International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 23s, 2025
https://theaspd.com/index.php

Green Fiscal Policy and Sustainable Economic Transformation: A Systematic Literature Review and Bibliometric Analysis

Hasdiana.S[1], Rahmatia[2], Fatmawati[3], Anas Iswanto[4]
[1]Economics Doctoral Program Student, Postgraduate Faculty of Economics and Business, Hasanuddin University, Makassar, Indonesia
[2,3,4]Faculty of Economics and Business, Hasanuddin University, Makassar, Indonesia
Email: dianhasdiana1401@gmail.com

Abstract
This study investigates Green Fiscal Policy (GFP) as a strategic tool for promoting sustainable economic transformation through a Systematic Literature Review (SLR) approach combined with bibliometric analysis. By examining 83 articles indexed in the Scopus database up to July 2025, the research highlights publication trends, geographic distribution, thematic focus, and key contributions to GFP discussions. The findings reveal a notable rise in publications after the 2015 Paris Agreement, with China leading as a major source of literature, while contributions from developing countries remain limited. The analysis also identified six key pillars of GFP success: fiscal accountability, energy transition, environmental data integrity, promotion of green innovation, cross-sector approaches, and integration of Environmental, Social, and Governance (ESG) frameworks. These results reaffirm GFP's role as a catalyst for fiscal reform that can align economic growth with environmental sustainability. This research makes a theoretical contribution to the environmental economics literature and offers practical recommendations for developing adaptive, inclusive, and context-specific green fiscal policies, especially in developing countries.

Keywords:*Green fiscal policy, sustainable economic transformation, environmental taxes, subsidies, energy transition, ESG.*

INTRODUCTION

Green fiscal policy is increasingly seen as a key tool for promoting environmental sustainability and inclusive economic growth. The literature indicates that fiscal instruments such as environmental taxes, subsidies, and green bonds not only function as mechanisms for redistribution but also act as catalysts for structural change toward a low-carbon economy (Jakob et al., 2019; Jones, 2011; Koval et al., 2023). Environmental tax reform has been shown to enhance resource efficiency and promote clean technology innovation, although the impact is heavily affected by the institutional context and political capacity in each country (D'Orazio, 2025; Ekins & Speck, 2011). Empirical results also highlight the challenge of implementing environmental taxes, as seen in Germany, which has shown limited effectiveness in reducing pollution (Erdogan, 2024; Omodero & Alege, 2022). Meanwhile, targeted subsidies in China are significantly encouraging green innovation (T. Bai et al., 2024; Zhao et al., 2023). This underscores that the success of green fiscal policies relies heavily on the design of instruments and sufficient institutional support.

Even so, several research gaps are still clearly visible. The absence of longitudinal studies and cross-border comparisons hampers a more comprehensive understanding of the long-term effects of green fiscal policies, and integration with other policy areas such as international trade, innovation, and social protection remains limited, while cross-sectoral synergies are crucial to ensure a fairer distribution of benefits (Gao, 2023; Ridwan et al., 2025). Another gap is the limited research on the impact of green fiscal policies on small businesses and low-income households, the groups most vulnerable to the regressive burden of environmental policies (Omodero & Alege, 2022). This situation highlights the urgency of research using the SLR method to develop a more solid analytical framework for designing effective and inclusive policies.

The SLR methodology has proved to be relevant because it enables systematic synthesis of literature, identification of research trends, and mapping of knowledge gaps (Damasceno & Gomes, 2023; Pasupuleti & Ayyagari, 2023). Using academic databases like Scopus and the Web of Science, researchers can evaluate the quality of publications and discover underexplored themes, such as the socio-economic impact of green fiscal policies (Palmaccio et al., 2023; Vejaratnam et al., 2020). However, a major

challenge in SLR is managing the growing volume of publications and ensuring the validity of the references used (Riano & Rojas, 2023). Therefore, combining SLR with bibliometrics is becoming an increasingly important strategy because it not only analyses the content of the literature but also maps the distribution, influence, and development trends of academic discourse (Palmaccio et al., 2023).

With this framework, this study poses three main questions: whether green fiscal policy remains a significant topic for future academic research (RQ1), how it develops as a research field, and whether it stays relevant for future sustainability and economic policy agendas (RQ2). How are the distribution and focus of studies related to Green Fiscal Policy in various regions and disciplines (RQ3)? What are the theoretical and practical implications that can support fiscal policy reform toward environmental sustainability?

Through a combination of Systematic Literature Review (SLR) and bibliometric analysis, this study not only provides an academic understanding of the effectiveness of fiscal instruments but also offers normative contributions to public policy theory and sustainable economic practices. Analysis using VOSviewer and the Scopus database up to July 17, 2025, allows for a comprehensive mapping of the literature's evolution, thereby offering important insights into the relevance and strategic direction of green fiscal policies within the framework of global sustainable development.

LITERATURE REVIEW

Green Fiscal Policy (GFP) is a strategic approach used by the government to internalise environmental costs within the economic system through fiscal tools such as subsidies, taxes, and public spending. This definition consistently appears in various studies showing that GFP aims to reduce carbon emissions, improve ESG (Environmental, Social, and Governance) performance, and promote low-carbon economic growth (Miao et al., 2023; Omodero & Alege, 2022). GFP also plays a key role in fiscal reforms focused on strengthening sustainable development and combating climate change (T. Bai et al., 2024; Boora & Karakunnel, 2023).

In the implementation context, green fiscal policies align public financial mechanisms with long-term environmental goals. This includes supporting the clean energy transition and reducing environmental degradation through strategic spending and fiscal incentives designed to promote green investment, especially in the private sector (Mazina et al., 2022; Tchorzewska, 2024). This approach is not only economic but also political because it involves budget reform and collaborative cross-sector fiscal management (Y. Bai et al., 2024; Xiong et al., 2023).

Conceptually, this policy demonstrates the synergy between economic growth and environmental conservation, shown through innovative fiscal strategies like tax incentives, tax credits, accelerated depreciation, feed-in tariffs, and environmental credits. The success of these policies depends on their ability to promote green innovation, enhance environmental indicators such as water and air quality, and encourage corporate behaviour toward more sustainable investments (Alsmadi & Alzoubi, 2022; Yang & Tang, 2025). Therefore, this literature indicates that systematically strengthening and adapting green fiscal policies is a vital step in supporting low-carbon development goals and the global energy transition.

Table 1: Define elements of green fiscal policy

Number	Defining factors of green fiscal policy	Author
1	Green fiscal policy is a government-managed financial approach that aims to reduce emissions and improve ESG performance through subsidies, taxes, and expenditures that mitigate environmental damage.	(Miao et al., 2023)
2	Green fiscal policies are the government's efforts to encourage efficient investment in renewable energy by aligning financial mechanisms with environmental goals.	(Mazina et al., 2022)
3	Green fiscal policies include budgeting strategies that focus on the energy transition, climate change, and green growth to reduce environmental degradation.	(Boora & Karakunnel, 2023)
4	Green fiscal policy refers to government policies that integrate environmental considerations by maximising fiscal components to support low-carbon economic development.	(Omodero & Alege, 2022)

5	Green fiscal policies include economic tools such as fiscal transfers and budget reforms designed to reduce environmental degradation and carbon emissions collaboratively across sectors.	(T. Bai et al., 2024)
6	Green fiscal policy is an innovative fiscal approach to improve environmental indicators such as coastal water quality and CO2 reduction through strategic spending.	(Yang & Tang, 2025)
7	Green fiscal policy involves providing fiscal stimulus and environmental credit incentives to guide polluting companies towards more sustainable investment behaviour.	(Ji et al., 2021)
8	Green fiscal policy refers to strengthening investment in environmentally friendly technology-based companies through tax incentives and subsidies.	(Tchorzewska, 2024)
9	Green fiscal policy is a government strategy that uses green credit policy stimulus to encourage company green innovation by strengthening financial instruments and providing more targeted incentives.	(Xiong et al., 2023)
10	Green fiscal policy is a series of government interventions that align public revenues and expenditures to safeguard the environment and climate, with an emphasis on subsidies and tax reform.	(Alsmadi & Alzoubi, 2022)

METHODS AND ANALYSIS

This study employs a systematic literature review (SLR) approach combined with bibliometric analysis to quantitatively examine the development, structure, and dynamics of research related to Green Fiscal Policy (GFP) in the context of sustainable development. This combination of methods aims to identify trends, patterns, key contributors, and recent issues in the field. The SLR process follows the PRISMA framework, which ensures transparency in the selection process and synthesis of related literature (Muhmad et al., 2024). The inclusion criteria are: (1) articles published up to July 17, 2025, (2) focusing on green fiscal policy topics, (3) documents in the form of scientific articles, and (4) publications in English. Additionally, bibliometric analysis is conducted using VOSviewer to visualise citation networks, author collaboration patterns, keyword linkages, and theme mapping. The results reveal the Intellectual Structure, Cross-Disciplinary Linkages, and the Evolution of Scientific Discourse about Green Fiscal Intervention (Ayaz & Zahid, 2024; Karunanithi et al., 2024; Tao & Chao, 2023).

The combination of bibliometric analysis and systematic review helps researchers synthesise empirical findings and map the landscape of research activities, including identifying key contributors and emerging trends (Y. Liu et al., 2024; Mohamed Noor & Ngadi, 2024; Q. Shang & Jin, 2023). Integrating these two approaches offers a comprehensive view of the development, historical progression, and future directions of the research field, making it especially valuable in interdisciplinary studies for gaining deeper insights (Donthu et al., 2021). Bibliometric analysis is also used for strategic purposes in scientific publishing, as introduced by Broadus (1987) to evaluate scientific journals based on their impact and influence (Aria & Cuccurullo, 2017).

The initial phase of this study begins with a careful selection of keywords using a top-down macro approach, starting with broad themes such as sustainable development, environmental economics, and fiscal instruments, then narrowing down to more specific terms related to "green fiscal policy." These keywords are incorporated into the article title, abstract, and keywords sections to guide the process of searching for articles in the Scopus database. The Scopus database was selected because of its extensive scope and robust citation indexing capabilities, enabling researchers to conduct a systematic literature review, identify field experts, monitor current research developments, and track emerging trends in green fiscal policy at both macro and micro levels.

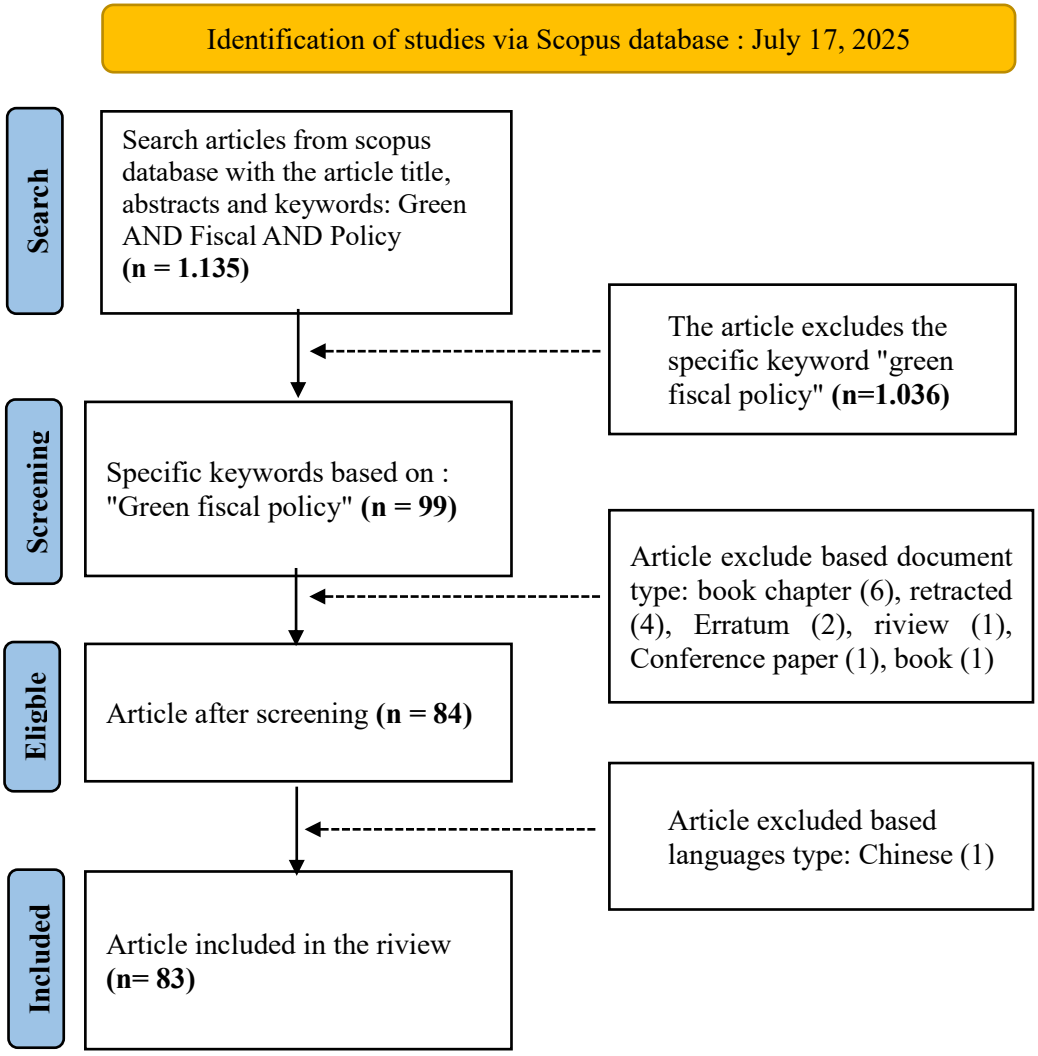


Figure 1: Systematic Literature Review Information Flow Using PRISMA

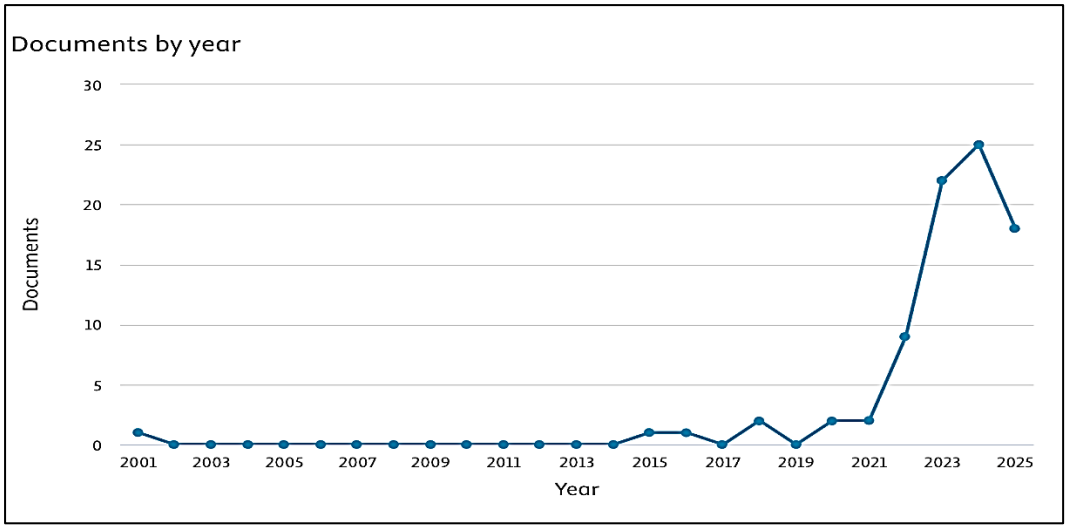
Based on the search results obtained on 17 July 2025 from the Scopus database using article titles, abstracts, and keywords: "Green Fiscal Policy" covering various academic disciplines, from the earliest publication in 2001 to the most recent in 2025, the total number of documents related to the Green Fiscal Policy was recorded as 1,135 documents (see Figure 1). After that, a document screening process was carried out based on classification and suitability with the scope of the study. Eliminated documents include: book chapter (6), retracted (4), Erratum (2), review (1), conference paper (1), book (1), and non-English articles (1), so that the total eliminated is 16 documents. The final sample analysed in full consisted of 83 articles. These selected articles were further analysed to answer the following research questions: RQ1: How has Green Fiscal Policy evolved as a research field, and is it still relevant for the sustainability agenda and future economic policies? RQ2: How is the distribution and focus of studies related to Green Fiscal Policy in various regions and disciplines? RQ3: What are the theoretical and practical implications that can support fiscal policy reform towards environmental sustainability, particularly in developing countries?

RESULT AND DISCUSSION

This study's results concentrate on the findings of 83 articles in the Scopus database regarding Green fiscal policy. This data was collected by identifying the number of articles published, their distribution over the years, and the journal sources. The study also emphasises the most influential aspects of green fiscal policy research, including the author's name, institutional affiliation, and the country of origin of the research.

How has Green Fiscal Policy evolved as a research area, and does it remain relevant to the sustainability agenda and future economic policies?

Based on data obtained from the Scopus database, it is known that over more than two decades, the number of scientific papers discussing green fiscal policy has reached 83 articles. This indicates that studies on green fiscal policies remain relatively scarce, as shown in Figure 1. The development of green fiscal policies has started to progress in the last two decades, particularly since 2024. The initial research was conducted by Scholtens (2001), titled "Borrowing green: Economic and environmental effects of green fiscal policy in The Netherlands," suggesting that green fiscal policy is beginning to gain attention in academic and public policy circles. However, this was not followed by a significant rise in research during 2001-2014, which averaged 0-1 documents per year. After 2015, coinciding with the launch of the Paris Agreement, the number of publications began to increase, although still limited. This marked an early awareness of the role of fiscal policy in supporting sustainable development (Nurfatriani et al., 2015). Then, between 2021 and 2024, a notable surge is observed in Graph 1, with a sharp rise from around 2 documents in 2021 to over 20 in 2023, reaching a peak of 25 documents in 2024. This growth reflects academic and policy responses to global issues such as the post-pandemic green economic recovery, the energy crisis, and the transition to renewable energy, as well as the urgency of implementing environmentally focused fiscal policies, including carbon taxes and the removal of fossil energy subsidies (Phung et al., 2023; Y. Shang et al., 2023; Zhao et al., 2023). Additionally, the decrease in data for 2025 is due to data collected earlier in the year (provisional data), but long-term trends demonstrate positive growth, and interest in GFP is not only a significant academic topic but also highly pertinent to the future of global economic and sustainability policies, especially amid the push towards a low-carbon economy (Zhou & Lin, 2025).



Source: Scopus database

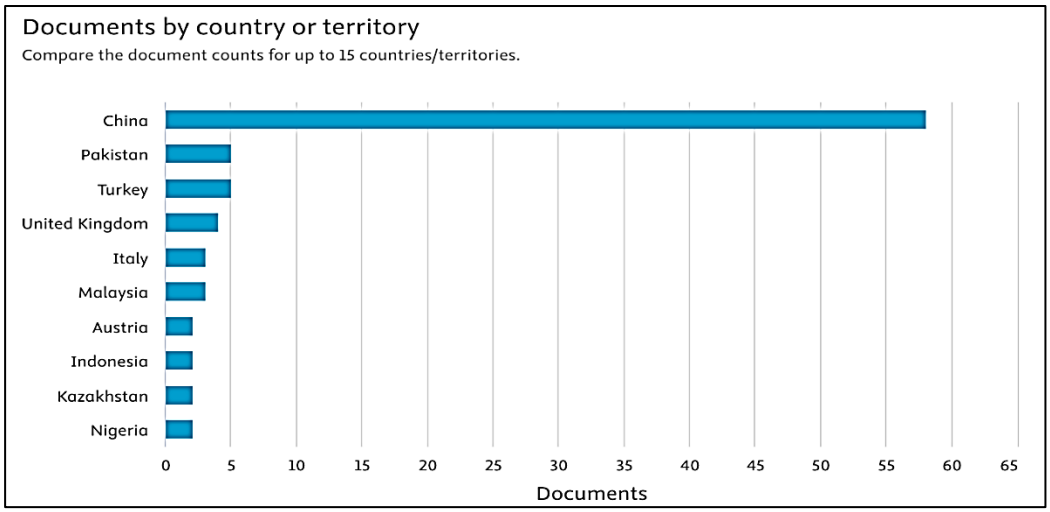
Figure 2: Number of Green fiscal policy publications

How is the distribution and emphasis of studies connected to Green Fiscal Policy across different regions and disciplines?

The analysis of the distribution of research on green fiscal policy in 83 articles was conducted by categorising articles based on classifications such as countries, regions, affiliations, sources, and authors, with a limit to only the top 10 articles for each category. This classification aims to identify the countries and academic communities most actively discussing green fiscal policy reforms.

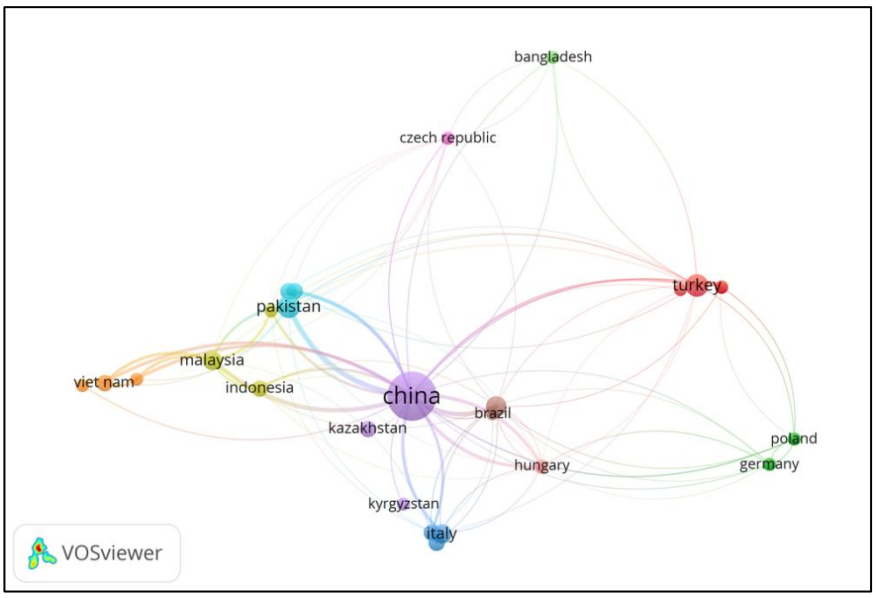
The results demonstrate that China overwhelmingly leads in the number of scientific publications with 58 articles, followed by countries such as Pakistan and Turkey with 5 articles each, and the United Kingdom with 4 articles. Meanwhile, contributions from developing nations like Indonesia, Kazakhstan, and Nigeria remain comparatively low (see figure 3). This geographical distribution suggests that although global interest in green fiscal policies is growing, the production of knowledge remains concentrated in certain regions and is not evenly spread across all parts of the world, especially in the countries of the Global South.

Understanding the regional distribution and concentration of institutions in the study of Green Fiscal Policy is crucial for fostering cross-disciplinary collaboration and serving as a foundation for developing adaptive green economic policies, particularly in developing countries facing environmental and fiscal challenges simultaneously.



Source: Scopus database
Figure 3: Number of articles by country or territory (top 10 countries)

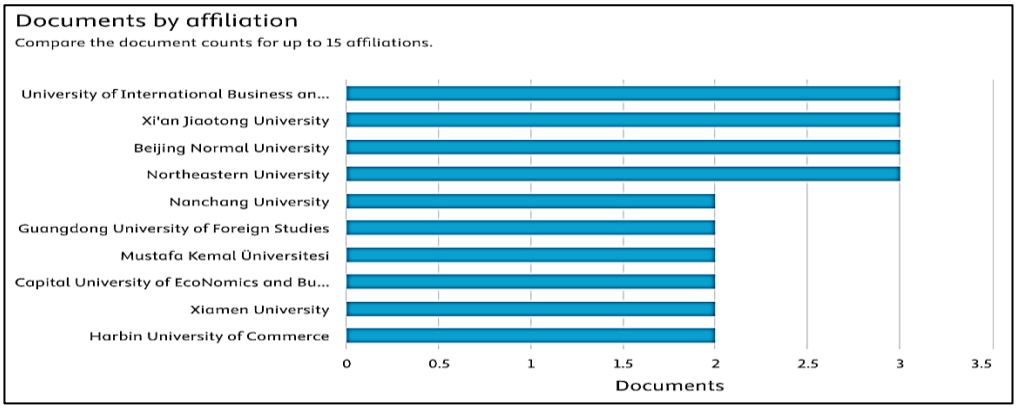
When categorised by country or region, the allocation of scientific studies related to the Green Fiscal Policy shows a clear dominance by China, with 50 articles, followed by Pakistan, Turkey, and the United Kingdom, with around 3 and 4 articles, respectively. Other contributing countries include Italy, Malaysia, Austria, Indonesia, Kazakhstan, and Nigeria.
These findings suggest that the topic of Green Fiscal Policy has garnered considerable attention in developing countries and large economies that actively incorporate green fiscal strategies into their national development plans. China's significant contribution reflects the country's fiscal policy focus on decarbonisation and green economic growth, as well as the global urgency to address climate change through fiscal measures. Researchers may also analyse the relationship between countries involved in Green Fiscal Policy research using the VOSviewer software. This step is vital for developing a systematic prospective research agenda. The visual insights from VOSviewer assist in mapping the connections and collaborations between nations in the development of sustainability-focused fiscal discourses and policies (see Figure 3).



Source: Output VOSviewer Software
Figure 4: Network country visualisation

These findings further reinforce the idea that the issue of Green Fiscal Policy is not only a concern in developed countries such as China, the United Kingdom, and Italy, but also attracts significant attention in developing countries like Pakistan, Malaysia, Indonesia, and Nigeria. The chart showing the distribution of documents by country indicates that China leads with the highest contribution to the Green Fiscal Policy literature, signalling the country's strong interest in integrating fiscal measures that support environmentally-focused economic growth.

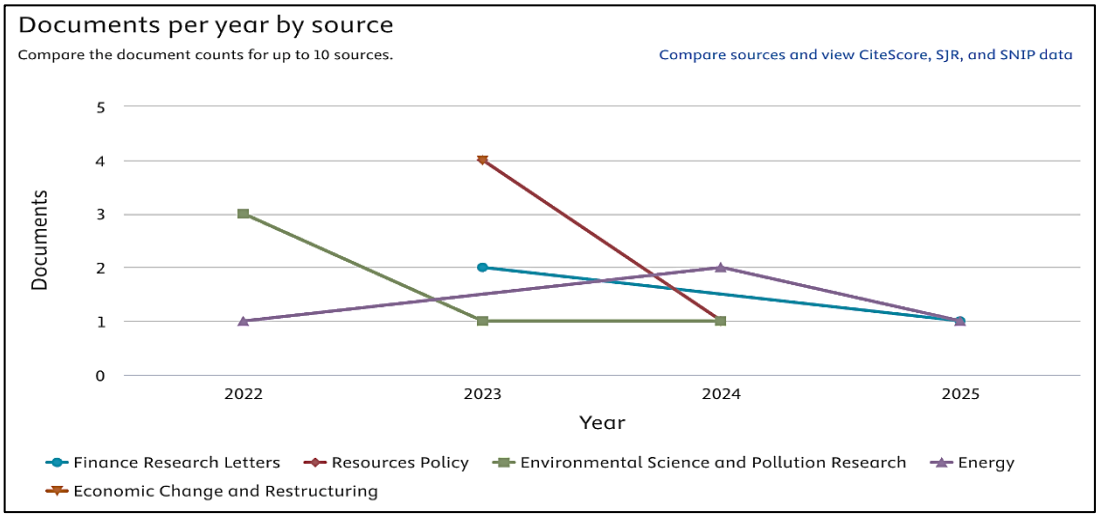
Second, the distribution of scientific papers related to Green fiscal policy by institutional affiliation is led by the University of International Business and Economics (China), with 3 articles; Luliang University (China), with 3 articles; Beijing Normal University (China), with 3 articles; Northeastern University (China), with 3 articles; Guandong University of Foreign Studies (China), with 2 articles; Mustafa Kemal University (Turkey), with 2 articles; Capital University of Economic and Business (China), with 2 articles; Xiamen University (China), with 2 articles; and Harbin University of Commerce (China), with 2 articles. (see Figure 4).



Source: Scopus database
Figure 5: Number of articles by affiliation (top 10 affiliations)

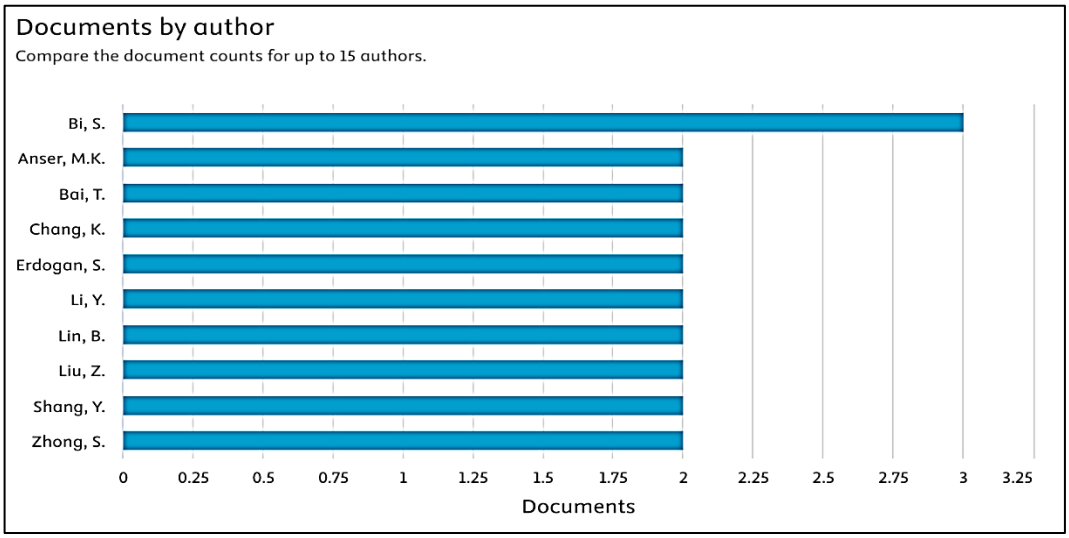
The dissemination of the Green Fiscal Policy study in the top 10 publications indicates that scientific interest in this topic is not limited to academic institutions in developed countries or those focusing on environmental issues, but also includes developing nations that are increasingly engaging with the global sustainability agenda. Notably, countries such as China and Turkey dominate the production of academic literature on Green Fiscal Policy.

Third, the allocation of studies on green fiscal policy based on publication sources is led by Resources Policy Journal with 4 articles, Environmental Science and Pollution Research with 3 articles, Finance Research Letters with 2 articles, and Energy Journal with 2 articles. Furthermore, the development of multiple sources within the same publication over the years has increased, indicating that this publication remains focused on environmental issues. (see Figure 5).



Source: Scopus database
Figure 6: Number of articles by sources (top 10 affiliations)

Fourth, the distribution of researchers conducting studies in the field of green fiscal policy. The leading ten authors include Bi, S., with 3 articles, and Anser, M.K., Bai, T., Chang, K., Erdogan, S., Li, Y., Lin, B., Liu, Z., Shang, Y., Zhong, S., each with 2 articles (see figure 7).

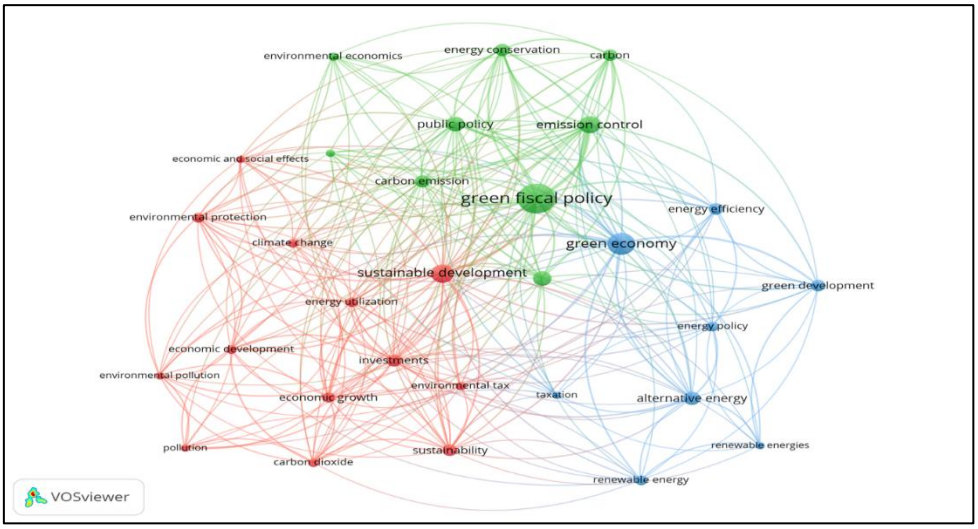


Source: Scopus database
Figure 7: Count of publications by author (top 15 authors)

What are the theoretical and practical implications that could underpin fiscal policy reform for environmental sustainability?

This review was conducted on 83 documents sourced from the Scopus database concerning Green Fiscal Policy. The VOSviewer software is utilised to demonstrate that the bibliometric analysis results have significant theoretical and practical implications for future environmentally focused fiscal policy reforms. Metadata analysis using VOSviewer enhances understanding for researchers and policymakers regarding the assumptions, theoretical frameworks, and empirical findings established in previous studies. From the perspective of practitioners and policymakers, these findings can serve as a foundation for developing adaptive and sustainable fiscal policies, such as removing fossil energy subsidies, offering tax incentives for green technologies, or implementing climate-based budgeting. Therefore, these studies have the potential to systematically accelerate fiscal reforms that facilitate the green economic transition, particularly in developing countries.

According to Figure 8, the emergence of topics includes green fiscal policy (102), green economy (82), sustainable development (80), emission control (71), public policy (57), investments (47), energy conservation (45), sustainability (40), economic growth (38), environmental policy (36), environmental pollution (25), and renewable energy (19).



Source: Output VOSviewer Software
Figure 8: Co-occurrence framework and representation key terms

Table 2: Keywords by authors

Rank	Keywords	Total links
1	Green fiscal policy	102
2	Green economy	82
3	Sustainable development	80
4	Emission control	71
5	Public policy	57
6	Investments	47
7	Energy conversation	45
8	Sustainability	40
9	Economic growth	38
10	Environmental policy	36

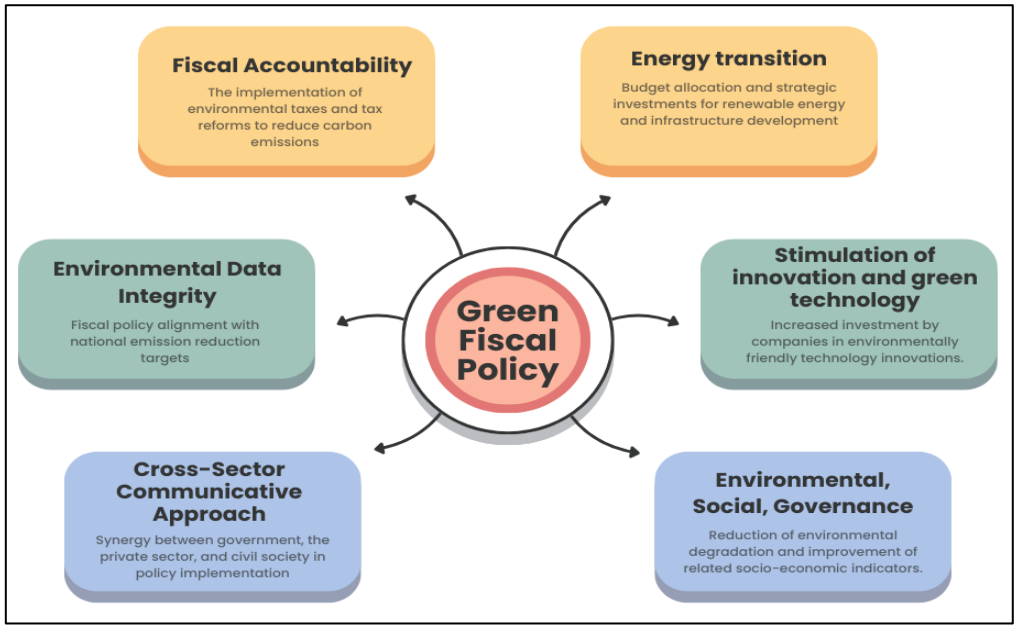
Source: Output VOSviewer Software

Based on the results of mapping and reviewing previous studies, it was found that there were limitations in prior research. Most studies on Green Fiscal Policy remained focused on developed countries, with significant contributions from countries such as China (see Figures 2 and 4). Therefore, future research should also target developing countries or regions with more established fiscal systems to address these gaps and enhance understanding in a global context.

This research significantly contributes to understanding how Green Fiscal Policy can promote fiscal reform and enhance organisational sustainability performance (Chen & Li, 2023; H. Liu et al., 2023). This is achieved through fiscal instruments such as tax incentives for the environment, renewable energy subsidies, and environment-based budgeting mechanisms. A cross-cultural approach to implementing these policies is also becoming increasingly important, particularly in developing countries that rely heavily on fiscal effectiveness to drive structural transformation towards a green economy (Mazina et al., 2022; Primc et al., 2024; Yeboah et al., 2024). Therefore, an integrated and contextual fiscal strategy is necessary and should align with global sustainable development targets.

The approach to green fiscal policy varies significantly between developed and developing countries due to their differing economic, social, and institutional complexities. Developed nations generally possess stronger fiscal and institutional capacities, enabling them to adopt more effective policies for reducing emissions and promoting renewable energy investments (Romano et al., 2017). Conversely, developing countries encounter challenges such as pro-cyclical fiscal policies, large informal economic sectors, and reliance on external funding (Deniz & Elgin, 2011; Uz Zaman & Sarker, 2022). Fiscal decentralisation strategies have been shown to boost green productivity through technological innovations and environmental regulations, as seen in China (B. Wang et al., 2022). Additionally, instruments like environmental taxes can counteract the adverse effects of foreign investment on sustainable energy objectives. Meanwhile, advancements in digital technology significantly enhance environmental quality in high-income countries, though their impact remains more limited in developing nations (Ben Youssef & Dahmani, 2024). Consequently, international cooperation, integrated cross-sector policies, and context-specific fiscal strategies are essential to bridge the gap and meet global sustainable development goals.

Findings from various studies indicate that essential aspects such as fiscal accountability, support for the energy transition, environmental data integrity, stimulation of innovation and green technology, cross-sector communicative approaches, and ESG performance are vital for successful fiscal implementation. These values must be incorporated into institutional design to ensure that fiscal policy reform is not merely technocratic but also ethical and inclusive, fostering sustainable economic growth.



Source: Data Sources (Feng & Ge, 2024; Jin, 2025; Lee & Kim, 2024; X. Liu et al., 2024; Rabhi et al., 2024; Yin et al., 2023)

Fiscal accountability

The success of green fiscal policies largely depends on six key interconnected pillars. Fiscal accountability is essential because it guarantees that fiscal tools, like carbon taxes, incentives for renewable energy, and subsidies for green technology, are managed transparently and purposefully (H. Yan et al., 2023). This transparency not only enhances the synergy between pollution reduction and green growth but also aligns with the framework of Pigouvian tax theory, where environmental taxes address negative externalities and encourage green innovation (X. Hu et al., 2023; Manta et al., 2023). Although political dynamics and the limited effectiveness of fiscal tools in some developing countries pose challenges, incorporating fiscal accountability still offers long-term advantages in fostering more sustainable resource management (Munch & Scheifele, 2023).

Energy transition

Furthermore, the energy transition is a crucial tool in promoting structural change towards low-carbon development (Cardinale & Scazzieri, 2019). Through budget allocation, strategic projects, and fiscal redistribution, governments can steer energy markets and supply chains to increase renewable energy adoption (Gordon & Gurumurthy, 2022). The support of green macroeconomic instruments such as carbon taxes, emissions trading, and green bonds has demonstrated its ability to mobilise resources for the clean energy sector (Braga & Ernst, 2023; Hassan et al., 2024; Sangiorgi & Schopohl, 2023). However, structural barriers such as insufficient investment in the power grid, policy inconsistencies, and weak just transition frameworks risk creating a lock-in effect that hampers green recovery (Evro et al., 2025; Herding et al., 2024; X. Wang & Lo, 2021).

Environmental Data Integrity

On the other hand, the integrity of environmental data plays a vital role in reducing information asymmetry, as explained by Akerlof's theory. Accurate and transparent environmental data enable governments to implement evidence-based policies that align with national emission reduction targets (Elsen et al., 2023). Moreover, the disclosure of environmental information has been shown to promote the adoption of environmentally friendly technologies at the enterprise level, confirming the essential role of trustworthy data in strengthening environmental governance (K. Zhang et al., 2024).

Stimulation of innovation and green technology

Additionally, promoting innovation and green technology supports Porter's hypothesis, which suggests that strict environmental regulations can stimulate productive innovation (W. Zhang et al., 2024). The integration of fiscal policy with innovation systems, such as through synergies with green financing, has been shown not only to directly reduce CO_2 emissions but also to speed up technological innovations

that indirectly help decrease emissions (Li & Wang, 2024; J. Hu et al., 2023). Therefore, aligning fiscal strategy with the green technology innovation agenda is a vital prerequisite for economic sustainability.

Cross-sector approach

Furthermore, the cross-sectoral approach reflects the theory of collective action, where coordination between government, the private sector, and civil society is necessary to achieve resource efficiency and innovation (Ardoin & Bowers, 2025). Increasing environmental taxes is indeed effective in reducing emissions. However, it can also hinder growth if not balanced with the right subsidies, thus emphasising the need for mixed policies to optimise economic and environmental development (Manigandan et al., 2024; J. Yan & Wang, 2024). Empirical evidence also shows that cross-sectoral policy alignment can boost the productivity of environmental factors through industrial restructuring and the acceleration of technological progress (Luo et al., 2025; B. Bai, 2023; Meng, 2024).

Environmental, Social, and Governance

Finally, the Environmental, Social, and Governance (ESG) framework is a vital tool for incorporating long-term risks into green fiscal policies. ESG implementation has been shown to significantly influence economic performance, particularly through enhanced links between ESG performance and green innovation in countries with limited innovation capacity (Long et al., 2023). Therefore, integrating the ESG framework not only boosts governance legitimacy but also fosters a green development path aligned with sustainable growth principles.

CONCLUSION

The study confirms that Green Fiscal Policy (GFP) plays a vital role in combining economic growth with environmental sustainability. Through systematic review and bibliometric analysis, it was found that GFP functions not only as a fiscal tool but also as a driver for structural change towards a low-carbon economy. The increase in publications after the 2015 Paris Agreement highlights the rising global interest in GFP, although certain countries, especially China, still lead research. This indicates a geographical gap that needs to be addressed by increasing the involvement of developing countries in academic discussions and policy implementation.

Furthermore, this study identifies six key pillars as determinants of GFP success: fiscal accountability, support for energy transition, integrity of environmental data, stimulation of green innovation, a cross-sector approach, and the integration of ESG frameworks. These pillars form the basis for fiscal policies that are not only technocratic but also inclusive and socially just. The practical implication is that the GFP must be designed flexibly, considering each country's institutional and socio-economic context, to effectively accelerate sustainable economic transformation. Therefore, the GFP can serve as a strategic tool to address global challenges related to climate change while reinforcing the foundations of long-term economic development.

REFERENCE

1. Alsmadi, A. A., & Alzoubi, M. (2022). Green Economy: Bibliometric Analysis Approach. International Journal of Energy Economics and Policy, 12(2), 282–289. https://doi.org/10.32479/ijeep.12758
2. Ardoin, N. M., & Bowers, A. W. (2025). Collective action impacts on climate change mitigation. Current Opinion in Behavioural Sciences, 63, 101503. https://doi.org/10.1016/j.cobeha.2025.101503
3. Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. Journal of Informatics, 11(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007
4. Ayaz, G., & Zahid, M. (2024). Trends, shifts, and prospects of sustainable finance research: a bibliometric analysis. Sustainability Accounting, Management and Policy Journal, 15(5), 1094–1117. https://doi.org/10.1108/SAMPJ-06-2022-0340
5. Bai, B. (2023). Fiscal stimulus and natural resource efficiency: A comprehensive approach to a green economic recovery. Resources Policy, 86, 104092. https://doi.org/10.1016/j.resourpol.2023.104092
6. Bai, T., Xu, D., Bi, S., Zhu, K., & Dávid, L. D. (2024). Impact of green fiscal policy on the collaborative reduction of pollution and carbon emissions: Evidence from energy saving and emission reduction policy in China. Copernican Oeeconomy, 15(4), 1263–1302. https://doi.org/10.24136/oc.3159
7. Bai, Y., Lu, C., Dong, X., & Li, Y. (2024). Role of collaborative governance in unlocking private investment in sustainable projects. Humanities and Social Sciences Communications, 11(1), 1–9. https://doi.org/10.1057/s41599-024-03175-2
8. Ben Youssef, A., & Dahmani, M. (2024). Assessing the Impact of Digitalisation, Tax Revenues, and Energy Resource Capacity on Environmental Quality: Fresh Evidence from CS-ARDL in the EKC Framework. Sustainability, 16(2), 474. https://doi.org/10.3390/su16020474
9. Boora, S., & Karakunnel, M. T. (2023). Media Framing of Indian Green Fiscal Policy: A Survey of Environmental Policies Across Online News Portals. Environment and Ecology Research, 11(5), 712–726. https://doi.org/10.13189/eer.2023.110502
10. Braga, J. P., & Ernst, E. (2023). Financing the green transition. The role of macro-economic policies in ensuring a just transition. Frontiers in Climate, 5. https://doi.org/10.3389/fclim.2023.1192706

11. Broadus, R. N. (1987). Toward a Definition of "Bibliometrics." Scientometrics, 12(5–6), 373–379. https://doi.org/10.1007/BF02016680
12. Cardinale, I., & Scazzieri, R. (2019). Explaining structural change: actions and transformations. Structural Change and Economic Dynamics, 51, 393–404. https://doi.org/10.1016/j.strueco.2018.12.002
13. Chen, G., & Li, Q. S. (2023). Fiscal spending and green economic growth: evidence from highly polluting Asian economies. Environmental Science and Pollution Research, 31(1), 834–844. https://doi.org/10.1007/s11356-023-30520-w
14. D'Orazio, P. (2025). Addressing climate risks through fiscal policy in emerging and developing economies: What do we know and what lies ahead? Energy Research and Social Science, 119. https://doi.org/10.1016/j.erss.2024.103852
15. Damasceno, G. V., & Gomes, R. C. (2023). Factors in the choice of fiscal governance: A systematic literature review and future research agenda. Financial Accountability & Management, 39(1), 237–254. https://doi.org/10.1111/faam.12311
16. Deniz, C., & Elgin, C. (2011). Cyclicality of fiscal policy and the shadow economy. Empirical Economics, 41(3), 725–737. https://doi.org/10.1007/s00181-010-0409-0
17. Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. Journal of Business Research, 133, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070
18. Ekins, P., & Speck, S. (2011). Environmental Tax Reform (ETR): A Policy for Green Growth. In Environmental Tax Reform (ETR): A Policy for Green Growth. https://doi.org/10.1093/acprof:oso/9780199584505.001.0001
19. Elsen, P. R., Oakes, L. E., Cross, M. S., DeGemmis, A., Watson, J. E. M., Cooke, H. A., Darling, E. S., Jones, K. R., Kretser, H. E., Mendez, M., Surya, G., Tully, E., & Grantham, H. S. (2023). Priorities for embedding ecological integrity in climate adaptation policy and practice. One Earth, 6(6), 632–644. https://doi.org/10.1016/j.oneear.2023.05.014
20. Erdogan, S. (2024). Linking green fiscal policy, energy, economic growth, population dynamics, and environmental degradation: Empirical evidence from Germany. Energy Policy, 189, 114110. https://doi.org/10.1016/j.enpol.2024.114110
21. Evro, S., Omonigho, E. N., Mayon, D., Ekpikie, A., Alamooti, M., & Tomomewo, O. S. (2025). Green recovery or fossil lock-in? Assessing sustainability and energy transition pathways in major economies. Energy Research & Social Science, 127, 104205. https://doi.org/10.1016/j.erss.2025.104205
22. Feng, N., & Ge, J. (2024). How does fiscal policy affect the green low-carbon transition from the perspective of the evolutionary game? Energy Economics, 134, 107578. https://doi.org/10.1016/j.eneco.2024.107578
23. Gao, Z. (2023). Impact of Green Fiscal Policy on Sustainable Development Performance of Chinese Enterprises. Renewable Energy and Power Quality Journal, 21(3). https://www.scopus.com/inward/record.uri?eid=2-s2.0-85212673552&partnerID=40&md5=4a4d5de5e38a3933c108d2164784a876
24. Gordon, G., & Gurumurthy, R. (2022). Transforming forced displacement response through innovation. Oxford Review of Economic Policy, 38(3), 414–433. https://doi.org/10.1093/oxrep/grac018
25. Hassan, M., Kouzez, M., Lee, J.-Y., Msolli, B., & Rjiba, H. (2024). Does increasing environmental policy stringency enhance renewable energy consumption in OECD countries? Energy Economics, 129, 107198. https://doi.org/10.1016/j.eneco.2023.107198
26. Herding, L., Cossent, R., Rivier, M., & Bañales, S. (2024). Assessing the impact of renewable energy penetration and geographical allocation on transmission expansion cost: A comparative analysis of two large-scale systems. Sustainable Energy, Grids and Networks, 38, 101349. https://doi.org/10.1016/j.segan.2024.101349
27. Hu, J., Chen, H., Dinis, F., & Xiang, G. (2023). Nexus among green finance, technological innovation, green fiscal policy, and CO2 emissions: A conditional process analysis. Ecological Indicators, 154, 110706. https://doi.org/10.1016/j.ecolind.2023.110706
28. Hu, X., Wei, Y., & Wang, C. (2023). Study on water entry characteristics of the projectile colliding with the floating ice based on fluid-structure interaction method: Dynamic response and energy conversion. Energy, 283, 129184. https://doi.org/10.1016/j.energy.2023.129184
29. Jakob, M., Soria, R., Trinidad, C., Edenhofer, O., Bak, C., Bouille, D., Buira, D., Carlino, H., Gutman, V., Hübner, C., Knopf, B., Lucena, A., Santos, L., Scott, A., Steckel, J. C., Tanaka, K., Vogt-Schilb, A., & Yamada, K. (2019). Green fiscal reform for a just energy transition in latin America. Economics, 13. https://doi.org/10.5018/economics-ejournal.ja.2019-17
30. Ji, L., Jia, P., & Yan, J. (2021). Green credit, environmental protection investment, and debt financing for heavily polluting enterprises. PLOS ONE, 16(12), e0261311. https://doi.org/10.1371/journal.pone.0261311
31. Jin, I. (2025). Aligning green budgeting with nationally determined contributions. Climate Policy, 1–14. https://doi.org/10.1080/14693062.2025.2502108
32. Jones, B. (2011). Driving a Green Economy through Public Finance and Fiscal Policy Reform. Journal of International Commerce, Economics and Policy, 2(2), 325–349. https://doi.org/10.1142/S1793993311000336
33. Karunanithi, K., Bui, W. K. T., & Tan, H. C. (2024). Green gross domestic product: A bibliometric analysis. Sustainable Development, 32(6), 6132–6143. https://doi.org/10.1002/sd.3006
34. Koval, V., Laktionova, O., Rogoza, N., Chumak, O., Komandrovska, V., & Berdar, M. (2023). The impact of fiscal policy on environmental management in ensuring sustainable economies. IOP Conference Series: Earth and Environmental Science, 1126(1). https://doi.org/10.1088/1755-1315/1126/1/012016
35. Lee, S., & Kim, M. (2024). Public perceptions of cross-sector collaboration and sector bias: evidence from a survey experiment. Public Management Review, 26(8), 2429–2451. https://doi.org/10.1080/14719037.2023.2273316
36. Li, G., & Wang, X. (2024). Can green fiscal policy improve green total factor carbon efficiency? Evidence from China. Journal of Environmental Planning and Management, 1–30. https://doi.org/10.1080/09640568.2024.2352554
37. Liu, H., Jafri, M. A. H., Zhu, P., & Hafeez, M. (2023). Fiscal policy-green growth nexus: Does financial efficiency matter in top carbon emitter economies? Environment, Development and Sustainability, 26(8), 20379–20396. https://doi.org/10.1007/s10668-023-03478-5
38. Liu, X., Cifuentes-Faura, J., Zhao, S., & Wang, L. (2024). The impact of government environmental attention on firms' ESG performance: Evidence from China. Research in International Business and Finance, 67, 102124. https://doi.org/10.1016/j.ribaf.2023.102124

39. Liu, Y., Jiang, X., Wu, Y., & Yu, H. (2024). Global research landscape and trends of cancer radiotherapy plus immunotherapy: A bibliometric analysis. Heliyon, 10(5), e27103. https://doi.org/10.1016/j.heliyon.2024.e27103
40. Long, H., Feng, G., Gong, Q., & Chang, C. (2023). ESG performance and green innovation: An investigation based on quantile regression. Business Strategy and the Environment, 32(7), 5102–5118. https://doi.org/10.1002/bse.3410
41. Luo, P., Zhang, C., & Cheng, B. (2025). Toward Sustainable Development: The Impact of Green Fiscal Policy on Green Total Factor Productivity. Sustainability, 17(3), 1050. https://doi.org/10.3390/su17031050
42. Manigandan, P., Alam, M. S., Murshed, M., Ozturk, I., Altuntas, S., & Alam, M. M. (2024). Promoting sustainable economic growth through natural resources management, green innovations, environmental policy deployment, and financial development: Fresh evidence from India. Resources Policy, 90, 104681. https://doi.org/10.1016/j.resourpol.2024.104681
43. Manta, A. G., Doran, N. M., Bădîrcea, R. M., Badareu, G., & Ţăran, A. M. (2023). Is the implementation of a Pigouvian tax considered an effective approach to address climate change mitigation? Economic Analysis and Policy, 80, 1719–1731. https://doi.org/10.1016/j.eap.2023.11.002
44. Mazina, A., Syzdykova, D., Myrzhykbayeva, A., Raikhanova, G., & Nurgaliyeva, A. (2022). Impact of Green Fiscal Policy on Investment Efficiency of Renewable Energy Enterprises in Kazakhstan. International Journal of Energy Economics and Policy, 12(5), 491–497. https://doi.org/10.32479/ijeep.13437
45. Meng, F. (2024). Driving sustainable development: Fiscal policy and the promotion of natural resource efficiency. Resources Policy, 90, 104687. https://doi.org/10.1016/j.resourpol.2024.104687
46. Miao, S., Tuo, Y., Zhang, X., & Hou, X. (2023). Green Fiscal Policy and ESG Performance: Evidence from the Energy-Saving and Emission-Reduction Policy in China. Energies, 16(9), 3667. https://doi.org/10.3390/en16093667
47. Mohamed Noor, M. H., & Ngadi, N. (2024). Global research landscape on coagulation-flocculation for wastewater treatment: A 2000–2023 bibliometric analysis. Journal of Water Process Engineering, 64, 105696. https://doi.org/10.1016/j.jwpe.2024.105696
48. Muhmad, S. N., Cheema, S., Mohamad Ariff, A., & Nik Him, N. F. (2024). Systematic literature review and bibliometric analysis of green finance and renewable energy development. Sustainable Development, 32(6), 7342–7355. https://doi.org/10.1002/sd.3093
49. Munch, F. A., & Scheifele, F. (2023). Nurturing national champions? Local content in solar auctions and firm innovation. Energy Policy, 179, 113574. https://doi.org/10.1016/j.enpol.2023.113574
50. Nurfatriani, F., Darusman, D., Nurrochmat, D. R., Yustika, A. E., & Muttaqin, M. Z. (2015). Redesigning Indonesian forest fiscal policy to support forest conservation. Forest Policy and Economics, 61, 39–50. https://doi.org/10.1016/j.forpol.2015.07.006
51. Omodero, C. O., & Alege, P. O. (2022). Green Fiscal Policy Mechanisms for a Low–Carbon Ecosystem: A Developing Country Assessment. Environment and Ecology Research, 10(5), 550–560. https://doi.org/10.13189/eer.2022.100503
52. Palmaccio, M., GaleoneE, G., Shini, M., & Campobasso, F. (2023). Green Finance: Past, Present, and Future Studies. Journal of Financial Management, Markets and Institutions, 11(02). https://doi.org/10.1142/S2282717X23500135
53. Pasupuleti, A., & Ayyagari, L. R. (2023). A Thematic Study of Green Finance with Special Reference to Polluting Companies: A Review and Future Direction. Environmental Processes, 10(2), 24. https://doi.org/10.1007/s40710-023-00642-x
54. Phung, T. Q., Rasoulinezhad, E., & Luong Thi Thu, H. (2023). How are FDI and green recovery related in Southeast Asian economies? Economic Change and Restructuring, 56(6), 3735–3755. https://doi.org/10.1007/s10644-022-09398-0
55. Primc, K., Zabavnik, D., Dominko, M., & Slabe-Erker, R. (2024). Green financing for cutting emissions and simultaneous economic upturn in the European Union: Myth or reality? Sustainable Futures, 8, 100355. https://doi.org/10.1016/j.sftr.2024.100355
56. Rabhi, A., Soujaa, I., & Parsons, B. (2024). Do environmental taxes and renewable energy consumption play a role in climate change mitigation? International evidence from developing economies. Research in Globalisation, 9, 100266. https://doi.org/10.1016/j.resglo.2024.100266
57. Riano, C. M., & Rojas, B. S. (2023). How to Report Systematic Literature Reviews in Management Using SyReMa. Innovate, 34(92). https://doi.org/10.15446/innovar.v34n92.99156
58. Ridwan, M., Akther, A., Dhar, B. K., Roshid, M. M., Mahjabin, T., Bala, S., & Hossain, H. (2025). Advancing Circular Economy for Climate Change Mitigation and Sustainable Development in the Nordic Region. Sustainable Development. https://doi.org/10.1002/sd.3563
59. Romano, A. A., Scandurra, G., Carfora, A., & Fodor, M. (2017). Renewable investments: The impact of green policies in developing and developed countries. Renewable and Sustainable Energy Reviews, 68, 738–747. https://doi.org/10.1016/j.rser.2016.10.024
60. Sangiorgi, I., & Schopohl, L. (2023). Explaining green bond issuance using survey evidence: Beyond the greenium. The British Accounting Review, 55(1), 101071. https://doi.org/10.1016/j.bar.2021.101071
61. Scholtens, B. (2001). Borrowing green: economic and environmental effects of green fiscal policy in the Netherlands. Ecological Economics, 39(3), 425–435. https://doi.org/10.1016/S0921-8009(01)00235-X
62. Shang, Q., & Jin, X. (2023). A bibliometric analysis on climate finance: current status and future directions. Environmental Science and Pollution Research, 30(57), 119711–119732. https://doi.org/10.1007/s11356-023-31006-5
63. Shang, Y., Zhu, L., Qian, F., & Xie, Y. (2023). Role of green finance in renewable energy development in the tourism sector. Renewable Energy, 206, 890–896. https://doi.org/10.1016/j.renene.2023.02.124
64. Tao, Z., & Chao, J. (2023). A bibliometric and visualised analysis of research on green finance and energy from a global perspective. Research in Globalisation, 7, 100156. https://doi.org/10.1016/j.resglo.2023.100156
65. Tchorzewska, K. B. (2024). A Lost Opportunity? Environmental Investment Tax Incentive and Energy Efficient Technologies. In Environmental and Resource Economics (Vol. 87, Issue 12). Springer Netherlands. https://doi.org/10.1007/s10640-024-00916-4
66. Uz Zaman, K. A., & Sarker, T. (2022). Chapter 8: Public finance and fiscal instruments for sustainable development. In De Gruyter Handbook of Sustainable Development and Finance (pp. 153–176). By Gruyter.

https://doi.org/10.1515/9783110733488-008
67. Vejaratnam, N., Mohamad, Z. F., & Chenayah, S. (2020). A systematic review of barriers impeding the implementation of government green procurement. Journal of Public Procurement, 20(4), 451–471. https://doi.org/10.1108/JOPP-02-2020-0013
68. Wang, B., Liu, F., & Yang, S. (2022). Green economic development under the fiscal decentralisation system: Evidence from China. Frontiers in Environmental Science, 10. https://doi.org/10.3389/fenvs.2022.955121
69. Wang, X., & Lo, K. (2021). Just transition: A conceptual review. Energy Research & Social Science, 82, 102291. https://doi.org/10.1016/j.erss.2021.102291
70. Xiong, X., Masron, T. A., & Gondo, T. W. (2023). Can the green credit policy stimulate green innovation of heavily polluting enterprises in China? Frontiers in Environmental Science, 10. https://doi.org/10.3389/fenvs.2022.1076103
71. Yan, H., Qamruzzaman, M., & Kor, S. (2023). Nexus between Green Investment, Fiscal Policy, Environmental Tax, Energy Price, Natural Resources, and Clean Energy—A Step towards Sustainable Development by Fostering Clean Energy Inclusion. Sustainability, 15(18), 13591. https://doi.org/10.3390/su151813591
72. Yan, J., & Wang, R. (2024). Green Fiscal and Tax Policies in China: An Environmental Dynamic Stochastic General Equilibrium Approach. Sustainability (Switzerland), 16(9). https://doi.org/10.3390/su16093533
73. Yang, M., & Tang, X. (2025). Investigating the asymmetric impact of tourism, green fiscal policy, and fintech on environmental emissions and coastal water quality: an empirical study using the method of moments quantile regression. Frontiers in Environmental Science, 12. https://doi.org/10.3389/fenvs.2024.1499558
74. Yeboah, K. E., Abbass, K., Jamatutu, S. A., Feng, B., & Feng, J. (2024). Achieving sustainability: Unravelling the role of financial development and foreign direct investment in sub-Saharan Africa. Natural Resources Forum. https://doi.org/10.1111/1477-8947.12518
75. Yin, X., Wang, D., Lu, J., & Liu, L. (2023). Does green credit policy promote corporate green innovation? Evidence from China. Economic Change and Restructuring, 56(5), 3187–3215. https://doi.org/10.1007/s10644-023-09521-9
76. Zhang, K., Li, J., Ma, W., & Wang, X. (2024). Does environmental information disclosure promote enterprise green technology innovation? PLOS ONE, 19(12), e0312901. https://doi.org/10.1371/journal.pone.0312901
77. Zhang, W., Zhu, B., Li, Y., & Yan, D. (2024). Revisiting the Porter hypothesis: a multi-country meta-analysis of the relationship between environmental regulation and green innovation. Humanities and Social Sciences Communications, 11(1), 232. https://doi.org/10.1057/s41599-024-02671-9
78. Zhao, L., Zhang, Y. Q., Sadiq, M., Hieu, V. M., & Ngo, T. Q. (2023). Testing green fiscal policies for green investment, innovation, and green productivity amid the COVID-19 era. Economic Change and Restructuring, 56(5), 2943–2964. https://doi.org/10.1007/s10644-021-09367-z
79. Zhou, Y., & Lin, B. (2025). The energy-saving effect of green fiscal policy: Empirical evidence from China's comprehensive demonstration cities of energy conservation and emission reduction fiscal policy. Applied Energy, 378. https://doi.org/10.1016/j.apenergy.2024.124784