African Journal of Economics
and Financial Issues (Volume 1, No. 1)
ISSN: 3085-4628

African Journal
of Economics
& Financial Issues

https://www.ajefi.ma

# Green Monetary Policy: A Bibliometric Analysis of the Literature Using Bibliometrix

**Mohamed SAOU[1], Taha NAMRI [1], Idriss EL ABBASSI [1]**

[1] Mohammed V University (UM5), Faculty of Law, Economics and Social Sciences (FSJES-AGDAL), Laboratoire d'Economie Apliquée (LEA), Rabat, Morocco

Received: January 20, 2025 Accepted: April 21, 2025

**Abstract**

The rise of global CO2 discharge and the recurrence of natural disasters and climate risks is prompting the central banks to take a more active role in environmental issues. Agreed in December 2015 at COP21, the Paris Agreement, asks a range of economic stakeholders and governments to accelerate the climate change mitigation by reducing their GHG emissions. Indeed, climate change effects on agriculture, food prices, financial assets and insurance, and economic growth has multiple consequences on the monetary policy objectives and transmission channels. In this context, the central banks integrated the environmental sustainability as a new agenda, by the adoption of green monetary policies. An interesting debate has been sparked by this concept of "greening" in recent years, particularly in developed countries, although it remains relatively unexplored in the existing literature. To enhance our understanding of the progress made in green monetary policy, this study employs bibliometric analysis covering the literature from 2000 to 2024. The data base for this analysis is derived form SCOPUS by the Bibliomtrix R tool and "VOSviewer".

**Keywords:** green monetary policy, bibliometrics, climate change, ecological transition

**JEL Classification:** E52, Q58, Q01, O57

Acknowledgements:

This research project was conducted with the support of the National Center for Scientific and Technical Research (CNRST) under the "Phd-Associate Scholarship-PASS"

Correspondance: Mohamed SAOU, Faculty of laws, Economics and social science, Mohammed V University, 10000, Rabat, Morocco.

Email addresses: mohamed_saou@um5.ac.ma (Mohamed SAOU)

## 1. Introduction

The continuing rise in climate risks and rising global temperatures have prompted governments, shareholders and members of civil society to reconsider the importance of behavioral change in combating the adverse effects of climate change (Anastasiou et al., 2024). As major societal players, companies are particularly called upon to comply with climate policies and reduce their carbon emissions, due to their significant contribution to global warming (Haigh & Griffiths, 2009). The Paris Agreement (COP21, 2015), adopted under the United Nations Framework Convention on Climate Change (UNFCCC), aims to contain global temperature rise to well below 2°C above pre-industrial levels. Achieving this goal requires a thorough understanding of the sources of carbon dioxide ($CO_2$) emissions as well as the influencing factors, including economic policies such as fiscal and monetary policies (Accord de Paris, 2015). The seriousness of the climate situation calls for urgent mobilization of all institutional stakeholders, accompanied by a broader understanding of environmental regulatory frameworks (Konadu et al., 2022).

It is with this in mind that the present work aims to provide food for thought on green monetary policy. The concept of "greening" monetary policies has attracted growing interest in recent years, particularly in developed countries, although it remains relatively unexplored in the scientific literature. This study mobilizes a bibliometric approach based on the methodological framework proposed by Eyzaguirre et al. (2023), covering the period 2000-2024. It is based on a SCOPUS database and uses Bibliometrix tools in R and VOSviewer, with the aim of gaining a better understanding of the scientific dynamics surrounding the greening of central banks and monetary policies.

Our work is structured as follows: in the first section, we justify our choice of keywords, which form the basis of our bibliometric analysis. Next, we present the various results of our research, focusing on the scientific evolution of work carried out in this field. Finally, we offer a synthesis of the literature in relation to the main areas explored in our analysis.

## 2. Context of keyword selection

### *2.1 Methodological approach*

Green", 'Monetary' and 'Policy' are new words used in environmental economics policy literature. Monetary policy" refers to the actions of central banks and monetary authorities with the aim of stabilizing or recovering the economy. Green" refers to any environmentally-friendly activity. We have used the 3 terms in the SCOPUS database, whose aim is to extract all the work and progress of scientific research into the greening of central banks and their actions. To this end, we drew up a multi-stage documentary research plan, which we carried out in separate stages.

The study of greening monetary policy and green actions by central banks has become an objective for both developed and developing economies for a number of reasons. Firstly, climate change has the potential to damage the transmission of monetary policy in multiple ways, via financial stability and prices, as well as its impact on growth. Secondly, monetary policy has the potential to make up for the inadequacy of fiscal and budgetary tools such as subsidies for sustainable projects and carbon taxation. Finally, the greening of monetary policy acts as a preventive and corrective instrument, anticipating and controlling climate risks that could disrupt the financial system. It strengthens the resilience of the financial system in the face of climate risks, thereby helping to ensure sustainable economic stability.

### *2.2 Documentary search strategy*

In the present work, we have used a bibliometric framework via the biblioshny package in the R language and VOSviewer. The reason is that the bibliometric framework is an analysis method used in many fields to track the evolution of scientific research, authors and citations in a specific field of study. According to Börner et al. (2003), bibliometric analysis is carried

out in four distinct stages. The first is to define the research question, identifying the subject's knowledge base, intellectual structure and research limits. The second stage involves collecting the database from recognized and indexed scientific search engines, such as Scopus, Web of Science, PubMed and Google Scholar.

The next step is to select keywords representing the pre-defined research problem, applying different filters according to research field, keywords, study period, authors, resource affiliations and nature of published documents. The fourth step consists of analyzing the data collected from the scientific search engines, using mathematical approaches, descriptive statistics and correlation analysis, as well as visualization methods such as scatter plots and mapping.

We use this bibliometric approach to identify trends in research on the interaction between central bank actions and environmental objectives. These trends are extracted from the Scopus databases, which represent one of the world's leading sources of scientific articles, books, journals and conference proceedings. If we search for English-language studies containing the keywords “Green”, “monetary” and “policy”, we find that the mass of research studies extracted is divided according to several fields of research, 4 of which are more considerable: firstly, the field of the environment occupies a share of (24%), secondly, we have the field of Economics and Econometrics occupying a share of (22. 1%), thirdly, the social sciences field with a share of (17.3%) and finally we have the energy field occupying a share of (11%). Unlike the rest of the fields, which occupy minimal shares (see Figure 1). The results of the bibliometric analysis reveal a significant increase in the abundance of research from our database.

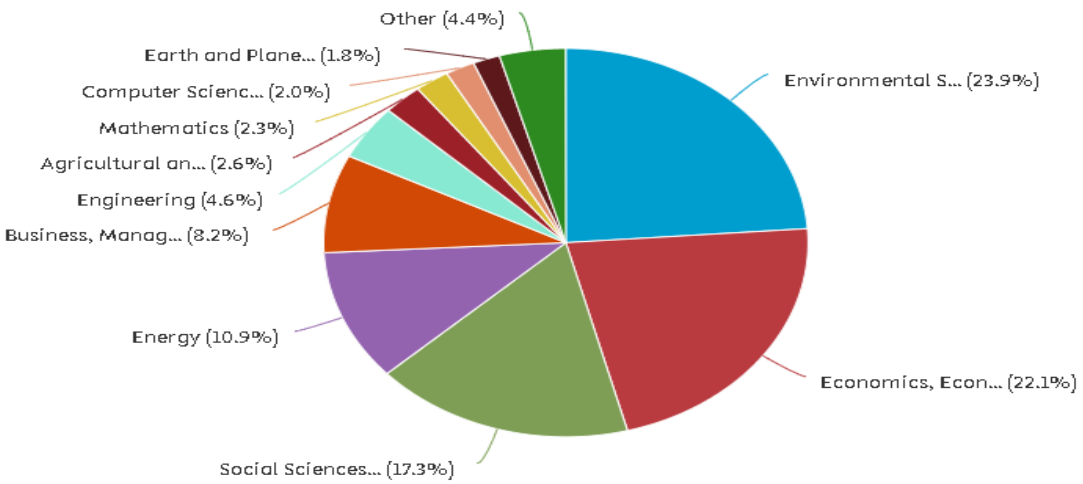


Figure 1. Publications by field of research.

After collecting the necessary data from various fields of research, we carry out an in-depth analysis of the results. We project the evolution of the number of publications and annual citations, while examining the interactions between authors, their affiliations and their citations. Two software packages are used for this purpose: VOSviewer and R, via the “Bibliometrix” package, which enables researchers to explore bibliometric data in the R environment (Aria & Cuccurullo, 2017).

## 3. Bibliometric analysis results

### *3.1 Publication and citation trends by year.*

In Table 1, we have compiled a set of related information after carrying out a filtering process based on several criteria. The total number of research papers included in our bibliometric study is estimated at 327, covering the period from 2000 to 2024, from 194 different sources.

Scientific output in this field is growing at an annual rate of 16.37%, with an average publication age of 4 years. In addition, the average number of citations per document is estimated at 27.98, for a total of 925 authors, of which 59 publications were produced by a single author. The collaboration index between authors from the same country is estimated at 3.06, while collaboration between researchers from different countries reaches 31.5%. Finally, the breakdown of documents includes 323 articles and 4 conference proceedings (see Table 1).

Table 1. General information on bibliometric analysis.

| Description | Results |
|---|---|
| MAIN INFORMATION ABOUT DATA | |
| Timespan | 2000: 2024 |
| Sources (Journals, Books, etc) | 194 |
| Documents | 327 |
| Annual Growth Rate % | 16,37 |
| Document Average Age | 4,22 |
| Average citations per doc | 27,98 |
| References | 18161 |
| DOCUMENT CONTENTS | |
| Keywords Plus (ID) | 1566 |
| Author's Keywords (DE) | 1185 |
| AUTHORS | |
| Authors | 925 |
| Authors of single-authored docs | 57 |
| AUTHORS COLLABORATION | |
| Single-authored docs | 59 |
| Co-Authors per Doc | 3,06 |
| International co-authorships % | 31,5 |
| DOCUMENT TYPES | |
| Article | 323 |
| Conference paper | 4 |

The analysis in Table 1 highlights the abundance and constant evolution of scientific work devoted to green monetary policy. The sustained growth of this research underscores the growing importance of monetary policy in climate risk management (Badel et al., 2023). However, the limited number of studies in this field reveals a significant gap in the existing literature (Steinbach, 2022). Furthermore, the relatively low average age of publications indicates a predominance of recent studies, reflecting a research dynamic that has intensified in recent years. The selected research works enjoy wide recognition in the scientific literature, as evidenced by their high citation index. Furthermore, the greening of monetary policy requires international scientific collaboration to promote a coherent and effective approach to environmental challenges.

Figure 2 illustrates the trend in the number of publications in the field under study. Before 2016, this trend remains moderate, followed by a significant increase, particularly marked from 2020 onwards. Two significant peaks appear in 2023 and 2024, with the latter year alone accounting for 30% of total publications. The surge in scientific publications after 2016 could be explained by the signing of the Paris Agreement in 2015, a major event that heightened awareness of climate change as a threat to the global economy.

International institutions such as the Bank for International Settlements (BIS) and the Network for Greening the Financial System (NGFS) have advocated the integration of climate issues into policy (Monasterolo et al., 2024 ; Jackson & Bailey, 2024). The rise of macroeconomic models to analyze the role of monetary policy in the ecological transition has contributed to the enrichment of databases on green financial assets. This development facilitates empirical studies that take risk into account (Dafermos et al., 2017).

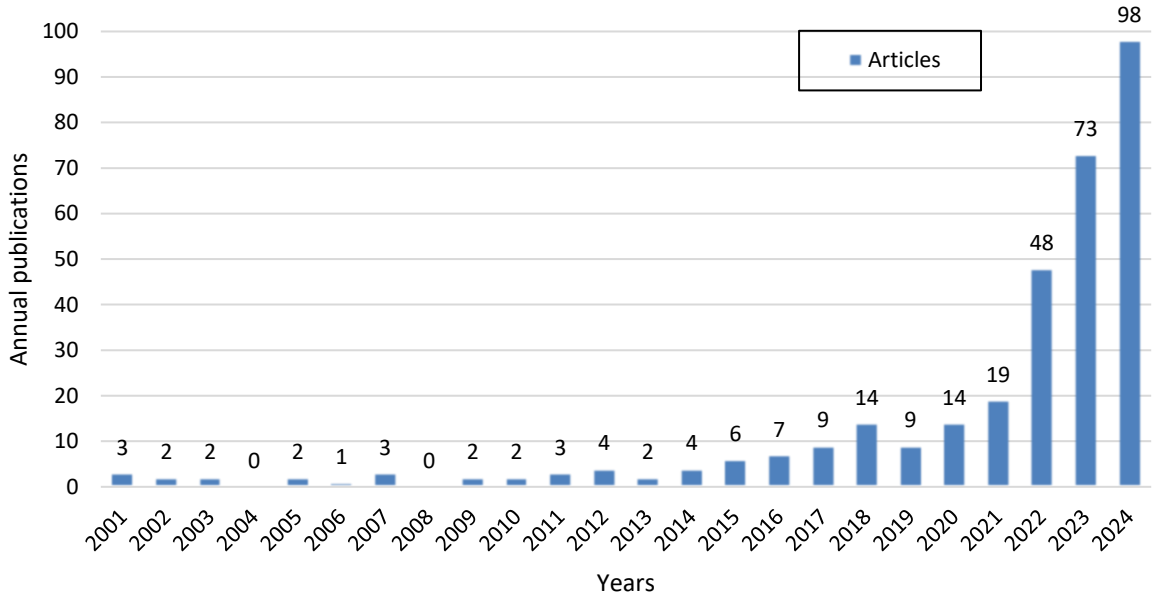


Figure 2. Trend in the number of annual publications.

The analysis in figure 2 is corroborated by the trend in the average number of citations shown in figure 3, which shows a significant drop, due to the increase in publications and the topicality of the subject, resulting in fewer citations of recent work from 2020 onwards.

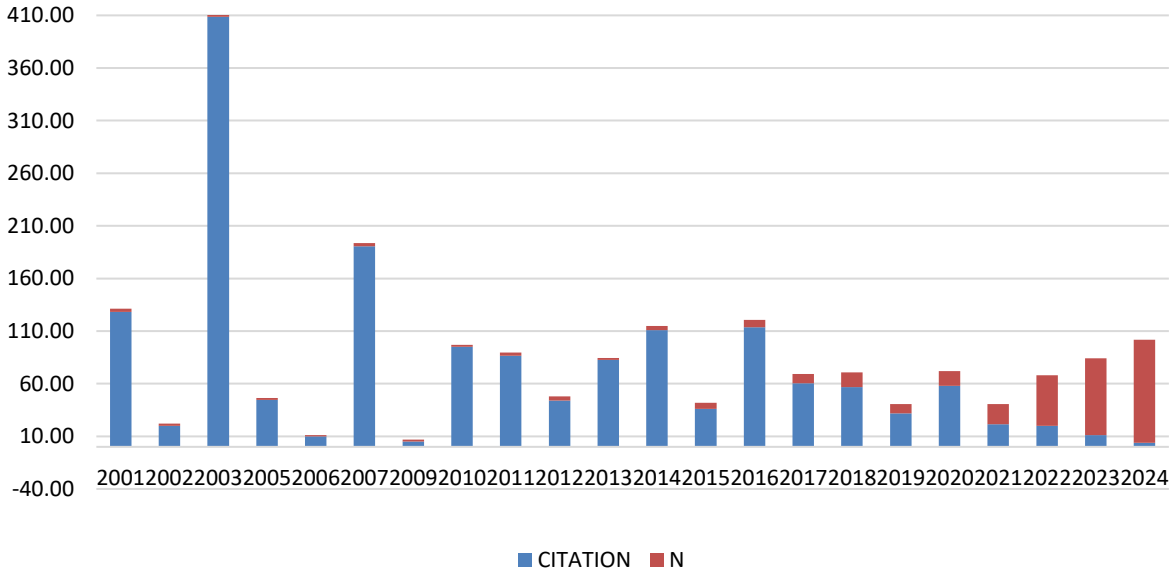


Figure 3. Trend in average citations and number of publications by year.

*3.2 Distribution of publications by country*

Figure 4 shows the distribution of scientific publications in the field of green monetary policy by country, according to two criteria: Single Country Publication (SCP) and Multiple Country Publication (MCP). We note that the UK is the dominant country in terms of scientific publications, mostly in SCP, which means that this research is mainly conducted within the country without foreign collaboration. Secondly, the UK, Germany and the USA have a significant number of PCM publications, indicating strong international collaboration. Thirdly, we note that Italy and France have an average contribution, their publications showing a certain balance between SCP and MCP. Finally, India, Australia, the Netherlands and Poland have a more modest presence, with some of them tending more towards international collaborations.

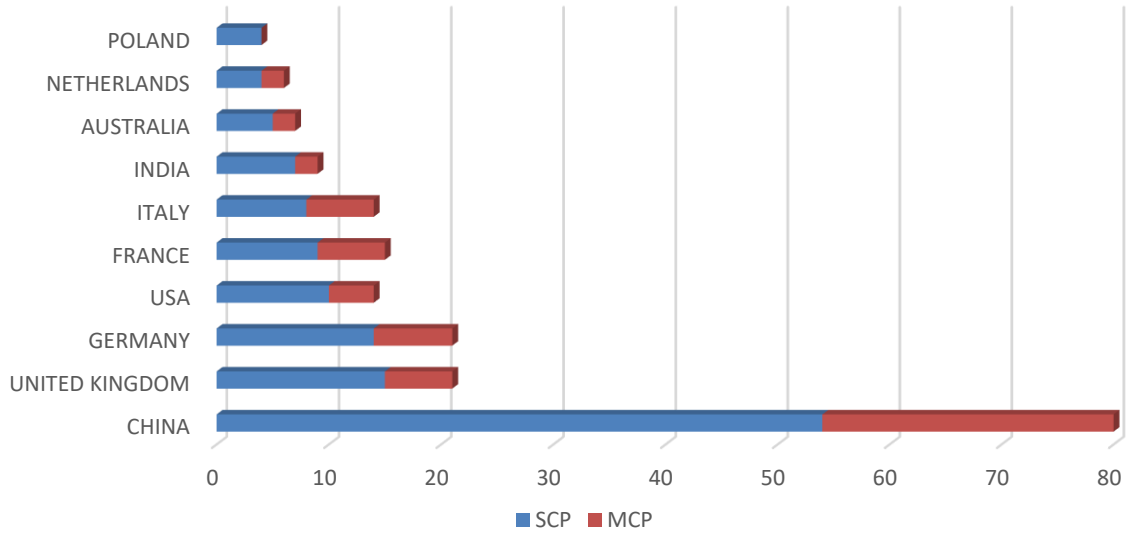


Figure 4. Most relevant countries by number of publications.

The cloud of countries shows that the most advanced in greening monetary policy research are: Mainly China, this country is characterized by green technology(Jian & Zhengjie, 2024)and financial inclusion to ensure green energy strategies (Zhao et al., 2024), through regulation of energy company behavior (Zhang et al., 2024). Chinese monetary policy incorporates green financial assets into procedures to facilitate medium-term lending(Macaire & Naef, 2023). China is using green finance as a lever to restructure the landscape of the Chinese economy (Nie et al., 2024), using green bonds as instruments perfectly supported by central bank actions (Wang & Lu., 2024; Fang et al., 2023), thereby shifting the structure of the Chinese economy towards employment and green investment vert (Liu & Wang., 2024 ; Zhu et al., 2024 ; Li et al., 2023). The evolution of research related to green monetary policy and its instruments in China compared to other countries is obviously due to the availability of statistical data and empirical tools developed such as evaluation methods (double difference, SHP, and other complex tools such as, E-DSGE. Other countries are relatively well developed in terms of green actions by central banks, such as the countries of the European Union. The European Central Bank seems to be one of the global players to have successfully integrated environmental objectives into the construction of monetary policy, which shows the concentrated appearance of research work in these countries (see Figure 5).

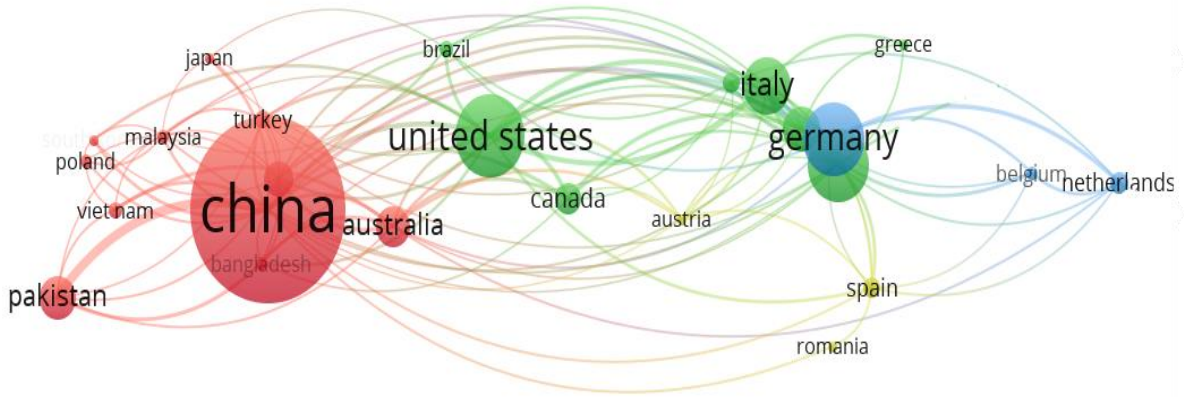


Figure 5. Co-authors by country.

*3.3 Affiliations and relevant authors.*

In this section, we look at the top 10 authors with the highest number of publications in the field of green monetary policy. AHMAD M and BAILEY D have published 5 articles, with different "Articles Fractionalized" indicators. The former is a more significant individual contributor than the latter. D'ORAZIO P differs from 3 published articles with a fractionalized score of 2. Other authors involved are WANG J, WANG X, WANG Y, ABAKAHEJA, ALI S, and CHAN YT.

Table 2. Most relevant authors by number of documents.

| Authors | Articles | Articles Fractionalized |
|---|---|---|
| AHMAD M | 5 | 1,87 |
| BAILEY D | 5 | 3,33 |
| WANG J | 4 | 0,89 |
| WANG X | 4 | 1,21 |
| WANG Y | 4 | 1,07 |
| D'ORAZIO P | 3 | 2,00 |
| JACKSON J | 3 | 1,33 |
| ABAKAH EJA | 2 | 0,53 |
| ALI S | 2 | 0,45 |
| CHAN YT | 2 | 0,67 |

The distribution of scientific publications based on institutional affiliations depicts Shanghai Jiao Tong University and Technische Universität Berlin as leading contributors with ten publications each, reflecting their commitment to research in green monetary policy. The University of Freiburg and Xihua University follow closely with nine publications each, showing a focus on environmental sustainability and climate integration in economic policies. Other notable institutions like Beijing Normal University, Columbia University, and Tsinghua University are highlighted for their significant contributions to knowledge dissemination in this field. These institutions collectively form a vibrant research core, indicating an international

collaboration around environmental concerns within the monetary and financial realm.

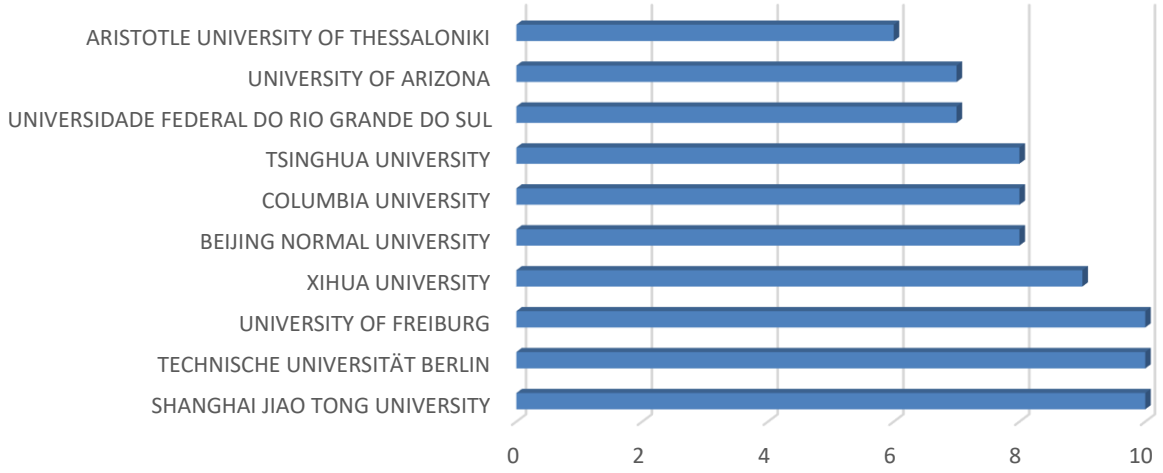


Figure 6. Number of publications by affiliation.

*3.4 Relevant newspapers by number of publications.*

This table shows the two journals with the most significant contributions in the field of green monetary policy. Leading the way is Environmental Science and Pollution Research, launched in 2022, with a total of 326 citations. Next come journals such as Ecological Economics, Climate Policy, Resources Policy and Energy Economics, which emerged in this field after 2016. Conversely, publications such as Environmental and Resource Economics and Landscape and Urban Planning stand out for their older presence. In addition to the number of citations, these journals are also distinguished by several bibliometric indicators: the h-index of Hirsch (2005), which establishes a link between the volume of publications and the number of citations; the g-index proposed by Egghe (2006), which gives more weight to the most cited articles; and finally the m-index, which relates the h-index to the number of years since the first publication, thus enabling scientific productivity to be assessed over time.

Table 3. Most relevant authors by number of documents.

| Source | H_index | G_index | M_index | TC | NP | PY_start |
|---|---|---|---|---|---|---|
| Environmental Science and Pollution Research | 7 | 14 | 1,75 | 326 | 14 | 2022 |
| Energy Economics | 6 | 13 | 0,75 | 173 | 14 | 2018 |
| Resources Policy | 6 | 9 | 2 | 123 | 9 | 2023 |
| Climate Policy | 7 | 8 | 1,4 | 234 | 8 | 2021 |
| Ecological Economics | 7 | 8 | 0,7 | 1322 | 8 | 2016 |
| Energy Policy | 7 | 7 | 0,5 | 357 | 7 | 2012 |
| Journal of Cleaner Production | 5 | 7 | 0,556 | 356 | 7 | 2017 |
| Sustainability (Switzerland) | 4 | 7 | 0,667 | 95 | 7 | 2020 |
| Environmental and Resource | 4 | 4 | 0,19 | 265 | 4 | 2005 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Economics Landscape and Urban Planning | 4 | 4 | 0,211 | 635 | 4 | 2007 |

*3.5 Most cited relevant works*

In Table 4 we list the 10 most relevant authors in the field of green monetary policy, indicating their total, average and normalized citations.

Table 4. The ten most cited articles.

| Paper | DOI | TC | TC/An | N/TC |
|---|---|---|---|---|
| TANNER C, 2003, PSYCHOL MARK | (Tanner & Kast, 2003) | 798 | 34,7 | 1,95 |
| CAMPIGLIO E, 2016, ECOL ECON | (Campiglio, 2016) | 441 | 44,1 | 3,88 |
| KONG F, 2007, LANDSC URBAN PLANN | (Kong et al., 2007) | 426 | 22,42 | 2,23 |
| DAFERMOS Y, 2018, ECOL ECON | (Dafermos et al., 2018) | 359 | 44,88 | 6,33 |
| BARÓ F, 2014, AMBIO | (Baró et al., 2014) | 328 | 27,33 | 2,96 |
| TYRVÄINEN L, 2001, J ENVIRON MANAGE | (Tyrväinen, 2001) | 237 | 9,48 | 1,85 |
| LO AY, 2010, URBAN FOR URBAN GREENING | (Lo & Jim, 2010) | 190 | 11,88 | 2 |
| KREKEL C, 2016, ECOL ECON | (Krekel et al., 2016) | 187 | 18,7 | 1,65 |
| HELM D, 2020, ENVIRON RESOUR ECON | (Helm, 2020) | 179 | 29,83 | 3,09 |
| LIU H, 2022, ENVIRON SCI POLLUT RES | (H. Liu et al., 2022) | 178 | 44,5 | 8,88 |

The works cited in Table 4 discuss the integration of the environment among monetary policy mandates and central banks' responses to climate risks. Krekel et al. (2016) et Campiglio (2016) in their work dealing with the crucial role of central banking and macro-prime policies in the ecological transition, propose the integration of banking network regulation for collateral credits Enabling banks to be wooed towards financing green projects. The ecological model developed by Dafermos et al. (2018) Supports this regulation by emphasizing the crucial role of quantitative easing (QE) don't financial stability and environmental sustainability goals. In the same vein, the work of H. Liu et al. (2022) discusses the importance of green financing and financial inclusion and fintech for energy efficiency in G7 countries. Using cost-benefit methods. The Tyrväinen (2001) study in Finland shows demining preferences towards urban forests, which provokes a demand for a green urban policy supported by the banks. This work is semilar to that of Lo & Jim (2010) in Hong Kong and Krekel et al. (2016) in Germany. Finaelemnt Helm (2020) stresses the importance of an integrated approach that includes monetary measures to support a green transition rather than simply a conventional economic stimulus.

*3.6 Keyword analysis*

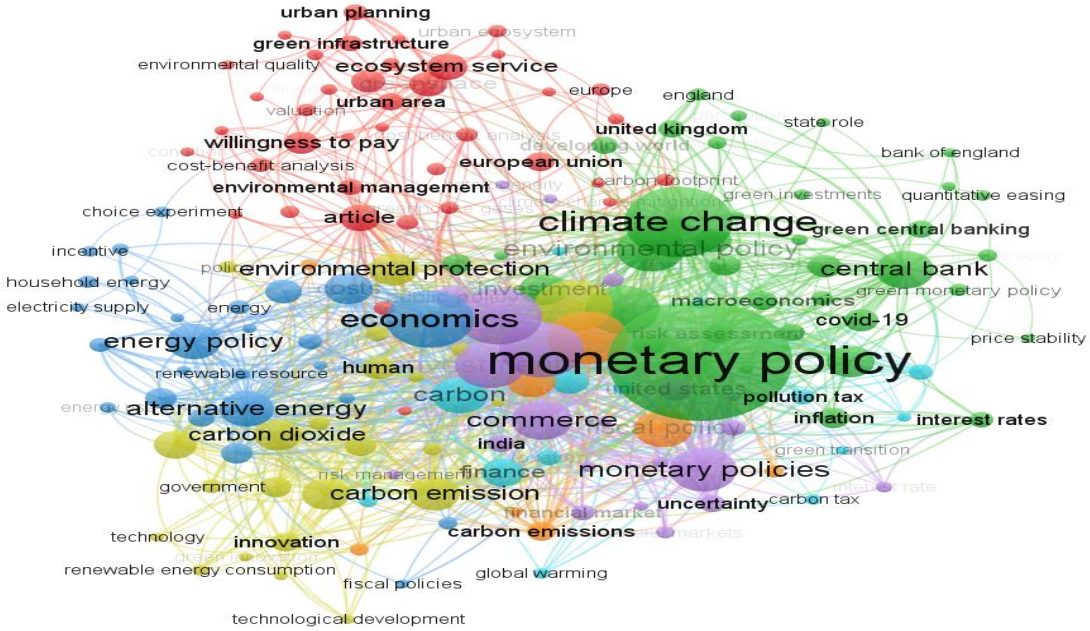


Figure 7. Keyword co-occurrence.

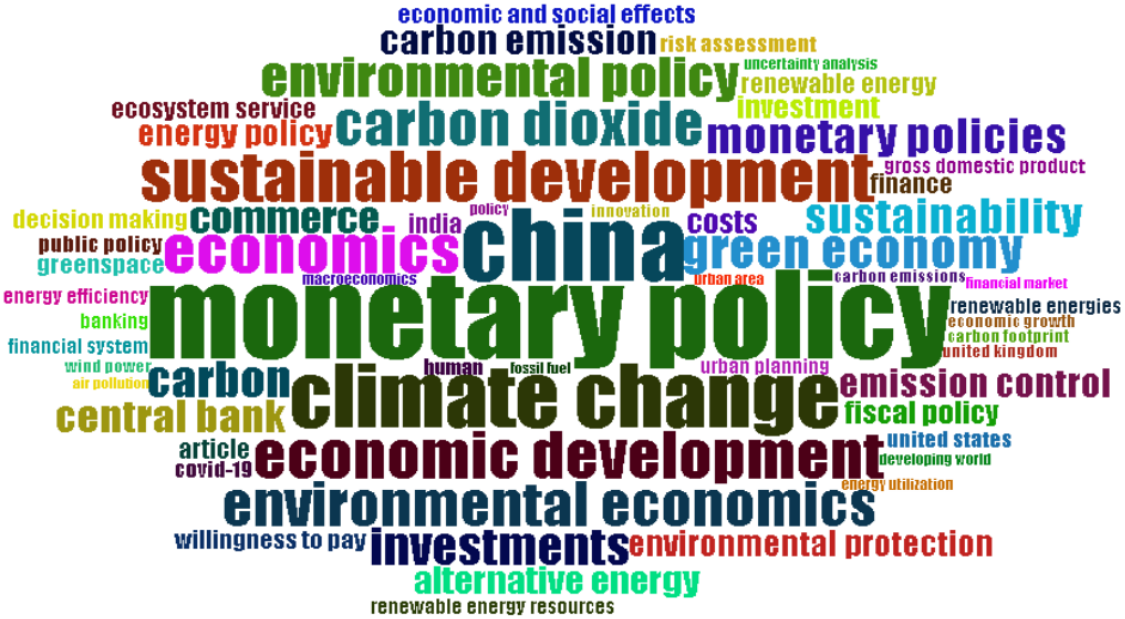


Figure 8. Word cloud of the most relevant keywords.

Figure 7 shows the co-occurrence of keywords associated with green monetary policy. This graph highlights the different search domains linked to the analyzed keywords. Each color represents a specific area, while the relative importance of each area is determined by the frequency of appearance of the corresponding keywords.

## 4. Discussion of results

The results of the bibliometric analysis presented above allow us to review the literature and prepare the following synthesis. Climate change is the major challenge facing the international

community today (Anastasiou et al., 2024). Its repercussions, often catastrophic, significantly affect production, prices and all the major macroeconomic and financial variables. As a result, the effectiveness of economic policies, particularly budgetary and monetary policies, is severely limited (Roy, 2024). According to forecasts by the Intergovernmental Panel on Climate Change (IPCC), the global average temperature is set to rise by 1°C above pre-industrial levels by 2030, and by 4°C by 2100, with direct effects on global production. Climate change also compromises key monetary policy mandates, such as price stability (Dées & Weber, 2021), economic growth (Yusifzada, 2024) and financial stability (Fabris, 2020). Extreme temperature episodes exacerbate the adverse effects of climate disruption by impacting agricultural supply through the degradation of crops and rural activities (Berg et al., 2018), while weakening energy infrastructures (Odongo et al., 2022). These disruptions reduce fossil fuel production, leading to the price adjustments needed to restore equilibrium on goods and services markets.

The idea of greening monetary policy is to interrogate the potential effects of central bank actions on $CO_2$ emissions, which contribute to global warming and worsening global temperatures. The literature highlights several channels through which monetary policy can influence $CO_2$ emission levels (Lau et al., 2023 ; Ozili., 2025). Notably, expansionary monetary policies - whether conventional, via lower interest rates, or unconventional - have been associated with increased carbon emissions, particularly prior to the Paris Agreement (Nguyen et al., 2022;VAN DEN ENGEL et al., 2024; Nguyen et al., 2022). Lower interest rates boost household purchasing power, leading to higher consumption. To meet this increased demand, companies step up production, often using fossil fuels, resulting in a significant increase in greenhouse gas emissions (Attílio et al., 2024; VAN DEN ENGEL et al., 2024; Chishti et al., 2021).

Insofar as monetary policy exerts both direct and indirect effects on $CO_2$ emissions, any change in central banks' key actions on financial markets can lead to significant variations in emission levels. This paper aims to explore the existing literature on the ways in which central banks can adapt their instruments to actively contribute to the achievement of the Sustainable Development Goals (SDGs). One aspect of the existing literature that remains largely unexplored concerns environmental integration within the Taylor (1993) rule. Several recent empirical studies suggest adding an environmental component to this rule, there by giving central banks a greater role in driving the ecological transition (Ramlall, 2023 ; Jawadi et al., 2024). A second strand of the literature focuses on unconventional monetary policies, in particular the green monetary policy implemented through quantitative easing. This approach involves redefining the eligibility criteria for financial assets, discriminating between those with high and low carbon intensity. It has two notable effects on economic and financial variables. On the one hand, it encourages the creation of bank reserves through the purchase of financial assets by the central bank (Lenza et al., 2010 ;Gagnon et al., 2010 ; Finnegan & Kapoor, 2023). On the other hand, this policy can improve commercial banks' liquidity, by increasing the value of their asset portfolios, now bought back by the central bank ((Rodnyansky & Darmouni., 2017;Christensen & Gillan., 2022). Finally, monetary policy can contribute to the ecological transition by mobilizing its power of collateralization, there by influencing refinancing operations and, in turn, the real economy and financial markets (Dafermos et al., 2021).

## 5. Conclusion

The bibliometric analysis carried out as part of the present work highlights a major gap in the literature concerning green monetary policies and sustainable actions by central banks, which nonetheless represent a central lever in the ecological transition. Central banks are in a position to adapt to environmental challenges by integrating the climate dimension into their objectives, alongside their traditional mandate. The risks induced by climate change can now affect price and financial stability, giving environmental stability an increasingly recognized role in their mandate. Through analysis of keyword co-occurrence, it appears that this field of research has notable interactions with other fields, including energy, energy transition, green finance, financial assets and markets, green bonds, macroprudential policies, climate change, among others. This approach has enabled us to identify several aspects that are still little explored in

the current literature on the greening of monetary policy, including green quantitative easing programs, green collateral policy frameworks, as well as conventional instruments incorporating green criteria.

Finally, a notable limitation of this study lies in the exclusion of work indexed on other scientific platforms such as Web of Science, the inclusion of which could help to fill some of the gaps identified in the existing literature.

## References

Accord de Paris. (2015).

Anastasiou, D., Ballis, A., Guizani, A., Kallandranis, C., & Lakhal, F. (2024). Monetary policy impact on sustainability: Analyzing interest rates and corporate carbon emissions. Journal of Environmental Management, 368. https://doi.org/10.1016/j.jenvman.2024.122119V

Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. Journal of Informetrics, 11(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007

Attílio, L. A., Faria, J. R., & McAdam, P. (2024). Climate investments, stock markets, and the open economy. Macroeconomic Dynamics, 29. https://doi.org/10.1017/S1365100524000348

Badel, A., Basu, S., Cugat, G., Dizioli, A., Emeksiz, O., Gasealahwe, B., Habib, A., Harris, L., Kpodar, R., Makrelov, K., Melina, G., Mlachila, M., Pirozhkova, E., Rebei, N., Shang, B., Spearman, N., Sultanov, A., Zanna, F., Zhao, Y., … Thakoor, V. (2023). Monetary Policy Design with Recurrent Climate Shocks* Prepared Monetary Policy Design with Recurrent Climate Shocks. https://ssrn.com/abstract=4655689

Baró, F., Chaparro, L., Gómez-Baggethun, E., Langemeyer, J., Nowak, D. J., & Terradas, J. (2014). Contribution of ecosystem services to air quality and climate change mitigation policies: The case of urban forests in Barcelona, Spain. Ambio, 43(4), 466–479. https://doi.org/10.1007/s13280-014-0507-x

Berg, A., Ostry, J. D., Tsangarides, C. G., & Yakhshilikov, Y. (2018). Redistribution, inequality, and growth: new evidence. Journal of Economic Growth, 23(3), 259–305. https://doi.org/10.1007/s10887-017-9150-2

Börner, K., Chen, C., & Boyack, K. W. (2003). Visualizing Knowledge Domains 1. http://www.asis.org/Publications/ARIST/Vol37/BornerFigures.html

Campiglio, E. (2016). Beyond carbon pricing: The role of banking and monetary policy in financing the transition to a low-carbon economy. Ecological Economics, 121, 220–230. https://doi.org/10.1016/j.ecolecon.2015.03.020

Chishti, M. Z., Ahmad, M., Rehman, A., & Khan, M. K. (2021). Mitigations pathways towards sustainable development: Assessing the influence of fiscal and monetary policies on carbon emissions in BRICS economies. Journal of Cleaner Production, 292. https://doi.org/10.1016/j.jclepro.2021.126035

Christensen, J. H. E., & Gillan, J. M. (2022). Does quantitative easing affect market liquidity ? Journal of Banking and Finance, 134. https://doi.org/10.1016/j.jbankfin.2021.106349

Dafermos, Y., Gabor, D., Nikolaidi, M., Pawloff, A., & Van Lerven, F. (2021). GREENING THE EUROSYSTEM COLLATERAL FRAMEWORK HOW TO DECARBONISE THE ECB'S MONETARY POLICY. www.neweconomics.org

Dafermos, Y., Nikolaidi, M., & Galanis, G. (2017). A stock-flow-fund ecological macroeconomic model. Ecological Economics, 131, 191 – 207. https://doi.org/10.1016/j.ecolecon.2016.08.013

Dafermos, Y., Nikolaidi, M., & Galanis, G. (2018). Climate Change, Financial Stability and Monetary Policy. Ecological Economics, 152, 219–234. https://doi.org/10.1016/j.ecolecon.2018.05.011

Dées, S., & Weber, P.-F. (2021). Les conséquences du changement climatique pour la politique monétaire. Revue d'économie Financière, N° 138(2), 243–257. https://doi.org/10.3917/ecofi.138.0243

Egghe, L. (2006). Theory and practise of the g-index. In Dordrecht Scientometrics (Vol. 69, Issue 1). Springer.

Eyzaguirre, I. A. L., Iwama, A. Y., & Fernandes, M. E. B. (2023). Integrating a conceptual framework for the sustainable development goals in the mangrove ecosystem: A systematic review. In Environmental Development (Vol. 47). Elsevier B.V. https://doi.org/10.1016/j.envdev.2023.100895

Fabris, N. (2020). Financial stability and climate change. Journal of Central Banking Theory and Practice, 9(3), 27–43. https://doi.org/10.2478/jcbtp-2020-0034

Fang, F., Si, D.-K., & Hu, D. (2023). Green bond spread effect of unconventional monetary

policy: Evidence from China. Economic Analysis and Policy, 80, 398 – 413. https://doi.org/10.1016/j.eap.2023.08.019

Finnegan, M., & Kapoor, S. (2023). ECB unconventional monetary policy and SME access to finance. Small Business Economics, 61(3), 1253–1288. https://doi.org/10.1007/s11187-023-00730-0

Gagnon, J., Raskin, M., Remache, J., Sack, B., Ezer, M., Fleming, M., Forster, J., Frost, J., Harvey, A., Hilton, S., Hrung, W., Keane, F., Kimbrough, K., Lucca, D., Madigan, B., Mosser, P., Sarkar, A., Stowe, L., Wagreich, R., … Wright, J. (2010). The Financial-Market Effects of the Federal Reserve's Large-Scale Asset Purchases.

Haigh, N., & Griffiths, A. (2009). The natural environment as a primary stakeholder: The case of climate change. Business Strategy and the Environment, 18(6), 347–359. https://doi.org/10.1002/bse.602

Helm, D. (2020). The Environmental Impacts of the Coronavirus. Environmental and Resource Economics, 76(1), 21–38. https://doi.org/10.1007/s10640-020-00426-z

Hirsch, J. E. (2005). An index to quantify an individual's scientific research output. www.pnas.orgcgidoi10.1073pnas.0507655102

Jackson, J., & Bailey, D. (2024). 'Facilitating the transition to net zero' and institutional change in the Bank of England: Perceptions of the environmental mandate and its policy implications within the British state. British Journal of Politics and International Relations, 26(2), 343 – 360. https://doi.org/10.1177/13691481231189382

Jawadi, F., Rozin, P., & Cheffou, A. I. (2024). Toward green central banking: Proposing an augmented Taylor rule. Energy Economics, 134. https://doi.org/10.1016/j.eneco.2024.107539

Jian, P., & Zhengjie, S. (2024). Navigating the green future: Unraveling the role of fintech, decentralization, natural resources, and monetary policy uncertainty in China. Resources Policy, 89. https://doi.org/10.1016/j.resourpol.2023.104573

Konadu, R., Ahinful, G. S., Boakye, D. J., & Elbardan, H. (2022). Board gender diversity, environmental innovation and corporate carbon emissions. Technological Forecasting and Social Change, 174. https://doi.org/10.1016/j.techfore.2021.121279

Kong, F., Yin, H., & Nakagoshi, N. (2007). Using GIS and landscape metrics in the hedonic price modeling of the amenity value of urban green space: A case study in Jinan City, China. Landscape and Urban Planning, 79(3–4), 240–252. https://doi.org/10.1016/j.landurbplan.2006.02.013

Krekel, C., Kolbe, J., & Wüstemann, H. (2016). The greener, the happier? The effect of urban land use on residential well-being. Ecological Economics, 121, 117–127. https://doi.org/10.1016/j.ecolecon.2015.11.005

Lau, C. K., Patel, G., Mahalik, M. K., Sahoo, B. K., & Gozgor, G. (2023). Effectiveness of Fiscal and Monetary Policies in Promoting Environmental Quality: Evidence from Five Large Emerging Economies. Emerging Markets Finance and Trade, 60(1), 203–215. https://doi.org/10.1080/1540496X.2023.2210716

Lenza, M., Pill, H., Reichlin, L., & Ravn, M. (2010). Monetary policy in exceptional times [with Discussion]. In Source: Economic Policy (Vol. 25, Issue 62).

Li, L., Ren, S., & Gao, Z. (2023). Green through finance: The impact of monetary policy uncertainty on inclusive green growth. Environmental Science and Pollution Research, 30(44), 99913 – 99929. https://doi.org/10.1007/s11356-023-29076-6

Liu, H., Yao, P., Latif, S., Aslam, S., & Iqbal, N. (2022). Impact of Green financing, FinTech, and financial inclusion on energy efficiency. Environmental Science and Pollution Research, 29(13), 18955–18966. https://doi.org/10.1007/s11356-021-16949-x

Liu, X., & Wang, X. (2024). How Green Finance Reshapes Employment Structure: Evidence from Green Credit. Polish Journal of Environmental Studies, 33(1), 289 – 301. https://doi.org/10.15244/pjoes/171686

Lo, A. Y., & Jim, C. Y. (2010). Willingness of residents to pay and motives for conservation of urban green spaces in the compact city of Hong Kong. Urban Forestry and Urban Greening, 9(2), 113–120. https://doi.org/10.1016/j.ufug.2010.01.001

Macaire, C., & Naef, A. (2023). Greening monetary policy: evidence from the People's Bank of China. Climate Policy, 23(1), 138 – 149.

https://doi.org/10.1080/14693062.2021.2013153
Monasterolo, I., Mandel, A., Battiston, S., Mazzocchetti, A., Oppermann, K., Coony, J., Stretton, S., Stewart, F., & Dunz, N. (2024). The role of green financial sector initiatives in the low-carbon transition: A theory of change. Global Environmental Change, 89. https://doi.org/10.1016/j.gloenvcha.2024.102915
Nguyen, T. P., Tran, T. N., Dinh, T. T. H., Hoang, T. M., & Duong Thi Thuy, T. (2022). Drivers of climate change in selected emerging countries: the ecological effects of monetary restrictions and expansions. Cogent Economics and Finance, 10(1). https://doi.org/10.1080/23322039.2022.2114658
Nie, C., Yao, Y., & Feng, Y. (2024). The impact of green finance on economic growth: Evidence from the green finance reform and innovation pilot zone. American Journal of Economics and Sociology, 83(4), 709 – 736. https://doi.org/10.1111/ajes.12573
Odongo, M. T., Misati, R. N., Kamau, A. W., & Kisingu, K. N. (2022). Climate Change and Inflation in Eastern and Southern Africa. Sustainability (Switzerland), 14(22). https://doi.org/10.3390/su142214764
Ozili, P. K. (2025). Can monetary and fiscal policy reduce CO2 emissions? Analysis of regional country groups. China Finance Review International. https://doi.org/10.1108/CFRI-09-2024-0564
Ramlall, I. (2023). Should central banks manage climate change risk via a CO2 emissions augmented Taylor rule? Evidence using a DSGE approach. Journal of Environmental Management, 343. https://doi.org/10.1016/j.jenvman.2023.117989
Rodnyansky, A., & Darmouni, O. M. (2017). The Effects of Quantitative Easing on Bank Lending Behavior. 30(11), 3858–3887. https://doi.org/10.2307/48568604
Roy, A. (2024). Green monetary policy to combat climate change: Theory and evidence of selective credit control. Journal of Climate Finance, 6, 100035. https://doi.org/10.1016/j.jclimf.2024.100035
Steinbach, A. (2022). THE GREENING OF THE ECONOMIC AND MONETARY UNION. Common Market Law Review, 59(2), 329 – 362. https://doi.org/10.54648/cola2022028
Tanner, C., & Kast, S. W. (2003). Promoting Sustainable Consumption: Determinants of Green Purchases by Swiss Consumers. Psychology and Marketing, 20(10), 883 – 902. https://doi.org/10.1002/mar.10101
Taylor, J. B. (1993). Discretion versus policy rules in practice. In Conference Series on Public Policy (Vol. 39).
Tyrväinen, L. (2001). Economic valuation of urban forest benefits in Finland. Journal of Environmental Management, 62(1), 75–92. https://doi.org/10.1006/jema.2001.0421
VAN DEN ENGEL, A., Swart, J., & Schramm, M. (2024). THE IMPACT OF THE REAL INTEREST RATE ON GREEN INVESTMENT: EVIDENCE FROM THE UNITED STATES. Journal of Business Economics and Management, 25(5), 939–959. https://doi.org/10.3846/jbem.2024.22363
Wang, P., & Lu, Z. (2024). The effect of collateral-based monetary policy on green finance: Evidence from China. Oeconomia Copernicana, 15(4), 1223 – 1262. https://doi.org/10.24136/oc.3001
Yusifzada, T. (2024). Evaluating the global impact of climate change on agricultural inflation: an innovative climate condition index approach. Environment, Development and Sustainability, 26(7), 18411–18438. https://doi.org/10.1007/s10668-023-03394-8
Zhang, D., He, Y., & Lu, M. (2024). Is energy firms' investment behavior more sensitive on corporate perception of monetary policy? Energy Economics, 136. https://doi.org/10.1016/j.eneco.2024.107749
Zhao, S., Zhang, X., & Kamran, M. (2024). China's energy strategy: A comprehensive analysis of economic, social, planning, and environmental impacts. Energy Strategy Reviews, 56. https://doi.org/10.1016/j.esr.2024.101572
Zhu, R., Wang, Y., & Li, R. (2024). Can green finance policies accurately promote corporate environmental investment?—a comprehensive evaluation from multiple aspects. Frontiers in Environmental Science, 12. https://doi.org/10.3389/fenvs.2024.1396687