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Article

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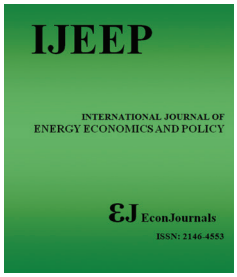
International Journal of Energy Economics and Policy

Provided in Cooperation with:
International Journal of Energy Economics and Policy (IJEEP)

Reference: Babu, P. Ebin/Mary, Riya (2022). Exploring the research trends in green tax: bibliometric analysis. In: International Journal of Energy Economics and Policy 12 (6), S. 157 - 162. https://econjournals.com/index.php/ijeep/article/download/13462/7004/31606. doi:10.32479/ijeep.13462.



International Journal of Energy Economics and Policy

ISSN: 2146-4553

available at http: www.econjournals.com

International Journal of Energy Economics and Policy, 2022, 12(6), 157-162.

Exploring the Research Trends in Green Tax; Bibliometric Analysis

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Received: 28 June 2022 **Accepted:** 24 September 2022 **DOI:** https://doi.org/10.32479/ijeep.13462

ABSTRACT

Policymakers, producers, and consumers all around the world have recognized the need for a sustainable model of development. However, there is a disconnect between the strategies put forth to achieve sustainability and the acceptance of sustainable development methods. The concept of "green tax" can speed up the adoption of ethical behaviors that support sustainability. A greater understanding of how different countries are implementing green taxes is necessary. By taking into account the papers published in Scopus journals in the English language, this study used the method of bibliometric analysis to comprehend the research done in the field of green taxes.

Keywords: Green Tax, Sustainability, Bibliometric Analysis, Scopus
JEL Classifications: K32, Qo1, Q48, Q56

1. INTRODUCTION

Climate change is the biggest danger that people face right now. The climate crisis is becoming more and more significant to the individuals who make decisions all around the world. A significant amount of resources and time have been put into green projects, and yet tax policy opportunities have been offered far less consideration (László, 2021) With the race between developing and developed countries to outgrow each other, we have lost our planet somewhere along the way. The shift is so obvious that for the first time in human history, we see a shift among the international community that is fighting against the sovereign to take action against climate change. Although these policies have become stricter over time, we still have a long way to go before they have an impact, as the battle between states over liability for environmental pollution continues.

Industries, companies, and businesses do a lot of damage to the environment and should be held accountable for what they do. So, the tax system is one way that the government tries to stop activities that cause pollution or other pollutants that are bad for the environment. Provisions in the current tax system are made to discourage companies and industries from doing things that pollute the environment or harm nature. Green Tax is the result of taxing activities and goods that harm the environment by their very nature or the way they are made. Environmental taxes has become more frequently used in recent years as a tool for authorities to address the unpleasant consequences of economic activities (such as pollution) (Maxim and Zander, 2020).

Cleaner energy, more sustainable industries, and more environmentally friendly behaviours can all be encouraged through a variety of policy measures, including EU and national green taxation schemes. Putting a price on social costs, changing decision-making, and offering incentives for companies and individuals to change their behavior can help to reduce resource waste and environmental damage. Taxation on pollution and resources is part of an environmental or green tax. To get to a point where climate change doesn't matter, people need to change a lot. In this way, green taxation needs to be part of a larger policy structure that includes a wide range of tools, such as pricing tools, subsidies, standards, and investments in public infrastructure. Environmental

problems can also be fixed through national environmental taxes. Environmental taxes can be used to overcome most environmental issues, and lowering climate change is a good example. They can be utilized as part of a larger green tax reform which has priorities for distribution and/or earnings (Labeaga and Labandeira, 2020). Green taxes can have a cascading effect in the sector of green taxes by modifying the method wherein the industries produce (Yu et al., 2021). Petrol and diesel are two examples of energy products that are taxed under the category of energy taxes and also include natural gas and coal that are used in heating and electricity that is used in transportation. Green taxation can also assist foster sustainable growth, encourage intergenerational fairness, and preserve EU Member States; tax revenue levels while allowing them to reduce other, more distorting taxes, such as those on labor. Since the EU Green Deal is also the EU growth strategy, green taxation can assist in reviving the EU economy as it recovers from the COVID-19 pandemic.

It is occasionally challenging for researchers and practitioners to have a systematic overview of pertinent material due to the abundance of published studies accessible on a specific research area or research topic. The technique of Bliometric analysis makes it possible to give a broad picture of the available scientific literature. In bibliometric analysis, which is a subfield of scientometrics, scientific activities in experimental research are appraised utilising quantitative and statistical methods (Callon et al., 1991). Pritchard (1996) gave the first definition of bibliometrics as "the application of mathematical and statistical tools to books and other media." It offers a summary of a research project that can be categorised by publications, papers, articles, topics, authors, and their affiliations. Performance analysis and graphic mapping appear to be the two most common methods adopted in bibliometric methods (Noyons et al., 1999). Performance analysis looks at the impact of citations made by the various participants in a research project (countries, institutions, departments, and researchers) (Yu and Shi, 2015). Graphic mapping aims to depict the structure and characteristics of scientific regions. It systematically reveals how diverse topics, places, insights, writers, and documents are linked with one another (Moral-Muñoz et al., 2014).

2. RESEARCH METHODOLOGY

The data utilised was gathered from Scopus on August 2, 2022. The search keyword used was "green tax" or "green-tax" which was limited to journal articles in English language. The term "green tax" is addressed in the publications' titles, abstracts, and or keywords as a result of this topic search. A total of 223 journal articles related to green tax was identified from 1991 to 2022 up to August 2, 2022 as per Figure 1.

Bibliometric analysis is a form of research methodology to comprehend the international research trends in a specific topic based on the academic whether the Scopus or WoS databases contain publications (Alsharif et al., 2020). In bibliometric analysis, books, journal articles, and other gross bibliographical units are subjected to quantitative examination (Donohue, 1972). The software VOSviewer was used to analyse and visualise connections between authors, nations, co-citations, and phrases. Each topic was determined and presented using the VOS (Visualization of Similarities) mapping technique in a two-dimensional map such that the distance between the items represents their similarity or relatedness most precisely.

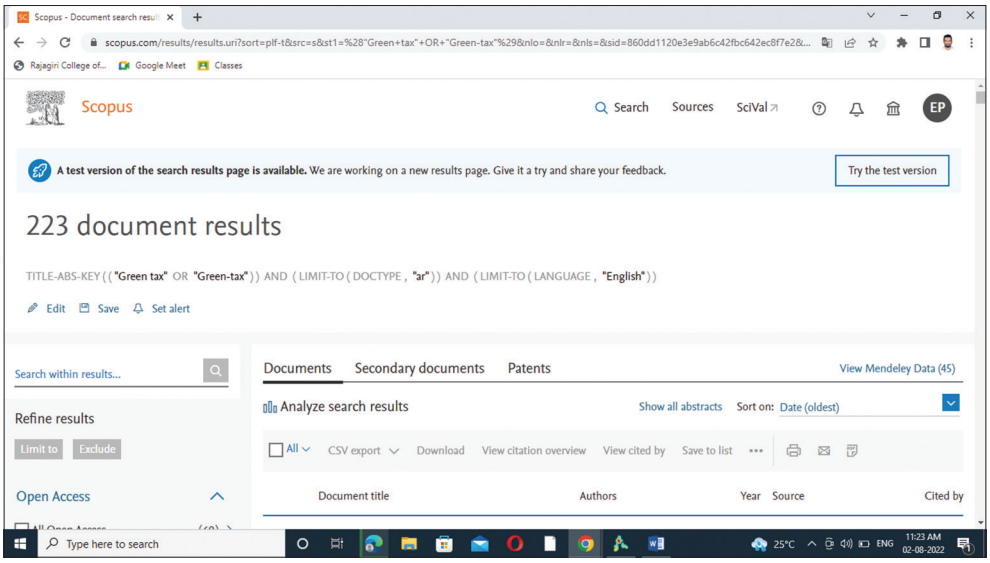
3. RESULTS AND DISCUSSION

3.1. Growth Trend

The number of peer-reviewed publications is a key indicator of the direction of a scientific research field or topic. Since 1991, there has been an escalation in the number of articles published. The number of articles that were published each year between 1991 and 2022 is shown in Figure 2.

As per Figure 2 in 1991, there was just one article. There were 24 papers published on the topic up until the year 2000. Until 2010, <10 articles were published annually, with the except for the year 2006, when there were 11 articles. Up to 2010, there were 2.6 articles each year on average. The year 2004 saw the fewest papers published—just three—and the average number of articles

Figure 1: Search Result



published over the course of the next 10 years was 6.2 per year. 2019 marked the year with the highest total number of publications (n = 24), with an average of 9.8 publications annually over the course of the preceding 10 years. 39 papers, or 15 articles per year on an average, were published in Scopus from 2020 January to 2022 July.

3.2. Area of Research

The area of green taxation has implications on every sphere of life. As depicted in Figure 3, majority of the research on green tax come from the area of "Environmental Science," 111 articles which is followed by "Economics, Econometrics and Finance," 109 articles. Other prominent areas of research include "Social science," (71) "Energy" (41), "Business and Accounting," (36) and "Engineering" (22). There is still greater scope for research in the area of Psychology, Medicine, and multidisciplinary research which are identified to be the lowest contributing areas.

Figure 2: Average number of publication on green tax

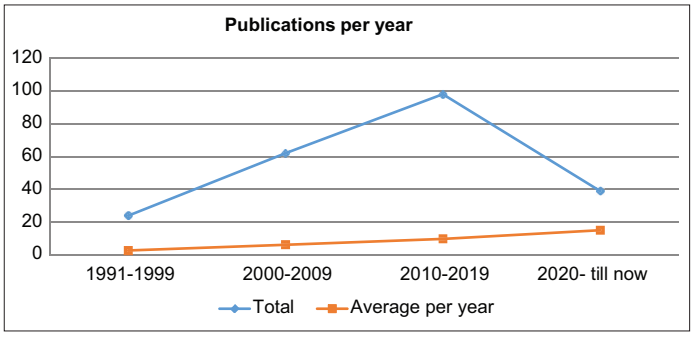
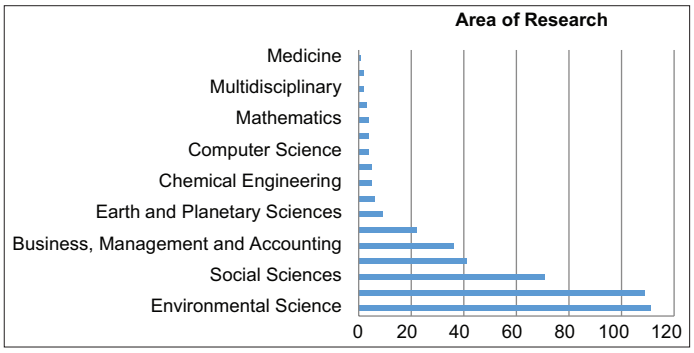


Figure 3: Area of Research



3.3. Co-occurrence Analysis

Figure 4 shows the result of co-occurrence analysis which was conducted to identify the co-occurrences of the key-words. The first cluster (red), with the major key-words being, Environmental Impact (14 occurrences and link strength of 100), Green Tax (15 occurrences and link strength of 100), Sustainable development (13 occurrences and link strength of 71), Economic and Social effects (8 occurrences and link strength of 69). Cluster 2 (green) has 6 major key-words, Taxation (43 occurrences and link strength of 316), Environmental Tax (38 occurrences and link strength of 245), Tax System (22 occurrences and link strength of 136), Tax reform (29 occurrences and link strength of 201), Green tax Reform (23 occurrences and link strength of 110), and Double Dividend (12 occurrences and link strength of 74). Cluster 3 (blue) has three major key-words, environmental taxes (13 occurrences and link strength of 82), Pollution (15 occurrences and link strength of 72), Economics (16 occurrences and link strength of 125). Cluster 4 (yellow) has four major key-words, Environmental policy (23 occurrences and link strength of 112), Climate change (11 occurrences and link strength of 51), Economic Instrument (12 occurrences and link strength of 72), European Union (10 occurrences and link strength of 46). Cluster 5 (purple) has two major key-words, Environmental economics (42 occurrences and link strength of 271), Pollution Tax (25 occurrences and link strength of 147). Cluster 6 (light blue) has three major key-words, Emission control (11 occurrences and link strength of 83), Carbon dioxide (11 occurrences and link strength of 88), and Greenhouse gases (7 occurrences and link strength of 60).

The list of top 13 journals in the list of articles considered for the study are listed in Table 1. The highest number of publication was in the Springer journal – Environmental and Resource Economics and Sustainability by MDPI with 12 articles each. The highest impact factor journal among the list of prominent journals is for the Journal of cleaner productions which is 9.297. Majority of the articles are published in Elsevier journals which is followed by Springer (Table 2).

The article titled "Modelling food logistics networks with emission considerations: The case of an international beef supply chain" by Soysal M., Bloemhof-Ruwaard J.M., Van Der Vorst J.G.A.J. was the most cited, with 163 publications. The article "Collective

Table 1: Prominent journals that publish articles on green tax

Journal	Aricles	Publisher	h index value	Impact factor	Quality
Environmental and Resource Economics	12	Springer	98	2.181	Q1
Sustainability	12	MDPI	109	3.251	Q1
Ecological Economics	5	Elsevier	220	5.389	Q1
Energy Policy	5	Elsevier	234	7.576	Q1
Environmental Economics and Policy Studies	5	Springer	27	1.556	Q2
Journal of Environmental Economics and Management	5	Academic Press Inc.	131	5.64	Q1
Energy Economics	4	Elsevier	168	7.042	Q1
Environment and Development Economics	4	Cambridge University Press	66	2.383	Q1
International Journal of Energy Economics and Policy	4	Econjournals	39	1.38	Q2
Environmental Politics	3	Routledge	75	4.32	Q1
European Economic Review	3	Elsevier	135	2.445	Q1
International Tax and Public Finance	3	Springer	50	1.289	Q2
Journal of Cleaner Production	3	Elsevier	232	9.297	Q1

Figure 4: Visualization of Keyword Co-Occurrences of Articles on Green Tax Published in the Scopus database

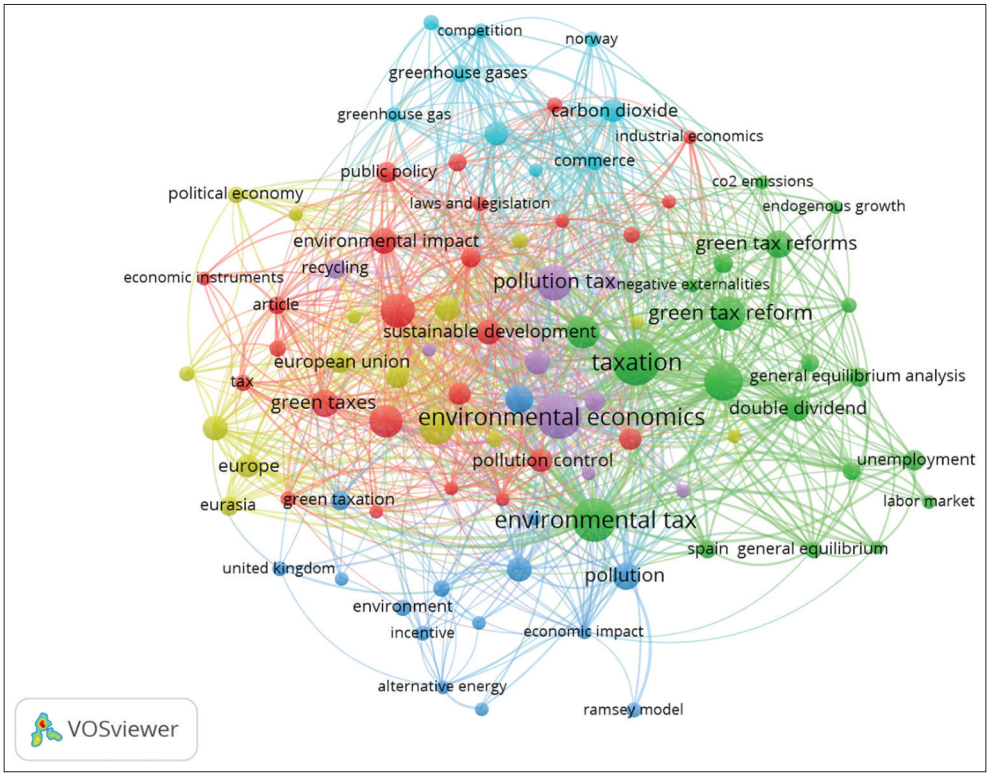
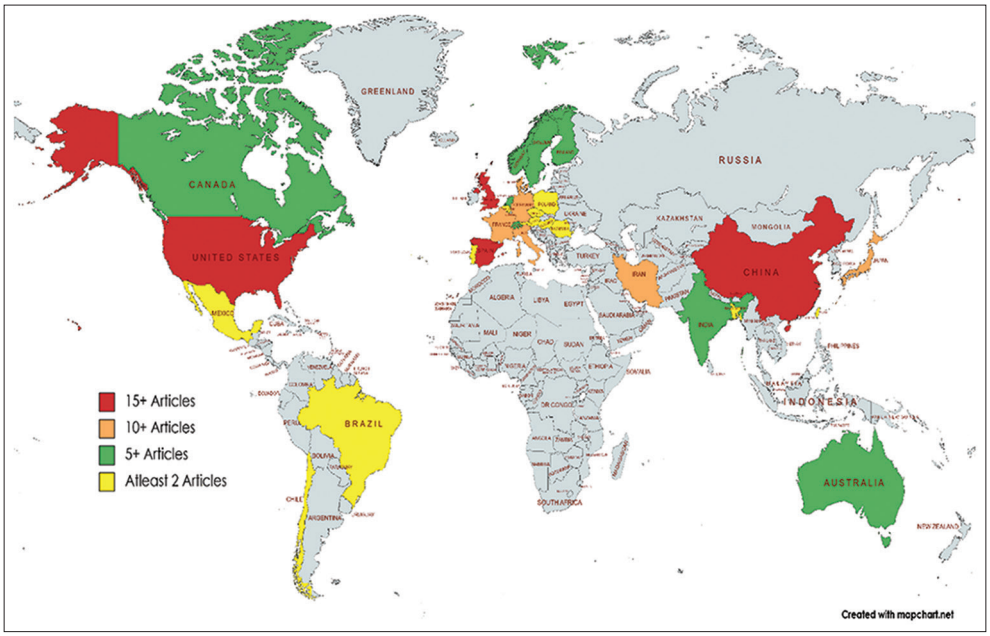


Figure 5: Representation of Countries on Green tax research based on number of articles published



guilt mediates the effect of beliefs about global warming on willingness to engage in mitigation behavior" by Ferguson M.A., Branscombe N.R., published in Journal of Environmental Psychology follows in the list of most cited with 141 citations. The article "A Distributional Analysis of Green Tax Reforms," authored by Metcalf published in National Tax Journal was cited 139 times. The article "Green taxes: can we protect the environment and improve the tax system at the same time?" by Oates W.E comes next with 114 citations; this is also the oldest publication in the top list of articles with the highest citations.

3.4. Countries and Territories

Research on green tax originates from 16 different countries which is presented in Table 3. The United States have contributed 15% of the existing literature followed by Spain which contributes 12%. China and United Kingdom comes next with 9% contribution. 7% of existing literature comes from Denmark, Germany and Italy which is followed by France with 6%. Iran and Japan contributes 5% of the existing literature and the remaining countries have contributed 19.5% of the research in this area. Figure 5 illustrates the contribution of various countries in the research green tax.

Table 2: Most influential authors and sources based on citation analysis

Authors	Title	Year	Source title	Cited by
Soysal M., Bloemhof-Ruwaard J.M., Van Der Vorst J.G.A.J.	Modelling food logistics networks with emission considerations: The case of an international beef supply chain	2014	International Journal of Production Economics	163
Ferguson M.A., Branscombe N.R.	Collective guilt mediates the effect of beliefs about global warming on willingness to engage in mitigation behavior	2010	Journal of Environmental Psychology	141
Metcalf G.E.	A Distributional Analysis of Green Tax Reforms	1999	National Tax Journal	139
Oates W.E.	Green taxes: can we protect the environment and improve the tax system at the same time?	1995	Southern Economic Journal	114
Aizawa M., Yang C.	Green credit, green stimulus, green revolution? china's mobilization of banks for environmental cleanup	2010	Journal of Environment and Development	93
Carattini S., Baranzini A., Thalmann P., Varone F., Vöhringer F.	Green Taxes in a Post-Paris World: Are Millions of Nays Inevitable?	2017	Environmental and Resource Economics	75
Li Y., Luo X., Huang X., Wang D., Zhang W.	Life Cycle Assessment of a municipal wastewater treatment plant: A case study in Suzhou, China	2013	Journal of Cleaner Production	67
Ward H., Cao X.	Domestic and International Influences on Green Taxation	2012	Comparative Political Studies	64
Ashworth J., Geys B., Heyndels B.	Determinants of tax innovation: The case of environmental taxes in Flemish municipalities	2006	European Journal of Political Economy	61
Hayashi Y., Kato H., Teodoro R.V.R.	A model system for the assesment of the effects of car and fuel green taxes on CO2 emission	2001	Transportation Research Part D: Transport and Environment	60
Wu X., Zhang Z., Chen Y.	Study of the environmental impacts based on the "green tax" - Applied to several types of building materials	2005	Building and Environment	58
Spangenberg J.H., Omann I., Hinterberger F.	Sustainable growth criteria minimum benchmarks and scenarios for employment and the environment	2002	Ecological Economics	54
Organisation for Economic Cooperation And Development	Implementation strategies for environmental taxes	1996	Implementation strategies for environmental taxes	54
Koskela E., Schöb R.	Alleviating unemployment: The case for green tax reforms	1999	European Economic Review	50
Cansino J.M., Sánchez-Braza A., Sanz-Díaz T.	Policy instruments to promote electro-mobility in the EU28: A comprehensive review	2018	Sustainability (Switzerland)	45

Table 3: Top 16 countries with publications on Green tax

Country/Territory	Number of Publication
United States	30
Spain	24
China	18
United Kingdom	18
Denmark	13
Germany	13
Italy	13
France	12
Iran	10
Japan	10
India	8
Sweden	7
Australia	6
Netherlands	6
Norway	6
Switzerland	6

4. CONCLUSION

Attainment of Sustainability in all areas of human life is a major challenge of present times. Green tax is a technique which can help to reduce the negative impact of irrational activities of mankind. The paper focuses on the bibliometric analysis of the publications in the area of green tax focusing on journal articles published in Scopus. The study indicated that there is minimal research being conducted in the area of green tax. There is a need to have a better understanding about various aspects of green tax as well as the possibilities of introducing the concept to the developing countries so that their environmental efficacy can be improved. Sustainable development goals can be attained developing a regulatory framework to promote the eco-friendly practices. The educational institutions and corporates have a pivotal role in enhancing the level of awareness about the significance of promoting sustainability. The implementation of green taxes will be an effective measure to ensure development in a sustainable direction. The successful green tax policies implemented can be adopted by the developing countries to attain sustainable development, research in the area of green taxes can be a catalyst for this. There is a need for more research in this area especially from the Asian and African Countries which can significantly contribute towards a sustainable development.

This study has been limited to the articles published in the Scopus journals in English language, a better picture of the situation can

be obtained by conducting a study based on Web of Science and PubMed journals.

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