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Green Investment, Energy Consumption and Environmental Pollution Nexus G-7 Countries: A Historical Perceptive

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ABSTRACT

The main purpose of this study is to examine the visions of the literature on green investment, institutional quality, energy consumption toward carbon dioxide (CO2) emissions in the perspective of G-7 countries. CO2 emissions is the major cause of GHG emissions. This review inspects and produces prevailing empirical and theoretical literature on said problem. This review paper firstly stimuluses the summary of green investment, institutional quality, energy consumption and CO2 emissions of G-7 countries. Secondly, it recognizes the literature based on the theoretical empirical and theoretical visions from the existing literature. Moreover, this article put light on theoretical approaches that defines how/ why these approaches work. Thirdly, this article suggests four productive dimensions for further policy development. This research also adds to the area of institutional quality, green finance, energy consumption concerning carbon dioxide (CO2) emissions by critically investigating and synthesizing prevailing theory and research on green finance, energy consumption, institutional quality and CO2 emissions.

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1. Introduction

Environmental contamination is the biggest threat to the sustainability and prosperity of the global economy. The environmental catastrophe puts a tremendous strain on the economic system as long as human development continues to grow(Chaudhary, Nasir, ur Rahman, & Sheikh, 2023; Hammed & Arawomo, 2022). Human activity has the potential to pollute the environment while it is growing. Thus, safeguarding the environment ought to be the first priority for every government. There is general agreement that Maintaining the ecosystem requires safeguarding it. both national sustainability and human existence (Aswani, Sajith, & Bhat, 2021; Bhat, Sofi, & Sajith, 2022; Su, Umar, & Gao, 2022). Sea levels have risen 178 mm in the last century, global temperatures have grown to 1.9 °F by 1880 due to population growth, and greenhouse gas (GHG) emissions have reached their greatest point in 650,000 years at 413 parts per million. The primary environmental and developmental concern at the moment may be addressing climate change (Huo et al., 2020; Saarinen, Moswete, Atlhopheng, & Hambira, 2020).

Concerns regarding green technology are shared by all nations due to the increase in greenhouse gases in the atmosphere and climatic changes that affect both the environment and the economy. Innovation restores the mortification of the environment without jeopardizing progress and expansion. All global economies have started concentrating on environmental safety testing as a result of the persistent, expanding pollution problem. The global community has also taken significant act and accepted several essential for the safety of the environmental tests to adequately environmental pollution (Doğan, Balsalobre-Lorente, & Nasir, 2020; Hassan, Sheikh, & Rahman, 2022; S. M. Khan & Saif-ur-Rehman; S. u. Rahman,

Chaudhry, Meo, Sheikh, & Idrees, 2022). Canada, Italy, the Germany, France, the United States of America, Japan, and the United Kingdom are the seven countries that are considered essential to sustaining a high quality of existing in the worldwide economy. It also raises their efficiency in producing energy and increases productivity.

Some environmentalists believe that because current technology can increase energy efficiency without interfering with economic growth, it could help reduce greenhouse gas emissions. GHG emissions may be impacted by environmental technology initiatives. They affect the cost of carbon-based energies by enacting taxes that reduces consumption of energy and productions of harmful substances. These rules also give businesses incentives to innovate in new technology development. Nonetheless, some contend that the reflected effect of technological improvements depletes resources and harms the environment. In the industrial sector, technology boosts output at the expense of raw materials and energy, which degrades environmental pollution (Ilyas, Banaras, Javaid, & Rahman, 2023; M. T. I. Khan, Yaseen, & Ali, 2017; S. M. Khan & Saif-ur-Rehman; C. Shahid, Gurmani, Rehman, & Saif, 2023; Usman, Rahman, Shafique, Sadiq, & Idrees, 2023; Zhu, Fang, Rahman, & Khan, 2023). However, actual evidence makes the asymmetry between technical developments and GHG emissions less evident. In a similar vein, this study advances our understanding by assessing the potential for technologies to lower greenhouse gas emissions (Amin, Aziz, & Liu, 2020; Awan, Rahman, Ali, & Zafar, 2023; Fatima, Jamshed, Tariq, & Rahman, 2023; Ilyas et al., 2023; Shahzadi, Ali, Ghafoor, & Rahman, 2023; Shen et al., 2021). Therefore, the use of green technology improves both the economy by incorporating technology into day-to-day activities and the environment by reducing pollutants. The primary focus of sustainable development goals is on addressing the complex issue of climate change and coming up with workable solutions. A composed approach to solving global issues and promoting economic growth—a necessary precondition for attaining sustainable growth—are also provided by green (M. A. Khan, Khan, Abdulahi, Liaqat, & Shah, 2019).

As production and industrialization develop, complex economies become more technological and require a high degree of knowledge and competence. Using renewable energy, producing goods in an environmentally conscious manner, and producing various goods are some examples of how to keep the economy green (Ahmad, Ahmed, Majeed, & Huang, 2021; Awan et al., 2023; S. Khan, Yahong, & Chandio, 2022; Tabassum, Rahman, Zafar, & Ghaffar, 2023). A green economy is maintained, for example, by the use of renewable energy, environmentally responsive energy effectiveness measures, and the manufacturing of various goods (Energy, 2019; Nawaz, Rahman, Zafar, & Ghaffar, 2023; Rehman, Ali, Idrees, Ali, & Zulfiqar, 2022; C. Shahid et al., 2023). Jabeen, Ahmad, and Zhang (2021) Because of the increased awareness of environmental issues and concerns, the whole more attention is paying to community for the technological advancements in green growth. To achieve green growth, we need to focus on creating and applying green innovation on a global scale. The most advanced instruments for attaining sustainable development across all economies are green innovation and environmental law. Many countries have enacted technology patents to minimize pollution of the air, water, and soil in an effort to stop the environmental devastation. This study looked at how environmental contamination in the Group of Seven countries affected institutional quality control. Various studies have provided examples of environmental degradation. We still don't have the ideal answer, though, to the environmental issue. Due to the ozone layer's thinning and its impact on public health, greenhouse gas emissions play a significant role in global warming and worsen overall environmental conditions. The quality and goals of national institutions have an impact on the development of a socioeconomic legal and cultural framework.

Another challenging subject is how institutional performance and environmental performance are related. The performance of institutions is influenced by political and commercial forces, and this intricate erection flows through multiple institutional channels (Kang & He, 2018). It is believed that the transition process can only proceed with the establishment of focused environmental and economic policies, but in order for these strategies to be effectively observed and implemented, they must be combined with supported institutions (Dasgupta, De Cian, & Verdolini, 2016; M. A. Khan et al., 2019; Liao, Dogan, & Baek, 2017; S. Rahman & Idrees, 2019). Olson Jr (1996) also recommended that Encouraging constructive cooperation among market actors may require the support of impartial and

effective government agencies. Therefore, raising the caliber of institutions becomes essential to resolving environmental problems.

The Group of Seven countries is a political platform for geopolitical discourse. Its members include the world's most liberal democracies and advanced economies. By 2020, the group as a whole will account for around 10% of the world's population, net worth of it is over 50%, and between 32 and 46% of its GDP. Members maintain tight diplomatic, political, legal, social, religious, environmental and cultural relations with one another and are significant actors in world affairs (Ali, ur Rahman, & Anser, 2020; Can & Gozgor, 2017; S. Rahman & Idrees, 2019). In order to do this, numerous nations work together to end the most serious problem associated with climate change and global warming, as well as to meet the carbon neutrality aim necessary to create a civilization free of greenhouse gases. However, sufficient data is obtained. Numerous studies have looked into how using renewable energy affects pollution in the environment. The general consensus is that using more renewable energy reduces pollution in the environment; nevertheless, studies typically overlook the environmental and economic benefits of using renewable energy sources independently, with the exception of hydroelectricity and biomass. However, compared to biomass and hydropower, investments in solar and wind generating capacity have increased recently. For example, new investments in the renewable energy sector globally amount to 285.9 billion US dollars, with 89.3% of total renewable energy investments in 2020 coming from wind and solar power.

First, the development process causes an initial decrease in environmental performance; but, at a certain point, the environmental pollution starts to increase. The term "environmental Kuznets curve" (EKC) describes this inverse U-shaped GDP pollution trend (Grossman & Krueger, 1995; Huang, Rahman, Meo, Ali, & Khan, 2024; Sarkodie & Strezov, 2019; Song, Anees, Rahman, & Ali, 2024). Generally speaking, the first phase of the economic negative effects expansion on environmental quality can be attributed to the scale effect of increased energy and trade openness use. But eventually the composition effect and technique positively effects the environment (Sarkodie & Strezov, 2019). Pollution from the environment first deteriorates as advancement spreads, but eventually it starts to advance. An alternative term for this inverted U-shaped gross national merchandise pollution design is the EKC (Grossman & Krueger, 1995; Sarkodie & Strezov, 2019). But later on, because of the impact on the organization and approach, it would adversely affect the climate. Exchange receptiveness and increased energy consumption have a significant scale influence on environmental quality, which has a negative impact on it at the underlying stage of improvement (Khoula, ur Rehman, & Idrees, 2022; Li et al., 2022; Sarkodie & Strezov, 2019; Zulfiqar et al., 2022). In terms of size, additional financial activities (transport, new construction, and deforestation) and energy consumption lead to a decline in natural quality since, during the early phases of improvement, development receives greater emphasis than environmental quality. People want a more hygienic environment so that they may subsequently, during another transformative stage under strategy effect, expect improved daily comforts (Grossman & Krueger, 1995; Qadri et al.; Sarkodie & Strezov, 2019; Zhao et al., 2023). According to this, the administration sector or cleaner innovation replace the manufacturing of commodities based on dirty invention, which has a significant influence on the climate and is referred to as the "synthesis impact" (Antweiler, Copeland, & Taylor, 2001).

The current study intends to evaluate the relationship between environmental performance and the role of institutional quality, green investments and energy usage in the EKC for G-7 countries. Despite the fact that numerous studies have looked at how green investments affect institutional performance, economic development, and environmental performance in a variety of topics (Ali, Yusop, Kaliappan, & Chin, 2021; Shahzadi, Sheikh, Sadiq, & Rahman, 2023; Zahra, Nasir, Rahman, & Idress, 2023). There are currently few studies available that evaluate institutional quality, green investments, economic growth within the framework of EKC in G-7 countries. Thus, controlling the amount of CO2 emissions from green investments is the study's main objective. Examining the connection between institutional quality and CO2 emissions is another of the study's goals.

2. Literature Review

Literature of the review is divided into two sections. This research reviews empirical and theoretical literature on (GHG) greenhouse gas emissions; this part highlights previous research gaps from the body of existing knowledge.

2.1. Theoretical literature review

According to the environmental Kuznets curve, environmental deterioration is first caused by economic expansion, but after a certain point, environmental degradation starts to decline as society starts to have better relationships with the environment. It may also suggest that protecting the environment is a benefit of economic growth. Critics assert that there is no assurance that economic development would consequence in a improved atmosphere, although this is not always the case. If economic expansion is to be unswerving with a improved environment, it at the very least requires a very unique approach and mindset. The EKC theory had a major effect on the economic policy of wealthy and developing countries. Webber and Allen state that rather than pursuing pro-environment policies, emerging countries should take into account the fundamental conclusions of the hypothesis of EKC in order to attain quick economic development. Economic expansion eventually results in the accomplishment of both economic and environmental goal because pro-environment restrictions simply low economic growth (Webber & Allen, 2010). The underlying premise of the EKC theory, however, has been contested by a number of academics over the past 20 years (Gill, Viswanathan, & Hassan, 2018). Despite the fact that the EKC hypothesis is extensively accepted in commercial economies. There is little evidence that all affluent nations participating in greener and more ecologically friendly skills would ultimately result in improvements to the environment. Furthermore, there is little proof that once their basic needs are met, wealthy societies worldwide begin to prioritize environmental performance (Raymond, 2004).

2.2. Empirical Literature Review

Green investment and institutional quality have relationship with each other as well as the connection among energy use and pollution of an environmental. The G-7 countries are confronting uncertain global warming and an extremely severe climate change situation today, and the rest of the world is working very stiff to bargain a answer to this issue and create environmentally friendly conditions. In order to attain justifiable growth and guarantee a fresh and pure environment, Shen et al. (2021) used panel data of 30 Chinese provinces from 1995 to 2017, The long- and short-term properties of the variables on CO2 emissions were found in the study, which employed the novel (CS-ARDL) methodology. However, this research also reveals a negative relationship between green investment and carbine emissions, while a positive connection happens between national resources and that. In order to reduce carbon emissions, this study must create effective nationwide natural tax regulations and encourage green investment. A second study S. A. R. Khan et al. (2019); S. u. Rahman et al. (2022); Sarwar, Ali, Bhatti, and ur Rehman (2021); Zhu et al. (2023) on the economies of the ASEAN region looked at the relationship between environmental and economic factors and logistic operations. Using data from the years 2007 to 2017 and the GMM method, the research concludes that the primary cause of environmental deprivation is poverty and logistic operations.

Additionally, this research suggested that in order to combat poverty and rise the use of renewable energy, a robust approach to economic sustainability is required. On the other hand, research by Chen, Yu, Yuan, Lu, and Shen (2021); Hafiza et al. (2022); S. u. Rahman et al. (2022); A. U. Shahid et al. (2022) looks at the association among communication and information technology, financial development, economic growth and the carbon dioxide emissions of the BRICS countries. To do this, this study use quantile regression derived from instants approaches. Overall, the results indicate that while financial development and economic expansion subsidize to CO2 emissions across all communication and information technology only meaningfully lowers emissions at lower emissions quantiles (Anwar et al., 2022; Shafique, Rahman, Khizar, & Zulfiqar, 2021; Younas, Idrees, & Rahman, 2021) the aim of this study to examine the effects of renewable energy consumption, urbanization, , agriculture, financial development, agriculture and economic growth on CO2 emissions in 15 Asian economies between 1990 and 2014. Empirical evidence indicates that while agriculture has a little impact, economic growth, renewable energy, and the use of urbanization all cause a rise in CO2 emissions. Additionally, Rehman Khan and Yu (2021) focus on green information

systems, another research uses the STIRPAT model to show how urbanization, economic growth, and energy consumption have a greater impact on environmental quality. The ecological footprint indicator used in this study covers the years 1990–2016, and the authors recommend that the area is growing unconcerned with the environment and engaging in high-emission trade. CO2 emissions, economic growth, and energy use have received increased consideration recently. A study conducted between 1990 and 2016 using the FMOLS and DOLS adoption methodologies found that, although it depends on the nation's policies, a rise in energy consumption will inevitably lead to a growth in environmental pollution. Therefore, in order to help the economy get back on track, it is necessary to implement environmental taxes, emphasize public rights, and remove offensive emissions across the levels of income and geographies was examined by Bhattacharya, Churchill, and Paramati (2017). Between 1991 and 2012, they used annual data from 85 established and developing economies worldwide. According to their answers, institutions and the deployment of renewable energy are important for nurturing economic development and lowering CO2 emissions.

Another result (Sarkodie & Strezov, 2019) for 47 SSA countries found that the interaction of level of income, governance, and renewable energy worsened GHG levels, suggesting that the amalgamation of scale, structure, and method effects exacerbates climate change; in these countries, only energy was found to be operative in reducing GHGs. Studies that look at how sector-specific energy usage affects CO2 emissions are scarce in the literature. Thus, determining how CO2 emissions is affected by institutional quality and sectoral energy is one of our goals. Using a comprehensive approach, Dauda, Long, Mensah, and Salman (2019) want to determine whether innovation may lower CO2 emissions. For this, a panel (DOLS) was used to examine 18 developed and under-developed nations between 1990 and 2016 in order to determine the long-term link. It is suggested that CO2 increase with economic growth, but it also desires to decrease environmental contamination. Because of all these resources environmental pollution, serious actions should be taken by the government to accept renewable energy like wind energy, solar energy and hydroelectric power and turn it into a green economy. Additionally, the finding demonstrates that increased energy consumption causes CO2 to increase everywhere, in BRICS countries CO2 emission decrease by economic growth but increases in G6 countries. According to a different study (Mensah, Long, Dauda, Boamah, & Salman, 2019), as global emissions rise, technology plays a bigger role in the fight against emissions.

The study also looks at the characteristics of patents, trademarks, and economic advancement in urbanization over the period of 1990 to 2015, using the ARDL approach methodology and taking the results from tests such as the Granger causality test, cross-sectional dependence test, the panel unit root test and Westerlund panel co-integration test. Ultimately, the study recommends that the auto industry make a concerted determination to condense the pollution of environmental, and government everyone encourage by the government and enact sensible policies. It is believed that enormous financial resources are required in order to reduce environmental performance through efficient and quick research and development. The main aim of the researchers to examine the fundamental association between technological progression and CO2 emissions with power consumption, economic growth, and energy pricing in Malaysia using the VECM approach (Yii & Geetha, 2017). This study indicates no correlation between technological innovation and CO2 emissions over the long run, but it does demonstrate a negative association in the near term.

3. Methodology

The author of this study collected and critically analyzed the pertinent literature by following the systematic literature review approach as outlined by Lacey, Matheson, and Jesson (2011). The main focus of the study, theory, bibliographic details used (where applicable), research philosophy (Zikmund, Babin, Carr, & Griffin, 2013), key results, method, definition of green investment, institutional quality, energy consumption and CO2 emission, geographical location of the study, research context, practical and theoretical review, additional supposition, and described restrictions are all included in the critical review form that the author developed for a thorough and critical analysis of the prior studies. From November 2019 to April 2022, the author searched the literature for the critical review of this work. The researcher evaluated the research papers which is related to this study taken from (1) the Clarivate Analytics list of economics publications; (2) Complete databases (Business Source Premier by Ebsco and Scopus) in order to find the most relevant green investment papers possible. (3) Google

Scholar; (4) widespread cross-disciplinary appendix on green investment, institutional quality, energy consumption and CO2 emission existing in various journals. For example, papers that do not address energy consumption, institutional quality, green investment, or CO2 emissions, books, commentary, abstracts and keywords, executive abstracts, editorials, literature reviews, and stories from newspapers and magazines —as well as those that are not empirical or conceptual—were not taken into account for this literature study. After eliminating duplicates, the author found nearly 700 articles in total. When necessary, the author looked at the abstract, title, and methodology of each paper to establish its applicability.

4. Conclusion

Following a thorough analysis of the literature, it is determined that energy use, institutional quality, and green investment all have an effect on CO2 emissions, both positively and adversely. The fact that each of the two findings fills a vacuum in the literature on its own is really intriguing. Thus, the association between, energy consumption, green investment, energy consumption, and institutional quality and CO2 emissions is still being debated, and a number of research have been done to examine this relationship. While some studies have looked at a considerable and positive influence on CO2 emissions, others have looked at a significant and negative impact. As a result, it is crucial to discuss the main causes in detail and create strategies to solve this grave issue. Since carbon emissions are the main contributor to greenhouse gas emissions, green investments has dominated discussions about global warming. Furthermore, this work does not develop the variable analysis. Thus, the primary goal of the study is to present a clear and thorough overview of previous research on energy consumption, CO2 emissions, institutional quality, and green investment, counting appropriate methods and practices.

4.1. Future Recommendations for Policy Makers

The policy implications of this research can help comprehend interaction among the components under analysis and guide policymakers in formulating strategies based on the variables under examination. At first, the G-7 countries constitute an exceptional blend of the established and world growing economies. They contribute significantly, within a maximum range of percentages, to energy consumption, global green investment, and institutional variables. Consequently, in order to guarantee sustainable development and foster the creation of a welcoming and safe environment, governments in each of these countries should support the expansion of their respective economies. Second, even with their enormous resources and readiness to embrace newly invented types of environmental pollution, it is debatable if the G-7 countries will be capable to meet the ambitious goal of retaining the world temperature below 28 °C. out, and replaced with renewable energy in order to both combat change in climate and ensure the green energy security. Third, as significant international institutional participants, the selected nations' panel needs to support their collaboration and care for other organizations. Fourth, in order to reduce greenhouse gas emissions, society and industry need to develop technologically.

Fifth, economic expansion should improve environmental quality; however, this can only be achieved by greatly increasing green investment and opportunity. Ultimately, these countries possess an abundance of resources, such as state-of-the-art technology, renewable energy, and green development projects. Therefore, prudent and efficient use will support these economies' convergence toward higher levels of investment, consumption, and greenhouse gas reduction. Ensuring that the G-7 countries enhance their institutional quality and experience sustainable environmental advantages is crucial. It is crucial in this situation to base choices on the development of institutional components such as civil politics, the rule of law, excellent bureaucracy, the fight against corruption, and democratic freedoms. The efficiency with which these institutions operate must also be noted. The social and political initiatives of the G-7 countries to alter their institutions ought to intensify in light of this. Public burden and demands for institutional reform can serve as a catalyst for improving the quality of these countries' institutions. Subsequently, a national plan can be developed to reinforce aspects such as the competition in contrast to accountability, corruption of the government, rule of law and the good authority.

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