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Effect of Green Fiscal Policy Instruments on Sustainable Economic Growth in Kenya



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Abstract

Purpose: The purpose of this article was to analyze effect of green fiscal policy instruments on sustainable economic growth in Kenya.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: The findings indicate that green fiscal policy instruments positively influence Sustainable Economic Growth in Kenya by encouraging green investment, promoting renewable energy adoption, reducing environmentally harmful activities, and supporting efficient resource utilization. However, their effectiveness is constrained by inconsistent implementation, limited green financing, and weak enforcement of environmental fiscal policies.

Unique Contribution to Theory, Practice and Policy: Pigouvian tax theory, Endogenous growth theory & the porter hypothesis may be used to anchor future studies on the effect of green fiscal policy instruments on sustainable economic growth in Kenya. Particular attention should be given to targeted tax incentives for renewable energy and clean technologies, green public investment, concessional financing, and mechanisms that appropriately price environmentally harmful activities. Policymakers should establish a predictable and coherent green fiscal policy framework that balances environmental objectives with economic growth, employment, investment competitiveness, and household welfare.

Keywords: *Green Fiscal Policy Instruments, Sustainable Economic Growth*

INTRODUCTION

Sustainable Economic Growth refers to the sustained expansion of economic output, productivity, employment, and living standards while conserving natural resources, limiting environmental degradation, and maintaining opportunities for future generations. In developed economies, it increasingly involves decoupling GDP growth from carbon emissions through renewable energy, clean technologies, energy efficiency, and environmentally responsible investment. In the United States, nominal GDP increased from approximately US\$21.38 trillion in 2020 to US\$29.30 trillion in 2024, while renewable sources excluding hydropower accounted for about 14% of electricity production in 2021, demonstrating the simultaneous expansion of economic activity and cleaner-energy investment. Empirical evidence from 48 U.S. states further indicates that renewable-energy consumption can contribute to sustainable economic development by reducing energy-related CO₂ emissions associated with economic activity (Koengkan, 2022). Thus, the American experience illustrates the increasing importance of combining economic expansion with renewable energy and technological transition rather than evaluating development exclusively through GDP growth.

The United Kingdom provides another developed-economy example, although its recent economic-growth trajectory demonstrates that sustainable growth does not necessarily mean consistently high GDP growth. World Bank statistics indicate that UK real GDP growth rebounded from -10.0% in 2020 to 8.5% in 2021 and 5.1% in 2022, before slowing sharply to 0.3% in 2023 and 1.1% in 2024. At the same time, the country's sustainability transition emphasizes cleaner energy, resource efficiency, technological innovation, and reductions in the environmental intensity of economic activity. International empirical evidence indicates that renewable-energy strategies can facilitate sustainable economic growth by supporting economic development while contributing to progress toward environmental Sustainable Development Goals (Chen, 2022). Therefore, the UK experience illustrates that sustainable economic growth should be assessed through both the durability of economic performance and improvements in environmental sustainability rather than GDP expansion alone.

In developing economies, Sustainable Economic Growth involves raising income, employment, industrial productivity, and living standards while simultaneously addressing energy insecurity, poverty, pollution, and climate vulnerability. India represents an important example because rapid economic expansion has occurred alongside substantial efforts to increase renewable-energy deployment, with non-hydropower renewable electricity accounting for approximately 9.2% of total electricity production in 2021 and electricity access reaching 99.5% of the population by 2023. Research on India demonstrates that improvements in economic development and environmental sustainability are associated with increased renewable-energy consumption, indicating complementarities between economic advancement and the transition toward cleaner energy (Khan, 2022). Broader evidence from South Asian economies similarly establishes a significant positive relationship between renewable-energy consumption and output growth (Ahmad & Majeed, 2022). India's experience therefore demonstrates that sustainable economic growth requires continued investment in renewable energy and clean technologies alongside industrial and socioeconomic development.

Vietnam provides a second developing-economy example, having maintained relatively strong economic growth while rapidly transforming its energy and industrial systems. World Bank data show that real GDP growth stood at 2.9% in 2020 and 2.6% in 2021 before accelerating to about

8.5% in 2022, demonstrating a strong post-pandemic economic recovery. During the same period, the country expanded investment in renewable energy and other sustainability initiatives intended to reduce the environmental consequences of rapid industrialization. Empirical analysis covering Vietnam from 1995–2019 identified a long-run relationship between renewable-energy consumption and economic growth, supporting the importance of cleaner energy in the country's development trajectory (Le & Sarkodie, 2023). Another recent study similarly shows that the interaction between renewable energy, economic growth, foreign investment, urbanization, and carbon emissions is critical to Vietnam's pursuit of environmentally sustainable development (Minh, 2023).

In Sub-Saharan Africa, Sustainable Economic Growth involves expanding production and incomes while simultaneously improving energy access, reducing poverty, strengthening institutional capacity, and protecting environmental resources. Kenya provides an important example, with World Bank data showing real GDP growth recovering from -0.27% in 2020 to 7.59% in 2021, followed by 4.86% in 2022, 5.72% in 2023, and 4.66% in 2024. Despite Kenya's substantial renewable-energy resources, empirical research found no statistically significant short- or long-run effect of renewable-energy consumption on economic growth, suggesting that clean energy must be complemented by investment, productive utilization, infrastructure, and supportive institutions (Nyasha & Odhiambo, 2023). This demonstrates that sustainable growth requires more than increasing renewable-energy supply; economies must transform clean energy into productive industrial, agricultural, and service-sector activities. Kenya therefore illustrates both the opportunities and challenges involved in simultaneously maintaining economic growth and transitioning toward environmentally sustainable development.

Ghana similarly illustrates the challenge of balancing economic transformation, growing energy requirements, environmental sustainability, and inclusive development in Sub-Saharan Africa. Evidence across the region shows that renewable-energy consumption contributes positively to economic growth and that this contribution becomes stronger when institutional quality exceeds an estimated threshold of 0.304, based on evidence from 25 Sub-Saharan African economies (Diallo & Ouoba, 2024). Research covering 43 Sub-Saharan African countries further established that increasing renewable electricity's share of total electricity production significantly improved economic development, although renewable electricity consumption itself produced a positive but statistically insignificant effect (Yuni, 2023). These findings are important for Ghana and comparable economies because they indicate that renewable-energy investment must be supported by good governance, financial development, human capital, and productive economic structures. Consequently, sustainable economic growth in Sub-Saharan Africa depends on integrating economic expansion with renewable-energy investment, stronger institutions, environmental protection, and inclusive socioeconomic development.

Green Fiscal Policy Instruments refer to government taxation, expenditure, financing, and incentive mechanisms designed to correct environmental externalities while encouraging low-carbon investment, resource efficiency, and sustainable economic activity. Kenya's Green Fiscal Incentives Policy Framework identifies fiscal mechanisms including taxes, subsidies, expenditure programmes, concessional loans, guarantees, and interest-rate support as tools for promoting climate-resilient development. Four key instruments suitable for the present study are environmental taxes/carbon pricing, green tax incentives, green public expenditure and subsidies,

and green financing instruments. Environmental taxes discourage pollution by internalizing environmental costs, while green tax incentives encourage firms to invest in cleaner technologies and energy-efficient production; empirical evidence indicates that fiscal incentives can redirect economic activity toward improved resource efficiency (Sun, 2024; Song, 2024). Green public expenditure and subsidies finance renewable energy, environmental restoration and climate-resilient infrastructure, whereas green financing instruments such as concessional loans and guarantees mobilize capital for environmentally sustainable investments, collectively providing pathways toward Sustainable Economic Growth.

Sustainable Economic Growth refers to sustained improvement in economic output and welfare while maintaining environmental quality, efficient resource utilization, and resilience for future generations. Environmental taxes can encourage cleaner production and consumption, although their growth effects depend on their design, whereas well-targeted emission-reduction subsidies and environmental expenditure can simultaneously stimulate economic activity and improve environmental outcomes (Yan & Wang, 2024). Green tax incentives can stimulate technological upgrading and energy efficiency, while green financing can facilitate clean-technology investment and strengthen green growth through innovation (Song, 2024; Wang, 2024). In Kenya, these instruments are particularly relevant because the government intends to use green fiscal reforms to mobilize private investment, promote climate-friendly production, improve public investment efficiency, and support the transition toward low-carbon and climate-resilient development. Therefore, effective implementation of environmental taxes, green tax incentives, green public expenditure and subsidies, and green financing instruments is expected to enhance Sustainable Economic Growth by promoting investment, innovation, resource efficiency, environmental sustainability, and economic resilience.

Statement Problem

Kenya faces the challenge of sustaining economic growth while simultaneously addressing climate change, environmental degradation, fiscal pressures, and the financing requirements of a low-carbon economy. In response, the government has increasingly incorporated green fiscal measures into its development agenda, including environmental taxation, subsidies, ecological fiscal transfers, research grants, concessional loans, climate-budget tagging, and incentives for renewable energy and climate-resilient investment. Kenya adopted the National Green Fiscal Incentives Policy Framework in December 2023, demonstrating a significant commitment to using fiscal policy to promote low-carbon and environmentally sustainable economic activities. Despite these interventions, implementation of sector-specific green fiscal incentives has remained incomplete, while concerns persist regarding their possible effects on production costs, inflation, public finances, investment, and household welfare. The IMF has consequently emphasized the importance of assessing the economic effects of environmental levies before implementation to avoid unintended consequences and ensure that green fiscal measures effectively support the transition to sustainable development.

Empirical evidence further presents mixed findings regarding whether environmental and green fiscal interventions necessarily translate into sustainable economic growth. Kenya-specific research has largely concentrated on renewable energy consumption rather than examining Green Fiscal Policy Instruments comprehensively; for instance, Nyasha and Odhiambo (2023) found no statistically significant short- or long-run effect of renewable energy consumption on Kenya's

economic growth. Situma (2024) similarly concentrated on renewable energy and emphasized that investment, affordability, and supportive policies are necessary for renewable energy to contribute effectively to economic performance. International evidence also indicates that the growth effects of environmental taxation may be nonlinear, with environmental taxes initially imposing economic costs before generating positive green-growth effects after certain thresholds are reached. Therefore, despite Kenya's growing commitment to green fiscal reforms, there remains insufficient empirical evidence on the collective effect of environmental taxes, green tax incentives, green public expenditure and subsidies, and green financing instruments on Sustainable Economic Growth in Kenya, creating the need for the present study.

Theoretical Review

Pigouvian Tax Theory

Pigouvian tax theory was originated by Arthur Cecil Pigou (1920) and argues that activities generating negative externalities, such as pollution, should be taxed according to their social costs. Such taxation corrects market failure by increasing the cost of environmentally harmful activities and encouraging firms and consumers to adopt cleaner alternatives. Recent research shows that pollution taxation can reduce environmental damage while reallocating resources toward research and development, potentially supporting economic growth and welfare (Afonso, 2023). The theory is relevant because Kenya can use carbon taxes, environmental levies, and related fiscal instruments to discourage pollution while financing sustainable economic activities.

Endogenous Growth Theory

Endogenous growth theory was principally developed by Paul Romer (1986; 1990) and emphasizes that long-term economic growth originates from internal factors such as technological innovation, knowledge accumulation, human capital, and research and development. Contemporary applications demonstrate that environmental policies can redirect resources from pollution-intensive activities toward clean technologies and R&D, potentially generating both environmental improvements and economic growth (Borissov, 2022). The theory is relevant because Kenya's green subsidies, tax incentives, public expenditure, and green financing can stimulate technological innovation and investment that support sustainable economic growth.

Porter Hypothesis

The porter hypothesis was advanced by Michael Porter and Claas van der Linde (1995) and proposes that properly designed environmental regulations can stimulate innovation, improve resource efficiency, and enhance economic competitiveness. Rather than viewing environmental protection purely as a cost, the theory predicts that appropriate environmental policies can encourage firms to innovate and offset compliance costs through productivity improvements. Recent evidence shows that well-designed environmental regulation can produce a “double dividend” by improving environmental quality while enhancing economic growth and social welfare (Chen, 2023). The theory is therefore relevant in explaining how Kenya's green fiscal incentives and environmental taxes may encourage cleaner innovation and ultimately promote Sustainable Economic Growth.

Empirical Review

Nyasha and Odhiambo (2023) examined whether renewable energy consumption contributes to economic growth in Kenya. The purpose was to determine the dynamic relationship between renewable energy utilization and economic growth over the period 1990–2019. The researchers employed a time-series research approach and applied the Autoregressive Distributed Lag (ARDL) bounds-testing technique to estimate both short-run and long-run relationships. The findings surprisingly revealed that renewable energy consumption had no statistically significant effect on Kenya's economic growth in either the short or long run. This suggests that expansion of renewable energy alone does not automatically generate sustainable economic growth unless it is accompanied by appropriate investment, fiscal incentives, infrastructure, and productive utilization. The researchers concluded that Kenya could pursue energy conservation and renewable-energy policies without necessarily compromising its long-term economic growth trajectory. They recommended policies capable of improving the productive utilization and economic contribution of renewable energy. The study is relevant because renewable-energy incentives constitute an important component of green fiscal policy, while its insignificant findings demonstrate the need to examine a broader combination of fiscal instruments rather than renewable energy independently.

Situma, Nelson, and Nyongesa (2024) investigated the effect of renewable energy consumption on economic growth in Kenya. The study was motivated by Kenya's considerable renewable-energy generation potential alongside relatively low levels of consumption and concerns that high energy costs constrain economic activity. The researchers employed quantitative time-series analysis to determine the relationship between renewable energy consumption and economic growth. Their findings established important linkages between renewable-energy utilization and Kenya's economic performance, while highlighting investment and energy-cost constraints affecting realization of its economic benefits. The study demonstrates that increasing renewable-energy capacity must be complemented by policies that encourage consumption, investment, affordability, and productive-sector utilization. The researchers therefore emphasized measures capable of expanding investment and utilization of renewable-energy resources. For green fiscal policy, this implies that tax incentives, subsidies, concessional financing, and public investment can potentially strengthen the economic contribution of renewable energy. The study is relevant to the present research because it connects a major target of green fiscal intervention renewable energy to Kenya's economic growth outcomes

Fang and Chang (2022) examined the nexus between fiscal imbalances, green fiscal spending, and green economic growth in E-7 economies. The purpose of the study was to establish whether environmentally oriented government expenditure contributes to economic development while accounting for environmental considerations. The researchers constructed a green economic growth index using a non-radial directional distance function and analyzed panel data using System-OLS estimation techniques. Their findings showed that green economic growth varied considerably over time and that the allocation and composition of fiscal expenditure were important determinants of sustainable development outcomes. The study demonstrated that fiscal spending can contribute to green growth when government resources are directed toward environmentally beneficial public goods and development initiatives. The authors recommended that governments rebalance fiscal budgets and increase expenditure on public goods supporting

sustainable development. They further emphasized the importance of designing development initiatives according to local economic and environmental conditions. The study is relevant to Kenya because it provides empirical support for green public expenditure as one of the fiscal instruments through which governments can pursue sustainable economic growth.

Sarpong (2023) investigated whether environmental taxation and green energy could support the transition toward low-carbon economic systems in the E-7 economies. The researchers analysed panel data covering 2000–2020 and incorporated environmental taxes, renewable energy, clean cooking technologies, urbanization, population growth, and carbon emissions. Cross-sectional dependence tests, CIPS and CADF unit-root procedures, cointegration techniques, Driscoll-Kraay estimation, and quantile-on-quantile methods were employed. The findings revealed that environmental taxation, renewable energy, and access to clean cooking technologies significantly reduced carbon emissions over the long run. Conversely, urbanization and population growth contributed to increased emissions, demonstrating the environmental pressures associated with economic expansion. The researchers concluded that environmental taxation can alter economic incentives and encourage the transition toward environmentally sustainable production and energy consumption. They recommended strengthening environmental taxation alongside investments in renewable energy and clean technologies. The study provides relevant evidence for Kenya because it demonstrates how environmental taxes and green-energy incentives can simultaneously support environmental sustainability, an essential component of sustainable economic growth.

Ameer (2024) examined the relationships among environmental taxation, renewable electricity, economic growth, environmental innovation, and renewable-energy consumption in emerging economies. The study used panel data covering the period 1990–2020 and applied integration tests, Method of Moments Quantile Regression, bootstrap quantile regression, and panel Granger causality analysis. The results confirmed a long-run relationship among environmental taxation, renewable-energy production, economic growth, carbon emissions, environmental innovation, and renewable-energy consumption. Environmental taxation and renewable electricity emerged as important determinants of the transition toward sustainable energy consumption. The causality analysis further demonstrated interdependence among the principal economic and environmental variables. The researchers concluded that coordinated environmental taxation and renewable-energy investment could accelerate the transition toward sustainable development. They recommended increased expenditure on renewable electricity, environmental taxation initiatives, and ecological innovation. The study is applicable to Kenya because it supports an integrated green fiscal strategy combining taxation, expenditure, innovation incentives, and renewable-energy investment rather than relying upon a single policy instrument.

Arogundade and Hassan (2024) investigated whether environmental taxation and renewable-energy transition influence green economic growth across 37 OECD countries between 1990 and 2021. The researchers employed panel econometric techniques, including fixed-effects two-stage least squares, quantile regression, and causality analysis, to account for heterogeneity and possible endogeneity. The findings established a non-linear U-shaped relationship between environmental taxation and green economic growth. Specifically, environmental taxes initially produced negative effects on green growth, but their effects became positive after economies reached an appropriate policy threshold. This finding demonstrates that poorly calibrated environmental taxation may impose short-term costs on businesses and households before longer-term environmental and

productivity gains materialize. The authors consequently emphasized the importance of carefully designing environmental taxes and coordinating them with renewable-energy transition policies. For Kenya, this suggests that environmental taxes should be progressively implemented and complemented by green investment incentives to prevent excessive burdens on productive sectors. The study is therefore relevant because it provides evidence that the relationship between green fiscal instruments and sustainable economic growth may be nonlinear rather than automatically positive.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low-cost advantage as compared to field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

FINDINGS

The results were analyzed into various research gap categories that is conceptual, contextual and methodological gaps

Conceptual Gap

The reviewed studies demonstrate relationships between environmental interventions and economic or sustainability outcomes, but they conceptualize Green Fiscal Policy Instruments inconsistently. Nyasha and Odhiambo (2023) and Situma (2024) concentrated mainly on renewable energy consumption, while Fang and Chang (2022) examined green fiscal spending, Sarpong (2023) focused on environmental taxation and green energy, and Ameer (2024) considered environmental taxation alongside renewable electricity and environmental innovation. Furthermore, some studies measured outcomes such as carbon emissions, energy efficiency, renewable-energy consumption, or green economic growth rather than Sustainable Economic Growth comprehensively. The conceptual gap therefore lies in the limited empirical examination of Green Fiscal Policy Instruments as a multidimensional construct, incorporating environmental taxes, green tax incentives, green public expenditure/subsidies, and green financing instruments, and their collective effect on Sustainable Economic Growth. The present study addresses this gap by integrating these instruments within a single conceptual framework.

Contextual Gap

The reviewed literature was conducted under substantially different economic and policy settings. For example, Fang and Chang (2022), Sarpong (2023), and Ameer (2024) examined groups of emerging economies, while Arogundade and Hassan (2024) investigated 37 OECD countries and found a nonlinear U-shaped relationship between environmental taxation and green economic growth. The African study similarly concentrated on environmental taxes, environmental expenditure, energy efficiency, and carbon emissions rather than directly examining Kenya's sustainable economic growth. Although the two Kenya-specific studies provide useful evidence, they predominantly investigate renewable energy consumption and economic growth rather than the broader fiscal-policy mechanisms available to the government. Therefore, limited evidence exists on how Kenya's combination of environmental taxation, fiscal incentives, subsidies, public

expenditure, and green financing affects sustainable economic growth within its specific fiscal and institutional environment.

Geographical Gap

A significant geographical gap also emerges because much of the empirical evidence originates outside Kenya. The reviewed studies include evidence from E-7 economies, emerging economies, 37 OECD countries, and a panel of 19 African countries, meaning their findings reflect economic structures, fiscal capacities, environmental challenges, and institutional arrangements that may differ considerably from Kenya's. Although Nyasha and Odhiambo (2023) and Situma (2024) specifically studied Kenya, both concentrated primarily on the renewable energy–economic growth relationship rather than comprehensive Green Fiscal Policy Instruments. Consequently, there remains insufficient Kenya-specific empirical evidence regarding the collective effect of Green Fiscal Policy Instruments on Sustainable Economic Growth, creating a geographical gap that the proposed study seeks to address.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study concludes that Green Fiscal Policy Instruments have the potential to significantly enhance Sustainable Economic Growth in Kenya by directing public and private resources toward environmentally responsible and economically productive activities. Instruments such as environmental taxes, green tax incentives, subsidies, green public expenditure, and concessional financing can promote renewable energy adoption, cleaner production, technological innovation, resource efficiency, and climate-resilient investment. However, their effectiveness depends on coherent policy design, effective implementation, adequate monitoring, institutional coordination, and protection of vulnerable households and sectors from unintended economic burdens. Therefore, strengthening and integrating green fiscal measures within Kenya's broader fiscal and development framework can support economic growth while advancing environmental sustainability and long-term resilience.

Theory

Future studies should develop integrated theoretical models that explain how Green Fiscal Policy Instruments influence Sustainable Economic Growth through investment, technological innovation, resource efficiency, and changes in production and consumption behavior. Researchers should conceptualize green fiscal policy as a multidimensional construct incorporating environmental taxes/carbon pricing, green tax incentives, green public expenditure and subsidies, and green financing instruments. Theoretical frameworks such as Environmental Kuznets Curve Theory, Endogenous Growth Theory, and Pigouvian Taxation Theory could be integrated to explain both environmental and economic effects. Longitudinal research should also examine whether the effects of these instruments differ across agriculture, energy, manufacturing, transport, and other sectors.

Practice

The Government of Kenya should strengthen implementation of green fiscal instruments that encourage businesses and households to shift investment toward low-carbon and resource-efficient activities. Particular attention should be given to targeted tax incentives for renewable energy and

clean technologies, green public investment, concessional financing, and mechanisms that appropriately price environmentally harmful activities. Kenya's Green Fiscal Incentives Policy Framework itself identifies taxes, subsidies, concessional loans, guarantees, interest-rate support, and government expenditure as mechanisms for stimulating climate-friendly investment and development. The National Treasury should also strengthen monitoring and climate-budget tagging so that the economic and environmental returns from green expenditure can be systematically assessed.

Policy

Policymakers should establish a predictable and coherent green fiscal policy framework that balances environmental objectives with economic growth, employment, investment competitiveness, and household welfare. Kenya should progressively implement appropriate carbon-pricing mechanisms while providing targeted support to vulnerable households and sectors that could experience disproportionate adjustment costs; carbon pricing has already featured among Kenya's climate-related fiscal reform priorities. Green fiscal incentives should particularly support renewable energy, sustainable agriculture, water management, clean manufacturing, green transport, and climate-resilient infrastructure. Policy implementation should further incorporate periodic impact assessments to identify ineffective incentives and prevent fiscal resources from being directed toward programmes that produce limited environmental or economic benefits.

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