Journal of Emerging Trends in Economics and Management Sciences (JETEMS) 16(5):189-195

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Harnessing Green Taxation To Drive The Performance Of Circular Economy: A Research Synthesis For Inclusive Sustainable Development In Business

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Abstract

Concerns regarding environmental effect of human activities have grown significantly over time, leading to greater attempts to address and mitigate the harmful effects of human activities on the environment. The adoption of a Circular Economy (CE) is considered to be crucial for the advancement of capacity building for inclusive sustainable development, as it is focused on minimizing waste, optimizing resource utilization and decreasing environmental expenses. Nevertheless, the impact of fiscal measures, such as green taxation, on driving this shift is not yet thoroughly investigated. This study fills in the knowledge vacuum by examining green taxation and CE in Nigeria, with a view to synthesizing research focus on the potential of harnessing the former to drive capacity building for inclusive sustainable development, through performance of CE. Specifically, it focuses on harnessing green taxation to: promoting innovative product design for durability and repairability; enhancing resource efficiency through lean manufacturing and closed-loop supply chains; extending product life; reducing waste; as well as proposing a framework for leveraging green taxation to support CE and sustainable development in Nigeria. The study adopts secondary data for a desk review of the two concepts in the context of developing nations. This study would therefore give important insights into how green taxes might be used to promote capacity building for sustainable development and CE in Nigeria. It would also offer a framework for stakeholders and policymakers to attain both environmental and economic sustainability.

Keywords: Capacity Building, Circular Economy, Product Lifecycle Management, Resource Efficiency

INTRODUCTION

Concerns regarding the environmental effect of human activities have grown over time. Environmental awareness and knowledge have developed significantly, leading to greater attempts to address and mitigate the harmful effects of human activities on the environment [1]. These worries can be linked to a variety of historical events and developments. The Industrial Revolution (1760 to 1840) marked a shift in human activity, leading to increased urbanization, factory pollution and resource exploitation, thus creating early concern about the environmental effects of unregulated human activity. Reports from the Intergovernmental Panel on Climate Change (IPCC) and activism by environmental organizations and youth movements have highlighted the urgent need to address the impacts of human activities on the environment. The adoption of a Circular Economy (CE) is crucial for the advancement of sustainable development, as it focuses on minimizing waste, optimizing resource utilization and decreasing environmental expenses. Nevertheless, the impact of fiscal measures, such as eco-friendly taxation, on driving this shift is not yet thoroughly investigated. Eco-friendly taxation, which is developed to promote environmentally conscious behaviors and discourage detrimental practices, possesses the potential to act as a catalyst for the implementation of CE. Despite the theoretical advantages it offers, there is a scarcity of empirical data regarding the influence of green taxes on waste reduction, resource efficiency and environmental expenses within the CE framework. This knowledge gap poses a challenge to policymakers and organizations in devising efficient strategies that uphold a sustainable economy.

The depletion of a country's natural capital impedes poverty reduction and long-term development goals. Environmental assets and ecosystem services are essential to human well-being and provide substantial economic and social benefits [2]. The World Bank predicts that if some ecosystem functions fail, the

world economy might lose $US 2.7 trillion by 2030. GDP in low-income nations might fall by 10% each year on average, with bigger losses in countries that rely heavily on ecosystem services. Understanding the worth of a country's environmental assets is critical for long-term development and economic progress. The transition towards a Circular Economy (CE) is therefore considered imperative for the advancement of sustainable development.

Nevertheless, the efficacy of fiscal instruments, including green taxation, in facilitating this transition remains inadequately investigated. Green taxation, formulated to promote environmentally sustainable practices while imposing penalties on detrimental activities, possesses significant potential as an impetus for CE. Despite its theoretical advantages, there exists a paucity of empirical evidence regarding the impacts of green taxes on waste minimization, resource efficiency enhancement and environmental cost reduction within the CE paradigm. This knowledge paucity hinders the capacity of policymakers and businesses to devise and implement effective strategies that support a sustainable economy.

LITERATURE REVIEW

Conceptual Review

The Circular Economy (CE) refers to a sustainable economic model that targets waste minimization and resource efficiency by closing the product lifecycles loop through improved practice of reuse, repair, refurbishment and recycling (4 Rs) [3; 4]. The transition towards a Circular Economy (CE) is therefore considered imperative for the advancement of sustainable development.

Green Taxation (also called ecological taxation or environmental taxation) generally means apportioning a cost reflecting the environmental impact caused by production, use and waste of a certain product, during its entire life cycle [5]. Green taxation can be used as one of the most effective tool in speeding the necessary transition from the environmentally harmful use of fossil fuels to renewable sources of energy, energy efficiency and rapid increase of use of renewable and climate-neutral energies [6]. The green tax models are just one important tool in a necessary range of policy instruments. The increased use of green taxation has shown positive results in some countries through a shift from labor taxation towards pollution or resource-use taxation. Green taxation can lead to technological modernization and a shift in consumer behavior. It can be applied on different levels, from local to international.

Economic theory posits that the imposition of taxes on pollutant emissions is an effective mechanism for mitigating environmental degradation in a cost-efficient manner, as it incentivizes behavioral modifications among firms and households that possess the capacity to diminish their pollution levels at minimal expense [7]. While the original purpose remains, green taxes now also contribute to comprehensive tax restructuring to promote sustainable development, economic growth, job creation and equitable economic relations globally [8]. Green taxes are justified economically, socially and environmentally as they target "bads" rather than "goods."

Environmental taxes present numerous advantages [8]. These include: encouraging environmentally protective behavior; facilitating the achievement of environmental objectives at minimal cost and maximum efficiency; indicating necessary structural economic changes for sustainability by incorporating environmental costs into pricing; promoting innovation and technology development; revenue from environmental taxes can mitigate other taxes, enhancing economic efficiency and reducing distortions; treating pollution as a production cost, thereby ensuring polluters bear the true costs of their actions; and inducing pollution reduction where it is least costly, allowing firms to choose between paying taxes or reducing emissions. Nonetheless, critics assert that green taxes disproportionately burden lower-income individuals. For instance, a household energy tax would elevate heating and lighting costs, making it challenging for low-income households to afford energy-efficient investments. The regressive effect increases if green taxes substitute for income and profit taxes, which many lower-income individuals do not pay [9]. Additionally, critics argue that emission reduction subsidies do not yield the same outcomes as emissions taxes. Such subsidies may enhance the advantages for subsidized groups, potentially increasing the number of polluters while achieving no net reduction in emissions [10].

Sustainable Development (SD), according to the World Commission on Environment and Development [11], refers to “development that meets the needs of the present without compromising the ability of the future generations to meet their own needs”. Ogbonna *et al* (12) opined that it this illustrates that production procedures shouldn't endanger the environment or cause excessive depletion of human and natural resources. As such, sustainability integrates economic, social and environmental concerns. As the process of responsible use and preservation of natural resources for the long-term enhancement of the quality of life for generations to come, sustainable development may thus be viewed as a facilitator for reconciling the demand for industrial and technical progress and advancement with the conservation of nature's resources.

THEORETICAL FRAMEWORK

For this study, the Ecological Modernisation Theory (EMT) is thought to be an appropriate theoretical framework. Joseph Huber established the theoretical framework and presented the idea. The importance of governmental regulations and policies was highlighted by Martin Jänicke. According to the theory, contemporary industrial and economic processes may bring environmental conservation and economic development together rather than putting them in opposition. It highlights how market forces, technical innovation and aggressive environmental legislation can all contribute to sustainable development. Concerning Green Taxation, EMT is in favour of the notion that market-driven tools such as green taxation may encourage companies to embrace more environmentally friendly operations. The theory also implies that technical innovation and changes towards more sustainable business models, which are essential to the idea of a circular economy, can be sparked by legislation. Furthermore, EMT supports the objectives of the circular economy, which separates economic progress from the use of resources and the production of waste. EMT makes the case, in relation to the circular economy, that economic institutions may modernise and become more resource-efficient with the help of environmentally friendly policies. Both the circular economy framework and EMT take a system's thinking stance, seeing environmental issues as linked to social and economic structures.

EMT may assist in explaining how green taxation laws encourage the adoption of circular economy measures, such as cutting waste, improving resource efficiency and encouraging sustainable product design. This is done by connecting green taxes to the results of the circular economy. The theory also offers a framework for evaluating how well green taxes are promoting innovation and the transition to a circular economy and how these results support the sustainability of the economy and the environment.

EMPIRICAL REVIEW

As the severity of global climate change escalates, carbon peak and carbon neutrality have emerged as international imperatives [8]. Green taxation, a crucial fiscal strategy promoting the transition to a green low-carbon economy, demands thorough investigation regarding its efficacy and operational mechanisms. Predominantly, existing research has concentrated on the macroeconomic implications of green taxes, while their influence on regional green growth and innovation remains underexplored. The study sees green taxation in both a broad and narrow sense, highlighting its essence and potential in stimulating regional green progress and innovation. Yang *et al.* (8) used panel data from 30 Chinese provinces between 2004 and 2021 to investigate the precise relationship between green taxes and local green innovation and development. The results show that green taxes considerably increase green innovation and promote green growth in local communities. However, it has a negative effect on area businesses' overall capacity for innovation because of the resource crowding-out effect. This finding highlights the need for a balanced approach in the formulation and application of policy by providing a new viewpoint on the negative impacts of green taxes. According to Brown, *et al.* (13), air pollution, toxic poisoning, climate change and ozone depletion are only a few of the major risks to humankind's future that are mostly caused by the economy's inability to emphasize and compensate for environmental harm. Many nations already have environmental taxes, sometimes known as "green taxes," in some little way. The effects include modification of economic activities, preventing global warming, making the use of new resources more expensive, thereby promoting reuse and recycling. Analysing eight potential green taxes in the USA, the results indicate that green taxes have the potential to both preserve the environment and generate significant income.

Hu and Chen (7) proposed that differentiating tax rates and broadening the scope of environmental protection taxes might reduce emissions of pollutants and promote green growth. According to Sun (14), the green tax system is an essential tool for the economy, especially when it comes to helping pilot areas. László (15) underlined that in order to implement the green policy, green taxes must modify behaviour of both consumer and producer and address activities that damage the climate. According to Wang *et al.* (16), local ecological success will be advanced by the regional adoption of distinct green tax policies. Hafi *et al.* (17) emphasized the necessity of improving cooperation both inside and between tax and environmental regulatory frameworks. They also recommended that green tax techniques be emphasized in order to promote regional ecological development.

Green innovation and regional green development, however, are inseparable. Shen and Zhang (18) found that some green taxes, such as those imposed on transportation, shipping, resources and urban land use, strongly support industrial ecological change, making them an essential instrument for preserving the environment and advancing sustainability. According to Cheng *et al.* (7), green tax policies have a positive effect on the environmental investments made by large polluting companies, especially those that are part of larger corporations. According to Liu *et al.* (19), policies that support clean power technologies and recycle carbon levies may help reduce emissions, boost social welfare and promote economic growth. According to the survey, green taxes become a major force for green innovation both inside businesses and within regions. Therefore, it is reasonable to consider

green taxes as a useful strategy for promoting green innovation. The Porter Hypothesis states that sensible environmental legislation fosters green innovation [20]. Song *et al.* (21) emphasized the importance of green taxes as a means of promoting the development of environmentally friendly products. They also pointed out that further research on environmental legislation and R&D tax incentives are required.

According to Wang *et al.* (16), resource tax reforms greatly support green innovation in resource-intensive industries, with CEO compensation enhancing this impact and business profitability serving as a reinforcing mediator. According to Yu *et al.* (22), a progressive carbon tax with units of measurement motivates businesses to adopt green innovations more successfully than one with a set rate. According to Jiang *et al.* (23), there are two ways that green taxes affect corporate green innovation: first, they provide a positive stimulus, while second, they exhibit a U-shaped dynamic that is initially suppressive but eventually stimulates growth. In order to improve company's ESG (Environmental, Social and Governance) performance and promote green technology innovation and sustainable growth, China implemented an environmental protection tax in 2018. This tax targets corporate pollutant emissions. According to Li (19), the environmental protection tax not only greatly improves ESG performance but also fosters green technological innovation, with the former acting as a moderating factor in the latter's growth. According to geographical variables and company ownership, the research also observes differences in this impact [19]. Using a game-theoretic model, Zhang *et al.* (24) discover that carbon prices encourage businesses to pursue aggressive green innovation initiatives.

Pourkarimi and Hojjat (25) emphasise the importance of green taxes as tools for implementing sustainable technologies. They contend that by reducing manufacturing costs and the cost of non-environmental items, these levies encourage the adoption of environmental technology. According to Zheng *et al.* (24), there is a synergistic relationship between environmental and taxation and business green innovation. According to Wang and Yu (16), externality problems are frequently brought on by the growth of mineral resources. They discovered that pollution reduction and green output are directly affected by the rate of environmental taxation. His findings support a steady increase in environmental tax rates by showing that environmental externalities have a detrimental impact on the invention of green technologies. According to Deng *et al.* (26), environmental levies have stimulated green innovation in highly polluting industries by forcing businesses to raise their R&D expenditure due to rising management expenses. This has led to a rise in green technical innovation.

To improve the effectiveness of environmental regulation and the advancement of green technology innovation, it is crucial to take into consideration the nonlinear effects of tax competition. Green taxation has a significant impact on environmental protection and green technology innovation [26]. According to Johan (27), green taxes create more market space for the advancement of environmentally friendly technology that don't produce pollution. Yu *et al* (22) investigated how technological subsidies and green taxes affected industrial companies' intelligent transformation. He found that making changes to tax laws might stimulate the creation of smart goods and increase business competitiveness [22]. Chen *et al.* (7) concluded by underlining the crucial role that green taxes play in stimulating environmental technology innovation, which has important implications for the growth of the industrial sector, but further incentives are required to support green development.

Critical Success Factors For Green Taxation

According to Koc., *et al.* (28), several critical success factors (CSFs) are identified to be essential for the successful transition to a circular economy (CE). These factors are grouped into seven key action areas:

i) Legislation and Documentation: To direct CE practices in construction, effective rules and appropriate documentation are essential.
ii) Financial: To support the execution of CE activities, sufficient financial resources and incentives are required.
iii) Design: Cutting waste and improving resource efficiency require creative design strategies that support circularity.
iv) External/Stakeholder: Effective CE adoption requires involving stakeholders and encouraging cooperation across different parties in the building value chain.
v) Technological: Using cutting-edge technology can improve the efficacy and efficiency of using CE principles in building.
vi) Internal: To drive the shift to CE, internal organisational reforms and managerial commitment are crucial.
vii) Construction/Production/Waste Management: Achieving circularity requires efficient management of waste and construction processes.
viii) Public awareness and acceptance [29].
ix) Careful planning and execution [30].
x) Syncronising with existing legislations and regulations [29].
xi) Capable of resolving socio-economic inequalities [29].

All things considered, combining these elements can improve the efficacy of green taxation programs throughout the world.

PROPOSED FRAMEWORK/MODEL

Conceptual Model

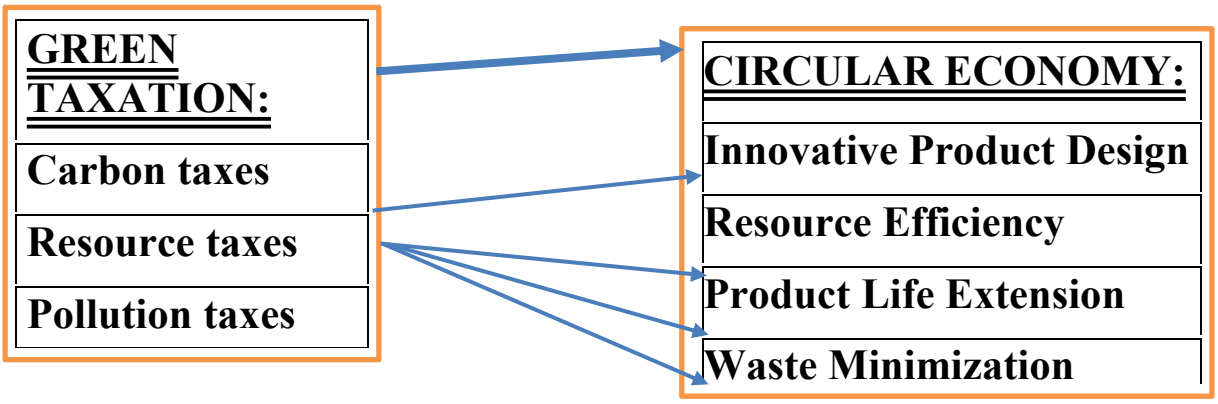

Figure 1: Conceptual Framework
Source: Authors' Conception (2025)

We suggest a framework whereby green taxation is postulated to have effect on transition to circular economy. Circular economy is opined to be proxied by indices like (1) Innovative product design for durability, repairability and upgradability; (2) resource efficiency using lean manufacturing, closed-loop supply chains, energy efficiency and water efficiency; (3) product life extension using maintenance services, repair services, refurbishment programmes and remanufacturing; (4) waste minimization through zero waste to landfill, upcycling, efficient waste management, recycling and material recovery. Green taxation is postulated to compose of major green taxes like Carbon taxes (taxes on GHG emissions usually for fossil fuel usage), resource taxes (levied on the extraction and use of natural resources like minerals and water), as well as pollution taxes (imposed on pollution generating activities like industrial activities).

Econometric Model

CE = {IPD, RE, PLE + WM}
GT = {CT, RT, PT}
CE = f(GT)
CE = *f*(CT, RT, PT)
$CE = \beta_0 + \beta_1 CT + \beta_2 RT = \beta_3 PT + \mu$
Where;

CE = Circular Economy
GT = Green Taxation
IPD = Innovative product design
RE = Resource efficiency
PLE = product life extension
WM = Waste minimization
CT = Carbon taxes
RT = Resource taxes
PT = Pollution taxes

CONCLUSION

This study examined green taxation and CE in Nigeria, with a view to synthesizing research focus on the potential of harnessing the former to drive the performance of the later. Specifically, it focuses on harnessing green taxation to: promoting innovative product design for durability and repairability; enhancing resource efficiency through lean manufacturing and closed-loop supply chains; extending product life; reducing waste; as well as proposing a framework for leveraging green taxation to support CE and sustainable development in Nigeria. The study gives important insights into how green taxes might be used to promote sustainable development and CE in Nigeria. It offers a framework explained with both conceptual and econometric models for stakeholders to have clear understanding of the relationship between the two concepts and for researchers to adopt in researching the effect of green taxation on circular economy in developing economies.

RECOMMENDATION

It is therefore recommended that future studies should use the proposed ideas and models in this study in their future researches, especially in developing countries.

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