An Assessment of Determinant Factors for a Sustainable Green Economy in Nigeria

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Abstract: Green Economy (GE) is a low-carbon, resource-efficient, socially inclusive economy that is fair, efficient, and embraced by all the stakeholders from the leadership, people, and industry, especially those in the techno-economic sectors, to enable synergy of the GE framework whose purpose is to tackle the environmental challenges and deterioration of the ecosystems. The GE concept, its applications, rate of success/failure differs across various countries. Developing countries like Nigeria are striving to transform the economy to a GE that will enhance Sustainable development. However, some factors either hindering and or promote the GE developments. Thus, this research aims to identify and assess the determinant factors (DF) for sustaining a GE in Nigeria to categorize the factors as hindrances/barriers and promoters/drivers of GE. Mono Quantitative method was adopted to collect and analyze the data obtained from a questionnaire survey. The quantitative data was based on the eleven determinant factors for a GE identified in the literature. Quantitative analytical tools like Cronbach Alpha for consistency, Mean Item Score (MIS), Relative Importance Index (RII), and T-test statistics were used to analyze GE factors in Nigeria. The result indicated that six DF promotes and drives GE in Nigeria while five DF hinder the GE development in Nigeria.

1. Introduction

The acknowledgement of environmental challenges and deterioration of this planet ecosystem has led to a global consensus on the need to adopt eco and environment-friendly concepts as corrective and proactive measures to enable the sustainability of human endeavors in achieving livelihoods with little or no harm to the environment. Several studies and reports [1]–[6] have emphasized the need for global uniformity in tackling environmental challenges that will enable human-environment harmony; that borders on balanced ecosystems, mitigating climate change, sustainable built environment (BE) while ensuring the sustainability of socio-economic and socio-environmental development of the humans on the earth. Altogether, these have led to the formulation and adoption of the seventeen sustainable development goals (SDGs) by the UN general assembly in 2015. However, to achieve sustainability in the business, economic, and built environment without hindering or impeding the social and economic development (SED) of the human race, the green economy (GE) concept was ushered to promote development.

GE promotes efforts of reducing ecological, environmental risks and scarcities with the sole objective of sustainable development (SD) without damaging the ecosystem and the environment[7], [8]. GE is a resilient economy approach and concept that provides a better quality of life for all within the earth's ecological limits [9]; GE maximizes the value and growth across the whole economy while managing natural assets sustainably[10]. GE is a socially inclusive, resource-efficient, and low carbon
concept of development driven by the growth of income through employment driven by public and private investment in economic activities, green assets, and infrastructure that reduces carbon emissions and pollution, which enhances energy and resource efficiency that ultimately prevent loss of biodiversity and ecosystem services for humanity [11]. GE refers to the whole economy becoming environmentally sustainable, not just a few sectors traditionally associated with the production of environmental goods and services, such as renewable energy and other clean technologies.

The 2011 UNEP GE Report argues "that for an economy to be green, it must be fair and efficient; the Fairness implies that countries should recognize the level of equity dimensions from the global standpoint, by assuring a just and fair transition to a low-carbon, resource-efficient, and socially inclusive economy"[12]. As such, GE that is deemed inclusive improves human well-being with social equity while reducing environmental risks and resource scarcities[13]. GE is an alternative to the present dominant economic model that exacerbates inequalities, encourages resource wastages leading to scarcities, generates widespread threats to human health, and degrades the environment [13]. It implies that GE is closely related to ecological economics but has a more politically applied focus[7], [8]. Hence, UNEP's initial promotion of GE concepts to governments and policymakers whose influence reaches all sectors and industries.

A workable GE may be less complicated, less difficult with few challenges to some developed countries, but it is opposite to developing countries like Nigeria. The Global Green Economy Index (GGEI) report that Measures countries' national performances in the green economy ranked Nigeria as 53rd among 130 countries in 2016-2018, while the 2019/2020 reports ranked Nigeria 56th globally and 19th in Africa, despite being the largest economy in Africa. This put Nigeria's GGEI performance very low as it indicates that Nigeria's GE strives did not improve. These were determined by some factors that may drive/promote or hinder and impede its efforts toward GE. Thus, this research aims to identify and examine the determinant factors (DF) for sustaining a GE in Nigeria and categorizing the factors as hindrances/barriers and or promoters/drivers for GE.

2. Sustainable Development and Nigeria's Green Economy: Determinant Factors (DF)

The GE concept has emerged as a strategic priority for many concerned countries. By transforming their respective economies into drivers of sustainability, these countries positioned themselves to tackle environmental challenges by taking on the significant challenges of this century, from rapid urbanization and resource scarcity to climate change and economic volatility that affects the global harmony[13]. GE concepts require buy-in from major stakeholders like the government, industry leaders, industry experts, academicians, and NGOs to achieve GE objectives. Altogether, these require GE policies, targets, and specific, measurable, achievable, realistic, and timely (SMART) goals. The formulation of such GE policies, targets, and goals requires all stakeholders' inputs to be effective[14]–[18]. A reliable GE performance is subject to independent evaluation and assessments by organizations like the Global Green Economy Index (GGEI) that measures country members' GE performances[19]–[21]. Besides, measuring the GE performance of a country enables the use and assessment of all green information. The strive for cleaner production by industries; the level of sustainable consumption; residential and industrial waste in a country are significant in its GE rating GE[14], [17], [22]–[25].

Nigeria is located in West Africa, with about 200million and about $500billion, making it a country to reckon with in Africa. Nigeria is at the forefront of planning to move to a sustainable future, but its economy is deemed mono-economic due to its heavy reliance on crude oil and natural gas exports [26], [27]. As such, Nigeria needs to diversify and transform the economy by adopting GE concepts to attain sustainability and achieve the 17 SGG through adequate infrastructure (Roads, Rail, Power, ICT, etc.), SDGs are in harmony with the environment[4]. The country suffers from infrastructural deficits that hamper its socio-economic and socio-environmental development[3], [4], [28]. Despite several statutory guidelines and codes, there is no uniformity in green assessment standards and enforcements as most activities within the built environment[6]. Infrastructural development projects (IDPs) need secured and sustainable funding that sustains development projects from initiation to completion and uses; that will
drive green and balanced growth of the built environment in tandem with the policies that encompass social, environmental, and economic aspects of the physical and built environment.

GE requires adequate funding to finance green projects and developments sustainably. Sustainable Finance (SF) for infrastructure is a means to deliver infrastructural development projects. Such projects must include the sustainable objectives within projects, business value creation, and risk management process that encompasses environmental, social, economic, and governance (ESG) factors[29][31]; it combines environmentalism and maximizing sustainable growth[32]; SF considers socially responsible investments by integrating social and environmental considerations in financial decisions and performance[33]. However, developing countries like Nigeria require international aids, collaborations, and Foreign Direct Investments (FDI) to execute some aspects of projects needed to sustain a GE. These were supported by globalization, which allows cross-border investments and developments.

Nigeria has also developed its green bond (GB) to raise funds to finance climate and environmental-related projects. Nigeria's GB requires compliance with the latest green bond framework and rules[34]. This GB performance will boost Nigeria's green policy drive and achievement of GE that will set a strong precedent and motivation for other African sovereigns to follow[35]. Achieving a realistic GE requires a country's leadership and political will to enforce and ensure GE policies' compliance. These will be further supported by synergy in research and development through education/academia and industry collaborations for GE concepts, products, and technology applicable to the people.

Summarily put, the following factors are deemed influential and can determine sustainable development within a GE; such factors are SMART green economy policy and framework; Leadership and political will; stakeholders perception; present and future infrastructural outlook; Sustainable finance, FDI, International aids & Collaboration for GE. Also, Green Bond Performance; Industry adoption for Clean Production; Sustainable consumption; Local Capacity and Assimilation; Socio-economic Pressures & Development; Synergy of Research and Development for GE. These eleven determinant factors for a GE identified were the research questionnaire's backbone for the subsequent data analyses. They paved the way for the formulation of the research hypothesis, stated below.

- **Ho**: The factors determining the development and sustaining of a GE in Nigeria's Built Environment are not significant.

3. **Research Methods**

Mono Quantitative Method and design based on a questionnaire survey was adopted in this study to collect and analyze the data. The quantitative data was based on the eleven determinant factors for a GE identified in the literature. The questionnaire and responses were structured based on a 5-point Likert scale; distributed using a simple random technique; Krejcie & Morgan's [36] table was used to determine the sample size which fixes 384 minimum sample size for a population of one million. Quantitative analytical tools like Cronbach Alpha for consistency, Mean Item Score (MIS), Relative Importance Index (RII), assessments, and T-test statistics to test the significance of such factors were used to analyze the determinant factors for a GE in Nigeria.

4. **Analyses, Discussions, and Limitations**

The questionnaire survey enabled the distribution of 650 number questionnaires, of which 62%, that is, 403 number of the questionnaire were returned and analyzed while 38% or 247 number questionnaires were nonresponsive. From the 403 questionnaires, the public sector's responses comprise 48% (312 questionnaires), while the Private sector constitutes 52% (338 number questionnaires). Cronbach's alpha test computed was 0.89, which is very good for the internal consistency of scores and data reliability. Mean Item Score (MIS), and Relative Importance Index (RII) was used to assess the data obtained, as shown in Table 1 below, while the statistical significance of the factors was computed in table 2 below.
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Leadership and Political will to enact, enforce and ensure compliance of the Green Bond and impact its ultimate performance across various sectors of the economy, thereby boosting SD in Nigeria. The Leadership and Political will to enact, ensure and ensure compliance with GE concepts, goals, targets, and

Table 1. Determinant Factors (DF) for Nigeria's Green Economy

| S/N | Determinant Factors for GE | MIS | Remark            | RII | Ranking |
|-----|---------------------------|-----|-------------------|-----|---------|
| DF1 | SMART GE Policy and Framework | 2.55 | Moderate Impact | 0.51 | 8th     |
| DF2 | Leadership and Political will | 2.37 | Low Impact      | 0.47 | 9th     |
| DF3 | Stakeholder’s Perceptions | 3.86 | Strong Impact   | 0.77 | 5th     |
| DF4 | Present and Future Infrastructure outlook | 4.60 | Very Strong Impact | 0.92 | 1st     |
| DF5 | Sustainable finance, FDI, International aids & Collaboration for GE | 4.53 | Very Strong Impact | 0.91 | 2nd     |
| DF6 | Green Bond Performance | 3.29 | Moderate Impact | 0.66 | 6th     |
| DF7 | Industry adoption for Cleaner Production | 1.91 | Low Impact      | 0.38 | 10th    |
| DF8 | Sustainable Consumption | 4.21 | Strong Impact   | 0.84 | 3rd     |
| DF9 | Local Capacity and Assimilation | 3.19 | Moderate Impact | 0.64 | 7th     |
| DF10 | Socio-economic Pressures & Rate of Development | 4.10 | Very Strong Impact | 0.82 | 4th     |
| DF11 | A synergy of Research and Development for GE | 1.55 | Low Impact      | 0.31 | 11th    |

Source: Authors' 2021 data assessments.

Table 2. One-Sample T-test Statistics for Significance

| One-Sample T-test Statistics | Determinant Factors (DF) for Green Economy in Nigeria |
|------------------------------|--------------------------------------------------------|
| N                            | Mean | Std. Deviation | Std. Error Mean | TOS alpha | Tail | P-value |
|------------------------------|------|----------------|-----------------|-----------|------|---------|
| Test Value = 0               |      |                |                 |           |      |         |
|                              | 11   | 3.2878 | 1.068 | 0.323 | 0.05 | 1       | 6.5467E-07 |
| t                            | 10.2135 | 10 | 0.0000 | 1.8125 | 2.5694 | 4.0051 | Yes |

Source: Authors' 2021 statistical computations.

The statistical computations in Table 2 above show that the GE determinant factors (DF1 to DF11) were very significant in influencing and affecting the GE in Nigeria. The assessments in Table 1 show that three factors have a strong impact on GE; two factors have strong impacts; three factors have a moderate impact; three factors have a low impact on GE development in Nigeria's efforts for Sustainable development. The top-ranked factors were Present and Future Infrastructure outlook -1st; Sustainable finance, FDI, International aids & Collaboration for GE -2nd; Sustainable consumption -3rd; and Socio-economic Pressures & Rate of Development -4th. The middle-ranked factors were Stakeholder’s Perceptions -5th; Green Bond Performance -6th; Local Capacity and Assimilation -7th; SMART GE Policy and Framework -8th. The lowest-ranked factors were Leadership and Political will -9th; Industry adoption for Clean Production -10th; Synergy of Research and Development for GE -11th.

The implication of such assessments indicates that Nigeria's present and future infrastructural outlook is the most crucial factor that will drive Nigeria's GE. Such deficits have affected the GE developments that bore down to funding, and sustainable financing for such projects hinders such a factor. Nigeria's primary income exacerbates SD project financing from oil and gas, mainly affected by shocks and unstable prices globally. This has forced Nigeria to look for ways to attract FDI, seek International aids & Collaboration to drive sustainable growth and GE. Such developments will enable sustainable consumption within its population, which is growing fast. Every population growth generates socio-economic pressures on the government to devise strategies that will accelerate development, which should be structured in a green concept to tackle socio-environment-economic challenges in this century.

GE concept requires SMART goals and targets arising from effective policies and a framework inclusive of all the stakeholders to avoid divergent perceptions of success/failure criteria for the concepts. These perceptions play a more significant role in accepting and assimilating the GE concept at the micro and local levels in various capacities and will push for the acceptance of the Green Bond and impact its ultimate performance across various sectors of the economy, thereby boosting SD in Nigeria. The Leadership and Political will to enact, ensure and ensure compliance with GE concepts, goals, targets,
and SD policies is very challenging for a developing country like Nigeria where socio-economic growth is prioritized over socio-environmental growth. Due to its economic challenges, these were linked to its over-reliance on crude oil and gas exportation. The effectiveness or lack thereof for the political will to ensure GE also impacts Industry adoption for Cleaner Production and the Synergy of Research and Development between the Academia and industry, which goes hand-in-hand with the overall movement to GE. Any SD shifts to GE require synergy within all the industries, from financing to cleaner production and sustainable consumption that promotes and prioritizes environmental sustainability within the business and the built environment.

The overall assessments indicated that the determinant factors (for a GE) that will enable SD were either barriers/hindrances or promoters/drivers to GE developments. The barriers/hindrances were the factors (DF1,2,7,9,11) whose impacts lead to socio-economic development without prioritizing the ecosystem's environmental sustainability and challenges. In contrast, the promoters/drivers for GE were those factors (DF3,4,5,6,8,10) whose impacts enable SD (including socio-economic-environment developments) within a green economic framework that prioritizes environmental sustainability. Figure 1 below shows the categorization of the factors (DF1 to 11).

![Figure 1. GE Determinant Factors (DF) categorization into Barriers/Hindrances and Promoters/Drivers](image)

Source: Authors' 2021.

5. Conclusions

This study identified and assessed eleven factors that determine how the GE concept is performing in Nigeria, and the results show that the 11nr. Factors were significant in determining GE in Nigeria. However, their impacts vary and indicate that some factors were barriers/hindrances to GE, while others were promoters/drivers for GE in Nigeria. The barriers and hindrances to GE in Nigeria were weaknesses and or ineffectiveness of SMART GE Policy and Framework; Leadership and Political will; Industry adoption for Cleaner Production; Local Capacity and Assimilation; Synergy of Research & Development for GE. The determinant factors (DF) that promote and drive the GE in Nigeria were Stakeholder's Perceptions; Present and Future Infrastructure outlook; Sustainable finance, FDI, International aids & Collaboration for GE; Green Bond Performance; Sustainable Consumption; Socio-economic Pressures and Rate of Development. The two categories of DFs, the promoters/drivers and those that are barriers/hindrances for GE in Nigeria, are significant. It implies that Nigeria's GE development and its efforts towards achieving SDGs in tandem with its socio-economic-environmental development (SEED) heavily depend on the magnitude of such DF's impact. Such factors, especially those related to the government, industry, and the people, coupled with their ability to be dynamic, innovative, green-embracing, and sensitive to the environment, determine GE and its aggregate, synergistic development in Nigeria's sectors.

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