

**HIGHER EDUCATION: A CATALYST FOR SUSTAINABLE  
DEVELOPMENT OF GREEN ECONOMY**

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<b>Keywords:</b> <i>Higher education, sustainable development, green economy</i>	<b>Abstract:</b> <i>Higher education is globally acknowledged as pivotal for the development of manpower needs of society. It is the fulcrum through which human resources are nurtured for a sustainable green economy. The green economy stresses the optimal utilization of natural resources most effectively and efficiently. This study discusses higher education as a catalyst for the sustainable development of a green economy which is a framework for the eradication of poverty, and the reduction of environmental risks and ecological scarcities. The paper enumerates the role of higher education in promoting a green economy through research, innovation and leadership among others. However, no prioritized green economy ethos in the pedagogical content and inadequate professional experts in the use of green technology are factors that inhibit the attainment of sustainable development of a green economy. The study asserts that for the sustainable development of green economy, there is a need to integrate green technology in teaching, research and community services. The paper suggests that for the attainment of sustainable development of a green economy, there should be a collaboration of academia, industry, government, civil society and the mass media in the propagation of sustainable thinking, practices and green behavioural development needed to transmit to a sustainable future.</i>
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**Introduction**

Globally, education is adjudged as the fulcrum for the social transmission of humans and society. Education is the leeway to disentangle oneself from mental enslavement, and emancipation and an enabler for civil participation and environmentally friendly activities. Interestingly higher education provides platforms where skills, knowledge and capabilities are acquired. Higher education is the third level of education where higher certificates are obtained after post-secondary education. It

consists of universities, inter-universities centres, colleges of education and other specialized education centres like schools of health and technology and National Teacher Institutions FRN (2014). Higher education institutions serve as crucial hubs for knowledge creation, dissemination, and application. They have the unique capacity to shape mindsets, cultivate skills, and foster innovation among students, faculty, and communities. Higher education becomes pivotal for the sustainable development of humans and

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society, especially the university education. Sustainable development strives to balance economic growth, social well-being, and environmental protection. Sustainable development ensures that man's activities do not destroy the environment in the process of harnessing resources (Wordu, 2023b).

It is pertinent to mention that various scholars have explored the quadruple helix model to recognize the urgent need for preserving the environment and adopting sustainable practices that prevent environmental degradation while promoting economic growth. The aim is to ensure that human activities do not harm the environment and its inhabitants in the pursuit of survival. The onus tasks of preserving the environment, promoting economic growth and ensuring sustainable practices are herculean tasks that higher education needs to achieve.

Interestingly, higher education achieves these goals through the dissemination of existing knowledge through teaching and the discovery of new knowledge through research and engagement in community activities. It, therefore seems that higher education's contribution to the development of a sustainable development of green economy is abysmally low. This has prompted the following research questions: What is the role of higher education in the development of green economy? How effective have they performed their role? What are the challenges? Is it because of a lack of framework for sustainable policy? Are there financial constraints in the use of renewable energy or does it have to do with expertise skills? It is against this backdrop that the researcher

seeks to explore the role of higher education in the development of a green economy and the various challenges that inhibit the attainment of a green economy in Nigeria.

The thrust of the paper is to investigate the pivotal role of higher education institutions in driving sustainable development towards a green economy focusing on their potential to educate, innovate and transform societies. The study aims to understand the nexus between higher education, sustainable development, and green economy, and to identify the challenges that hinder the attainment of sustainable green economy. To achieve this the research adopted philosophical research methods. According to Zukaukas et al. (2018), Philosophical research involves a systematic attempt to study the consistency and relationship of ideas and knowledge to provide solutions to societal problems. The philosophical research provides a framework for a critical analysis of concepts under investigation for better understanding and provision of solutions to societal problems.

The methods for data collection are secondary data mainly on the existing literature, journals, textbooks and other print media. The study is interested in Nigerian higher education at times called tertiary education which consists of universities and inter universities and other specialized educational institutions that award higher certificates after secondary education. The paper will contribute to the repository of knowledge and the trajectory of the development of sustainable development of green economy. This paper is hinged on the Quintuple Helix Innovation Model QHIM, which is an extension

of the Triple Helix Model which was originally proposed by Etzkowitz and Leydesdorff in 1998. The Triple Helix Model describes the interactions and relationships between academia, industry and government in fostering innovation within a knowledge-based economy. QHIM extended by adding two additional helices namely the civil society and media-basic public. (Etzkowitz and Leydesdorff, 2000; Carayannis and Campbell, 2010; Barcellos-Paula et al, 2021). The QHIM in the integration of five helices to sustainable development suggests that innovations emerge from interactions and collaborations among these five helices namely academia, industry, government, civil society and mass media in solving complex societal challenges and in fostering a sustainable green economy. The model is apt for a sustainable green economy because it recognizes that a sustainable development economy requires the collaboration of not only the academia, industry and government but also civil society and the mass media, In the context of sustainability civil society, plays a crucial role in advocating for environmental protection, promoting social justice and holding other stakeholders accountable for their actions. The media through different platforms help to raise awareness about environmental issues and disseminate information about the green economy, and sustainable practices. The paper is structured after the introduction clarification of related concepts, nexus and benefits of higher education, sustainable development and green economy, the role of higher education in the development

of green economy, inhibitors of green economy conclusion and suggestions.

### **Concept of Higher Education**

Higher education, sustainable development, and green economy are three significant concepts that have gained considerable attention in recent years. It is therefore incumbent to explore various definitions and explanations provided by scholars and practitioners. Higher education is a former and third level of education after the completion of post-secondary education that is saddled with the onus tasks of providing quality education, skills and knowledge that instil virtues, positive values and enablers for political participation and civic responsibility. Higher education is where higher certificates are acquired for the development of higher-level manpower needed in society (Wordu, 2023a). Asaju (2023), avers that higher education does not only award certificates that benefit the individuals but also the community. Thus, higher education institutions play a critical role in shaping the knowledge, skills, and attitudes of individuals towards sustainable development practices.

These institutions can provide students with the necessary knowledge and skills to become agents of change in promoting sustainable development practices. Higher education is the communication vehicle that serves as the source of research and innovation and facilitates sustainable mindset and solutions (Zaleniene and Pereica, 2021). The authors further opined that higher education also promotes collaboration across disciplines which is

essential for addressing complex environmental issues.

It is enlightening to emphasise that the statutory role of tertiary educational institutions is teaching, research, and innovation. Through these processes, knowledge is created and disseminated that leads to a sustainable mindset and sustainable development (Bechin, et al, 2021). Globally, higher education institutions can serve as catalysts for sustainable development by educating, innovating, and transforming societies towards a green economy. These institutions have the unique capacity to shape mindsets, cultivate skills, and foster innovation among students, faculty, and communities.

### **Sustainable Development**

Sustainable development is a trending concept among scholars and practitioners in education and environmentalism. It has elicited various definitions, and it behooves the researcher to proffer various definitions and explanations given by experts. The development consists of all spheres of change that result in total eradication of poverty, hunger, diseases, unemployment and inequality, and all types of human slavery (Wordu, 2023c). In the same vein, Abeh (2017), opined that development means the attainment of all standards of living for all people and basic things that make lives worth living (Abeh, 2017). The basic facilities that make life worth living are but not limited to good health facilities, affordable housing facilities, better and affordable education and a living wage.

Sustain means anything that can retain its value over time (Wordu et al, 2023). Sustainability

means long-lasting without causing harm either to individuals or the environment. Although the concept of sustainable development elicited various definitions in the past but emerged prominently in the 1987 Brundland Report also known as “Our Common Future” as “development that meets the needs of the present generation without compromising the needs of future generation to meet their own needs” (World Commission on Environment and development, 1987 p43). Sustainable development as a trending concept ensures that human actions intentionally or unintentionally should not rub negatively on the environment to cause natural disasters, climate change and quality of life. Sustainable development practices recognize the interconnectedness of social, economic, and environmental systems and aim to promote balance and harmony among these systems.

It stresses a harmonious relationship among the ecosystem, the resources and individuals. It entails that sustainable development is the development of humans in all strata of life, eradicating poverty, and inequality, and providing all that makes living worthwhile. It involves the process of harnessing the resources in a manner that the ecosystem is not destroyed to enable the future generation optimal utilize the resources. From the following definitions, for development to be sustainable it must consider the well-being of individuals by providing basic infrastructures, health facilities, and clean water and provide the basic needs of individuals. Sustainable development abhors development that explores the resources and destroys the

environment. Higher education becomes the vehicle through research to provide the necessary mindset and technology that will be environmentally friendly. To achieve sustainable development higher education administrators should integrate digital tools into educational content that will encourage a technological environment friendly.

### **The Green Economy**

The concept of a green economy has gained significant attention worldwide following the constant and excessive use of natural resources in the most ineffective ways. In 1989, a group of environmental economists commissioned a report for the UK government that introduced the concept of the green economy. This report is considered the origin of the green economy concept. The essence of the green economy is to promote sustainable development practices by reducing environmental risks and ecological scarcities and, at the same time promote economic growth and social inclusiveness (UNDP, 2011).

The inception of the green economy concept and ineffective ways of using natural resources have elicited international condemnation of the effect on the environment. This has led to different international initiatives, in 2008 the UNDP developed an initiative to provide analysis and policies to support investment in green sectors and environmentally friendly industries. (UNEP, 2008). In 2012 the United Nations Conference on Sustainable Development also known as Rio+20 was organized in Rio de Janeiro, Brazil.

The essence of the conference was how to reduce poverty, enhance social equality and ensure environmental protection (UNCSD, 2012). The summit was aimed at recognizing the economic and environmental goals of the global community (Wikipedia). The essence of the various summits is the affirmation of the natural resources and the usage should be effective, efficient, environmentally sustainable and equitable. Economic growth and development, should reduce environmental impact and focus on promoting social equity, economic growth and environmental sustainability.

A green economy aims to reduce pollution and carbon emissions by efficiently harnessing natural resources and aspire to growth in income and job opportunities that must be driven by private and public investments (Al-Taai, 2021). It is pertinent to stress that higher education becomes the fulcrum for the training of individuals to become leaders and innovators in sustainability practice.

### **The Nexus and Benefits of Higher Education, Sustainable Development and Green Economy.**

Nigeria is a country with a growing population with an estimated population of over two hundred million. According to Wikipedia the second largest economy in Africa with 2/3 of oil revenue contributing to the economy. Interestingly, Nigeria is endowed with an abundance of natural resources like iron, coal, natural gas, iron ore, gypsum, bentonite and barite among others. Unfortunately, the ineffective and inefficient ways of exploiting these natural resources have led to negative

impacts on the environment, such as pollution, climate change and erosion among others. The continued unsustainable mining of oil in the Niger Delta, Gold in Northern Nigeria, overgrazing and deforestation has not only engendered humanity but made it very difficult to reverse those negative effects it has on the economy.

The degradation of the Niger Delta region, caused by oil spills and gas flaring, has led to the loss of biodiversity, contamination of water sources, and displacement of communities. The country's heavy reliance on fossil fuels has also contributed to air pollution, which is a leading cause of respiratory illnesses in urban areas. Fletcher (2022), citing WHO avers that air pollution from fine particulate matter generated by both fossil fuels and biomass burning causes about 7 million deaths a year. It has lowered the quality of life through the destruction of means of livelihood leading to an increase in poverty, unemployment and social inequality.

It is instructive to state that to halt these unwholesome practices there is a need to develop a new economy with green growth and sustainable development based on digitalization and technologies (Cheaben et al, 2022). Higher education institutions have a significant role in promoting the green economy by training individuals to become leaders and innovators in sustainability practices. They can contribute to the development of the green economy by incorporating sustainability principles into their curriculum, conducting research on environmentally friendly technologies and practices, and forming partnerships with

businesses and organizations that are committed to sustainability. Izuagba et al, (2017) opined that the 17 SDGs attainment is hinged on NO 4 “ensure inclusive and equitable quality education and promote life-long learning opportunities for all” identified education not only as a part of the definition of sustainable development but also a means of achieving it.

Again, the ingenuity of education especially the higher education that is saddled with the responsibility to nurture potentials and develop to stardom comes into play. Higher education is pivotal to the dissemination of information and discovery of knowledge through teaching and research. It is the teacher who embeds the right attitude, capability, knowledge and mindset that encourage sustainability habits. Corpuz et al, (2022), opined that schools are strategic avenues for the development of students’ attitudes through environmental education, climate advocacy, learning positive attitudes and promotion of green facilities. The integration of the educational environment into the curriculum will serve as a platform that will enable students to environmental action, mindfulness, sustainable lifestyles and promotion of green facilities (Climate Change Commission, 2011).

Higher education institutions in Nigeria have a significant role to play in promoting a green economy by integrating sustainability principles into their curriculum. By educating students about the significance of environmental preservation and resource efficiency, universities and colleges can provide courses and programs in environmental science, renewable energy, and sustainable development. This will equip

students with the knowledge and skills they need to address environmental challenges.

The development of a green economy in Nigeria presents a great opportunity to tackle environmental challenges while also promoting economic growth and social equity. The onus is on the managers of higher education to integrate and invest in renewable energy transmitting from fossil fuels to renewable energy like solar, wind and hydroelectric power. Nigeria can reduce its dependence on fossil fuels and mitigate greenhouse gas emissions. Also, adaptation of energy efficiency through the promotion of smart energy management systems, energy appliances and green building designs.

The benefits of the adoption of the green economy are the reduction in greenhouse emissions, investment in energy efficiency and the use of renewable natural resources, reduction in the atmospheric concentration of carbon dioxide and importantly the sustainable use of the eco-system. (Khanfar, 2014). The multiplier effect will lead to an increase in the soil fertility, availability of clean water and increase in agriculture yield. Lavirnenko et al (2019), opined that a green economy is an economic growth that does not expose people to environmental risks or ecological scarcities but leads to improvement in humans and prevents biodiversity loss and degradation.

Additionally, promoting sustainable agriculture practices can enhance food security, safeguard natural resources, and create job opportunities for rural communities. Sustainable agriculture is farming in environmentally responsible ways,

which will help to preserve natural resources, promote social equity, high yield, and healthier products and ensure economic profitability (The Sun Media Foundation, 2023). This is the pillar in which sustainable development and green economy are anchored. Green economy is that the natural resources should be used in the most effective ways without harming the environment. Sustainable development is a development that takes cognizance of the environment, resources and people. The process of exploring resources should not undermine the opportunity for a future generation to use them. Higher education should adopt campus initiatives that encourage energy efficiency, waste management and recycling of waste materials and maintain a green campus environment (Pal, 2023). Thus, education especially higher education is at the crux of the matter, higher educational institutions can collaborate with government agencies, businesses, and non-profit organizations to research green technologies and practices.

### **Role of Higher Education in the Development of a Green Economy**

The traditional role of higher education is the integration of the capacity and knowledge that will shape the workforce and drive the social transformation of society. The call for higher education to drive and address environmental issues and sustainable green economy practices is increasingly significant in a knowledge-driven economy. Higher education becomes a crucial platform for the transition towards a sustainable and green economy through the following:

#### **Curriculum Integration.**

Higher education by incorporating sustainability-focused courses and programmes into curricula universities equip students with the knowledge and skills necessary to address environmental challenges (Erickson, 2016). The integration of sustainable technology into pedagogical content will prepare the students for innovations and implement sustainable practices that will enhance the green economy. In the same vein, Stough et al (2018), aver that higher education can significantly foster sustainable practice through its double function, firstly, creating and disseminating knowledge to society through teaching and research. Secondly by preparing students for their future role in society.

### **Research and Innovations**

Globally higher education is acknowledged as the hub for research and innovation. For a sustainable green economy, higher education should drive the advancement of green technology, sustainable practices and policy solutions (Lozano et al, 2013). The onus is on the managers of tertiary education to integrate and train faculty members to research the development of renewable energy sources and energy efficiency. The lecturers must develop strategies to mitigate environmental degradation for the effective attainment of a sustainable green economy.

### **Community Engagement**

The tripartite functions of higher education are teaching, research and community engagement. Through community engagement the administrator of higher education partners with the local communities, and industries to promote

sustainable practices. In the process also through outreach programmes extend their expertise to address environmental challenges (Wiek et al., 2011). So, the adoption of multi-stakeholders will accelerate sustainable practices and production patterns that will enhance the green economy.

### **Leadership and Advocacy**

Lectures are highly respected in society; therefore, the onus is on the principal officers and faculty members through their actions and programmes to integrate renewable and efficient energy into their day-to-day activities. University communities through advocacy initiate policies that engender sustainability and the transition towards a green economy (Barth et al., 2019).

### **Inhibitors of Green Economy**

The prime function of higher education is shaping future generations through the dissemination of existing and discovering new knowledge through teaching and research. It is also within the purview of higher education to introduce innovations that will aid sustainable practices. However, there are numerous challenges inhibiting tertiary education as catalyzers in the drive to a green economy.

- Many tertiary educations have not integrated or prioritized green economy into the educational content and thereby unable to build graduates with the necessary skills and technology needed in a green economy.
- The transition from the black economy to the green economy requires the use of modern technology to ensure a smooth transition, but unfortunately, there is a lack of professionals with the prerequisite knowledge and skills to impart to the students. The academic



environment lacks the necessary ambience that will enhance the green economy.

- Higher education lacks the finances and the political will to implement a green economy in tertiary education. Therefore, lacks the resources and training needed for a green economy. Financial constraints make higher education unable to provide adequate finance to establish research centres, and offer scholarships and innovative centres that will focus on the sustainability of a green economy. Otieno (2021), observed that curricula have not been developed to provide green technologies and more importantly the students are not familiar with the concept of the green economy. The author further states that the curriculum is theoretical-based and not competence-based to enhance a smooth transition towards green economic practices.

### **Conclusion**

Nigeria is one of the leading economies in Africa with abundant human and natural resources. Despite the resources, the country is faced with numerous socioeconomic problems namely poverty, unemployment, low standard of living, poor health facilities and inequality. The country has witnessed inefficient ways of harnessing natural resources that led to pollution of the environment and biodiversity loss. Oil exploration and deforestation have led to unsustainable development and there is a need to harness natural resources without destroying the environment, society and economics. Sustainable development must ensure that the resources are harnessed without destroying the ability of the generation to optimal utilization of

resources. By so doing, the resources must be efficiently, effectively and environmentally equitably utilized. The usage of the resources should focus on promoting social equity, economic growth and environmental sustainability. This is the crux of a green economy, providing development that reduces pollution and carbon emissions by efficiently harnessing natural resources that are driven by private and public investments. To achieve this, the quintuple helix innovation model was adopted taking cognizance that for the attainment of a sustainable green economy, there is a need for collaboration between academia, industry, government, civil society and mass media. Each of the helices plays a prominent role in sensitizing the public on the importance of a sustainable mindset and practices.

It is crucial to recognize the interconnection between higher education, sustainable development, and green economy. This recognition is essential in promoting sustainable development practices and in informing strategic interventions, policies, and practices that aim to encourage environmental friendliness and social inclusion. By understanding how these three elements are linked to one another, we can work towards creating a more sustainable future for ourselves and future generations.

### **Suggestions.**

The following suggestions are advanced to ensure that Nigeria's economy is moved from the black economy to the green economy.

- i) There should be a synergy between the managers of tertiary educational institutions, the government, industry, civil

society and mass media in the propagation of sustainable thinking, practices and green behavioural development needed to transmit to a sustainable future.

- ii) There should be an interdisciplinary collaboration between educational institutions, and policymakers in the adoption of pedagogical content and policy reform in education that will enhance the green economy.
- iii) Nigerian educational institutions should partner with international educational institutions in research for technological innovation and knowledge that will

enhance the green economy. Technology is pivotal in the attainment of a green economy and Nigerians need to diversify the economy in sustainable agriculture and end the over-reliance on oil and gas sectors.

- iv) Tertiary education should be financially strengthened to be the hub for research and innovation in Nigeria. A platform for creating awareness about sustainability culture, practices, training of manpower needs on the use of environmentally friendly technology and the integration of technology in the curriculum.

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