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Efforts to address sustainable development by researchers in Nigeria

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ABSTRACT

This special issue covers efforts to address sustainable development by researchers in Nigeria. It provides a focus on the work being done in that country on and around sustainable development. The articles comprising the special issue clearly describe the significance and importance of the work. The special issue is intended in part to help researchers from Nigeria to disseminate their work around the world, and also to help inform all interested parties of the work being done in Nigeria in support of sustainable development.

Keywords: sustainable development, Nigeria, sustainable development goals, economic sustainability, environmental sustainability, social sustainability

INTRODUCTION

Much effort is being expended in Nigeria on research related to sustainable development and on initiatives pertaining to sustainable development measures. This is evident from the literature and discussions with researchers in the country. Nigeria is a major oil producing country, and that shapes much of its activity.

Growing interest has been expressed by researchers in Nigeria to present the results of their research on sustainable development and related topics such as progress towards the Sustainable Development Goals of the United Nations, in the *European Journal of Sustainable Development Research*, as a means of disseminating the results and outcomes of the work and informing the broader community of these activities. The Sustainable Development Goals are comprised of 17 interconnected goals that were developed and adopted to help address the major development challenges faced by countries, communities and people around the world, including those in Nigeria. Nigeria is a state member of the United Nations.

Actions taken in Nigeria in support of sustainable development are particularly important since, despite the fact that Nigeria has natural resources and a rich culture, the country has numerous challenges (Oweibia et al., 2024). These include socio-economic disparities and much poverty, environmental and health issues, as well as corruption and political instability. Nigeria, with an index of 54.6, ranked only 146th out of 167 countries in the 2024 sustainable development index (Sachs et al., 2024).

As founding Editor in Chief of the *European Journal of Sustainable Development Research*, I feel the journal provides a highly suitable platform for this desire for research dissemination, given its international scope, expanding impact and open-access foundation. The latter point allows access to this material by interested parties from all countries, regardless of financial or other limitations.

As a consequence, this special issue was launched on efforts to address sustainable development by researchers in Nigeria. The special issue features a number of articles by researchers in Nigeria on a wide range of topics, directly or indirectly on sustainable development and initiatives to support and foster it.

SUSTAINABLE DEVELOPMENT EFFORTS IN AFRICA

Nigeria, as a country in Africa, has both unique national issues and circumstances related to its activities and progress towards sustainable development, as well as shared issues that are common to all or many countries in Africa. For this reason, before considering Nigeria, it can be instructive to consider the broader situation in and context of Africa.

Much has been written about sustainable development efforts in many countries, including most in Africa. For instance, in writing about accounting and accountability in Africa, Soobaroyen et al. (2025) make some interesting and informative comments. They write, "there is ... an insufficient understanding of accounting and governance practices ...,

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particularly about attempts to embed sustainability accounting, reporting on sustainable development goals and other related frameworks." They go on to consider topics like industry, stating "accounting research in Africa has focused on corporate behaviours and unsustainable practices, particularly within the extractive industries and their impacts on indigenous communities." They go on to state that the impact of individuals, organisations and society on sustainable development requires extensive focus particularly from African scholars to support policy and practices aimed at a sustainable future. Finally, regarding the environmental pillar of sustainable development, Soobaroyen et al. (2025) note that "climate change is on the rise globally and government response to mitigating the impacts of climate change is also becoming a core agenda of their policies."

SUSTAINABLE DEVELOPMENT EFFORTS IN NIGERIA

Much has been reported on actions being taken by and in Nigeria that are in line with, directly or indirectly, the Sustainable Development Goals. Some particular examples are noted below.

First, according to United Nations in Nigeria (2025), the United Nations and its partners in Nigeria have been working on the Sustainable Development Goals since their adoption by the UN in September 2015. It is indicated specifically that:

- Nigeria has demonstrated a commitment to achieving the global goals through diligent leadership and implementation.
- The UN is working with the Government of Nigeria and other partners to support effective and efficient implementation of the Sustainable Development Goals, and to assist in the direction and allocation of resources to sectors of the economy that will provide the greatest benefits to the vulnerable and poor in the country.
- The United Nations in Nigeria is also assisting the country administratively, by assisting in the planning and budgeting of development activities within the framework of the Sustainable Development Goals, and by providing technical support to the Office of the Senior Special Advisor to the President on Sustainable Development Goals and related government ministries.

Second, Oweibia et al. (2024) recently reviewed and analyzed comprehensively the actions taken by Nigeria towards the Sustainable Development Goals since their inception. This was done so as to 1) assess how Nigeria's national development frameworks align with the Sustainable Development Goals, and 2) highlight the significance of the Sustainable Development Goals in addressing Nigeria's development challenges. Oweibia et al. (2024) concluded that Nigeria has made efforts to include in national policies the Sustainable Development Goals. But they also conclude that 1) significant gaps remain in addressing challenges, and 2) Nigeria's socio-economic and political complexity provide challenges and opportunities for sustainable development. The recommendations of the study include targeted strategies in response to specific challenges, as well as improved

stakeholder engagement and policy implementation, and suggest that Nigeria can, through these actions, shift towards more comprehensive and sustainable national development and achieve progress on the Sustainable Development Goals.

Third, some authors have focused on the challenges regarding sustainable development in Nigeria. For example, Falola (2021) examines for Nigeria what he refers to as "the mismanagement and porous policies of governance that neglect pressing environmental concerns with no regard for sustainable development." He claims sustainable economic progress and human development have been hindered by bad politics, gross mismanagement, and corruption. Falola (2021) writes that "Nigeria must rise to the challenge of meeting the needs of the present without bankrupting the future of both the people and the land," and discusses both short-term and long-term measures and planning and offers many supportive recommendations. Relatedly, Dauda and Oyeleke (2021) cite several factors as responsible for Nigeria's poor sustainable development performance (poverty and inequality) and examines the challenges they constitute to the attainment of sustainable development in Nigeria. To enhance sustainable development in the country, Dauda and Oyeleke (2021) recommend policy measures to reduce poverty and various forms of inequalities such as investment in health and education (especially for females), a commitment to fighting corruption in the public and private sectors, and diversification of the economy from one that is primaryproduct dominated to an industrial and services economy.

OUTLINE OF THE SPECIAL ISSUE

This special issue focuses on sustainable development work and activity by researchers in Nigeria, and features a number of articles by researchers in Nigeria on a wide range of topics on sustainable development and initiatives to support and foster it.

These articles can be categorized loosely in several important areas related to sustainable development, as follows:

- The importance of the sustainability of food production and agriculture processes towards sustainable development
- The need for sustainable energy and in particular contributions to sustainable development attainable through energy derived from biomaterials
- The significance of enhanced health as a critical factor in shifting towards sustainable development
- The requirement for enhanced sustainable environmental management in efforts to make development sustainable
- The need for improved housing as a support for sustainable development and the need for advancements in making buildings more sustainable
- The need for sustainability enhancements in both industry and business operations and management

The articles in this special issue in each of these categories are briefly described below, to help illustrate the activity ongoing in these areas as well as their contributions to sustainable development.

Sustainable Food and Agriculture

The impact of government agricultural empowerment schemes in Nigeria are examined by Bolarinwa et al. (2025). The focus is on the positive impact such schemes can have on the welfare of youth, but it is recommended by the authors that such programs be replicated via policies in other segments of society.

The important role of vegetable production in Nigeria's agriculture is considered by Ibironke et al. (2025), who review and examine the challenges and innovations in harvesting and handling of vegetables in Nigeria. The authors advocate for transformative changes in harvesting and handling practices to mitigate post-harvest losses and optimize vegetable production in the country.

The benefits of utilizing biomass for energy and biochemical production as a sustainable strategy for agriculture wastes management and exploitation are investigated by Aremu et al. (2025), through efforts at optimizing furfural production from tropical almond fruit seedcake via acid-catalyzed hydrolysis and dehydration. The study highlights the potential of tropical almond fruit seedcake as a sustainable feedstock for furfural production.

The effects of drying methods on the qualities of beetroot flour are investigated by Ojeniran et al. (2025). The authors recommend solar drying for beetroot, as it can retain the highest percentage of fat content, ash content, protein content, carbohydrate content and bulk density.

A study that aimed to improve and even optimize resource utilization and productivity among cassava farmers is presented by Olanrewaju (2025). A case study is carried out for Ogun State, Nigeria, leading to recommendations to improve access to agricultural credits, expand extension services, and implement educational programs aimed at promoting modern farming techniques, as a means of supporting the adoption of sustainable agricultural practices in the region.

Sustainable Energy and Biofuels

The importance of advanced energy technology in achieving sustainable development is examined by Nosegbe and Madu (2025), through an energy analysis of gas turbine generators. Key factors such as efficiency, thermal power, heat rate, specific fuel consumption, and work ratio are considered.

Much research is reported on the use of biomaterials for energy production.

For instance, the bioenergy portfolios of selected prominent petroleum companies are examined by Ofili (2025), highlighting efforts being put forward on conventional and innovative biofuels, biocrude, biooils, green naphtha, hydrogenated vegetable oil, renewable natural gas, sustainable aviation fuel, sustainable liquefied petroleum gas, bioliquefied natural gas, biobutanol, biomethanol and alcohol-tojet fuels. It is concluded that current efforts are insufficient to attain net zero operation by 2050.

On a more detailed technical level, the significance of biogas production via anaerobic digestion, is examined by Oluwaseun and Titiladunayo (2025), as an avenue for

renewable energy production that is more sustainable than routes using traditional non-renewable energy sources. The study explores the potential of biogas production through the co-digestion of cow dung and elephant grass, employing a locally fabricated mild steel biodigester.

Batch anaerobic digestion of goat manure is considered in research by Oladunni et al. (2025), by examining the effect of hydraulic retention time and substrate-to-inoculum ratio and its importance in optimization efforts. The study established that goat manure as a good substrate for biogas production.

Enhanced and Sustainable Health

The importance of potable water quality for sustainable development is considered by Binibor et al. (2025). The impact of various storage container materials, including plastics, clay and aluminum, on the physiochemical and bacteriological properties of potable water health risks is evaluated, as an important step in understanding associated health risks. It is found that plastic and aluminum containers lead to significant chemical contamination, while clay containers promote bacterial growth.

Naphthalene contamination in water is the focus of a study by Balogun et al. (2025). The efficacy of modified kaolin is investigated as a low-cost adsorbent for its removal from aqueous solutions. It is concluded that kaolin represents a viable and cost-effective adsorbent for naphthalene removal in water treatment, supporting efforts to mitigate environmental pollution and improve health.

The utilization of medicinal plants with known ethnopharmacology as an option to discover new anticancer agents with mild side effects is investigated by Ola et al. (2025). The study uses an in vitro model to examine antioxidant, bioactivity and cancer selective cytotoxicity potency of eulophia gracilis successive extracts on selected cancer cells.

Sustainable Environmental Management

The environmental concerns associated with waste collection and disposal methods are examined for markets by Rotowa and Olaleru (2025). The application of the research is Akure markets and measures are suggested such as to ensure prompt waste collection from the market by the appropriate agency and the provision of disposal bins in the market areas.

Polycyclic aromatic hydrocarbons and heavy metals are common environmental contaminants that present carcinogenic and hazardous risks, and thus affect sustainable development. To address such risks, polycyclic aromatic hydrocarbons and selected heavy metals (Pb, Cu, Cd) are examined by Kayode et al. (2025) for an aluminium recycling contaminated soil in Atuwara-Igbheren, Sango-Ota, Ogun State in Nigeria.

Techniques to manage plastic waste sustainably are reviewed by Orhorhoro (2025), accounting for such key factors as types and contents of plastics, the life cycle of plastic waste, and the environmental impact of plastic waste, and future perspectives are provided. Significant environmental degradation and human and aquatic health threats are observed to be linked to the physical and chemical properties of plastic trash, their non-biodegradable natures, and plastics overuse.

Sustainable Buildings and Housing

Some research is being carried out on sustainable buildings. For example, the adoption of green building practices is assessed by Onipe et al. (2025), with a case study focusing on Ozoro, Delta State, Nigeria. The study identifies and explains barriers and opportunities for green building adoption in the region area, and offers practical strategies for enhancing environmental sustainability, energy efficiency, and occupant health through a more sustainable built environment.

Furthermore, studies on housing and its importance in sustainable development have been reported. For instance, the application of sustainable development principles in housing projects are examined by Ezeokoli et al. (2025) for Anambra state, Nigeria. It is recommended that the government of the state formulate and implement social, economic, and environmental policies for housing project delivery, to help facilitate and foster environmental, economic, and social inclusion.

Also, the significance of the housing deficit on sustainable development is examined by Abe et al. (2025), considering Sustainable Development Goal 11, which focuses on making cities and human settlements inclusive, safe, resilient and sustainable. A case study for Ado-Ekiti, Nigeria is considered. The study recommends the establishment of industries producing quality, affordable building materials; incentives for improved access to affordable, resilient housing; slum upgrading and conversion of under-utilised land to affordable, quality housing, among other initiatives.

Industry and Business Sustainability

The importance of sustainable business practices for long term value creation and for fostering sustainable development have received attention. For instance, the challenges encountered by firms in implementation of sustainable business practices, and how the challenges can be addressed, are evaluated by Iliemena-Ifeanyi and Amedu (2025). The research considers four oil and gas firms in Nigeria as a case study.

On the industry and process levels, research into sustainable development has also been reported. For example, bioinformatics tools for protein analysis are reviewed by Ogunjobi et al. (2025), highlighting their abilities for predicting protein structure, simulating interactions, and clarifying function relationships. Applications like the development and discovery of new drugs are examined.

This optimization of biodegradable bioplastic production using chitosan and glycerol from potato starch are explored by Nwaka et al. (2025). The study contributes to bioplastic production by highlighting improvements in mechanical properties and biodegradability.

The formulation of drilling fluids using locally sourced materials (clays) in conjunction with bentonite and non-food-based additives are investigated by Eze and Chukwu (2025). The work helps address the challenges posed by the reliance on imported drilling fluid materials. It is found that locally sourced additives not only can meet the required standards for drilling operations but also contribute to sustainable practices within the petroleum industry.

Additive manufacturing of acrylonitrile butadiene styrene plastic and its benefits like material waste reduction are examined by Orhorhoro et al. (2025). The authors focus on the tensile property of such polymers, which need to be known prior to selecting them for a specific need.

This suitability of mixed wood sawdust for biomass pyrolysis has been modeled, simulated and evaluated by Oony-Iye et al. (2025). The research helps understand important process parameters like pyrolysis products yield.

CLOSING

This special issue on efforts to address sustainable development by researchers in Nigeria was launched to provide a focus on the work being done in that country on and around sustainable development. The articles in the special issue attest to the significance and importance of the work. It is hoped that the special issue will not only help researchers from Nigeria to disseminate their work to other researchers across the world, but will also help inform all interested parties of the work being done in that country in support of sustainable development.

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