

KNOWLEDGE PRODUCTION IN NIGERIAN TERTIARY INSTITUTIONS AS A CRITICAL DRIVER OF SUSTAINABLE DEVELOPMENT

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Abstract

The study discussed knowledge production in Nigerian tertiary institutions as a critical driver of sustainable development in Nigeria. Depending on secondary data obtained from recognized online and print resources. The study concluded that research and innovation, curriculum development and knowledge dissemination, policy influence and advisory role, community engagement and extension services, collaboration and knowledge networks and capacity building for sustainable development are some of the critical roles of tertiary institutions in supporting knowledge production in the tertiary institutions in Nigeria. The paper also identified; inadequate research funding, poor research infrastructure, brain drain and shortage of skilled personnel, weak university–industry collaboration, inadequate policy support and governance issues, limited access to research information, high teaching loads and administrative burdens and inadequate research culture and motivation as the various challenges militating against knowledge production in the tertiary institutions in Nigeria. Based on the findings, the paper recommends that that the government and private institutions should increase research funding and financial support,

upgrade research infrastructure, address brain drain and build human capacity, strengthen university–industry collaboration, enhance policy support and governance for research, improve access to research information and digital resources, reduce teaching and administrative burdens on academics, foster a strong research culture and motivation, encourage local and context-specific research and promote collaboration among Nigerian universities

Keywords: *Knowledge Production, Tertiary Institutions, Sustainable Development*

1.0 Introduction

Sustainable development has become a central concern for nations seeking to balance economic growth, social equity, and environmental protection. Central to achieving sustainable development is knowledge production—the systematic creation, dissemination, and application of knowledge through research, innovation, and intellectual engagement. Tertiary institutions, as hubs of advanced learning and research, play a pivotal role in knowledge production that drives sustainable development. In Nigeria, universities, polytechnics, and colleges of education are strategically positioned to generate context-specific knowledge capable of addressing the country's complex developmental challenges.

Nigeria faces multifaceted sustainability issues, including poverty, unemployment, environmental degradation, insecurity, energy deficits, and weak institutional capacity. Addressing these challenges requires locally grounded research, innovation, and evidence-based policy solutions. Tertiary institutions are expected to contribute through teaching, research, and community service by producing skilled manpower, advancing scientific and technological innovation, and generating knowledge relevant to national development priorities. Effective knowledge production within these institutions is therefore critical to fostering economic competitiveness, social transformation, and environmental sustainability.

However, despite the growing number of tertiary institutions in Nigeria, concerns remain about the quality, relevance, and impact of knowledge produced. Challenges such as inadequate research funding, weak university–industry linkages, limited research infrastructure, and brain drain have constrained the capacity of tertiary institutions to fully contribute to sustainable development. These limitations raise critical questions about how knowledge production in Nigerian tertiary institutions can be strengthened and aligned with sustainable development goals.

This study examines knowledge production in Nigerian tertiary institutions as a critical driver of sustainable development. It explores the role of higher education institutions in generating relevant knowledge, fostering innovation, and supporting policy and community development. By situating knowledge production within the broader discourse of sustainable development, the study contributes to understanding how Nigerian tertiary institutions can be repositioned as engines of sustainable national transformation.

2.0 Conceptual Terms

2.1 Concept of Concept of Knowledge Production

Knowledge production refers to the process of creating new information or knowledge through research, experimentation, and analysis. It involves gathering, organizing, and synthesizing existing knowledge to form new ideas or theories. This process is crucial in the academic world as it leads to the advancement of various fields of study. Knowledge production can take place in various forms, such as scientific studies, literature reviews, and theoretical discussions. It helps to expand our understanding of the world, solve complex problems, and make new discoveries. Knowledge Production refers to the process of creating new knowledge through the use of research, data analysis, and critical thinking. This process involves gathering information, evaluating evidence, and drawing conclusions that contribute to the existing body of knowledge in a particular field. The output of knowledge production can result in scholarly articles, scientific discoveries, and theories that advance our understanding of the world. It is an essential aspect of academic and scientific pursuits, and plays a crucial role in shaping our understanding of various disciplines."

Knowledge production refers to the systematic process through which new knowledge is created, validated, disseminated, and applied to solve problems and advance human understanding. It involves research, innovation, critical inquiry, and scholarly activities carried out within institutions such as universities, research centers, and industries. Knowledge production goes beyond the mere accumulation of information; it emphasizes the generation of new ideas, theories, technologies, and solutions that respond to societal needs and developmental challenges (Nonaka & Takeuchi, 1995).

In the context of higher education, knowledge production is a core mandate of tertiary institutions, alongside teaching and community service. Universities serve as intellectual spaces where scientific, technological, social, and cultural knowledge is developed through empirical research, experimentation, and interdisciplinary collaboration. The relevance of produced knowledge is often measured by its contribution to economic growth, social development, policy formulation, and environmental sustainability (Altbach, Reisberg, & Rumbley, 2009).

2.2 Forms and Modes of Knowledge Production

Scholars have identified different modes of knowledge production. Traditional or Mode 1 knowledge production is discipline-based, academic-driven, and primarily conducted within universities with an emphasis on theoretical rigor and peer review. In contrast, Mode 2 knowledge **production** is application-oriented, transdisciplinary, and socially distributed, involving collaboration among universities, industries, governments, and communities. Mode 2 knowledge is problem-focused and aimed at addressing real-world challenges such as sustainability, public health, and technological innovation (Gibbons et al., 1994).

In recent times, knowledge production has increasingly adopted interdisciplinary and collaborative approaches, integrating local and indigenous knowledge with scientific research. This shift enhances the relevance and societal impact of research outcomes, particularly in developing countries where context-specific solutions are essential for sustainable development.

2.3 Processes of Knowledge Production

Knowledge production involves several interrelated processes, including problem identification, research design, data collection, analysis, validation, dissemination, and application. These processes rely on adequate research infrastructure, skilled human resources, funding, and supportive institutional policies. Academic publications, patents, policy briefs, innovations, and community-based solutions are common outputs of knowledge production. Effective dissemination through journals, conferences, digital platforms, and stakeholder engagement ensures that knowledge transcends academic boundaries and informs decision-making (OECD, 2015).

2.4 Knowledge Production and Sustainable Development

Knowledge production is critical to sustainable development because it provides evidence-based solutions to economic, social, and environmental challenges. Research-driven innovations support industrial development, improve agricultural productivity, enhance healthcare delivery, and promote environmental conservation. In the education sector, knowledge production fosters critical thinking, creativity, and problem-solving skills among graduates, equipping them to contribute meaningfully to national and global development (UNESCO, 2017).

For developing countries such as Nigeria, effective knowledge production is essential for addressing local development challenges. Universities are expected to generate indigenous knowledge, promote technological innovation, and influence public policy. When aligned with national development priorities, knowledge production strengthens institutional capacity, enhances global competitiveness, and supports the achievement of the Sustainable Development Goals (SDGs).

3.0 Method

Knowledge production in Nigerian tertiary institutions as a critical driver of sustainable development in Nigeria is a position paper that adopted a systematic literature review-based method. The method allows to collect and review the related previous literature from various online sources. With the aid of digital platform, the researcher collected secondary information to generate knowledge on this topic from 2015-2025. The position paper followed qualitative narrative design method. The researcher has visited different online sites to collect the previous literature and analyze the knowledge production in Nigerian tertiary institutions as a critical driver of sustainable development in Nigeria. The previous findings are critically analyzed and presented

in different themes as on knowledge production in Nigerian tertiary institutions as a critical driver of sustainable development in Nigeria (Adapted from Ogunode, 2025).

Inclusion and exclusion criteria

Inclusion

This output of the literatures on the knowledge production in Nigerian tertiary institutions as a critical driver of sustainable development in Nigeria presents an in-depth study and result that can infer conclusion on the topic. The study includes: online publication; conference paper, journals sorted from reputable international journals such as CEON, Elsevier, Hindawi, JSTOR, IEEE, Learn Techlib, SAGE, Nebraska and Springer (Adapted from Ogunode, 2025v).

Exclusion

Also, the literature review excludes information from edited books, preprints, monographs, information below 2015 and book chapters (Adapted from Ogunode, 2025).

4.0 Result and Discussion on Role of Tertiary Institutions in Knowledge Production for Sustainable Development in Nigeria

Tertiary institutions, encompassing universities, polytechnics, and colleges of education, are central to knowledge production and innovation in Nigeria. Beyond their teaching and training functions, these institutions are expected to generate, validate, and disseminate knowledge that addresses societal challenges and contributes to sustainable development. By producing context-specific knowledge, tertiary institutions provide solutions to economic, social, technological, and environmental problems, thereby promoting national progress (Altbach, Reisberg, & Rumbley, 2009).

1. Research and Innovation

Research is the cornerstone of knowledge production in tertiary institutions. Nigerian universities conduct both basic and applied research across multiple disciplines, generating findings that inform public policy, industrial practices, and technological advancement. Applied research, in particular, contributes to sustainable development by addressing local challenges such as agricultural productivity, renewable energy, healthcare delivery, environmental management, and infrastructure development (UNESCO, 2017 Dutz, Hayter, Singh, & Webb 2018)). Through laboratories, research centers, and innovation hubs, tertiary institutions produce knowledge that stimulates industrial development and fosters innovation-driven economic growth (National Open University (2020). Research and innovation according to National Open University (2012) play a crucial role in knowledge production for sustainable development in Nigeria, and tertiary

institutions are at the forefront of this effort. These institutions according to Ngafi.E.W. (2025) are responsible for conducting research and promoting innovation in various fields, including technology, agriculture, and healthcare. Through research, tertiary institutions generate new knowledge and develop practical solutions to address pressing issues and challenges in Nigeria. This includes issues such as poverty, environmental degradation, and health epidemics. By producing high-quality research, these institutions contribute to the development of evidence-based policies and programs that promote sustainable development (Ehimiaghe & Adejoh, 2022). Tertiary institutions also play a key role in promoting innovation. They provide a conducive environment for students and faculty to explore new ideas and develop innovative solutions. Through incubation centers, technology transfer programs, and collaborations with industry partners, these institutions encourage the application of research findings to real-world problems. Tertiary institutions in Nigeria also serve as hubs for knowledge dissemination and transfer (Garcia, Soares, & Lopes, 2021). They organize conferences, workshops, and seminars to share research findings and exchange ideas with other institutions and stakeholders. This promotes collaboration and contributes to the growth of knowledge and innovation networks in the country (Ogunode & Ade, 2023).

2. Curriculum Development and Knowledge Dissemination

Tertiary institutions serve as platforms for disseminating knowledge to students, communities, and professional stakeholders (Ogunode & Ade, 2023). By integrating sustainability principles into curricula, universities instill critical thinking, problem-solving, and innovation skills in graduates. These skills equip students to tackle sustainability challenges in sectors such as agriculture, energy, urban planning, and public policy. The production of textbooks, journals, policy briefs, and technical reports further extends the impact of knowledge beyond the classroom (Okebukola, 2002). Curriculum Development and Knowledge Dissemination are critical roles that tertiary institutions play in knowledge production for sustainable development in Nigeria. These institutions are responsible for designing and implementing academic programs that equip students with the necessary knowledge and skills to contribute to the overall development of the country. This process involves constantly reviewing the curriculum to ensure it aligns with the current needs and realities of society (Ogunode, Jegede, Adah, Audu & Ajape 2020). Through this, students are equipped with the latest knowledge and are better prepared to face the challenges of sustainable development. Tertiary institutions also play a crucial role in disseminating knowledge to the wider community. This is done through various means such as research publications, conferences, workshops, and community engagement. By sharing their knowledge and expertise, these institutions contribute to the development of new ideas and solutions that can address the pressing issues of sustainable development in Nigeria. Additionally, through collaborations with industry and government, tertiary institutions facilitate the transfer of knowledge and technology for the benefit of society (Echono 2022).

3. Policy Influence and Advisory Role

Tertiary institutions provide evidence-based knowledge to inform national development policies. Research outputs from Nigerian universities often guide government decision-making on issues such as climate change mitigation, public health, industrial regulation, and resource management. By serving as think tanks and advisory bodies, tertiary institutions facilitate policy formulation that is scientifically informed and locally relevant, enhancing the effectiveness of sustainable development strategies (Adewale, & Mohammed, 2017). The Policy Influence and Advisory Role of Tertiary Institutions has a significant impact on the production of knowledge for Sustainable Development in Nigeria. By providing a platform for research and analysis, tertiary institutions are able to inform and guide government policies towards sustainable solutions. This includes offering expert advice and recommendations for policies to address pressing issues such as environmental conservation, economic growth, and social development (Ogunode & Abubakar 2020).

4. Community Engagement and Extension Services

Knowledge production in Nigerian tertiary institutions is not limited to academic research but extends to community engagement. Universities implement outreach programs, workshops, and technical support services aimed at transferring knowledge and technology to local communities. For example, agricultural extension programs and health campaigns promote the application of research findings at the grassroots level, thereby directly contributing to environmental sustainability, economic empowerment, and social development (Abdulaziz, Olokooba & Iyekolo, 2020). Community engagement and extension services play a vital role in the knowledge production process for sustainable development in Nigeria. Tertiary institutions are responsible for fostering an environment that encourages community engagement and promotes sustainable development through the transfer of knowledge. This includes collaborating with local communities, government agencies, and other stakeholders to identify the needs and challenges that affect the sustainable development of the country (Adewale, & Mohammed, 2017). By doing so, tertiary institutions can use their resources and expertise to develop solutions and strategies that address these issues. Tertiary institutions also have a responsibility to disseminate their findings and research to the wider community through extension services. This involves organizing seminars, workshops, and other outreach programs to educate and inform the public about their research and its potential impact on sustainable development. It also includes providing training and capacity building programs to local communities, empowering them to actively participate in the development process (Ngafi. E.W. et al 2025).

5. Collaboration and Knowledge Networks

Tertiary institutions in Nigeria foster collaborations with industries, international universities, research institutes, and non-governmental organizations. These partnerships facilitate knowledge exchange, access to advanced technologies, and collaborative problem-solving. Through joint

research, conferences, and publications, tertiary institutions expand the reach and relevance of their knowledge production, addressing both local and global sustainability challenges (UNESCO, 2017). Collaboration and knowledge networks according to Chukwuma, Ibrahim, & Eze, (2019) are essential components of knowledge production for sustainable development in Nigeria, and they play a critical role in tertiary institutions. These institutions not only serve as centers for academic research and education, but they also act as hubs for collaboration and knowledge sharing among various stakeholders. Through collaboration, Johnson, (2020) and Harmon, (2023, March 30) opined that tertiary institutions are able to leverage the expertise and resources of different individuals and organizations, leading to more comprehensive and innovative solutions for sustainable development (Ngafi. et al. 2023). Knowledge networks, on the other hand, facilitate the flow of information and knowledge between different individuals and institutions, both within and outside of Nigeria. This allows for the sharing and dissemination of research findings, best practices, and resources, ultimately leading to the advancement of knowledge and sustainable development. Tertiary institutions as noted by Ogunode, Offia & Walakan (2024) act as key nodes within these knowledge networks, connecting researchers, policymakers, NGOs, and community members to foster collaboration and knowledge sharing. The role of tertiary institutions in knowledge production for sustainable development in Nigeria goes beyond conducting research and educating students. By actively participating in collaboration and knowledge networks, these institutions contribute to the development and implementation of sustainable solutions, ultimately leading to positive social, economic, and environmental impacts in the country (Brown, Smith, & Okafor, 2022).

6. Capacity Building for Sustainable Development

By producing skilled manpower, tertiary institutions contribute indirectly to sustainable development. Graduates trained in science, technology, engineering, social sciences, and environmental studies are equipped to drive sustainable innovations and implement solutions in various sectors. This human capital development ensures that knowledge generated within institutions is translated into practical societal benefits (Ogunode 2025). Capacity building is a crucial aspect of sustainable development in Nigeria, and tertiary institutions play a vital role in knowledge production for achieving sustainable development. Tertiary institutions have the resources, expertise, and facilities to generate and develop knowledge, which is essential for building capacity and promoting sustainable development in the country (Dutz, Hayter Singh, & Webb, 2018). Through research and education, these institutions contribute to the creation of sustainable solutions and strategies for addressing pressing issues in the Nigerian society, such as poverty, environmental degradation, and social inequality (Adams, 2017).. The role of tertiary institutions in knowledge production is crucial for equipping individuals and communities with the necessary skills, knowledge, and resources to actively participate in sustainable development efforts in the country. By empowering individuals and communities with the necessary capacity to

promote sustainable development, tertiary institutions play a crucial role in driving positive and long-lasting change in Nigeria (Yusuf, 2012; Ragasa, Babu, Abdullahi & Abubakar, 2010).

B- Challenges Hindering Knowledge Production in Tertiary Institutions in Nigeria

Knowledge production is a critical function of tertiary institutions, essential for sustainable development, innovation, and national growth. However, Nigerian tertiary institutions face several challenges that hinder their capacity to generate, disseminate, and apply knowledge effectively. These challenges span infrastructural, financial, human resource, policy, and societal dimensions, limiting the overall impact of research and innovation in the country.

1.0 Inadequate funding

Inadequate funding remains one of the most significant obstacles to knowledge production in Nigerian tertiary institutions. Research activities require sustained financial investment for data collection, laboratory experiments, fieldwork, conferences, and publication. However, Nigeria's public expenditure on education and research falls below UNESCO's recommended benchmark of 15–20% of national budgets. Most institutions depend heavily on limited government subventions, while access to competitive research grants is scarce. (Okebukola 2015). Although agencies such as the Tertiary Education Trust Fund (TETFund) provide some research support, funding is often insufficient, delayed, or unevenly distributed, limiting large-scale and interdisciplinary research initiatives (Echono, 2023; World Bank, 2020). One of the most significant constraints on knowledge production in Nigerian tertiary institutions is inadequate funding for research activities. Limited financial resources restrict access to modern laboratories, research materials, technological tools, and fieldwork opportunities. As a result, many research projects remain theoretical, under-resourced, or incomplete, undermining the quality and relevance of knowledge produced (Okolie, 2023).

2. Poor Research Infrastructure

Research infrastructure such as laboratories, libraries, workshops, ICT facilities, and research equipment is grossly inadequate in many Nigerian tertiary institutions. Existing facilities are often obsolete, poorly maintained, or overstretched due to rising student enrolment (Echono, n.d). Limited access to modern research tools reduces the quality, relevance, and global competitiveness of research outputs. Poor electricity supply and inadequate internet connectivity further constrain empirical research and digital scholarship, making it difficult for researchers to engage in cutting-edge knowledge production (Ajayi & Ekundayo, 2014). Effective knowledge production requires robust research infrastructure, including laboratories, libraries, ICT facilities, and specialized equipment. Many Nigerian universities lack adequate or modern infrastructure, which constrains experimental research, data collection, and technological innovation. Insufficient infrastructure also limits access to scientific databases, journals, and other knowledge resources necessary for high-quality research (Echono, S2022).

3. Brain Drain and Shortage of Skilled Personnel

Nigeria faces a persistent brain drain, with highly qualified academics and researchers emigrating to countries with better research facilities, remuneration, and working conditions. This results in a shortage of experienced faculty members to mentor students, lead research projects, and produce high-impact publications. The limited pool of skilled researchers hinders sustained knowledge production and innovation (). Nigeria continues to experience significant brain drain as highly skilled academics and researchers migrate to developed countries in search of better working conditions, remuneration, and research opportunities. This has resulted in a shortage of experienced researchers and mentors in tertiary institutions. The loss of intellectual capital weakens institutional research capacity and disrupts continuity in knowledge production. In addition, limited opportunities for professional development and postgraduate training further constrain the emergence of new researchers (Adebayo, 2010; Olayiwola, 2018).

4. Weak University–Industry Collaboration

Collaboration between tertiary institutions and industries is crucial for applied research, technology transfer, and practical solutions to societal problems. In Nigeria, weak linkages between universities and the private sector reduce opportunities for joint research, funding, and commercialization of research outputs. This gap limits the relevance and practical application of knowledge produced within universities (Aina, 2011). Effective knowledge production thrives on strong collaboration between universities, industry, and government. In Nigeria, however, university–industry linkages remain weak and poorly coordinated. Research outputs are often theoretical and disconnected from societal and industrial needs. The private sector rarely funds university research, while institutions lack mechanisms for technology transfer, commercialization, and innovation. This disconnect limits the practical application of research findings and reduces incentives for problem-solving and demand-driven research (Etzkowitz & Leydesdorff, 2000; Oyelaran-Oyeyinka, 2014).

5. Inadequate Policy Support and Governance Issues

Policy inconsistencies, weak governance structures, and lack of strategic research planning affect knowledge production. Tertiary institutions often face bureaucratic bottlenecks, unclear research priorities, and limited government support for innovation-focused initiatives. Absence of comprehensive policies on sustainability-oriented research further undermines the alignment of knowledge production with national development goals (UNESCO, 2017). Policy inconsistency, weak implementation frameworks, and governance challenges significantly hinder knowledge production in Nigerian tertiary institutions. Frequent changes in education policies, bureaucratic bottlenecks, and political interference undermine institutional autonomy and research planning. In some cases, governance structures fail to prioritize research excellence, transparency, and accountability. The absence of coherent national research and innovation policies further limits

coordination and long-term investment in knowledge production (Federal Republic of Nigeria, 2014).

6. Limited Access to Research Information

Access to up-to-date academic journals, publications, and digital resources is critical for effective knowledge production. Many Nigerian tertiary institutions experience poor internet connectivity, subscription limitations to international databases, and low digital literacy among staff and students. These factors restrict access to global knowledge networks, reducing the competitiveness and quality of local research outputs (Ohaeri, Olayinka & Ogunode 2023). Access to current scholarly literature, academic databases, and research networks is essential for quality knowledge production. Many Nigerian tertiary institutions lack subscriptions to reputable journals, digital libraries, and research repositories due to high costs. Consequently, researchers rely on outdated materials, reducing the originality and global relevance of their work. Limited access to open-access platforms and international research collaborations further isolates Nigerian scholars from global knowledge ecosystems (Altbach, Reisberg, & Rumbley, 2009).

7. High Teaching Loads and Administrative Burdens

Academic staff in Nigerian tertiary institutions often face heavy teaching responsibilities and administrative duties, leaving insufficient time for research and innovation (Ezenkiri, Mamman, Ezeani, & Francis, 2021). Excessive workloads reduce the ability of academics to engage in intensive research activities, attend conferences, or mentor postgraduate students, which directly impacts knowledge production (Ofojebe, & Chukwuma, 2015). Academic staff in Nigerian tertiary institutions are often overburdened with heavy teaching loads, large class sizes, and extensive administrative responsibilities. These demands leave little time for research, grant writing, and publication. The emphasis on teaching for revenue generation, particularly in public institutions, has shifted attention away from research productivity. As a result, knowledge production becomes secondary to routine instructional and administrative duties (Ngafi & Tyokyaa, 2024).

8. Inadequate Research Culture and Motivation

A weak research culture, coupled with low incentives and recognition for research achievements, discourages academics from prioritizing knowledge production. Lack of awards, promotions, and career progression tied to research output reduces motivation to undertake high-quality studies, innovation, and publications (Ohaeri, Olayinka & Ogunode 2023). A weak research culture characterized by limited mentorship, low incentives, and inadequate recognition of research excellence also hampers knowledge production. Promotion criteria in some institutions emphasize years of service rather than research impact, innovation, or societal relevance. Poor remuneration, delayed salaries, and limited research rewards further demotivate academic staff. Without a supportive research environment that encourages creativity, collaboration, and ethical scholarship, sustained knowledge production remains difficult (Okebukola, 2015).

4.1 Conclusion and Recommendations

Knowledge production is a fundamental driver of innovation, policy development, and sustainable growth. As a core function of tertiary institutions, it shapes national development trajectories by generating solutions to complex societal problems. Tertiary institutions in Nigeria play a critical role in knowledge production that underpins sustainable development. Through research, innovation, curriculum dissemination, policy engagement, community outreach, and collaborative networks, these institutions generate solutions to complex societal challenges. Strengthening research capacity, fostering industry partnerships, and promoting sustainability-oriented curricula will enhance the contributions of Nigerian tertiary institutions to national development and the achievement of the United Nations Sustainable Development Goals (SDGs).

Knowledge production in Nigerian tertiary institutions faces multifaceted challenges that hinder the generation, dissemination, and application of research. Addressing these challenges requires increased research funding, improved infrastructure, strengthened human capacity, effective governance, enhanced industry-university collaboration, and the promotion of a strong research culture. By mitigating these constraints, Nigerian universities can strengthen their contribution to sustainable development, innovation, and national growth.

Based on the findings, the paper hereby recommends the followings:

1) Increase Research Funding and Financial Support

The Federal and State Governments, in collaboration with the National Universities Commission (NUC), should allocate increased and sustainable funding for research activities in tertiary institutions. Adequate funding will provide the resources needed for laboratory equipment, fieldwork, data collection, and innovative projects, enhancing the quality and relevance of knowledge production.

2) Upgrade Research Infrastructure

Universities should invest in modern laboratories, libraries, ICT facilities, and access to digital knowledge resources. Additionally, establishing research centers of excellence focused on key national development priorities can facilitate high-impact research and interdisciplinary collaboration.

3) Address Brain Drain and Build Human Capacity

Tertiary institutions should implement retention strategies for skilled academic staff, including competitive remuneration, research grants, career development opportunities, and incentives tied to research output. Scholarships, postgraduate training, and mentorship programs can also enhance human capital for knowledge production.

4) Strengthen University–Industry Collaboration

Universities should establish partnerships with industries, government agencies, and NGOs to promote applied research, technology transfer, and commercialization of research outputs. Collaboration ensures that knowledge produced is relevant to national challenges and contributes directly to sustainable development.

5) Enhance Policy Support and Governance for Research

The NUC and institutional leadership should develop clear policies and strategic plans to guide research priorities, resource allocation, and evaluation. Establishing research governance structures, including ethics committees, research offices, and sustainability committees, can streamline research processes and ensure alignment with national development goals.

6) Improve Access to Research Information and Digital Resources

Universities should invest in high-speed internet connectivity, subscription to international journals and databases, and digital literacy programs for staff and students. Improved access to research information enhances the quality, competitiveness, and global relevance of knowledge produced.

7) Reduce Teaching and Administrative Burdens on Academics

Institutional policies should balance teaching loads and administrative responsibilities to allow academics sufficient time for research and innovation. Hiring adjunct faculty or administrative assistants and encouraging collaborative research teams can alleviate workload pressure.

8) Foster a Strong Research Culture and Motivation

Universities should promote a robust research culture by introducing incentives such as research awards, recognition programs, publication grants, and promotion criteria linked to research output. Encouraging interdisciplinary and community-oriented research projects can also strengthen motivation and engagement in knowledge production.

9) Encourage Local and Context-Specific Research

Tertiary institutions should prioritize research that addresses local and national development challenges, including sustainable agriculture, renewable energy, public health, and environmental management. This ensures that knowledge production directly contributes to sustainable development and societal well-being

10) Promote Collaboration Among Nigerian Universities

Institutions should establish networks for joint research initiatives, resource sharing, and collaborative innovation. National research consortia can enhance research capacity, reduce

duplication of efforts, and strengthen the impact of knowledge production across the higher education sector.

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