



The University as a Catalyst for Sustainable Development in Nigeria: A Case Study of the Federal University of Technology, Akure

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A B S T R A C T

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This article examined the university as a catalyst for sustainable development in Nigeria with particular emphasis on the Federal University of Technology, Akure. It took into cognizance the notion of the university, its objectives and subsequent establishment and expansion in Nigeria. The paper also examined some of the challenges plaguing the Nigerian university system in the achievement of its objectives with emphasis on sustainable development. The place of the university system in the nation's attainment of the position of one of the best twenty economies by the year 2020 was discussed. It further reviewed the importance of university education to the knowledge economy through collaborations and linkages, knowledge dissemination and sharing occasioned by globalization, since no part of the world is insulated from the current challenges facing mankind which threaten sustainable development. The paper reviewed some of the variables that needed to be given proper consideration in order to improve the quality of university education in Nigeria. It posited that with quality university education, the gap between Nigeria and the developed countries of the world can be bridged. The paper concluded that through research and innovation, university education is a veritable and dynamic source of knowledge and human capital to transform the nation and ensure sustainable development.

1. Introduction

The Federal Universities of Technology were established between 1981 and 1982 specifically for the scientific and technological advancement of the nation. These universities are located in Akure, Owerri, Minna, Yola and Bauchi and are generally referred to as the third generation universities in Nigeria (Taiwo, 1980). Nigerian first generation universities comprised the Universities of Ibadan, the University of Ife, (now Obafemi Awolowo University) and the University of Nigeria, Nsukka and Ahmadu Bello, Zaria respectively. The proliferation of universities in Nigeria from two in 1962 to 93 in 2008 has led to corresponding increment in students' enrolment such that the student population stood at 1.09million (NUC, 2008). Similarly, the regulatory organization confirmed that there are about 2000 academic programmes being offered in Nigerian universities which are geared towards the development of national capacities, economic growth, productivity and societal sustainability. The Federal University of Technology, Akure partakes in the production of high level manpower and the development of national consciousness particularly now that the quality of human capital appears critical to national development and the creation of global competitiveness. These activities are in fulfillment of the university's establishment to offer highly acceptable

certificates worldwide while its degree programmes are tailored towards some specific objectives for the benefit of the aggregate economy and the society (Abayomi and Ayodele, 2004). The major mandate of the Federal University of Technology, Akure include among other things, the responsibility to and offer academic and professional programmes, offer to the general population the result of research, act as agent and catalyst through post graduate research and training, identify technological problems of the society and solve them within the context of the national needs and provide and promote sound basic scientific training which reflect indigenous culture as well as enhance national unity.

The accomplishment of the mandate of FUTA would invariably turn the university to a centre of excellence, epitomized by high quality programmes, products and contributions to the society thereby enhancing the sustainable development of the country. However, the mandate is expected to be achieved through motivated and skilled staff dedicated to teaching and research, geared towards global needs and production of self-reliant high-level manpower, goods and services (FUTA, 2008). The needs are capital intensive in a nation that is not insulated from the global economic downturn that is ravaging countries across the world and has never achieved the UNESCO benchmark of 26% of annual budget as allocation to education (ASUU, 2002). Consequently the outputs of university education in the mode of national development with

enhancement of the Gross Domestic Product, character and intellectual development of students as graduates to tackle the challenges of the nation could be in jeopardy. Other outputs such as acquisition of physical and intellectual skills by the students, promotion of scholarship, national and international understanding and interaction and promotion of community service are equally dependent on availability of cost bearing inputs in quality and quantity.

The university as the bedrock of national development and integration, a leading light and a beacon of scientific breakthrough and technological development and a congregation of intellectuals constantly reproducing itself tends to confirm the assumption that sustainable development is dependent on human capacity (ASUU, 2002). The unique characteristics of the university make the future possible through the kind of research knowledge generated and disseminated to the other members of the society and these in turn enhance the present and future which sustainable development entails.

The UNESCO (1998) and World Bank (2000) in agreement reported that universities are founded for the promotion of endogenous capacity, sustainable development, the building and strengthening of peace, understanding among human beings and democracy. Universities also promote freedom and human rights, changes in work processes and in the nature of economic activities and the extraordinary development of the new information and communication technologies. They reported that university education must be relevant to individual and community needs and aspirations to be called quality education as it is only quality education that could ensure sustainable development. These observations appear similar to the result of the work of Orwig and Caruthers (1980) which indicated that university's credibility is enhanced or reduced by the extent to which results are achieved or not, even in a situation where money is never available in unlimited quantity. Therefore the central task of university education is to train and educate from a long term perspective, short term adaptation to the labor market, personal development and contribution by individuals to social and economic development through education in citizenship and lifelong training (UNESCO, 1998). Thus the development of the nation's human capital to explore and exploit the country's natural resources tends to depend on the universities' ability to generate knowledge, transfer knowledge and apply knowledge. This had necessitated the statement of objectives of teaching, research and community service that are explicitly geared towards the sustainable development of the nation in all ramifications (FGN, 2004). How far the universities have achieved the essence of their existence has been the subject of discussion among stakeholders in Nigeria. In agreement with the Nigerian context, Eurich's (1981) study based on 12 countries highlighted the functions of higher education of which the university is a prominent part as:-

- i. Manpower development exhibited in the recruitment, sorting, training and certification of the trained manpower needed by society with the emphasis on central planning. This is a social need.
 - ii. Individual development which represents the individual desires and expectations with emphasis on market demand.
- I. Advancement and diffusion of knowledge: it is being appreciated. The whole world is knowledge- driven and globalization

is the current trend.

These had placed emphasis on the content of education, the body of knowledge in form of research scholarship and its uses.

Societal advancement based on the contribution of higher education to the solution of high priority public problems. These are many especially in the area of science, defense, agriculture and starvation medicine and public health.

From the foregoing, it could be deduced that universities as universal phenomena are established for the good of all now and in the future but the achievement of their objectives could be constrained due to some challenges facing them. In such instances, sustainable development could become a mirage while poverty, illiteracy, technological backwardness and environmental degradation would remain pronounced.

Conceptually, sustainable development was first used in the Brundtland report released in 1987 by the United Nations and the Commission's definition of the concept has become the most quoted definition of sustainable development. The Brundtland Commission (1987) defined sustainable development as the development which meets the needs of the present without compromising the ability of future generations to meet their own needs. In essence, sustainable could be described as lasting improvement on the quality of life. Furthermore, sustainable development seems to be hinged on human solidarity, environmental sustainability, democratic governance, supporting technologies and secular and religious non-violence while violence is the main obstacle to development. Accordingly, Su (2002) explained that sustainable development involves materials, aesthetics, ecological systems, agriculture and forests and human health. Moreover, sustainable development appears to be all-encompassing as it covers diverse areas such as population and human development, cultural, social and security, financial, political, economic, ecological resources, ecosystem services and non-renewable energy, pollution, climate change and global environmental management. It equally covers food security, water, deforestation, gas flaring and desertification.

Furthermore, Briggs (2008) described sustainable development as a socio-ecological process characterized by the fulfillment of human needs while maintaining the quality of life and the natural environment indefinitely. It takes into consideration human welfare and the long-term effects of today's activities including global cooperation to reach viable and long lasting solutions. Sustainable development also entails that resources need be explored and exploited with regard to the future such that they would not be totally depleted hence sustainable development is the development that is not truncated, aborted or short termed but is long lasting and affects the present and the future.

However, it appears that productive and consumptive activities of man contribute to the non-sustainability of the planet Earth and this in turn affects the environment and the welfare of society. To this end, there tends to be huge human-driven threats to sustainable development when viewed from the perspective of the

future of life on the planet Earth especially threats arising from harmful effects of science and technology and gender inequality (Wikipedia, 2010).

The need arises for rating sustainable development in order to increase human awareness of the dangers posed by non sustainability of the planet that is inhabited by man and search for solution. The rating could be good sustainable that is ok, almost sustainable that is medium, poor which is almost unsustainable and bad which is unsustainable. The outcome of such rating is expected to spur man into action of finding means of reversing bad trends in order to return the Earth to its normal capacity of environmental sustainability else extinction of humanity. In this respect, universities of technology seem to be more relevant in ensuring sustainable development in the areas of food security, energy generation and poverty eradication. Indicators of sustainable development are many and include Index of Sustainable Economic Welfare (ISEW), Genuine Progress Indicator (GPI), Human Development Index (HPI), Environmental Development Index (ESI), the Sustainable Development Index (SDI), Wellbeing Index and Ecological Footprint (EF). The most popular indicator is the Human Development Index which was developed by the United Nations (Bartelmus, 2008). He further revealed that the indicators are the dimensions of sustainable development that are more in the nature of indices of its assessment which reflect the state of social goals such as sustainable development, human development, the quality of life and socio-economic welfare.

Meanwhile, sustainable development has been criticized as the contraction of the developed countries that use about 80 percent of world's resources to striven and control the population of the developing nations with the emphasis of the Bruntland report (1987) on inter-linkages between economic development, environmental degradation and population. Irrespective of whether market economy or De-growth are better ways of agreeing with nature, it still appears necessary that concerted efforts be made to manage resources especially the other side of technology which tend to threaten the existence of man.

Besides, the HDI to benchmark Nigeria's sustainable development has shown that the country is one of the poorest nations in Africa and with 75 Million citizens (54.4 percent of population) living in poverty as against 25percent in 1990 (DFID, 2006). The body also reported that seven (7) Million children do not go to school, one (1) Million children die each year before the age five with mortality rate of 197 per 1,000 life births and at least three (3) Million people are living with HIV/AIDS while maternal mortality rate of 800 per 100,000 is the second highest in the world after India. Similarly, the life expectancy is as low as 50 years and women illiterates are more than male due to cultural and religious factors. In the 2007 report, DFID (2007) concluded that the HDI score for the country only showed slow improvement over a 30 year period and that there has been no structural transformation in a country with a disconnect between growth, poverty reduction and human development despite the number of universities in the country.

From the foregoing, it could be deduced that sustainable development entails decent employment for human capital, cheap and

qualitative food, good transportation networks, uninterrupted power supply, potable drinking water, affordable houses, reliable health care system, security of lives and property and well funded research-based tertiary institutions. Besides, it could be deduced that sustainable development is a global issue although it has been described as poor in Nigeria and that universities have significant roles to play in ensuring sustainable development of the nation especially universities of technology such as FUTA.

2.0 The University as a Catalyst for Sustainable Development in Nigeria

Sustainable development which indicates an all round development of a nation and its resources depends on quality university education that transforms a relatively unskilled person to skilled human capital and inquire into various fields of knowledge for the benefit of mankind. The position of the university as a catalyst for sustainable development seems to have been long recognized since the inception of the enterprise during the medieval era (Balogun, 2008). The university does it through the generation of advanced knowledge for the improvement of the socio-economic and physical environment of the nation through intellectual investigations and discourse. The importance of the university as a catalyst for sustainable development is heightened now that knowledge as against physical capital is changing the world economy as the source of present and future wealth. Therefore, the wealth or poverty of nations depends on the quality of higher education and knowledge generated within them (World Bank, 2000).

Consequently, in this era of knowledge explosion and innovation economy, universities are expected to continuously improve in generating skills, resourcefulness and creation of public knowledge, as well as exchange of skills between industries and academia and come up with better technologies that support sustainable development. University education is a manpower industry that produces the knowledge and skills necessary for development therefore the university must prevent human capital deficiency especially in critical areas of the economy that promote sustainable development.

Globally, the realization of universities as agents of sustainable development appears to have led to the formation of the Commission on Science and Technology for Sustainable Development in the South (COMSAT) in 1994 after the 1992 Earth Summit. The Commission remarked that a vital measure for promoting sustainable development is in developing the capacity of all stakeholders through education (COMSAT, 1994). Moreover, the United Nations introduced Education for Sustainable Development (ESD) spanning 2005-2015. The eight point Millennium Development Goals (MDG) include the eradication of illiteracy as a means of using higher education to solve problems that affect man and his environment. The IIEP (2009) emphasized the importance of university education to nation building when it reported that national competitiveness today depends on the capacity to produce and absorb knowledge. Knowledge itself promotes economic growth

and development and has become an international service traded between countries that attracts capital investment, invites competition and produces a profit that is sometimes higher than in other sectors. The unique position of higher education promotes countries internationally as knowledge itself has become a process dependent on market forces in its production, distribution and absorption. Yet, it seems as if these attributes cannot be found in Nigerian universities.

Moreover, Du Vivier (2008) had opined that African universities must be committed to active participation in social transformation, economic modernization and the training and upgrading of total human resources; not just for a small elite but the whole society.

The Federal University of Technology, Akure as a catalyst for sustainable development could be a trainer of trainers and research generator in key areas of the economy and thereby builds the nation's capability for self reliance and sustainable development. FUTA could turn the nation to an egalitarian society that depends less on oil revenue, aggressively developing agriculture and agro-based industries through capital adequacy, technological breakthrough and societal advancement. It could also develop alternative energy that is environmentally friendly, cheap, easy to harness and more secured. Doing this could reduce dependence on fossil fuels that are environmentally harmful and contribute to global warming, which reduces environmental sustainability.

FUTA as the home of scientific innovation could provide good university education that ensures that recipients impact their societies with positive values since education involves the process of transferring accumulated knowledge, skills and cultures across generations (FGN, 2004). Education as a social process allows for the exchange of ideas, attitudes, skills and feelings and FUTA could strengthen collaboration between science and technology researchers and educators and the industries. In the same vein, the university could better integrate science and technology into educational programmes for sustainable development and strengthen cooperation between formal and non-formal education.

FUTA as a university of technology could develop intellectual and technical capacity to address climate change, alternative energy, earth's renewal, making wastes to be bio-degradable, food security, poverty reduction and the development of curriculum on sustainable development and the establishment of a department of sustainable development.

The university could also be involved in advocacy and dissemination of results of research efforts and patency on issues that promote sustainable development. It could also be trainer of trainers in areas of human endeavour that advance sustainable development apart from citation of researchers from FUTA in reputable journals nationally and internally. In doing so, the university would be advancing the cause of knowledge. Moreover, FUTA as a catalyst for sustainable development could champion its education on discovery, exploration, teaching, changing and sharing of ideas, experiences and lessons learned and learning about others; all tailored towards capacity building. It has been long established that education can develop the human capacities hence the integration of research findings into

useable knowledge for stakeholders nationally and internationally. Empirical studies by Harbison (1973) on the relationship between investment in human resources and national growth have led to emphasis on qualitative aspect of labour force than the quantitative aspects. Human capital deficiency appears to be the major constraint to scientific and technological advancement of Nigeria as the country remains largely a raw material producing nation due to knowledge gap instead of being a service provider.

Therefore, university education especially technology could be deployed in governance, products and services to reduce unemployment, hunger and insecurity, terrorism and gender inequality which are impediments to sustainable development. FUTA currently mount courses in engineering, earth and minerals, environmental technology, science and management technology where innovation could integrate the nation's economic environment with the social components of the nation at all levels as done in countries such as the United States of America.

Furthermore, Brazil, Russia, India and China (BRIC) appear to be challenging the dominance of American and European economies in the world market. This tends to have been attributed to the development of capacities in Research and Development (R&D) in their universities and research institutes and thereby breaking the barrier of poverty and ignorance. The same feat has been achieved by Japan that was devastated during the Second World War and it is today the second largest economy and with literacy level of about 99 percent (NUC, 2008, Ogomudia, 2008).

In contrast, sustainable development in Nigeria appears challenged because there is uncoordinated use of education and training capacities between industry and students which has led to massive graduate unemployment, insecurity and crime. Furthermore, it could create gaps and mismatch in manpower and students training bearing little or no relevance to the needs of the society and country. Thus societal expectation of graduates in terms of technological advancement and good reputation appears low whereas the university is expected to jump-start development and eradicate poverty. Countries such as Japan, Korea, Malaysia and Singapore have used university education in general and research in particular to achieve sustainable development. Research had been utilized as an engine of progress much that they have crossed the technology hurdle within one generation, crashed the poverty barriers and are joining the developed nations of the world (Nwokolo, 1989). According to Nwokolo (1989), a country is said to be technically advanced when it has acquired the scientific, technological, and industrial infrastructure to manufacture and sell enough goods and expertise to sustain economic growth and is able to feed her people. Such countries have promoted university from skill and knowledge acquisition to empowerment as in the United States of America, France, Canada, the United Kingdom and South Africa. Their universities have consistently been listed among the world best 200 in all areas of human endeavour (Okebukola and Ibadapo-Obe, 2009). On the other hand, Nigerian economy is import-driven and relies on foreigners to drive almost all developmental projects even in sensitive areas such as exploration

Table 1: Funding a Nigerian University to Attain Membership of Top 200 Universities by 2020

Webometrics	Ranking	THE and ARWU		TOTAL	
		Mean Annual	10-year Aggregate	Mean Annual	10-year Aggregate
N 0.35 billion	N3.5 billion	N5.3 billion	N53 billion	N5.65 billion	N56.5 billion

Source: Okebukola and Ibidapo-Obe (2009)

and exploitation of crude oil.

From the reviewed literature and having been established over twenty five years ago, it becomes pertinent to ask some questions concerning FUTA such as (a) using FUTA as a case study, how effective is university education in Nigeria as a catalyst for sustainable development? (b). what are the challenges being faced by FUTA that could impede its role as a catalyst for sustainable development?

Although there seems to be no empirical studies on the effectiveness of FUTA as a catalyst for sustainable development in Nigeria, however its position as the best university of technology in Nigeria could serve as a measure of excellence (FUTA, 2007) Besides, FUTA mounts some courses that focus economic, environmental and human development and its graduates are internationalized to face the current challenges of the world in this era of globalization. FUTA is one of the few universities in Africa where meteorology, mining engineering, gender education and entrepreneurship, project and transport management technology are taught. Similarly, courses in fisheries and aqua-culture, ecotourism and wildlife, agriculture and food security, space studies and information and communication technology, geology and geophysics and all kinds of engineering which have direct bearing on sustainable development are mounted. The university has many awards in its kitty.

Furthermore, the university has established worldwide linkages, collaborations and exchange programmes with renowned individuals and institutions for the exchange of knowledge, skills, ideas, research results, staff and students as with the University of Mining, Takwa, Ghana (Mireku-Gyimah,2008). Moreover, post-doctoral training and training programmes for junior academics, staff training and retraining nationally and internationally are regular occurrences while staff are encouraged to attend conferences and go on sabbatical in order to update their knowledge and for continuous improvement in pedagogy.

Meanwhile, these activities are to improve human wellbeing by enhancing the viability and health of human, social and physical environments through university education but the poor rating of Nigeria using the Human Development Index tend to suggest that universities have not been playing their strategic role in sustainable development. Many stakeholders such as Nwokolo (1989) and Ishiekwene (2005) have not rated the universities better in terms of quality and relevance of their products and services .and character development of graduates. In fact, the NUC (2004) remarked that graduates of Nigerian universities are failing to meet the needs of the labour market they are produced to serve and that few researches in Nigeria were of world standard. In essence, many graduates remain jobless for years and some often take to crime.

In response, researchers and stakeholders such as Ogomudia (2008) and Ajayi (2009) revealed that the problems of university education in Nigeria ranged from ineffective planning and implementation of policies arising from ineffective policy decision making, inconsistency of policies, inadequate funding and inadequate infrastructure probably occasioned by financial impropriety. Other identified problems include substandard admission system, distressed products of secondary schools, interference from government, and non-adherence to carrying capacity by the universities, bureaucratic bottleneck and poor management among others.

Table 1 indicates the financial implication of making a Nigerian university attain membership of top 200 universities by 2020 which appears staggering and tends to be more than the annual budget of most states in Nigeria. Currently, inadequate funding seems a major challenge.

Perhaps these constraints have not allowed the universities to produce graduates that are able to use their head, heart and hands for the total development of the nation to attain one of the best economies in year 2020 and thereby promote sustainable development of the nation.

Much as the FUTA has tried to make positive impact in developing the nation, it appears impossible for a part of the whole system to achieve more than all the components of the whole. Therefore, the laudable achievements of FUTA in teaching, research and community service seems incapable of transforming the nation for sustainable development except other universities overcome their challenges and take their rightful position in the sustainable development of the country.

3.0 Conclusion and Recommendation

The primary purpose of this paper was to examine the university as a major force for sustainable development in Nigeria using FUTA as a case study. Within the limitation of this paper, the main conclusion that can be drawn is that universities particularly universities of technology can be the veritable tools for sustainable development in the country as observed in the emergent and developed economies. This is because technology leads to the acquisition of practical and applied skills as well as basic scientific knowledge. Specifically, FUTA can be useful in the economic utilization of natural resources for the welfare of men since effective technology provides innovation for efficient and effective exploitation of resources for the good of all. Through these, FUTA and other universities can be useful in the area of food security,

climate change, energy generation, infrastructural and manpower development that are economically, technologically and environmentally sustainable. FUTA will be very relevant in providing solution to environmental degradation, global warming, food security and recycling technology, as well as the production of functional graduates. For sustainable development, there must be adequate and quality educated personnel to produce and maintain infrastructure. Equally important are gender equality, peace and absence of war and healthier body.

Therefore, it is recommended that courses that address national challenges and promote sustainable development should be mounted by the universities. All stakeholders should be involved in funding university education while university autonomy, effective governance and financial and institutional accountability should be promoted and enforced if need be.

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