BUILDING HUMAN CAPITAL FOR SUSTAINABLE DEVELOPMENT: ROLE OF THE UNIVERSITY

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PREAMBLE

Permit me to start this presentation by giving glory, honour, adoration and praises to the Almighty God for making it possible for us all to gather here today for this lecture. I will like to thank the Registrar of the University of Ibadan, Mr. O. I. Olukoya, for inviting me to make this presentation titled ***"Human Capital for Sustainable Development: Role of the University".*** *I thank you, sir. I must also thank the Deputy Registrar, Mrs. MargretAziba for working tirelessly to make this day a reality. I cannot count the number of phone calls she made in this respect, apart from her personal trip to Badagry, on behalf of the Registrar. I thank you madam. I am also grateful to all of you, here present, for finding time to grace this occasion and to make contributions to this topic.*

Development is a word that is frequently used in homes, societies, institutions, states and nations. Though very evasive in definition, the Dictionary of Contemporary English refers to development as "the process of gradually becoming bigger, better, stronger, or more advanced". It is indeed a process that embodies all attempts to improve the conditions of human existence in all ramifications, including provision of health care, education, housing and other essential services. It is rationale, therefore, to view development as a transformation process to a better situation. Development is therefore very critical to the growth of any individual, society or nation.

It is however, important for any individual, community, society or nation to be able to sustain its level of development. Sustenance, here, is regarded as the ability to make a thing continue to happen for a long time while sustainability refers to the use of natural products and energy in a way that does not harm the environment. It is in this regard that sustainable development has become a household word all over the world, championed by the United Nations, to manage our resources, for the sake of posterity in the wake of rising natural and man-made disasters, such as terrorism, cybercrimes, poverty, environmental degradation, flood, devastating storms, tornados, business failures, economic recessions, diseases and epidemics, among others. The concern overthese calamities gives rise to embracing the concept of sustainable development.

Accordingly, the topic for discussion today is not only relevant but also very timely when viewed against the backdrop of Nigeria's Vision 20:2020 and the Transformation Agenda. Undoubtedly, however, sustainable development requires high quality and appropriate Human Resource to successfully implement.It is against the backdrop of the foregoing that this paper proceeds to examine the role of the university in building human capital for sustainable development.

The paper is divided into seven sections. The first section is the Introduction. Section two examines the concept, issues and goals of Sustainable Development. In section three, the concept, process and scope of building human capital for sustainable development is discussed within the context of the several declarations on Education for Sustainable Development (ESD). The role of the university in building human capital for sustainable development is discussed in section four. The challenges the university faces are identified in section five while some suggestions for the way forward are put across in section six. A case study showing example of what was done in Ukraine, from which useful lessons can be drawn taken from Pidlisnyuk (2010) is presented in section seven. Finally, the conclusion of the paper is in section eight.

1.0 INTRODUCTION

The satisfaction of human needs and aspirations has always been the major objective of development. For several decades, and particularly in the last century, economic growth and development had resulted in substantial improvements in health, education, and the quality of life for many people especially in the western countries. However, it has become very apparent that the global community, over these decades, has pursued a path of development which is clearly not sustainable. Today, the world is grappling with enormous and unprecedented crisis. These include massive destruction of the natural ecosystems at an alarming rate resulting in considerable losses in biodiversity; tremendous increases in soil, air and water contamination; accumulation of sizeable amounts of waste in the environment that neither can be assimilated by the biosphere nor managed by humans effectively; global climate changes; extensive land degradation including catastrophic deforestation (Miller and Tyler,, 1994); global food crisis; extreme poverty; worsening income inequality; widening gap between the haves and have-nots, economic and financial crisis.

Within the last 80 years the world's population has increased threefold and will grow by approximately 3.7 billion people in the next 30 years with an estimate that 90 percent of the additional people will live in poor countries. Efforts to feed the increasing population have resulted in desertification in many parts of the world typically leading to increases in soil erosion and salinity and reduction of natural vegetation (Pidlisnyuk, 2010). The Challenges for developing countries including Nigeria are even more serious. There are risks of reversal of the gains made in the area of development over the last decade or so. In fact, some of these countries are already falling behind target dates for meeting the MDGs.

The United Nations and several international agencies and non-governmental organization (NGOs) have raised alarms and issued warnings over the state and conditions of the globe today. Also drawing attention to the alarming environmental, social and economic crisis, Sampson (2013) observes that, "At the current reckless rate of exploitation and manhandling, we face the threat of waking up one day to find that our economies have been debased beyond recognition and our social and institutional structures have been gruesomely mismanaged at the detriment of this and future generations."

The urgent need to take action to halt and reverse the imminent threat to human survival posed by the unprecedented crisis that stare us in the face is now. This is the overarching concern

that the concept of sustainable development seeks to address. In doing this, the UN organized a Conference on the Human Environment in Stockholm, Sweden to discuss and find solutions to the deteriorating state of the environment arising from the unsustainable activities and practices of countries in pursuit of economic growth and development. In the 1980s, the concept gained momentum following the activities of the UN and its agencies which were aimed at creating awareness and mobilizing efforts at all levels to reverse further damage to the world's capacity to continue to support human existence.

It was, however, the setting up of the Brundtland Commission in 1984 and the publication of its landmark report, *Our Common Future,* in 1987 that marked the beginning of the relevance of sustainable development as a global issue. Two other events, the 1992 earth Summit held in Rio de Jenairo, Brazil and the Third UN Conference on Environment and Development held in Johannesburg, South Africa in 2002 that further popularized and mobilized more support from more countries for the concept of sustainable development.

Another UN Conference on Sustainable development, popularly referred to as Rio+20, was held in Rio de Jenairo in 2012. The Conference brought together thousands of representatives from governments, the private sector, NGOs and other interest groups to examine progress on the outcomes of the first Rio Earth Summit of 1992 and agree on arange of measures to reduce global poverty, create jobs for the growing unemployed, achieve sustainable energy and promote a fairer and more equitable use of global assets and resources.

While there are still lack of understanding and divergent views on the concept, principles, goals and strategies of sustainable development, what appears to be clear is that the world is gradually coming to terms with the fact that human well-being as reflected in the health, wealth and quality of life of people is part of, and linked to the diversity, productivity and quality of the ecosystem. Consequently, the unsustainable development path pursued by countries and other actors that have led to the environmental degradation and socio-economic imbalances that we see today must be reversed while more sustainable practices adopted.

Sustainable development, as we shall see later, has the potential to offer humanity the recipe to tackle all or most of the development challenges confronting the world today, if concerted efforts are made at different levels – international, national, regional, local, institutional and individual – to make its implementation a priority. However, it is pertinent to point out that

the fundamental and overriding success factor in the implementation of sustainability development is requisite human capital.

In development studies, human capital is recognized as the most critical in development. It has been directly linked to the ability of nations to transform from underdeveloped to developed economies. Indeed, the quality of a country's human capital is central to promoting and sustaining innovation as well as the adoption of appropriate technology for accelerated sustainable development. That human capital was largely accountable for the transformation of resource-poor countries like South Korea, Taiwan and Singapore while resource-rich countries like Nigeria, Venezuela and Angola are still at the lower wrung of the development ladder is a fact. This point, in fact, re-iterates the case for accelerated human capital development, especially in the developing countries, if the world is to overcome the global socio-economic and ecological crisis that have the potential to endanger our individual and collective existence as well as rob future generations of their well-being.

It must be said that building the requisite human capita for the attainment of sustainable development by all countries requires both a new ideology of life and innovative approach to education. In this regard, sustainable development should become a regular part of the programmes and curricula of our educational system at all levels. As noted by Pidlisnyuk (2010), "Education is an instrument for training human resources to optimize productivity by encouraging technical progress and by promoting cultural conditions conducive to social and economic change." The role of the university in building human capital through high quality educational that promotes creativity, innovation and adoption of modern technology for the successful implementation of sustainable development cannot be overemphasized.

2.0 SUSTAINABLE DEVELOPMENT: CONCEPT, ISSUES AND GOALS

2.1 The Concept of Sustainable Development

As stated earlier, sustainability has been at the forefront of the development movement when the United Nations Conference on the Human Environment adopted a declaration for preservation and enhancement of the human environment. However, the term 'sustainable development' was coined in 1980 by the environmental nongovernmental organization (NGO), International Union on the Conservation of Nature, which argued for conservation as a means to assist development and specifically for the sustainable development and utilization of species, ecosystems, and resources. Drawing on this, the United Nations World Commission on Environment and

Development, set up in 1982, popularized the concept in its report, *Our Common Future*, published in 1987. Also referred to as the Brundtland Report, the report argued that (Kates et al, 2005):

> *'The environment does not exist as a sphere separate from human actions, ambitions, and needs, and attempts to defend it in isolation from human concerns have given the very word "environment" a connotation of naivety in some political circles. The word "development" has also been narrowed by some into a very limited focus, along the lines of "what poor nations should do to become richer," and thus again is automatically dismissed by many in the international arena as being a concern of specialists, of those involved in questions of "development assistance." But the "environment" is where we live; and "development" is what we all do in attempting to improve our lot within that abode. The two are inseparable."*

Accordingly, the report defines sustainable development as:

> *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs."*

According to Al-Roubaie (2013), sustainable development is a situation that "requires meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations for a better life. He goes on to say that sustainable development requires the promotion of values that encourage consumption standards that are within the bounds of the ecologically possible and to which all can reasonably aspire. Furthermore, sustainable development, at a minimum, must not endanger the natural systems that support life on Earth: the atmosphere, the waters, the soils, and the living beings."

Judged by its widespread use and frequency of citation, the definition given by the Brundtland Commission has come to be seen as the standard and most succinct definition of sustainable development. The definition views sustainable development as having a major focus on intergenerational equity. Although the definition does not explicitly mention the environment or development, the subsequent paragraphs of the report are clear about these issues. On development, the report states that:

- human needs are basic and essential;
- economic growthis required to sustain them;
- equity in sharing resources with the poor is vital; and
- equity is encouraged by effective citizen participation.

On the environment, the report explains that, the concept of sustainable development does implies limitations imposed by the present state of technology and social organization on

environmental resources and by the ability of the biosphere to absorb the effects of human activities. (Kates et al, 2005).

In the years following the Brundtland Report, several other definitions of the concept of sustainable development were provided. The publication *'Caring for the Earth: A Strategy for Sustainable Living' (1991),* defines sustainable development as 'improving the quality of life while living within the carrying capacity of supporting ecosystems'. Another definition of sustainable development is the ability of physical development and environmental impacts to sustain long-term habitation on the planet Earth by human and other indigenous species while providing:

- an opportunity for environmentally safe, ecologically appropriate physical development;
- efficient use of natural resources;
- a framework which allows improvement of the human condition and equal opportunity for current and future generations; and
- manageable urban growth. (Roosa, 2008),

Pearce et al (1989) are of the view that, "Sustainable development involves devising a social and economic system, which ensures that these goals are sustained, i.e. that real incomes rise, that educational standards increase, that the health of the nation improves, that the general quality of life is advanced." They explain further that, "Development is about realizing resource potential. Sustainable development of renewable natural resources implies respecting limits to the development process, even though these limits are adjustable by technology. The sustainability of technology may be judged by whether it increases production, but retains its other environmental and other limits." In another development, Pearce (1993) states that, "Sustainable development is concerned with the development of a society where the costs of development are not transferred to future generations, or at least an attempt is made to compensate for such costs".

While all the above definitions may be expressed differently, a close examination shows that they all point to a fundamental fact of sustainable development which is that human wellbeing (the health, wealth and quality of life of people) is part of, and linked to the diversity, productivity and quality of the ecosystem. Consequently, sustainability depends on improving and maintaining the well-being of people and the ecosystem together. This fundamental coupling of the human system as an integral part of the ecosystem is visually depicted in the simple yet powerful schema of the 'egg of sustainability'. The egg of sustainability depicts human societies

as an integral part of the surrounding ecosystem, like the yolk of an egg within the white. They are likely to be sustainable only if both the human condition and the condition of the ecosystem are good or improving. If the condition of either is poor or worsening, the society is unsustainable (Hardi and Zdan*et al*, 1997). In other words, people and the ecosystem are equally important. People are an integral part of the ecosystem. The well-being of one is bound in the well-being of the other. It follows that sustainable development entails improving and maintaining the well-being of both.

2.2 Key Issues of Sustainable Development

From the foregoing, it is very clear that Sustainable Development draws global attention to the urgent need to address issues that have the potential to endanger our individual and collective existence and threaten to rob future generations of their wellbeing. As captured by Sampson (2013), these issues include:

1.***The Environment*** (degradation, global warming, deforestation, loss of biodiversity, climate change, greenhouse gas emissions, waste management, renewable energy, natural resource depletion, food security, water preservation, physical infrastructure management, among others);

2. ***Economy*** (cyclical economic crisis, growth challenges, poverty, trade barriers, financial inequality, growing unemployment, social security nets, grassroots development, among others);

3. ***Social*** (human right issues, socio-cultural diversity management, religious, racial, gender differences management, social exclusion, stigmatizations and discriminations, extra judicial killings, police brutality, illiteracy, population management, adequate shelter, among others);

4. ***Globalization*** (uneven global development, inequitable distribution of global resources, harmful and unfair trade practices, import subsidies, unemployment, technology and knowledge transfer, social media, cybercrime, migration, resource strain, terrorism, among others);

5***. Institutional governance*** (responsible business practices, corporate governance, focused and purpose driven CSR policies, resource efficiency, effective risk management practices, accountability and transparency, full disclosure in financial and non-financial reporting, global best practices in production and service delivery, staff welfare, family-friendliness, working conditions and safety measures, best practices in human resource management, unhealthy competitive practices, among others); and

6. ***Public governance*** (including at national and sub-national levels; transparency and accountability; efficient management of capital, including human capital, natural capital, financial capital, social capital; community and grassroots development; effective reporting and public disclosure; policy consistency, sovereign debts management, savings and external reserves policies and management, participatory governance, democratic norms, equitable distribution of national resources, sovereign wealth management for the now and the future, among others)

From the issues that sustainable development seeks to address, it is clear that sustainable development is a multi-dimensional concept requiring the participation of diverse stakeholders

and perspectives. While this is so, it is pertinent to point out here that the overarching goal of sustainable development, in spite of evolving a core set of guiding principles and values, is still based on the Brundtland Commission's standard definition of meeting the needs, now and in the future, for human, economic, and social development within the restraints of the life support systems of the planet. It stresses the need for a balanced consideration of all the aspects highlighted above in our everyday decision making processes. It encourages governments, non-governmental institutions, corporate organizations, communities, families and individuals to take responsible decisions with the well-being of the whole environment in mind.

Probably, the need to clarify the concept of sustainable development further and better focus the strategies for its implementation, informed the decision of the Rio +20 Conference held on 20th – 22nd June, 2012 to launch a process that will bring up a set of Sustainable Development Goals (SDGs) as we have the Millennium Development Goals (MDGs). In the report of the conference, tagged "*The Future We Want*", it was agreed that the SDGs must:

- Be based on Agenda 21 and the Johannesburg Plan of Implementation.
- Fully respect all the Rio Principles.
- Be consistent with international law
- Build upon commitments already made.
- Contribute to the full implementation of the outcomes of all major summits in the economic, social and environmental fields.
- Focus on priority areas for the achievement of sustainable development, being guided by the outcome document.
- Address and incorporate in a balanced way all three dimensions of sustainable development and their inter-linkages.
- Be coherent with and integrated into the United Nations development agenda beyond 2015.
- Not divert focus or effort from the achievement of the Millennium Development Goals.
- Include active involvement of all relevant stakeholders, as appropriate, in the process.

While the concept of sustainable development continues to undergo some fine tuning, the fact still remains that, based on the identified key issues above, making reasonable progress toward the successful implementation of sustainable development is hinged on the need for human capital, i.e. people with the right frame of mind, the right attitude and most importantly,

people with the ability to use education and knowledge to deliver the triple bottom-line – economic prosperity, environmental and social equity.

3.0 BUILDING HUMAN CAPITAL FOR SUSTENABLE DEVELOPMENT

3.1 The Concept of Human Capital

The formal concept of human capital was developed in the 1960s by a group of economists although the idea that investment in education has a long-term economic and social payoff for the individual and society at large goes back to Adam Smith. Over the years, various authorities have attempted to define the concept. Due to its all-embracing and multi-dimensional nature as the outcome of investment in education, health, training, experience, and migration, it has often proved difficult to capture the concept of human capital by a mere definition. However, for the purpose of our discussion, there are a few definitions that will suffice.

Armstrong (2006) explains the concept of human capital as representing, "… the human factor in the organization; the combined intelligence, skills and expertise that gives the organization its distinctive character. The human elements of the organization are those that are capable of learning, changing, innovating and providing the creative thrust which if properly motivated can ensure the long term survival of the organization"

One definition that captures the concept of human capital quite simply and clearly is that offered by the OECD (2001; 18). The OECD defines human capital as:

> *"the knowledge, skills and competencies embodied in individuals that facilitate the creation of personal, social and economic well-being"*.

In other words, human capital encompasses the capacities and abilities acquired by individuals, groups and societies that enable them to carry out assigned responsibilities for the attainment of predetermined goals. The notion of 'human capital' became popular in economic literature as a result of the realization that physical capital alone was not sufficient to bring about long term development. In fact, many economists were to later explain that human capital was the most important factor that created development in the sense that with minimal physical capital, human capital could stimulate or cause substantial progress to happen. On the other hand, without human capital, nothing would ever happen. Indeed, it is known that plants, offices, computers, automated equipment, intranets, systems, internets, websites and all other facilities that any organization may install remain unproductive except for human efforts and direction.

According to the World Bank, fast economic growth requires three fundamental factors. These factors are natural capital, physical capital and human capital. Of these three factors,

however, human capital has a major share in generating economic growth (contributing 64 per cent). This point had been aptly captured by Harbison (1973) when he wrote that:

> *"Human resource, not physical capital, not income or material resources constitute the ultimate basis for the wealth of nations. Capital and natural resources are passive factors of production, human beings are the active agents who accumulate capital; exploit natural resources; build social, economic and political organizations; and carry forward national development. Clearly, a nation which is unable to develop the skills and knowledge of its people and to utilize them effectively in the national economy will be unable to develop anything else*"

The implication of the above statement is that no country can make any meaningful economic progress without developing the knowledge, skills and capabilities of its citizens to manage available resources. It is an incontrovertible fact that human capital constitutes the most precious assets of any nation. This therefore underscores the imperative for building requisite human capital for sustainable development.

3.2 Building Human Capital for Sustainable Development

Building requisite human capital – i.e. people with the right skills, knowledge, competencies, frame of mind, attitude and motivation remains the most enduring strategy for the pursuit of sustainable development. This is the only way to provide people with the capacity – knowledge, skills, attitudes and motivation – to reduce the harmful influence of society on the environment and to protect and preserve the globe for future generations. A key issue in creating a critical mass of requisite human capital is strengthening the role of education and in particular, education for sustainable development using a multidisciplinary approach (Pidlisnyuk et al., 2005; Kasimov et al., 2002) and providing training to a diversified group of stakeholders including students and specialists, particularly those specialized in the field of political science, economy, environment and agriculture. The crucial importance of a strong educational component for sustainable development was stressed at the 1992 World Summit in Rio de Janeiro, Brazil. Chapter 36 of Agenda 21 states, "Education, including formal education, public awareness and training should be reorganized as a process by which human beings and societies can reach their fullest potential. Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues (Melnychuk et al., 2003)."

Education is an instrument for developing human resources to optimize productivity by encouraging technical progress and by promoting cultural conditions conducive to social and

economic change. The objective is to use all forms of capital, including the human capital, to achieve rapid, more equitable economic growth with elimination and avoidance of the impact to the environment (Kasimov et al.).

Re-emphasizing the importance of education for sustainable development, the Dakar Framework for Action proclaimed that "education is a fundamental human right. It is the key to Sustainable Development … for effective participation in the societies and economies of the 21st century, which are affected by rapid globalization (UNESCO, 2000)." In the same vein, at the final Agreement of the 2002 World Summit on Sustainable Development in Johannesburg, South Africa it was stressed that "the achievement of the internationally agreed development goals, including those contained in the Millennium Declaration will require a significant increase in the flow of financial resources to education and awareness raising" and to "integrate sustainable development into education systems at all levels of education in order to promote education as a key agent for change (UN, 2002)."

Recognizing the crucial role of education, a UN's Decade on Education for Sustainable Development (ESD) declared for the period 2005-2014. The Decade aims to see ESD implemented in thousands of local situations on the ground, involving its integration into a multitude of different learning situations. These initiatives can be catalysts for action and contribute to the goals and objectives of the Decade. In such ways, organizations, local communities and individuals, different educational units can be actors within the global movement toward sustainable development.

While education has been duly recognized as a potentially strong instrument for attainment of sustainable development, it must incorporate key themes of sustainable development in all education systems to be effective (UNECE, 2005). These themes include a wide range of issues such as poverty alleviation, peace, ethics, democracy, justice, security, human rights, health, social equity, cultural diversity, economy, environmental protection, natural resource management, among other things. In accordance with the goals of sustainable development mentioned above, the content of education for sustainable development should also have three parts (Kasimov et al.):

- *environmental* - protection of the integrity of ecosystems, the carrying capacity of the biosphere, biological diversity, and the quality of the environment;

- *economic* - providing the imperative of sustainable development for economic management (efficient use of natural resources, strategic sustainable management of territories, resources and economic sectors);
- *social* - education in the sphere of human rights, health, safety, conflict resolution, ethnology, anthropology).

There are also suggestions by experts to the effect that the ultimate target of education for sustainable development should be to make the principles of sustainable development an integral part of every person's life using an effective combination of the following traditional instruments:

- *dialog*ue**:** creating understanding and constant dialog between authority, business organizations, other important stakeholders groups;
- *education***:** development and creation of new knowledge, skills and habits for encouraging susainability practice in business, economy, each-day life;
- *information*: providing the public with broad access to information about varieties of questions regarding SD, state of the environment along with information about achievements in the a way to sustainability;
- *marketing:* changing of human behavior supporting sustainable development decisions, having all knowledge and data.

In addition to the above, at the end of the day, effective education for sustainable development will depend upon a combination of the following factors: legitimacy through the curriculum; new ways of learning; competence of staff; institutional development; partnerships and finances.

Accordingly, building human capital for sustainable development will require a reform of the educational system especially at the university level because the university is the major and apex 'feedstock' for a country's human capital. The university supplies the human capital needs both for the other lower levels of the educational system (primary and secondary) and the non-educational organizations. The university therefore has a very critical role to play in the promotion and implementation of sustainable development.

4.0 ROLE OF THE UNIVERSITY

While universities are expected to play very specific roles in promoting sustainable development through their traditional functions of teaching, research and knowledge dissemination, there is a growing consensus that our current paradigms are inadequate for addressing the long term needs of a sustainable future.As such, it is then necessary for universities to fill the gaps by updating strategies and procedures to accommodate the resilience

required to progressively adapt to changing physical, historical and social conditions in order to play an active role in shaping a more sustainable future. To do so universities should encourage new thinking within the educational system (Torino, 2009) and introduce new, creative and innovative solutions to problems of sustainability. Universities can do this by playing some of the following roles:

1) ***Incorporation of Sustainable Development Aspects into Existing University Courses and Programmes.***

Universities have a critical role to play in educating all stakeholders, disseminating information about sustainability, and particularly by training leaders with the skills to solve regional and local problems from a global and interdisciplinary perspective. Universities should therefore incorporate relevant key themes of sustainable development in existing courses and programmes. These themes, as stated earlier, include a wide range of issues such as poverty alleviation, peace, ethics, democracy, justice, security, human rights, health, social equity, cultural diversity, economy, environmental protection, natural resource management. These themes should fully be integrated into the courses as part of the regular curricula with the objective of ensuring that all university graduates or a great majority of them become sustainability literate and have the awareness and understanding to be ecologically responsible citizens. A sustainability literate person, according to Obe et al (2004), would be expected to:

- ✓ understand the need for change to a sustainable way of doing things, individually and collectively;
- ✓ have sufficient knowledge and skills to decide and act in a way that favours sustainable development; and
- ✓ be able to recognize and reward other people's decisions and actions that favour sustainable development.

Sustainability literate citizens will be in a position to make everyday decisions based on a balanced consideration of the social, economic and environmental aspects of sustainable development. In relatively poor countries, such as developing countries the creating of a critical mass of sustainability literate citizens will therefore be an overarching objective which the university should take as a matter of utmost priority.

2) ***ConductingResearch on Sustainable Development***

Universities can initiate different types of research (pure or action research) in specific areas that are germane to addressing sustainable development issues. Such research plays an indispensable role in development, albeit a very complex and perhaps an indirect one as stated by

Vessuri(2008). Research, apart from creating and increasing knowledge, it also enhances understanding of sustainability issues and informs policy decisions. Whether conducted for specific purposes (action research) or as an academic pursuit by policy makers or academics, research has an impact on all areas, especially in the context of human and social development. Taylor (2008) posits that, "Research is assumed to be a vital part of the role of universities. While each university is expected to conduct research in its areas of strength, there is the need for universities to encourage interdisciplinary or collaborative research to address the multi-dimensional nature of sustainable development. They should also encourage the emergence of international research networks and local research services that enable them to leverage on their collective resources and capabilities.

To make its research outcomes useful and beneficial for the purpose of promoting sustainability practices, the university is expected to ensure the dissemination, transfer or sharing of its research ideas and knowledge to those who require the input of such research findings to enhance good sustainability practices especially at local or community levels. This is because, as Teaslade (2000) points out, "Harnessing local knowledge is important in prioritizing the local community as the object of development.

3) ***Execution ofCommunity-based Programmes and Projects***

With the increased recognition of the social role of higher education in development (Bok 1984), the university can play the critical role of conducting special projects and programmes aimed at addressing problems and challenges in local communities as well as provide services to the local people. Such projects can be conducted in partnership with other public organizations for development purposes or with financing from corporate organizations as part of their corporate social responsibility. In this regard, the university should articulate sound research proposals for the purpose of seeking for research funding.

4) ***Development of New Approaches and Solutions***

Universities can also identify areas of critical human needs that have great negative impact on sustainability and work to develop new and innovative approaches and solutions to these problems. For example, energy and all other non-renewal resources (water, land, air, soil, etc.) form the basis of the entire living process in the present and in the future. When working on those areas, the university's focus should not merely be on preventing over-exploitation of existing resources or on limiting the growing excesses of pollution but to provide alternatives

which have a positive impact rather than negative. It is better to invest in alternative energy even though this may not be currently profitable, as its continued development would be an important gift to future generations.

The development of alternative energy systemsis a crucial issue at a global level. The last two decades have seen the exploration of virtually every avenue that might contribute to greater self-sufficiency for communities including feasibility studies, demonstration projects and commercial development of a range of energy sources including hydropower, wind turbines, ocean waves, solar and geothermal energy, municipal solid waste and biogas. In many cases, progress in these alternative developments has fallen short of expectations. This has been attributed to many factors, including inadequate resource assessments, poorly conceived projects based on unworkable assumptions, and even opposition by environmental and other groups. The university has a part to play in discerning between what is possible and what is appropriate and conveying the emerging knowledge to all generations.

5) ***Creating Awareness on Sustainable DevelopmentIssues***

Improving awareness of sustainability includes such issues as control of greenhouse gases, land and energy use, consumption patterns, pollution and transport, all of which have direct connections to education for sustainable development . There is a high degree of interdependence between all these factors. An understanding of these matters through education contributes to building the skills and attitudes needed to question the way we think, the values we hold and the decisions we make in the context of sustainable development. It seeks to enable individuals to take informed and responsible decisions and actions, now and in the future by also realizing the impacts of their decisions on others. In addition education is recognized as an essential element in disaster risk reduction strategies. Major disasters such as the tsunami and the major earthquakes have major impact on sustainable development. This requires more education of all sectors of society on disaster reduction practices based on the application of scientific and technical advances and management practices. Education for disaster reduction is a trans-disciplinary exercise aimed at developing knowledge, skills and values which will empower people of all ages, at all levels, to assume responsibility for building a safer and sustainable future.

6) ***Engagement with Industry, Commerce and the Community***

` Achieving sustainability requires social change, which is predicated on changing public awareness. Universities have a responsibility to articulate and disseminate new sustainability-related scientific knowledge and information, including its attendant uncertainty, to society at large through various fora. For example, through roundtable discussions, conferences, seminars and dialogue between scientists and other stakeholders, including citizens and policy makers, new knowledge can be a catalyst for social innovation and effective policymaking. Conversely, this dialogue can spur further innovations in knowledge that help society progress along the path of sustainability.

7) ***Strengthening Regional and International Cooperation and Exchange***

To achieve success in the incorporation of sustainable development principles into the education system, collaboration has to exist between educational and training systems, communities, other stakeholder groups, such as governmental officials, non-governmental organizations, and consumers. Another challenge is to make sustainability attractive not only to certain target educational groups, but to the society as a whole. In the global context, the problems posed by climate change is a leading example of where education for sustainable development (ESD) could be applied to daily life, as climate change affects everyone and ESD offers an essential way to shape knowledge and attitudes, and hence could help us to address these problems.

8) ***Adoption of New Training /Delivery Methods***

University lecturers need to move outside the traditional format of teaching through lectures and seminars. They should involve practitioners from business as well as political and governmental leaders to make presentations to students. The revised sustainability sound curricula have to balance the traditional scientific approach with input from case studies and social sciences, including elements of ethics and sociology. In training professionals, teachers and lecturers have to raise ecological awareness, emphasize principles of sustainability and present good practices. Students should be encouraged to ask appropriate questions and try to findadequate answers rather than simply acquiring a body of knowledge. The goal should be to enable students to engage in an informal conversation and discussion with experts about the different aspects of environment and sustainability and to help them to develop the confidence

and skills to add to this knowledge and to challenge it, when appropriate (Gough and Scott, 2006).

9) ***Serving as Role Models for Sustainable Development***

Another potential role for the university in the effort to attain sustainability is the use of their campuses as models for a sustainable society, based on interactions with various stakeholders in society through the academic research and education processes. The university can provide venues in which to test new sustainability-relevant knowledge in a social context. Activities already being undertaken by participating universities, such as the development of "sustainable" or "green" campuses, and the issuing of action statements in response to climate change, are examples of how to showcase a sustainable society. By serving as test model for society at large, the university can help foster in its students the attitudes and skills necessary to achieve a sustainable society in the future. Thus the sustainable campus can serve as both an experiment in progress and an ideal tool for educating future generations.

10) ***Establishment of Partnerships and Networks***

The university in collaboration with other universities and institutions can establish a "Network of Networks" (NNs), which is able to link the various discipline-specific research networks already in place, thereby utilizing and augmenting their respective strengths and knowledge bases. The NNs provides a common platform and meeting space for the sciences and practice together with public policy innovation by enhancing interdisciplinary cooperation among universities and research centers in different nations through such initiatives as student exchange, faculty exchange and joint research projects. Each of the universities participating in the NNs plays a prominent role in its part of the world and is connected to networks related to their own interest. Models developed by these universities in different areas to address common issues, reflect each region's economic, social and cultural conditions. Together they can provide the components for a global model that incorporates regional diversity.

The Network of Networks (NNs) should be capable of addressing the broad and complex range of sustainable and responsible development issues through training and research activities such as holding research network conferences and building consensus on sustainable and responsible development objectives. The NNs operate as a platform for science and public policy innovation, improving cooperation with universities and research institutes in developing nations through joint research and education programs, and to provide support as needed. They work

actively within the universities' and surrounding communities to develop social models for sustainable and responsible development. Campuses offer an opportunity to serve as experimental venues where the knowledge captured can be put into practice as a good role model.

The roles identified for universities in helping to build human capital for sustainable development are by no means exhaustive. They are only indicative of the kinds of things that the university can do to contribute in promoting sustainable development. As the university engages with the government, the communities, corporations, other universities and institutions, it can identify many other roles that it can play as sustainable development issues emerge and evolve over time.

5.0 CHALLENGES OF THE UNIVERSITY

Many universities, especially in the developing countries grapple with numerous and daunting challenges that impose severe constraints on their ability to build human capital for sustainable development in their respective countries. In Nigeria, in particular, most universities face, or are likely to face, the following challenges:

(i) Inadequate Funding

Inadequate or limited funding has been the biggest bane of the university in Nigeria. This has resulted largely from dwindling budgetary allocations from government as well as the university's inability to improve internally generated revenue (IGR) due to environmental factors. Appendices 1and 2 depict the funding pattern of education in Nigeria and some selected African countries. From Appendix 1, it can be seen that budgetary allocation to education has generally been on the decline between 2000 and 2012. The budgetary allocation increased from a meager 8.3 per cent of the total budget in 2000 to its highest ever point of 31 per cent in 2008 and 2009. Thereafter, it crashed to 1.5 per cent of the total budget and only improved to 8.43 per cent in 2012. Compared to other African countries, it can be seen in Appendix 2, that Nigeria has almost the least budgetary allocation to education among the 10 African countries. With limited financial resources, it is very difficult for the university to introduce new subjects/content into its curricula or introduce new courses that address issues of sustainable development.

(ii) Weak infrastructure

The university also suffers gross inadequacy of vital infrastructure for teaching and research. It is reported in various media that all resources required for the education production process are in short supply. According to Ochuba (2001), lecture halls, laboratories,

studentshostels, library space, books and journals and office spaces are all seriously inadequate. The World Bank (1994) equally observed that the equipment for teaching, research and learning are either lacking or very inadequate and in a bad shape to permit universities the freedom to carry out basic functions of academics.

(iii) ***Inadequate Faculty***

The university also experiences shortage of academic staff who are expected to carry out the roles of the university in sustainable development as identified above. In the Needs assessment Report just released by the Federal Ministry of Education, it was shown, for instance, that there were 37,504 academics in the country's 124 universities (less than half of what is required) with only about 45 per cent of them possessing the PhD which is the basic requirement for teaching in the university. Also, student-teacher ratio is reported to be as high as 1:122 in some universities. With this gross shortage of academic staff, carrying on the additional responsibility of introducing new courses in sustainable development will add to the burden of the university and whittle down the quality of its programmes generally.

(iv) ***Low Management Support***

For the university today, in the face of all the challenges identified above, survival has become the name of the game. Most times, the university management may not see the direct benefit of playing the roles suggested in the previous section of this paper and so may be reluctant to provide financial and infrastructural support for such roles.

(v) ***Brain Drain***

The phenomenon of 'brain drain' has drained the university in Nigeria of its best and most academic staff who have left for greener pastures in other countries, including African countries. Unfortunately, the largely uncompetitive nature of the Nigerian university particularly within the context of infrastructural facilities makes attracting academics, including Nigerian in the diaspora, from other climes difficult.

(vi) ***Low Level of Awareness of Sustainable Development Issues***

There is a very low level of awareness among Nigerians of issues relating to sustainable development. In this regard, 'patronage' of sustainable development activities and programmes of the university is likely to be low, except there is a sustained publicity stunt at all levels to create the level of awareness among the citizens about the importance of sustainable development.

(vii) ***Rigid Institutional Structures***

Traditional institutional set-up and structures in the university are too vertically segmented and compartmentalized. These are not suitable for the cross-cutting and holistic nature of sustainable development issues which require inter-departmental and inter-institutional collaboration.

These challenges, notwithstanding, the university can introduce programmes it has capacity to implement and as it builds capacity and garners support in the future it can expand its activities.

6.0 SUGESTIONS FOR THE WAY FORWARD

In addition to starting on a relatively small-scale, the university can take some of these steps to address some of the challenges identified above.

- Establishment of a Focal Point/Office to handle programmes and projects related to sustainability development;
- Launching of a dedicated sustainable development endowment fund to solicit for funds and assistance from donor organizations, international agencies, corporate organizations, etc.;
- Integration of sustainable development issues into the university's strategic plan to gain management recognition and formal approval;
- Seeking technical assistance for training of faculty to build requisite capacity management of sustainability development progammes and projects;
- Establishment of partnership and collaboration arrangement with local and foreign institutions who are already implementing sustainability training;
- Headhunting experienced personnel;
- Identifying and establishing a pool of associates for the purpose of strengthening capacity at a reasonable cost.

The suggestions above are not exhaustive but they can give the university a good start or some push if the programme is already in place. Over time, with lessons learned from doing, the programme can take root.

7.0 CASE STUDY (ADOPTED FROMPIDLISNYUK, 2010)

Over recent years the author has supervised and implemented several programs aimed to promote sustainable development for the Ukrainian public and to implement sustainability within the university system. Firstly, in years 2001-2002 together with colleagues from the Sustainable Development and Ecological Education Center, a number of training programs were prepared and

delivered to local governmental officials, public experts and NGOs leaders in some Ukrainian cities: Kyiv, Cherkassu, Kamenetz-Podilsky. Two programs were successfully accomplished in cooperation with faculty from the Carl Vinson Institute of Government, the University of Georgia (USA). A text-book entitled "Sustainable Development: 25 questions and answers" was published in order to disseminate knowledge among broader Ukrainian auditory.

Secondly, in 2002 the author prepared a syllabus for a lecture course "Environmental aspects of Sustainable Development", taught at the Master program in Ecology at the National Agricultural university during the years 2002-2005. It was the first official course in sustainable development at Ukrainian universities. Currently, this course is obligatory for all Master programs in Ecology in Ukraine. In 2005, a new syllabus for lecture course "Fundamentals of Sustainable Development" was prepared by author, and the subject was taught for the Master program in Economy at the National Agricultural University in 2005-2007. The same course was delivered at LanchouGiaotong University (China), Kyiv State University (Ukraine) and ICN Business School (France). The syllabus includes the following topics: overview of sustainable development (SD), main terms and affiliations; ecological threats that stimulated SD; economic and social threats that stimulated SD; institutional support for SD; indicators of SD: global and local approaches sustainable agriculture; sustainable water use; education for sustainable development; local agenda 21: creation and implementation; the role of stakeholders groups in SD; case studies from Europe, USA and Ukraine.

For teaching these course two bench books were prepared together with co-authors. The first one entitled "Sustainable development: what everyone needs to know" (2003) was published in English, the other one entitled "Sustainable development and role of education" (2005) has been broadly used for courses in sustainable development at different Ukrainian universities.

The first book was also used at Kansas State University for a Master program in Sustainability in Indigenous Study. Different researches have started to research on in different aspects of sustainability as a consequence of the different initiatives taken: analysis of institutional support for SD in Europe and ways of using it in Ukraine; attitude of Ukrainians towards SD: the case of local and state governmental officials; attitude of Ukrainians towards SD: the case of educators and students; analysis of Water use in rural communities of Central Ukraine in terms of sustainability: sustainable rural development in Central Ukraine and the role of extension service; sustainable Transport systems.

Finally, recognizing the important role of educators in implementation of sustainability, recently two trainings were accomplished in cooperation with the Sustainable Development and Ecological Education Center and National Agricultural university across Ukraine: the “Education for Sustainable Development” week for secondary schools teachers from Central Ukraine and the “University Program regarding Sustainable Development “for faculty of Crimean Universities (South Ukraine).

8.0 CONCLUSION

This paper has examined the role of the university in integrating sustainable development into all human activities. The paper started by highlighting the imperatives of sustainable development. It submitted that the satisfaction of human needs and aspirations has always been the major objective of development and for several decades,economic growth and development had resulted in substantial improvements in health, education, and the quality of life for many people. However, the path of growth and development pursued by the global community has largely beenunsustainable. As a result, the world has to grapple with enormous and unprecedented crisis that threaten its survival. These crises and the need to address them gave birth,through the activities of the UN, to the concept of sustainable development which is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The overarching objective of sustainable development is meeting the needs, now and in the future, for human, economic, and social development within the restraints of the life support systems of the planet. It focuses on key issues relating to the environment, economy, social inclusion, globalization and governance. As a multi-dimensional concept requiring the participation of diverse stakeholders and perspectives, the successful implementation of sustainable development is hinged on building requisite human capital, i.e. knowledge, skills and competencies embodied in individuals that facilitate the creation of personal, social and economic well-being. The paper indicated that the university has a very critical role to play in the promotion and implementation of sustainable development through its teaching, research and knowledge dissemination functions. More specifically, the roles of the university included incorporation of sustainable development aspects into existing university courses and programmes, conducting research on sustainable development, execution of community-based programmes and projects, development of new approaches and solutions, creating awareness on sustainable development issues, engagement with industry, commerce and

the community, strengthening regional and international cooperation and exchange, adoption of new training delivery methods, serving as role models for sustainable development and establishment of Partnerships and Networks. In discharging these responsibilities, the paper recognized the fact that the university faces certain challenges which are enormous and need to be addressed. Accordingly, the paper put forward some suggestions for addressing the challenges and enhancing the ability of the university to play the roles of promoting sustainable development.

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APPENDIX 1

FGN ALLOCATION TO EDUCATION SECTOR, 2000 – 2012

YEAR	*ALLOCATION*	*% OF TOTAL BUDGET*
2000	*64,514,932,711.00*	*8.3*
2001	*72,950,836,443.00*	7.0
2002	*82,094,441,815.00*	5.09
2003	*78,952,003,053.00*	*11.83*
2004	*93,767,886,839.00*	7.8
2005	*N/A*	*8.3*
2006	*N/A*	8.7
2007	*186BN*	6.07
2008	*168.64bn*	13
2009	*183.3*	13
2010	*249.08*	6.4
2011	*365.88*	1.5
2012	*400.15*	8.43

Source: Federal Ministry of Finance.

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APPENDIX 2

BUDGET ALLOCATION TO EDUCATION SECTOR IN 2012 IN 11 AFRICAN COUNTRIES.

S/N	COUNTRY	PERCENTAGE (%)
1.	Botswana	19.0
2.	Swaziland	24.6
3.	South Africa	25.8
4.	Cote d'Ivoire	30.0
5.	Ghana	31.0
6.	Kenya	23.0
7.	Uganda	27.0
8.	Tunisia	17.0
9.	Morocco	17.7
10.	Burkina Fasso	16.6
11.	Nigeria	8.43

Source: US Department for International Development Official Bulletin, 2012, P.14