Environmental Science Education: Implication for Achieving Sustainable Development Goals in Nigeria

[1]MUSAH Aminu & [2]BAH Ladi Fatima

[1]Department of Integrated Science Education,
Federal College of Education (Tech) Potiskum, Yobe State, Nigeria
Email: musahaminu16@gmail.com)

[2]Department of Chemistry Education,
Federal College of Education (Tech) Potiskum, Yobe State, Nigeria
(08061356111)

ABSTRACT
Recently, the concept of sustainable development has gained global recognition. Early 20th century, the term 'sustainable development' has been used widely and often times incorrectly. The term began to gain popularity and credibility, when it became increasingly acceptable to use it as a way of responding to global environmental concerns, biophysical issues, fairness, equity and distribution of resources. Bearing this in mind, the Millennium Development Goals (MDGs) were put up to address and include the issue of sustainability in development. In essence, this article was written with a view to enhance the understanding about the analytical content of sustainable development as well as sensitizing the Nigerian economy to key into the current wave of sustaining the global economy. In the light of some environmental as well as socio-economic challenges permeating the Nigerian economy, it is therefore required that the Nigerian government concentrates on key areas that can help boost and sustain its developmental objectives, among which includes creation of employment opportunities, strengthening the institution of governance and provision of basic social and essential resources among others.
Keywords: "Sustainable", "Globalization", "Environment", "Development"

INTRODUCTION
It is common knowledge within the development circle that development involves a physical reality and a state of mind. Through development process, the interactions between social, economic and institutional processes must be continually sustained to meet up with increasing future demands in terms of population growth and continuous use of natural, human and material resources. It has been observed that changes in the integrated approach to social, economic and environmental issues have not really facilitated the developmental goals in Nigeria. For instance, problems such as poverty, flooding, ethnicity, environmental pollution, corruption, attitudes and lopsided income distribution have been on the increase (Mathur 2002). A cursory look at the poverty profile in Nigeria in 2004,showed that Nigeria's relative poverty measurement stood at 54.4%, but increased to 69% in 2010. In concrete terms, 54.7% of Nigerians were living in poverty in 2004 as against 60.9% in 2010 (National Bureau of Statistics, 2010). Besides these, in the early 1990s Nigerian cities experienced Floods and hazards which have more than doubled in the last ten years (Odermeho, 1993). It was also while recently, it was reported that Nigeria experienced the worst flooding in 2012 (Akintoye 2014).
In view of these challenges, it should be recalled that in the year 2000, the Millennium Development Goals (MDGs) were adopted by 189 member countries of the United Nations including Nigeria. This was with a view to fast track the key developmental issues in the countries which included increasing the availability of basic life sustaining goods, raising the standard of living of the people as well as expanding the range of economic and social choices. A set of eight goals to be achieved by 2015 was

adopted by the United Nations which were to eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality; improve maternal health; combat HIV/AIDS, malaria, and other diseases; ensure environmental sustainability; and develop a global partnership for development (Todaro and Smith, 2011).

In light of these goals, it became pertinent for the Nigeria economy to understand the prospects and underlying principles for achieving these goals as well as sustaining the process of developments desired. It is against this background that this paper is sub-divided into sections. Section two takes a look at some theoretical and practical principles on sustainable development while section three reviews the plan implementation of the world summit on sustainable development. In section 4, a review of the Nigerian case on sustainable development was carried out.

Concept of Sustainable Development

It should be noted that there is no single clear cut definition for sustainable development but there are key ideas common to all, definitions concerns resource exploitation at a rate that would not prove detrimental to future generations. For instance, the Complete A-Z Geography (2010) Handbook defined sustainable development as "development that meets the needs of the present, without compromising future generations to meet their own needs. The environment should be seen as an asset, a stock of available wealth but if the present generation spends this wealth without investment for the future then the world will run out of resources. If, however, we use this capital (grant) to research and develop new resources for the future, we can build machines that will substitute for the environmental resource (resource substitution). A good example is the construction of solar panels to replace oil, coal, hydro and thermal power generation mechanisms". It is also about being clear and responsible about the use of scientific, and other, evidence – for example, about levels of pollution or carbon emissions.

The international Institute for Sustainable Development (IISD) sees sustainable development in many ways, but the most frequently quoted definitions is from Our Common Future, also known as the Brundtland Report: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- The concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and

- The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs".

All definitions of sustainable development require that we see the world as a system-a system that connects space; and a system that connects time. When you think of the world as a system over space, you grow to understand that air pollution from Europe/Americas affects air quality in Asia, and Caribbean, and that pesticides sprayed in Argentina could harm fish stocks off the coast of Australia. Besides, when you think of the world as a system over time, you start to realize that the decisions generations before ours made about how to cultivate the land continue to affect agricultural practice today; and the economic policies we put in place today will have an impact on urban poverty when the present young grows up.

The ozone layer may therefore have some of the characteristics of a unique asset crucial to well-being and perhaps survival.

In an ecological perspective, sustainability must involve limits on the population and consumption levels and the process that generate variability and novelty-the generation of genetic diversity and the resultant processes of evolution and change in species and ecosystem. Jonathan Harris (2000) noted that advocates of sustainable development recognize social development as an essential part of the paradigm shift. The major area of emphasis included. Human Development index per capita GNP/GDP Gender Equity, poverty, e.t.c he concluded by saying that *"true sustainability means a major shift from existing techniques and organization of production (in areas as Agriculture, Energy, industry, renewable resource system) to newer techniques that will practically address the real issues without Jeopardizing the future, but instead, preserve it."*

Sustainable Development Goals
The sustainable development goals are made up of 17 items namely:
Goal I. End poverty in all its forms everywhere
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3. Ensure healthy lives and promote well-being for all at all ages
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5. Achieve gender equality and empower all women and girls
Goal 6. Ensure availability and sustainable management of water and sanitation for all
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Goal 10. Reduce inequality within and among countries
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12. Ensure sustainable consumption and production patterns
Goal 13. Take urgent action to combat climate change and its impacts*
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development

With particular reference to sustainable Development to different regions, the African perspective include welcoming of New partnership for Africa's Development [NEPAD] and other existing development framework that are owned and driven nationally by African countries and that embodies poverty reduction strategies; provide financial aid Technical support of Africa's effort to implement land and natural resources management practices; mobilize financial and other support to develop and strengthen health systems; promote integrate water resource development and options the upstream and downstream benefits through effective management policies (Oyeshola 2008).
In addition to enhancing ensuring sustainable development in Africa other measures to be employed include Achieve sound management of chemicals, with particular focus on hazardous chemicals and waste' Bridge the digital divide and create opportunity in terms of access infrastructure and technology transfer and application through integrated activities for Africa; create an existing environment to attract investment; accelerate new and existing programmes and projects; support African countries in their efforts to implement the habitat agenda through initiatives to strengthen national, local and institutional capacities in sustainable urbanization and local and institutional capacities (Akintoye 2014).

Africa's sustainable development challenges
The overriding sustainable development challenge in Africa in general and Nigeria in particular is poverty eradication. Indeed, "African Ministerial Statement to the World Summit on Sustainable Development (WSSD) identified poverty eradication as an indispensable requirement for sustainable development. Africa is the only region in the world where poverty has increased both in absolute and relative terms (ECA 2006).
Apart from being the poorest region in the world, Africa remains the least developed, the most technologically backward, the most indebted, the most food-insecure and the most marginalized. Furthermore, malnutrition, disease, environmental degradation, natural resource depletion, poor and inadequate infrastructure, unemployment and weak institutional capacities continue to pose serious development challenges for Africa.

This state of affairs is exacerbated by recurring natural disasters and the AIDS pandemic, which is reversing decades of economic gains and imposing costs on Africa at least, twice those in any other developing regions, thus undermining sustainable economic growth. It is striking that Africa is the only continent that has not and not on track to meet most of the Millennium Development Goals (MDGs) by 2020 (UN 2005).

Sustainable development thrives best in an environment of good governance, peace and security, but armed conflict remains a major obstacle to development in several parts of the continent. The maintenance of an environment of peace and security is therefore one of Africa's foremost development imperatives. Apart from its costs in human and material terms, conflicts impede production, damage infrastructure, prevent the reliable delivery of social services and disrupt societies. Africa is the most sub-divided continent, with small and fragmented economies that undermine the continent's position in the global development arena. In spite of the long-standing commitments and the emphasis placed by African leaders on the process of regional integration, this has been slow and therefore, remains a major challenge for Africa (ECA 2006)..

It is therefore no coincidence that the Africa Chapter of the Johannesburg Plan of Implementation (JPOI) of WSSD, states in its preamble that since the United Nations Conference on Environment and Development (UNCED), sustainable development has remained elusive for many African countries, including Nigeria with poverty remaining a major challenge.

Policy responses to Africa's development challenges

Africa's development challenges are somehow rooted in past policies and strategies. In the 1960s and 1970s, many African countries pursued national development planning as the main strategy for development for many centuries, this strategy of growth was State-based with the rationale that the State was big enough to mobilize resources for the daunting task of development. Besides, private capital and the relevant institutions were not well developed to partake meaningfully in development activities in many countries.   Most African countries relied mainly on the exploitation of natural resources for development (ECA 2006)..

Many newly independent countries used the revenues generated from the natural resources to build their infrastructures, industry, education and health while increasing formal employment. However, the sharp oil price increase in the 1970s negatively affected improvements in sustainable development that had been made. Also, the heavy dependence on natural resources led to resource depletion and environmental degradation and worsened the exposure of weaker economies to external shocks, thereby increasing poverty and reversing social development (World Bank, 2003). Many countries including Nigeria experienced reduced economic growth in the latter part of the 1970s and early 1980s.

As a result of poor economic performance, Nigeria embarked upon Structural Adjustment Programs (SAPs) during the 1980s and 1990s and Poverty Reduction Strategies (PRSs) from 1999. The SAPs were meant to correct the macro-economic imbalances that had occurred as a result of state-controlled economic policies in most African countries. They were also supposed to generate quick growth to compensate for the long-term low average growth rates for the continent. However, these policies failed to integrate environmental and social concerns, thereby exacerbating inequalities, poverty and environmental degradation. Even the macro-economy sector suffered, as not much attention was paid to important sectors such as agriculture, industry and employment (Cecilia 2009).

Furthermore, policies should embody holistic, broad based and participatory approaches, to promote ownership and engender action by all, and for all.

Review of the Nigeria Case on Sustainable Development

Lele (1991) describes sustainable development as "a new way of life and approach to social and economic activities for all societies, rich and poor which is compatible with the preservation of the Environment

Sustainable Development according to the writer's view could be referred to as efficient management of resources for human survival taking into consideration both the present and future generation. Specifically, some factors could be identified as obstacles to achieving sustainable development in less economically developed countries (LECDs) like Nigeria?

41

• The priorities of LEDC governments and individuals are often short term e.g. meeting the basic needs of population today. For example, providing shelter, food, fresh running water, education and healthcare. Many LEDCs are experiencing internal conflict/natural disasters and money is spent on the military/disaster relief rather than on these basic needs and longer term sustainable initiatives;
• Corruption makes it difficult to priorities long term issues. Many leaders are in office for short periods of time and are also accompanied with policy summersault;
• Lack of qualified people to develop and implement alternative technologies due to a poor educational system and the "brain drain";
• Lack of education about finite resources. People do not know or understand the implications of over use of resources'

In the light of these challenges, specific areas of sustainable development effect for Nigeria and its implication for general development are as follows:

Environmental protection
Nigeria is a member of international and global community and as such share in the effects of technological advancement, specifically environmental management is particularly necessary and its major aim should be to avoid stressing a valued ecosystem beyond the limits of its resilience, stability and carrying capacity (Oyeshola, 2008).

The oil rich regions have a greater effect of most of this environmental degradation challenges in areas such as: oil spillage; crude oil content chemical substances such as sulphur nitrogen, oxygen as well as hydrocarbon components of oil spillage will affect living things affect wild life, aquatic life, plant life directly or indirectly thereby being implications for the bio-diversity of all living things now and in future, (Cecelia, 2009).
• Gas flaring. These flares contribute to greenhouse gases which contain toxins and therefore expose everyone to diseases such as asthma, respiratory illness, cancer and premature deaths.

To combat these particular environmental issues in Nigeria,
• We can develop a gas policy which will be favorable to both the population and the investors
• Articulate a national environmental health policy and national health action plan
• Review and harmonize existing health Laws
• Promote safe use of pesticides and other agrochemicals
• Develop a master plan on solid waste management
• Develop environmental health performance indicators
• Bringing pollution and environmental waste under control
• Phase out ozone-depleting substances
• Phase out persistent organic pollutant

To tackle some of these challenges, some measures to be taken include:
- Provision of soft loans to less privileged persons to promote Small and Medium scale Enterprise (SMEs).
- Address the problem of financing the real sector and mobilization of long term savings for investment.
- Job training of people in skills relevant to their immediate work environment and rural development should be incorporated.

Social Development
This is set to achieve equity in social issues such as education, health politics, social infrastructures, e.t.c It is reaffirmed that Nigeria in order to achieve any meaningful development must take care of social services of basic education, functional health care, employment for youth, clean water, security of life and properties, and access to quality infrastructures.
To achieve this social development, the Nigeria government in addition to existing policies can adopt the following:
- Creation of new employment opportunities for young school leavers and rural dwellers.
- Strengthen institutions of governance at all levels including adequate attention to human right and conflict prevention.
- Provision of basic social and essential resources, education, health, clean water, e.t.c
- Maintenance of Existing structures and creation of new ones where they are needed

CONCLUSION

In a bid to address the challenges of sustainable development globally, and particularly in Nigeria, all available means must be employed to tackle related problems of the environment alongside economic and social issues. This can be achieved by taking a conscious step towards the achievement of the goal of sustainable development given as stated in section 5 above.

In addition, the issue of sustainability must be a concern to all parastatals (public and private) and individuals. This will require educating everyone on the need for sustainable development and as a result walk towards its actualization. Besides, sanctions for erring persons must be ensured if the success of the process of sustainable development is to be attained.

Finally, policies that will promote sustainability should be put in place by the government of individual countries, which are consistent with international policies, in order to achieve an overall global sustainable development.

REFERENCES

Akintoye V, A & Opeyemi O, A (2014) Sustainable Development Goals: Nigerian perspective *European Journal of Sustainable Development*, (**3**), 1,pp 33-46

Mathur, B. L. (2002) "Economic Planning and Development theory and practice" India Sublime publications japer, India

Cecelia H. (2009) "Using the concept of sustainable development to encourage corporate responsibility in small enterprise". Norwegian University of science and Technology Trondheim, Norway

ECA, (2006). National Strategies for Poverty Reduction and Implementation of the Millennium Development Goals: An Issues Paper, Addis Ababa

IUCN; UNEP; and WWF, (1991): Caring for the Earth: A Strategy for Sustainable Living

Jonathan M. H. (2000), "Basic Principles of sustainable Development". Tufts University Medford MA 02155, USA. Global Development and Environmental institute Working paper 00-04

Lele S.M (1991) "Sustainable Development A critical Review on world Development (1991): Plan of implementation of the world summit on sustainable development at the united Nation" Conference; WWW. UN. Org/

National Bureau of Statistics (2011) "Nigerian Poverty Profile, 2010". National Bureau of Statistics.

Odermerho F. (1993) "Flood Control in a Third World City: Benin City Nigeria- Some Environmental and Policy Issues". Geo Journal 29.4 371-376, Kluwer Academic Publishers

Oyeshola D, O.P. (2008) Sustainable Development – Issues and challenges for Nigeria.

Todaro M. P. & Smith S. C. (2011) "Economic Development**".** Pearson Education Limited, Eleventh edition

United Nations General Assembly (2005) .Report of the Secretary General's Advisory Panel on International Support for the New Partnership for Africa's Development. A/60/85 21 June.

United Nations (2003) World Summit on Sustainable Development: Johannesburg 2002. Political Declaration and Plan of Implementation.

World Bank (2003) World Development Report, 2003. Sustainable Development in a Dynamic World: