SUSTAINABLE AGRICULTURE
AND RURAL DEVELOPMENT
Panacea for National Security Threats and
Absolute Poverty in Nigeria

Dr. A. I. Age
DEDICATION

This book is dedicated to my Late Parents, Pa Iorbee Age and Ma Iyolinyenge Iorbee Age (aka Senda Amena). My dear Parents, your blessings and prayers have paid off, so, you can rest in perfect peace in Jesus' Name (IJN), Amen.
ACKNOWLEDGEMENTS

My first gratitude goes to the Almighty God, for granting me good health, protecting me against my enemies and giving me the spunk, mettle and inspirations that prompted me to write this invaluable and thought provoking text book. Secondly, I am grateful to my Mentor, Prof. C.P.O. Obinne for his intellectual mentoring that has empowered me academically to achieve this feat. He did not only successfully supervised my M.Sc. and Ph.D. theses, but also facilitated my employment as a Lecturer in the Department of Agricultural Extension and Communication, Federal University of Agriculture, Makurdi in 2004 when he was the Dean, College of Agricultural Economics, Extension and Management Technology. Today, the seed he had sowned in me has germinated, sprouted and yielded my being not only the Dean, College of Agricultural Economics and Extension but also an Associate Professor of Agricultural Extension Policy and Sustainable Agriculture and Rural Development. Professor Chukwudi Patrick Obinne, you are too much, it is only the Almighty God who can reward you on my behalf.

Thirdly, I am grateful to Engr. Prof. E.I. Kucha, the Eagle Vice Chancellor, Federal University of Agriculture, Makurdi for creating an enabling environment for me to write three text books including this one during his tenure alone. In fact, I can never forget his financial support given to me when I wrote my first text book in 2013 titled “State-of-the Art Social Research Methods: Three-in-one”. It was that same motivation that spurred me to write my Second text book titled “Agricultural Extension Policy: contemporary cum topical issues”. Besides, I got my Associate Professorial Promotion during his tenure.

Fourthly, I wish to thank Prof. A. R. Kimbir, Deputy Vice Chancellor (Administration), FUAM for writing foreword to this book. I also wish to express my appreciation to Mr. I. Agene, Secretary in the Dean’s Office, College of Agricultural Economics and Extension for typesetting this work.
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PREFACE

The world in which all races of people are found is fast changing due to the emergence of social changes as well as some natural phenomena. Cases of environmental degradation or pollution, food insecurity, absolute poverty, political instability, global terrorism, high rate of youths' unemployment, global economic recession and low per capita agricultural productivity abound in Nigeria and other countries of the world. These call for urgent attention and action of all human races to preserve and protect our environments so as to meet our present needs without compromising ability of future generations to meet their own needs.

The advent of this innovative and thought provoking text book is not only apt but timely, considering the need for sustainable agriculture and rural development as well as the need to implement the 17 sustainable Development Goals (SDGs), which were launched by the United Nations in 2015 to replace the Millennium Development Goals (MDGs).

This book speaks volumes for itself and it aims at sensitizing the academics, researchers, policy makers, farmers, rural development pundits and the three tiers of government of the need to preserve and protect “Our Common Future”. It is, therefore, recommended to Postgraduate Students in Nigerian Universities as well as Lecturers, researchers, Policy makers, Extension Workers and the general public who are lovers of Sustainable agriculture and rural development.

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FOREWORD

I am elated, enthused and honoured to write foreword to this thought provoking text book titled “Sustainable Agriculture and Rural Development: Panacea for National Security threats and Absolute Poverty in Nigeria”. I highly appreciate the efforts of the Author, Dr. Akoso Iorbee Age for writing a book on topical and contemporary global and national issues with a view to sensitizing and conscientising all Nigerians of the urgent need to preserve and protect our natural resources base so as to meet our present needs without compromising the ability of the future generations to meet their own needs.

In fact, this text book has addressed almost all current challenges and contemporary international and national issues confronting Nigeria, which need to be tackled by relevant stakeholders such as Policy makers, researchers, the three tiers of government, donor nations, farmers, Agricultural extension workers and the Private sector.

The book is thematically designed and it consists of Seven Chapters. Chapter one deals with Sustainable Agriculture and Rural Development in Nigeria. Chapter two looks at an Overview of Sustainable Development Goals (SDGs). Chapter three treats Effects of Poverty on Socio-political Stability and National Security in Nigeria. Chapter four addresses the impact of Globalization on Nigeria’s Economic Development and National Security. Chapter five introduces the Green Alternative: Agriculture Promotion Policy to Nigerians. Chapter six discusses Control of Post-harvest losses of horticultural, root and tuber crop produce in Nigeria, while Chapter Seven deals with Agroentrepreneurship and its role in Sustainable Agriculture Development in Nigeria.
I hereby recommend this innovative and thought provoking text book to all M.Sc. and Ph.D students in Nigerian Universities studying Agricultural Extension and Rural Development, as well as Lecturers, Researchers and other interested readers who are lovers of Sustainable Agriculture and Rural Development.

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# TABLE OF CONTENTS

Dedication - - - - - - - - iii
Acknowledgements - - - - - - - - iv
Preface - - - - - - - - vi
Foreword - - - - - - - - vii

**CHAPTER 1:**
Sustainable Agriculture and Rural Development in Nigeria - - - - - - - 1

**CHAPTER 2**
An Overview of Sustainable Development Goals (SDGs). - 23

**CHAPTER 3**
Effects of Poverty on Socio-political stability and National Security in Nigeria - - - - 30

**CHAPTER 4**
The Impact of Globalization on Nigeria's Economic Development and National Security - - - - 53

**CHAPTER 5**
The Green Alternative: Agriculture Promotion Policy in Nigeria - - - - - - 92

**CHAPTER 6**
Control of post-harvest losses of Horticultural and Root/Tuber crop produce in Nigeria - - - - 102

**CHAPTER 7:**
Agroentrepreneurship: Its role in Sustainable Agriculture Development in Nigeria. - - - - - - 132
CHAPTER ONE

1.0 SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN NIGERIA

1.1 The Concept of Sustainable Development
Sustainable development can be conceptualized as the development that meets the needs of the present without compromising or undermining the ability of future generations to meet their own needs. It can also be defined as a process of meeting human development goals, while still sustaining the ability of natural systems to continue to provide the natural resources and ecosystem services on which the economy and society depend (Wikipedia, 2017). This concept was developed initially by the Brundtland Report in 1987. It was rooted in the earlier ideas about sustainable Forest management in Europe during the 17th and 18th centuries and environmental concerns.

The goal of sustainable development is to achieve a balance/harmony between environmental sustainability, economic sustainability and socio-political sustainability. In other words, the goal of sustainable development is to balance our economic, environmental and social needs, thus facilitating prosperity for the present and the future generations. In fact, sustainable development consists of three basic pillars or dimensions, namely: Economy, environment and the Society. It is a long-term, integrated approach to developing and achieving a healthy society by jointly addressing economic, environmental and socio-political issues, while avoiding overconsumption or utilization of natural resources.

There are four basic objectives of sustainable development. These include: Social progress and equality, environmental protection, conservation of natural resources, and stable economic growth and development. These laudable objectives can be achieved by reducing: absolute poverty among Nigerians, environmental
pollution and degradation, unemployment of our University graduates, and poor housing/sanitation facilities.

**Importance of Sustainable Development**

One may ask, what is the importance of Sustainable Development? Sustainable development is presently becoming a topical and contemporary issue globally due to the following attendant reasons:

1. It controls and protects a nation’s natural resources such as land, water, minerals and energy resources (crude petroleum oil and gas) so as to avoid extinction and degradation;

2. It encourages us to conserve and enhance our resource base, by gradually changing our attitudes and ways in which we develop and use improved technologies;

3. It ensures a stable relationship between anthropogenic activities and the natural world, which does not diminish the prospects for future generations to enjoy a similar or better quality of life as we are enjoying presently.

4. It ensures a balance or harmony between environment, economy and the society, thus enhancing per capita productivity with a view to reducing absolute poverty, hunger and enhancing economic, political and environmental security; and

5. It enlightens us to avoid overconsumption of non-renewable resources beyond the carrying capacity of our nation.

**Brief Historical Evolution of Sustainable Development**

In 1980, the international Union for the Conservation of Nature (IUCN) published World Conservation strategy that included one of the first references to Sustainable development as a global priority and introduced the term “Sustainable Development” (Wikipedia, 2017). Two years later, the United Nations World Charter for Nature (UWCN) raised five principles of conservation by which human conduct affecting nature is to be guided and judged. In 1987, the United Nations World Commission on Environment and Development (UNWCED) released the Report titled “Our Common Future”, commonly called the “Brundtland Report” (Wikipedia, 2017). The report included what is now one of the most widely
recognized definitions of sustainable development. According to this report, Sustainable development can be defined as "the development that meets the needs of the present without compromising the ability of the 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 impose by the State of technology and social organization on the environment’s ability to meet the present and future needs”.

Since the advent of Brundtland Report in 1987, the concept of Sustainable development has developed beyond the initial intergenerational framework to focus more on the goals of "Socially inclusive and environmentally sustainable economic growth". In 1992, the UN conference on Environment and Development published the Earth Charter, which outlined the building of just, sustainable, and peaceful global society in the 21st century.

The action plan currently tagged "Agenda 21" for sustainable development identified information, integration and participation, as the key building blocks to help all countries of the world to achieve development that recognizes these interdependent pillars. Agenda 21 emphasizes that in sustainable development, everyone is a user and provider of information. It stresses the need to change from older sector – centered ways of doing business to new approaches, that involve cross or multi-sectoral co-ordination and integration of environment and social issues into all development processes. Furthermore, Agenda 21 underscores broad Public participation in decision making as a fundamental prerequisite for achieving sustainable development (Wikipedia, 2017). In September, 2015, the United Nations General Assembly formally adopted the Universal Integrated and Informative 2030 Agenda for sustainable development (2016-2030).

**Dimensions or Pillars of Sustainable Development**

Basically, there are three pillars or dimensions of sustainable development, namely: Economy, environment and the Society.
Fig 1: Venn diagram of the three pillars of sustainable development.

The venn diagram in Figure 1 above depicts a tripod interaction of three pillars of sustainable development. According to Aleke (2015), the nexus shows that for sustainable development to be achieved, the economy needs to grow rapidly with zero inflation, high Gross Domestic Product (GDP), Gross National Product (GNP), manageable population and high per capita income.

**Economic Dimension of Sustainable Development**

A sustainable economic development is one that meets the needs of all people in a society without leaving future generations with fewer natural resources than those we are presently enjoying. It is one that ensures that the available natural resources are efficiently utilized in such a way that the consumption of non-renewal resources does not exceed the carrying capacity of the nation. That is to say, all the natural resources such as land, water, minerals and energy resources such as crude petroleum and gas from fossil oils that are non-renewable should not be exploited beyond their carrying capacity. Besides, for a nation to witness sustainable economic development,
there should be high rate of employment, declining rate of mortality, high life expectancy, improved infrastructural facilities and favorable balance of trade.

**Environmental Dimension of Sustainable Development**

Environmental sustainability requires a society to design activities that can meet human needs, while still preserving the life support systems of the planet. This concerns the natural environment and how it endures and remains diverse and productive. Since natural resources such as land, water, minerals and energy resources are derived from the environment, the state of air, water and climate are of particular concern (Wikipedia, 2017). This, for instance, entails using water sustainably, utilizing renewable energy sources in such a way that can conserve biomas and biodiversity.

An unsustainable situation in which the natural resources are used up faster than they can be replenished is not a sustainable development and as such should be avoided. Environmental sustainability requires that excessive human activities should be circumscribed to ensure that natural resources are utilized at a rate that can be replenished naturally without the use of exogenous technologies. It should be noted that long term result of environmental degradation will lead to inability to sustain human life. Such degradation on global scale, would imply that there is an increase in mortality rate until human population drastically falls to the level the degraded environment can support. This concept of sustainability is intertwined with that of the carrying capacity. If the global degradation continues beyond a certain tipping point or critical threshold, it would lead to eventual extinction of humanity (Wikipedia, 2017).

What we are saying is that, if there is high consumption or utilization of non-renewable resources than nature's ability to replenish, it will lead to environmental degradation, which can derail environmental sustainability. However, if there is equal utilization of resources to the nature’s ability to replenish, it will lead to environmental equilibrium, which begets steady state of a society's economy. Moreso, if less than nature’s ability to replenish is
utilized, there will be environmental renewal, thus leading to environmental sustainability.

Socio-Political Dimension of Sustainable Development
In every social system, there exists a society, which has societal norms, values and culture. This living entity called a society is made up of human beings, who are political animals and their socio-political interactions determine sustainability of economic and environmental development of the society. The United Nations Global Compact (2000) defined sustainable political development as the domain of practices and meanings associated with basic issues of social powers as they pertain to the organization, authorization, legitimization and regulation of social life held in common. This definition, is in agreement with the view that socio-political changes are important for responding to economic, environmental and cultural challenges. It also means that for socio-political sustainable development to take place, the politics of economic development should be addressed holistically. That entails good governance that eschews corruption, but it is highly transparent, accountable and committed politically to meeting the present needs of the people without compromising the ability of the future generations to meet their own needs.

I view of the foregoing, seven (7) sub-domains of sustainable development were formulated or posited by the UN Global compact (2000) as follows:

1. Organization and good governance;
2. Law and justice;
3. Communication and critique,
4. Representation and negotiation;
5. Security and accord;
6. Dialogue and reconciliation, and
7. Ethics and accountability.

The UN Global compact was a UN initiative to encourage businesses worldwide to adopt sustainable development and socially responsible policies and to report on their implementation. It is a
principled-based framework for businesses, stating principles in the area of human rights, labour, the environment and anti-corruption. These ten (10) principles are as follows:

Principle 1: is on human rights and it states that "support and respect the protection of internationally proclaimed human rights".

Principle 2: is also on human rights and it states that "make sure that they are not complicit in human right abuses".

Principle 3: is about labour standard and it states "the freedom of association and the effective recognition of the right to collective bargaining".

Principle 4: is also about labour and it states "the elimination of all forms of forced and compulsory labour".

Principle 5: The effective abolition of child labour.

Principle 6: Elimination of discrimination in employment and corruption.

Principle 7: Concerns Environment and it states that "Businesses should support a precautionary approach to environmental challenges".

Principle 8: is also on environment and it states that to "undertake initiatives to promote environmental responsibility".

Principle 9: Encourage the development and diffusion of environmentally-friendly technologies; and

Principle 10: is concerned with anti-corruption and it states that "businesses should work against corruption in all its ramifications including extortion and bribery".

Socio-political sustainable development is based on adoption of human rights, labour laws, environmental and anti-corruption principles, all of which must be strictly internalized, observed and complied with. In fact, the socio-political sustainable development is being corroborated by the Brundtland Report of 1987 which underscores the fact that sustainable development is guided by human rights principles.
Cultural Dimension of Sustainable Development

Culture is the fourth dimension of sustainable development posited by some contemporary researchers, since the triple-bottom-line dimensions of economic, environmental and social or society do not seem to be enough to reflect the complexity of the contemporary society. It was against this backdrop that the agenda 21 for future and united cities and Local Government (UCLG) Executive Bureau led the preparation of the policy statement "Culture: Forth pillar of sustainable Development", passed on 7th November, 2010, in the framework of the World Summit of local and Regional leaders- 3rd World Congress of UCLG, held in Mexico City. This policy document inaugurates a new perspective in sustainable development and points to the relationship between culture and sustainable development through a dual approach: developing a solid cultural policy, and advocating a cultural dimension in all public policies. Cultural sustainable Development can be defined as practices, discourses and material expressions, which over time express continuities and discontinuities of social meaning (Wikiedia, 2017).

Albeit social change is inevitable and in most cases controversial, it is better to introduce new technologies that are compatible with the culture or societal norms and values of the people as alternative approach to bringing about sustainable development. Besides, societal norms or social order should be maximally harnessed to conserve and protect our natural resources. These social norms should prohibit or circumscribe excessive anthropogenic practices that can lead to depletion of non-renewable natural resources. For instance, our society should have in place norms that prohibit vandalisation of petroleum pipelines or degradation of our environment through indiscriminate felling of trees, extraction of minerals and pollution of water and air with exogenous technologies (e.g Gamalin 20 used to kill fish in water).

Furthermore, our society should not abandon her good cultural practices for exogenous technologies even though they have some advantages. For instance, use of chemical fertilizers, which although could improve soil fertility and enhance crop yields, continuous application of these can pollute the environment and
destroy biodiversity in the long run. There is need for farmers to minimally use exogenous technologies by integrating endogenous technologies with exogenous technologies for better result. In this regard, cultural practices such as bush burning, use of toxic plant or chemical materials to kill fish in any aquatic habitat and indiscriminate felling of economic trees should be avoided. However, good cultural practices such as organic farming through green manuring, mixed farming, land rotation, crop rotation, bush fallowing, taungya farming, alley farming, aorestation, mulching should be encouraged in order to ensure sustainable agricultural development in Nigeria. For any new technology to be introduced, diffused and adopted by members of any social system, it must be culturally compatible, socially acceptable, economically accessible or affordable and environmentally-friendly. Undermining the crucial role of cultural dimension in sustainable development is tantamount to derailing and imperiling holistic sustainable development in Nigeria.

There are several factors militating against effective implementation of sustainable development goals in Nigeria. Firstly, lack of political will to advance and implement key aspects of sustainable development, especially in the area of growing per capita income and protecting the environment. Secondly, integration of environmental issues into national development plans has been neglected by those saddled with the task of planning, developing, implementation, monitoring and evaluation of sustainable development goals and/or projects. In most cases, developing nations have not been articulating macro-policy objectives that are actually meant to address key objectives of sustainable development into their national development plans.
1.2 The Concept of Sustainable Agriculture and Rural Development

1.2.1 Sustainable agriculture
Sustainable agriculture is one that uses improved techniques of crop and livestock production that meet the demand for and supply of agricultural commodities without, compromising the ability of future generations to meet their own demand for and supply of agricultural commodities. In other words, sustainable agriculture is one that uses improved farming techniques that are economically affordable, environmentally friendly and socio-culturally compatible and acceptable, while at the same time enhancing per capita productivity on a long term basis. For sustainable agriculture to take place, all the farming technologies must be safe and environmentally-friendly without any form of degradation or pollution of the ecosystems and destruction of biodiversity. Besides, such technologies must have relative economic advantage or be more cost effective than the
existing technologies. Moreso, they must be in line with the norms or values or culture of the people before they will be widely adopted.

The natural environment on which crops are grown or livestock are raised must be fertile and regularly maintained. The natural resources such as land and water should be wisely utilized in order to avoid depletion of nutrients which cannot be restored or replenished naturally. Efforts should be made to adopt organic farming that can replenish soil nutrients and conserve other resources naturally.

According to National Sustainable Agriculture Coalition (2017), legally speaking, sustainable agriculture is defined as an integrated system of plant and animal production practices having a site-specific application that will over the long term:

a. Satisfy human food and fiber needs;

b. Enhance environmental quality and natural resource base on which agricultural economy depends;

c. Make the most efficient use of non-renewal resources and on-farm resources and integrate where appropriate natural biological cycles and controls;

d. Sustain the economic viability of farm operations, and

e. Enhance the quality of life for the entire society including rural farmers”.

The basic goals of sustainable agriculture are environmental health, economic profitability, social and economic equity, which are popularly referred to as the three legs of sustainability stool.
Strategies for Sustainable Agriculture
Sustainable agriculture in Nigeria can be achieved through adoption of the following workable strategies:

1. Organic farming practices such as green manuring, composting, farm yard manuring, crop rotation, bush fallowing or land rotation, taungya farming, alley farming, mulching and a host of others.

2. Dry season farming, which requires construction of dams and canals. Crops cultivated under dry season farming are rice, maize, vegetables and sugar cane.

3. Use of improved varieties of crops (FUAMpea land II). These are new varieties of cowpeas produced by the Federal University of Agriculture Makurdi.

4. Use of improved breeds of animals that have high genetic potentials.
5. Inclusion of sustainable development goals into national development plans by policy makers in Nigeria.

6. High annual budgetary allocations and disbursements to the agricultural sector. At least 20% of the annual budgetary allocations should be given to the agricultural sector.

7. The Federal government should ban importation of foreign food, especially rice and maize into Nigeria. This will encourage domestic production.

8. Subsidizing of farm inputs (fertilizers) and agrochemicals to boost food production. The current cost of a bag of Fertilizer now is N10,000 which can be subsidized by the Government at N3,000.00

9. Putting in place appropriate Legislations that will ban the use of bad cultural practices such as bush burning, use of toxic chemicals to kill fish in aquatic habitats, deforestation and nomadism or pastoralism.

10. Capacity building and awareness creation on sustainable development principles devised by the UN Global compact. This will bring about attitudinal change in rural farmers as well as the three tiers of government saddled with the task of political leadership.

11. Integration of exogenous and endogenous technologies so as to ensure environmental health and prevent destruction of biodiversity. In this regard, overdependence on exogenous technologies should be discouraged by agricultural extension workers.

12. Provision of improved rural infrastructure so as to prevent rural-urban migration, and improve on the environmental health and well-being of the rural peasants. For it is only when their well-being is improved upon that they will be spurred to enhance their production. In this regard, the physical, social and institutional rural infrastructural facilities should be provided by the governments, donor nations and the private sector, considering the high capital outlay required to fund these projects.
13. Strengthening of our cultural values and norms which should be internalized by all Nigerians with a view to protecting and conserving our natural resource base.

14. Diversification of agricultural production. This can be achieved through mixed farming, crop rotation, multiple cropping, fish cultivation, and bee keeping.

15. Provision of micro-credit facilities to rural farmers at a single digit interest rate. This will empower rural farmers economically and consequently encourage them to enhance their per capita productivity.

1.2.2 Sustainable Rural Development

Nigeria has a teeming population of about 170 million with a landmass of 923,769 square kilometers and 774 Local Government Areas, most of which are found in remotest geographical areas. These rural areas serve as dwelling homes for the majority (85%) of 170 million Nigerians. This alone calls for sustainable rural development of 774 LGAs. What then is sustainable Rural Development? According to the Centre for Sustainable Rural Development (CSRD, 2017), Sustainable Rural Development can be defined as a process of improving the quality of life of the rural poor by developing capacities that promote community participation, health and education, food security, environmental protection and sustainable economic growth, thereby enabling community members to move out of poverty cycle and achieve their full potentials. It can also be defined as the process of empowering rural communities to meet their present needs without compromising the ability of future generations living in rural areas to meet their own needs without harming the environment.

Promoting sustainable Agriculture and Rural Development (SARD) is the major objective of Agenda 21. The major objective of SARD is to increase food production in a sustainable way and to enhance food security and the well-being of the rural poor. This will involve education initiatives, provision of economic incentives and the development of appropriate and new technologies, thus ensuring stable supplies of nutritionally adequate food, access to
those supplies by the vulnerable groups and production for markets, employment and income generation to alleviate poverty, as well as natural resources management and environmental protection (Wikipedia, 2017)

Rural development pundits need to regularly hold village or community hall meetings with the ruralites in various rural communities to carry out audience analysis with a view to finding out their major challenges and prioritized needs. It is on the basis of these that they can design capacity building and skills acquisition programmes for the rural dwellers.

**Key Themes Associated with Sustainable Rural Development**

There are several thematic issues to be addressed in sustainable rural development. Some of these include:

i. Community participation;

ii. Water and sanitation;

iii. Health and hygiene;

iv. Poverty reduction;

v. Food security and agriculture;

vi. Disease control/control of infant mortality and maternity issues;

vii. Education and equal opportunities for women;

viii. Conservation and protection of natural resources and the environment;

ix. Economic growth/development and development of small and medium scale enterprises (SMEs);

x. Rural infrastructural development including agricultural infrastructure, and

xi. Policy and administration.

**International Sustainable Rural Development Agencies**

A good number of international agencies are directly involved in steering the ships of sustainable rural development. Prominent among these include the following among others:

1. United Nations International Fund for Agricultural Development (IFAD)
The cardinal goal of IFAD is to empower poor rural women and men in developing countries to achieve higher per capita income and improved food security. It is the desire of IFAD to ensure that poor rural people have better access to and the skills and organization they need to take advantage of the following:

a. Natural resources, especially secure access to land, water and improved natural resources management and conservation practices;

b. Improved agricultural technologies and effective production services;

c. A broad range of financial services;

d. Transparent and competitive markets for farm inputs and produce;

e. Opportunities for rural off-farm employment and enterprise development; and

f. Local and national Policy and programming.

2. United Nations Millennium Development Goals (MDGs)

Several years ago, leaders from different countries of the World met and agreed on a vision for the common future: a world with less poverty, hunger and diseases, greater survival prospects for mothers and their infants, better education for children, equal opportunities for women and a healthier environment. The MDGs promoted poverty reduction, education, maternal health, gender equality, combated child mortality, HIV/AIDS and other diseases and it also aimed at providing all countries of the world with a framework for development (www.un.org/millennium goals).

3. International Institute of Rural Reconstruction (IIRR)

IIRR works with the poor and their countries as its partners, enabling them to improve their lives and achieve their full potentials (www.iirr.org).

4. Association for International Agriculture and Rural Development (AIARD)

This agency aims at improving the quality of life for all people by developing capacities that can help to eliminate poverty, improve food security status, conserve and protect the environment and stimulate broad-based economic growth and sustainable development (www.aiard.org).

16
Dimensions of Sustainable Rural Development

Basically, there are six (6) dimensions of sustainable rural development, viz:

i. Human resources development;
ii. Natural resources and environment;
iii. Economic growth and development;
iv. Rural infrastructure;
v. Science and technology; and
vi. Policy and administration.

Human Resources Development

Before any meaningful form of sustainable rural development can take place in any nation of the world, there must be human resources development. This can be done through provision of qualitative education, capacity building and skills acquisition, entrepreneurship, organization, orientation and discipline of the entire society. According to Age (2017), when a society is properly organized, oriented ad disciplined, it can be prosperous on the scantiest of natural resources and vice-versa. It is human resource that is going to harness all material resources in the most efficient ways so as to bring about sustainable rural development. That means, Nigeria and other developing nations of the world should pay closer attention to improving the sordid conditions of our educational institutions, starting from primary to University levels. This can be achieved through increased annual budgetary allocations and disbursements to education sector (at least 25%) as against 8% in 2016. If human resources are not properly educated, organized, oriented and disciplined, Nigerians shall continue to wallow in abject poverty, since there will be lack of skilled manpower to tap and exploit the abundant natural resources that could have made this nation to develop economically.

Natural Resources and Environment

Natural resources such as land, water, minerals and crude petroleum and gas and the entire environment need to be conserved and protected to ensure sustainable rural development. That means all
these natural resources and their environments should not be utilized or consumed beyond their carrying capacities, with a view to preventing environmental degradation, pollution and destruction of biodiversity.

**Economic growth and development**

Economic growth is one side of a psychological coin, while economic development is another side of the same coin. That means for sustainable rural development to take place in any developing country, its economy should not only grow but develop. This can be achieved through increasing per capita income, Gross National Product (GNP) and Gross Domestic Product (GDP). Besides, such a nation should maintain a manageable population through putting in place appropriate legislation that controls the number of wives and children that an adult man can have.

**Rural and Agricultural Infrastructure**

The kernel of sustainable rural development is the provision of improved rural and agricultural infrastructural facilities in rural areas. These could be physical, social and institutional infrastructural facilities that can assuage and facilitate the well-being of the rural dwellers. These rural infrastructure can facilitate easy access, transportation of agricultural produce to urban centres, availability of social amenities and recreational facilities, supply of micro-financial assistance or facilities and maintenance of social order. It is only when these rural infrastructure are available in rural areas that cases of rural-urban migration can be mitigated. Before any meaningful sustainable rural development can take place in any part of the nation, there must be substantial development of the agricultural sector and vice versa. In view of that, integrated rural and agricultural development approach should always be employed in bringing about sustainable agriculture and rural development, which are inseparable identical twins of sustainable development.
Science and Technology
Sustainable rural development cannot successfully take place without adoption of improved technologies, which are the products of science and technology. And adoption of these technologies requires that the Federal, State and Local Governments should adequately fund research and extension service delivery. Without adequate funding of research, there will be lack of improved technologies and without adequate funding of extension services, technologies cannot be diffused or disseminated to the end users, most of whom are peasant farmers. Efforts should be made by the three tiers of government and the private sector or donor nations to adequately fund research and extension service delivery in all developing nations including Nigeria.

Policy and Administration
Sustainable rural development in any developing nation and even developed nations of the world, depends on the sound policy framework on one hand, and the commitment or political will on the other hand. It was against this backdrop that Idachaba (2006) stated that good intentions are not enough. That is to say, a nation may have sound and laudable macro-policy objectives but may lack sincere commitment or the political will to honestly implement such formulated policies in order to achieve macro-policy objectives. Until our political leaders show more commitment towards effective and efficient implementation of sustainable development goals, the dream of having a sustainable rural development in Nigeria will become a mirage. The way forward is to eschew corruption and money bag politics and elect only honest and credible leaders who can fulfill their campaign promises with the masses. That entails good governance by our political leaders who hold the knife and the yam. If they fail to cut us a piece, sustainable rural development will be derailed.

There are some distributive, machavelian and infamous policies in Nigeria that are not redistributive and need to be reformed. For instance, the bicamera legislature that comprises 109 Senators and 360 members of the National House of
Representatives, who are receiving juicy jumbo pay packages monthly are a drain on economic development of this country. There is need to reform our 1999 constitution and prescribe a unicamera legislature that is more economical for this nation. Besides, the land Use Act of 1978 that vested excessive powers on the State Governors should be abrogated from the 1999 constitution and in its place a legislated Land Policy should be formulated and enacted so as to make land easily available and accessible to the landless.

![Diagram of six dimensions of sustainable agriculture and rural development in Nigeria]

**Fig 4: The six dimensions of sustainable agriculture and rural development in Nigeria**

**Brief Historical Evolution of Agenda 21**

According to United Nations Conference on Environment and Development (UNCED, 1992), Agenda 21 was a comprehensive plan of action which was taken globally, nationally and locally by organizations of the United Nations, Governments and major groups in every area in which human beings exert impacts on the environment.
Agenda 21, the Rio Declaration on Environment and Development, and the statement of principles for the sustainable Management of Forests were adopted by more than 178 Governments at the United Nations conference on Environment (UNCED) held in Rio de Janeiro, Brazil on 3rd -14th June, 1996. The Commission on sustainable Development (CSD) was created in December, 1992 to ensure effective follow up of UNCED, to monitor and report on implementation of the agreements at the local, national, regional and international levels. It was agreed that a five year review of Earth Summit Progress would be made in 1997 by the United Nations General Assembly meeting in special session.

The full implementation of Agenda 21, the programme for further implementation of Agenda 21 and the commitments to the “Rio Principles, were strongly reaffirmed at the World Summit on sustainable development (WSSD) held in Johannesburg, South Africa from 26th August to 4th September, 2002. The CSD firstly reviewed Rural Development at its third session in 1995, which it noted with concern that even though some progress had been reported, disappointment was widely expressed at the slow progress in moving towards sustainable agriculture and rural development in many countries of the world including Nigeria.

Sustainable agriculture was also considered at the 5 year review of implementation of Agenda 21 in 1997, during which Governments were urged to attach high priority to implementation of the commitments agreed upon at the World Food Summit, especially, the call for at least reducing the number of undernourished people by half in the world by the year 2015. This goal was reinforced by the Millennium Declaration adopted by the Heads of States and Government in September 2000 which resolved to half by 2015 the proportion of the World’s People who suffer from hunger.

The MDGs era has come and gone since 2015 with many achievements, hence the coming on board of another bold, transformative 2030 Agenda for sustainable development which was adopted widely by the World’s leaders last September, 2016 under the auspices or tutelage of the United Nations. With the advent of Agenda 2030, the growing emphasis is placed on the nexus approach to sustainable rural development, which seeks to realize synergies from the links among development factors such as energy, health, water, food, education, gender and economic growth.
References


CHAPTER TWO

2.0 AN OVERVIEW OF AGENDA 2030 SUSTAINABLE DEVELOPMENT GOALS (SDGs)

2.1 Brief Historical Evolution of Agenda 2030
On 1st January, 2016, the 17 Sustainable Development Goals of the 2030 Agenda for sustainable development, which were adopted by the World Leaders in September, 2015 at the United Nations' historic summit officially came into force. These goals were otherwise known as the Global Goals and they were built on the successes of the Agenda 21 (MDGs).

The Millennium Development Goals (MDGs) which were launched in 2000 set 2015 as the target year. It should be noted that the MDGs were only meant for the developing nations. Recognizing this and the successes of the MDGs and the fact that a new development agenda was needed to cover all countries of the world, irrespective of their level of development beyond 2015, countries agreed in 2012 at Rio Conference in Brazil that they would establish an “Open Working Group” to develop a set of sustainable development goals.

After more than a year of negotiation, the Open Working Group presented its recommendation for the 17 sustainable development goals. In early August, 2015, the 193 member States of the United Nations reached a consensus on the outcome document of the new agenda titled “Transforming our world”: The 2030 Agenda for sustainable development” The Member States decided that the UN summit for the adoption of new sustainable development goals would hold from 25 to 27th September, 2015 in New York and convened as a high level plenary meeting of the General Assembly.

The SDGs intend to go further to end all forms of poverty. These goals are unique in the sense that they call for synergized actions by all countries of the world, the poor, and the rich and middle income to promote prosperity of the entire world, while at the same time protecting the planet. They recognized that ending
poverty must go hand in hand with strategies that would build economic growth and address a range of social needs such as education, health, social protection and job opportunities, while at the same time tackling climate change and environmental protection.

2.2 The Anatomy of the 17 Sustainable Development Goals

The newly set global goals for sustainable development agreed upon by the 193 member States of the United Nations include the following:

Goal 1: 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 quality education for all and promote lifelong Learning.
Goal 5: Achieve gender equality and empower all women and girls.
Goal 6: Ensure access to water and sanitation for all.
Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all.
Goal 8: Promote inclusive and sustainable economic growth, employment and decent jobs or work for all.
Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation.
Goal 10: Reduce inequality within and among nations of the World.
Goal 11: Make cities inclusive, safe, resilient and sustainable.
Goal 12: Ensure sustainable consumption and production patterns.
Goal 13: Take urgent actions to combat climate change and its impacts.
Goal 14: Conserve and sustainably use the oceans, seas and marine resources.
Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation and loss of biodiversity.
Goal 16: Promote justice, peaceful and inclusive societies, and
Goal 17: Revitalize the global partnerships for sustainable development.
Albeit the SDGs are not legally binding on all Countries of the World, governments are expected to adopt, take ownership and establish national framework for the achievement of the 17 goals. In fact, all Countries of the World have primary responsibility to follow up and review the progress so far made in implementing the goals, which will require quality, accessible and timely data collection. Regional follow-up and review will be based on national level analysis and will contribute to follow-up and review at the global level.

**Implementation of the Global Goals**

Implementation of the 17 SDGs and success will rely on different sustainable development policies, programmes, projects and plans put in place by different Countries of the World. These SDGs will serve as a compass for aligning various Countries' national plans with their global commitments.

Each Country of the world is expected to design its own sustainable development strategies that will require mobilization of resources and financing or funding strategies. In this regard, all stakeholders such as governments, civil society organizations and the private sector are expected to contribute towards the realization of agenda 2030. Besides, a revitalized global partnership at the global level is needed to support national efforts. This is highly recognized in the 2030 Agenda. This implies that each country can partner with international funding agencies for financial support that can enable her to effectively implement sustainable development goals in her country. In fact, multi-stakeholder partnerships have been recognized as an important component of strategies that seek to mobilize all stakeholders around the globe to contribute financially towards implementation of sustainable development goals.

The means of implementing the SDGs including how to mobilize financial resources to achieve SDGs are a core feature of the new agenda. That entails investment will be required by each country. One way of doing this is to include these goals in the national development plans and to budget annually for implementation of sustainable development goals. In fact,
mobilization of resources in trillions of dollar will be required. Countries can mobilize resources from domestic and international sources as well as from the public and the private sectors. The government of every nation can organize fund raising ceremonies or launching on annual basis towards implementation of the new agenda.

Finally, official development assistance is needed to help developing nations of the world to achieve sustainable development goals. This implies that the member States of the United Nations can jointly source for funds from the World Bank or other sources after which they can share whatever is realized for the purpose of implementation of 2030 Agenda.

How to Monitor Implementation of SDGs
A lot of people may want to know how implementation of SDGs can be monitored. At the global level, the 17 SDGs and 169 targets of the new agenda can be monitored and reviewed using a set of global indicators, which unfortunately are yet to be devised. The global indicators or framework to be developed by the inter Agency and Expert Group on Sustainable development goals indicators (IAEA-SDGs) were to be agreed upon by the UN Statistical Commission by last year March, 2016. After that, the Economic and Social Council and the General Assembly would then adopt these indicators for the use of all countries of the world.

Besides, every country shall develop her own national indicators to assist in monitoring progress made so far on the goals and targets. At the time of writing this text book, monitoring indicators were yet to be developed in the majority of the countries of the world including Nigeria.

Furthermore, Chief Statisticians from member States of the UN are working assiduously on identification of the targets with the aim of having two (2) indicators from each participating country. In all, there will be approximately 300 indicators for all countries of the world to make use of. There is possibility of reducing these especially when the participating nations cover cross-cutting issues as time goes on.
Again, the follow-up and reviewing process will be informed by an annual SDG progress Report to be prepared by the Secretary General of the UN. The present Secretary General of the UN is Mr. Ban Ki-Moon, who reported the Progress Report of the 215 Millennium Development Goals, thus "the disparities between rural and urban areas remain pronounced, and big gaps still persist in different sectors".

Finally, the annual meetings of the High level political Forum on sustainable development will play a central role in reviewing progress towards SDGs at the global level. The means of implementation of the SDGs will be monitored and reviewed as outlined in the Addis Ababa Action agenda, the outcome document of the third international conference on financing for development to ensure that financial resources are effectively mobilized to support new sustainable development goals.

How Climate Change Relate to Sustainable Development
It has been observed that climate change is already impacting negatively on public health as well as that of livestock, food and water security, migration, peace and national security. If climate change is left unchecked, it will roll back the gains of development we have already made over the last decades and it will make further development gains impossible. Investment in sustainable development will help address climate change by reducing greenhouse gas emissions and by building climate change resilience. In fact, action on climate change will drive sustainable development in all nations of the world.

Tackling climate change and fostering sustainable development are two mutually reinforcing sides of the same psychological coin. Sustainable development cannot be achieved in any country of the world without action on climate change. In fact, a good number of SDGs seem to be addressing the core drivers of climate change.
Differences between MDGs and SDGs

There are several differences between MDGs and SDGs. Firstly, MDGs had only 8 goals, while SDGs have 17 global goals with 169 targets which are broader in scope and go further than the MDGs by addressing the root causes of poverty and universal need for development that works for all people. The goals cover the 3 dimensions of sustainable development: Economic growth, Social inclusion, and environmental protection.

Secondly, the new global goals cover more ground, with high ambitions to address inequalities, economic growth, decent jobs, cities and human settlements, industrialization, oceans, seas, ecosystems, energy, climate change, sustainable consumption and production, peace and justice.

Thirdly, the new goals are universal and apply to all countries of the world, while the MDGs were intended for action in developing countries only.

Fourthly, a core feature of SDGs which was lacking in the MDGs is their strong focus on means of implementation: the mobilization of financial resources, capacity building and technology as well as data and institution.

Finally, the new goals recognize that tackling climate change is essential for sustainable development and poverty reduction. In fact, SDGs number 13 aims at promoting urgent action to combat climate change and its impacts.
References

CHAPTER THREE

3.0 EFFECTS OF POVERTY ON SOCIO-POLITICAL STABILITY AND NATIONAL SECURITY IN NIGERIA

I am pleased to be invited once again by the Commandant, Air War College, Nigeria Air Force Base, Makurdi to present my second lecture paper titled “Effects of poverty on Socio-Political Stability and National security in Nigeria” to this cream of erudite Scholars drawn from the Nigerian Armed Forces on the occasion of Air War College course (2016), organized by the Air War College, Nigeria Air Force Base, Makurdi.

I thank the Commandant for the privilege granted to me to once again interact with Senior officers of the Nigerian Armed Forces on this contemporary and topical national issue. I highly appreciate Air Commodore E. D. Yinkere, who in spite of his tight schedule of duty, paid an official visit to Federal University of Agriculture, Makurdi sometime last year with a view to inviting me to come and present this paper to you this morning. Join me in congratulating him on his recent promotion to the rank of Air Commodore. Lastly, I wish to thank the Director, Academic Affairs, Air Commodore I.G. Loko and all the organizers of this gathering for their efforts in putting in place this meeting of intellectuals to brainstorm on the roadmap to solving Nigeria’s socio-economic, political and National security challenges.

According to Opejobi (2016), a United Nations (UN) report on Nigeria’s common Country analysis (CCA) has described Nigeria as the poorest and unequal country in the world with over 80 million of her populace living below poverty line of 1USD ($1) a day. According to the report, “Nigeria with a population of over 175 million is the most populous nation in Africa and the seventh most populous country in the World. Her population will be approximately 200 million by 2019 and over 400 million by 2050, thus becoming one of the top populous countries in the World”. According to Ojo (2016), Nigeria is a naturally blessed Country but
apparently appears to be in a state of hunger in the midst of plenty. According to him, a larger part of her citizenry is ravaged by poverty. Despite being the 3rd biggest economy in Africa, Nigeria ranks around 160th out of 177 Countries on the scale of the Human Development index (HDI). Having been endowed with superfluous human and natural resources, Nigeria has no business being a poor nation. But what do we find in Nigeria? Poverty on the faces of majority of Nigerians. According to UNDP (2016), Nigeria has a poverty rate of 62.6 percent with HDI of 0.47 in 2016.

I consider organization of this discourse as not only apt but also timely, considering the spate of poverty in Nigeria with its concomitant numerous social ills such as political thuggery, rascality or hooliganism, kidnapping, prostitution, drug abuse and a host of others. This paper is thematically designed using down-to-earth and methodical approach. It consists of four (4) parts:

1. Conceptual clarifications;
2. Overview of Governments programmes on poverty;
3. Effects of poverty on Socio-political stability/National Security., and

1.0 CONCEPTUAL CLARIFICATIONS

There are some key concepts that need to be clarified for you to have a grasp of the subject matter. These include: Poverty, poverty line and National Security.

1.1 The Concept of Poverty

The word poverty is derived from a Latin word, “paupertas” and it means being poor. According to Wikipedia (2017), poverty simply means general scarcity or a state of lack of certain amount of material possessions or money. According to online Dictionary Thesaurus (2017), poverty is defined as the state or condition of having little or no money, goods or means of support, condition of being poor. It is synonymous with deprivation, destitution, indigence, pauperism and penury. Business online Dictionary (BOD, 2017) defines poverty as a condition whereby people’s basic
needs for food, water, clothing and shelter are not being met. According to BOD (2017), poverty is generally of two types: Absolute or extreme poverty and relative poverty. Absolute or extreme poverty or destitution refers to inability of an individual human being to obtain adequate resources or lack of means that are sine qua non to meet the basic or physiological needs such as food, water, clothing and shelter. Absolute poverty or penury or destitution was originally defined by the United Nations in 1999 as a condition characterized by severe deprivation of basic human needs such as food, water, shelter, sanitation facilities, health, education and information. It depends not only on income but also access to services. Wikipedia (2017) defines absolute poverty as the absence of enough resources to secure basic necessities of life. This type of poverty is common globally in terms of individual’s purchasing power to consume the necessities of life. It should be independent of any changes in income distribution. Relative poverty on the other hand, occurs when certain people in a particular geographical area do not enjoy the same minimum level of living standard as compared to the rest of the Society. This type of poverty varies from one country or state to another within the same Country. For instance, in Benue State, some people in a particular Local Government Area may not have access to food, water, shelter as a result of the remoted nature of their geographical area as well as certain natural calamities. We can regard these people as suffering from relative poverty, since it is only common in that particular geographical zone.

According to Sule (2006) cited in Age (2015), poverty is a state of want, which is a situation in which human beings cannot meet their basic needs for their livelihood. According to this Scholar, it can also refer to inability of an individual or group of individuals in the Society or a Nation to provide the minimum level of Socio-economic infrastructure necessary for survival. This implies that poverty is a state of deprivation of these necessities of life.

According to the United Nations Development Programme (UNDP) Human Development Report of 1996 cited in Age (2015), poverty is perceived as “an abject state of being, in which an individual is incapable of utilizing resources around him to improve
himself economically, socially, politically and otherwise, due to lack of opportunity for education which is basic for human development. From this definition, it could be deduced that poverty goes beyond the state of want or deprivation of the necessities of life. It has to do with lack of lofty ideas or inability to tap and utilize the abundant human and material resources to bring about economic development of a nation. A nation may possess all the natural resources that are required for being prosperous, but her citizens may lack lofty ideas to exploit these resources and as a result may be wallowing in relative poverty.

To an Agricultural Extensionist, poverty refers to lack of wherewithal (money) to procure improved farm inputs and other basic social goods and Services that can enhance the living standard or well-being of an individual or group of individuals in any social system. In other words, it refers to the absence of purchasing power needed to adopt agricultural innovations and to satisfy certain basic human needs such as food, water, clothing, shelter as well as social services such as education, health care delivery services and so forth. Once a farmer has no economic access to such basic necessities of life, he can be regarded as a poor or peasant farmer.

1.2 Poverty Line or Threshold or Limit
According to Wikipedia (2017), poverty line or threshold or limit can be defined as the minimum level of income deemed adequate in a particular Country for an individual to subsist upon on a daily basis. It is the minimum level of income below which an individual cannot afford to have economic access to three square meal a day. Initially, the International poverty line was set by the World Bank at US$ 1.00 a day when the Millennium Development Goals were first published in 1996. However, in 2008, the World Bank pushed the line to US$1.25 a day due to higher inflation levels in several developing Countries of the World at 2005 PPP. In October, 2015, the World Bank updated the International poverty limit to US$1.90 a day as a result of purchasing power parity differential globally.

To determine poverty line, the total cost of all essential resources that an average human adult consumes in one year can be
estimated. Typically, the rent required by an adult to live in an apartment is used as a basis for determining poverty line globally. The poverty line is the equivalent of US$1.00 a day in 1996 US prices, hence, the widely used expression as living on less than US$1.00 a day. The vast majority living below US$1.00 a day are found in South Asia, East Asia, Sub-Saharan Africa, the West Indies and Pacific.

In summary, income-based poverty can be defined as earning less than US$1.25 or US$1.90 a day as measured in 2005 International prices or 2015 International prices, respectively.

1.2.1 Causes of absolute or extreme poverty in Nigeria
In Nigeria, absolute poverty is caused by the following factors:
1. Low per capita income or low economic growth rate;
2. Bad governance;
3. Ill health and diseases;
4. Debt burden;
5. Political, ethnic, religious and economic instability;
6. Income inequality as a result of distributive policies;
7. Low rate of economic Security as a result of lack of employment opportunities for our youths;
8. Laziness and poor attitudes to hard work or farming;
9. Overdependence on one means of livelihood;
10. Unfavorable balance of trade;
11. Lack of access to land and
12. Lack of opportunity for formal education.

1.0 Low per capita income or low economic growth rate
According to Ojo (2016), a viable economy is essential for provision of employment, thus reducing poverty level in the Country. The Nigeria’s economy presently has low economic growth rate of 2.1%. This is a clear indicator of poor economic performance as a result of Nigeria’s inability to maintain a manageable population in spite of its high GDP growth rate of 8.99% in the third quarter of 2016. In other words, there is low per capita income in Nigeria as a result of exploding population of over 170 million and this has greatly
exercabated the high level of poverty in Nigeria. The way forward is to control our population through a legislation by placing a ceiling on the number of wives and children an adult Nigerian should have.

TABLE 1: ABOUT NIGERIA’S PRESENT STATUS

<table>
<thead>
<tr>
<th>S/NO</th>
<th>Variable</th>
<th>Current status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Population</td>
<td>170 million</td>
</tr>
<tr>
<td>2</td>
<td>Per capita income</td>
<td>$1.280</td>
</tr>
<tr>
<td>3</td>
<td>Poverty rate</td>
<td>62.6%</td>
</tr>
<tr>
<td>4</td>
<td>Human Development Index (HDI)</td>
<td>0.47%</td>
</tr>
<tr>
<td>5</td>
<td>Growth rate</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

Source: UNDP (2016)

2.0 Bad Governance
Our political leaders hardly or don’t fulfill their campaign promises made with the electorate during electioneering political rallies. Besides, there is high level of corruption among political leaders, lack of transparency and accountability, poor annual budgetary allocations and disbursements to some critical sectors and poor planning, implementation, monitoring and evaluation of public projects or programmes. Bad governance on the part of political leaders has subjected the Nigerian masses to abject poverty and untold hardships such as high cost of food, farm inputs and other goods and services. For instance, a bag of fertilizer is now sold at N8,500 per 50kg bag, while a bag of 100kg milled rice is now sold at N120,000 or above. Again, a liter of kerosene is now sold at N450.00 as against N150.00 per liter in 2015. The way forward is to elect credible leaders who can give Nigerian masses good governance.

3. Ill Health and Diseases
A healthy society is a rich society and vice versa. This is because ill health tends to suck productivity, thus limiting production activities and lowering the viable contributions of the sick people to the
Nigeria’s economy. According to Ojo (2016), with high level of malaria, HIV/AIDS and other infectious diseases ravaging the Country, it is not surprising that poverty has the will to thrive in Nigeria. Provision of improved health care delivery services to the masses can surely mitigate both ill-health and poverty in Nigeria.

4. Debt Burden
Economic development of any nation requires high capital investment by both the public and the private sectors. It should be noted that a debt ridden economy becomes handicapped and as such shifts focus to servicing of debt to the detriment of economic development and creation of more employments for our youths. This ugly development leads to static economy with its concomitant poverty of the masses. The Nigerian Government had sent a request to the National Houses of Assembly in 2016 to support her intention to borrow $30 billion from the World Bank and other Advanced Countries so as to fund critical infrastructure in the Country. The idea looks laudable, but how are we sure this money will be judiciously put to use? In any case, I espouse this move provided appropriate machinery is put in place to monitor and evaluate implementation of critical infrastructure with the use of $30 billion when eventually it is taken by the Nigerian Government, considering the sordid physical, social and institutional rural and urban infrastructural facilities in the Country. It should be noted that even the richest Countries in the World (eg. USA, India, Pakistan) still borrow money to fund capital projects and Nigeria cannot be an exception.

5. Political, Ethnic and Religious Instability
Whenever there is Political, ethnic and religious instability in any part of Nigeria, there is mass exodus or migration of internally displaced persons (IDPs) from their homes of origin to unknown places, where they settle as refugees. According to Ojo (2016), incessant unrest and attacks by the insurgency have greatly abetted the level of poverty in Nigeria. For instance, the emergence of Boko Haram insurgency in the North east, the Niger Delta Avengers in the
South-south, the Shiite in Plateau, Kaduna and Kano States, the Fulani herdsmen attacks in the middle belt had rendered majority of IDPs homeless, Jobless, foodless, hence they are artificially compelled to wallow in abject penury. The antidote to this ugly development is to provide adequate military, economic, political, environmental and food security to the IDPs and to ensure their reintegration.

6. Income inequality as a result of distributive policies
Majority of our economic or public policies in Nigeria are distributive in nature instead of being redistributive. Consequently, there is a wide gap between the rich and the poor in terms of wealth creation and distribution. For instance, the bicamera legislature we have in Nigeria comprising 360 representatives and 109 Senators, each of whom is collecting between N 2million to N8 million monthly is a source of concern and a drain on our economy. It is not surprising to note that none of these legislators would want to spend less than five tenures as a result of the juicy jumbo pay package they receive monthly. There is need to review our 1999 constitution by prescribing unicamera legislature, slashing their salaries and placing a ceiling on the number of tenures (maximum of 2) each of them can stay in the National House of Assembly.

Again, privatization of public enterprises is a good development, but it is the political leaders who still use public funds to purchase privatized public enterprises for their personal aggrandizement. So, you can see how the Nigeria’s wealth is being recycled within the same political elite, thus perpetuating income inequality between the rich and the poor in this Country.

7. Low rate of economic security/youths unemployment
Third world countries are less secured economically due to their inability to provide employment opportunities to their citizens. Nigeria as a developing nation has been finding it extremely difficult to provide stable employment opportunities to our youths. Majority of our University graduates are still roaming about our streets jobless. They have therefore become part of the poverty stricken
According to National Bureau of Statistics (NBS, 2016), unemployment in Nigeria in the second quarter of 2016 was 13.9 percent, underemployment was 19.7 percent, while youths unemployment/underemployment was 45.65 percent. It should be noted that high rate of unemployment is a clear indicator of economic underdevelopment which begets poverty of our youths, a situation that leads to rascalism or hooliganism, armed robbery, kidnapping, thuggery, prostitution, drug trafficking, drug abuse, cattle rustling and a host of other social vices.

<table>
<thead>
<tr>
<th>Year: 2016 Variable</th>
<th>Current Statistics (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment</td>
<td>13.9</td>
</tr>
<tr>
<td>Underemployment</td>
<td>19.7</td>
</tr>
<tr>
<td>Youth unemployment/underemployment</td>
<td>45.65</td>
</tr>
</tbody>
</table>

Source: Adapted from National Bureau of Statistics (2016)

8. **Laziness and poor attitudes to hard work or farming**
A good number of Nigerians are poor just because of laziness and poor attitudes to hard labour or farming. Such people refuse deliberately to use their God’s given creative potentials and would prefer to live a parasitic life instead of working hard to earn a living. For instance, majority of the beggars on our streets, prefer begging for alms than going to the farm. Biblically speaking, there is no food for a lazy man. There is need for our youths to change their parochial attitudes to farming and use their creative potentials to earn a living. If they can not produce crops or livestock, let them go into postharvest value addition, such as processing, storage and marketing of agricultural produce.

9. **Overdependence on one source of livelihood**
Majority of our rural famers are poor because they over depend on monocropping. As a result, whenever there is crop failure due to climate change, they tend to have low yields, which in turn leads to low income, and with this low income, there is no saving, hence the
vicious poverty circle of our rural farmers continues. In order to come out of this vicious poverty circle, there is need for diversification of our economy. In the case of farmers, they are advised to adopt mixed farming and multiple cropping. At the macro-economic level, there is need for our Country to have a paradigm shift from overdependence on sweet crude oil to green agriculture, tourism, textile and garments manufacturing industries, telecommunications, cement, food processing, pharmaceuticals and service sector of our economy such as transport, banking, education and health sub sectors.

10. Unfavorable Balance of Trade
A nation that imports more goods and services than it exports tends to have a trade deficit with its concomitant negative balance of payment. Under such a circumstance, more money is flowing out than coming into the Country. This affects her economic development; hence it remains a poor nation. The way forward is to ban importation of all goods and services that can be locally produced in Nigeria, especially rice, textile and garments, tobacco as well as junk food and sweet drinks.

11. Lack of Access to Land: According to FAO (2016), most of Nigerians are poor due to lack of access to land. There is need to abrogate the land use Act of 1978 from the 1999 constitution and replace it withLegislated land policy.

12. Lack of Opportunity for Formal Education.
A nation whose citizens lack opportunity for formal education tends to be poor in the midst of plenty. This is because of lack of lofty ideas to exploit her abundant human and material resources.

1.4 Indices for measuring poverty
Extreme poverty can be measured using the following four (4) indices as prescribed by the UNDP:
I. Per capita income index (PCI),

Physical quality of life index (PQLI),

Augmented physical quality of life index (PAQLI), and

IV. Human Development Index (HD1).

Per capita income index is the ratio of the Gross National Product (GNP) of a nation for a given period of time to the total population of that country. The current per capita index in Nigeria is $1.280.

\[
\text{PCI} = \frac{\text{GNP}}{\text{Population}}
\]

According to Sule (2000) cited in Age (2015), the traditional method of measuring poverty internationally had been the per capita income index, which can be obtained by dividing the Gross National product of a country for a certain period of time by the total population of that Country. It should be noted that the PCI measures only economic growth of a Country but not economic development. According to Age (2015), a Country may increase her income generation internally and externally, thereby enhancing her per capita income, but that does not automatically translate into improving the well-being or standard of living of the citizenry. In 2014, the Federal Government of Nigeria under President Goodluck Jonathan was boasting and bragging itself of having a higher per capita income, without considering the fact that there was high level of poverty in Nigeria. In fact, the Nigerian masses were suffering from lack of physical, Social and institutional infrastructural facilities, chronic food insecurity, Political, ethnic and religious instability, nonpayment of monthly salaries for over five months or more in some States of the Federation, thereby subjecting the masses to abject penury. You can talk of economic development of a Country when there is increase in productivity accompanied by a corresponding increase in the well being of the people. It was that ugly situation that pushed the Nigerian electorate to vote out...
President Good Luck Jonathan on 28th March 2015. It should be noted that mere calculation of per capita index cannot give the true picture of a country's level of extreme poverty. Nevertheless, the index is still an internationally acceptable index for measuring poverty across the globe.

ii. Physical Quality of Life Index (PQLI)
This measures the wellbeing of the people in a given country based on three major indicators: Infant mortality, life expectancy and basic literacy. Its main focus is social development. It does not measure all indices of economic development; neither does it measure freedom, security, justice nor other capital projects needed by the people.

iii. Augmented Physical Quality of Life Index
This measures differential levels of human deprivation and sufferings experienced by the people living anywhere in the World. The index can be measured using the following ten (10) sub indices, each of which has an equal weight of 0.1:

<table>
<thead>
<tr>
<th>Sub Index</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>0.1</td>
</tr>
<tr>
<td>Health status</td>
<td>0.1</td>
</tr>
<tr>
<td>Women social status</td>
<td>0.1</td>
</tr>
<tr>
<td>National Security</td>
<td>0.1</td>
</tr>
<tr>
<td>Economic status</td>
<td>0.1</td>
</tr>
<tr>
<td>Demography or mortality rate</td>
<td>0.1</td>
</tr>
<tr>
<td>Political stability</td>
<td>0.1</td>
</tr>
<tr>
<td>Geographical location (U/R)</td>
<td>0.1</td>
</tr>
<tr>
<td>Cultural diversity</td>
<td>0.1</td>
</tr>
<tr>
<td>Well-being of the people</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Total = 1.0

PAQLI, though an improvement over PQLI, is not concerned with critical infrastructural development of a nation, which is not good enough.
iv. The Human Development Index (HDI)

The Human Development index is the most recent composite index devised by the UNDP in 1990 (Sule, 2006). According to Sule (2006), HDI focuses on human development mainly, and its primary objective of development is the people. HDI is determined based on three indicators, viz: Life expectancy at birth, Literacy, and per capita income. According to UNDP (2016), Nigeria has a teeming population of 170 million, poverty rate of 62.6%, per capita income of $1,280 and HDI of 0.47. Table 3 below shows selected indicators of poverty in Nigeria as from 1991 – 1995 and 2016.


<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Per capita income ($)</td>
<td>108</td>
<td>169</td>
<td>49</td>
<td>48</td>
<td>NA</td>
<td>1.280</td>
</tr>
<tr>
<td>2</td>
<td>Population growth rate (%)</td>
<td>21</td>
<td>21</td>
<td>32</td>
<td>21</td>
<td>21</td>
<td>NA</td>
</tr>
<tr>
<td>3</td>
<td>Life expectancy (years)</td>
<td>54</td>
<td>54</td>
<td>52</td>
<td>52</td>
<td>52</td>
<td>55</td>
</tr>
<tr>
<td>4</td>
<td>Adult literacy (%)</td>
<td>54</td>
<td>54</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>56</td>
</tr>
<tr>
<td>5</td>
<td>Human Dev. Index</td>
<td>0.328</td>
<td>0.328</td>
<td>0.328</td>
<td>0.328</td>
<td>0.328</td>
<td>0.47</td>
</tr>
<tr>
<td>6</td>
<td>Poverty rate (%)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>62.6</td>
</tr>
</tbody>
</table>

Source: Adapted from CBN Annual Report (1995) and UNDP (2016)

1.3 National Security

This concept was first developed in the United States of America after World War II at Yale University in 1790 and initially it was focused on the military might. At that time, it was defined as freedom from military threats and political coercion. However, the trend has changed now and it encompasses a broad range of facets,
all of which impinge on the nonmilitary or economic security of a nation and the values espoused by the entire society.

National security, in contemporary perspective can be conceptualized as a conglomeration of all spheres of security such as economic security, political security, environmental security, energy and natural resources security, cyber security, food security, military security as well as protection and preservation of all that the society considers as indispensable and invaluable (Imobeghe, 2000, Age, 2017). In order for a nation to acquire national security, it must possess economic and political security, environmental security, energy and natural resources security, food security, cyber security and the military might (Age, 2017).

2.0 OVERVIEW OF GOVERNMENTS PROGRAMMES ON POVERTY

Several poverty reduction programmes had been put in place by the past and present Nigerian governments, some of these include:

1. National Accelerated Food Production Programme (NAFPP), which was established in 1972 to provide accelerated food production in Nigeria with a view to mitigating poverty among rural farmers.

2. Nigerian Agricultural Cooperative Bank (NACB) which was established in 1972 to provide agricultural credit facilities to farmers in order to boost agricultural productivity and to reduce poverty among farmers. This was reformed into Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB) and reformed again in 2012 into Bank of Agriculture.

3. Operation Feed the Nation (OFN) which was launched in 1976 by the then military Head of State, General Olusegun Obasanjo to create awareness of the need to farm and produce more food by Nigerians in order to stop food importation.

4. Green Revolution Programme (GRP) which was established by the then Civilian President, Alhaji Shehu Shagari in 1979 with the aim of revolutionizing domestic food production and
reducing food importation. The aim of this programme was also to ensure self-sufficiency in food production.

5. Agricultural Development programmes (ADPs) which were first established in 3 States of the Federation as enclave project in Funtua, Gusau and Gombe in 1975 and later established in all the 36 States of the Federation including the Federal Capital Territory (FCT), Abuja with the goal of disseminating agricultural innovations to the rural farmers in order to enhance their productivity and standard of living. These ADPs are still functional in Nigeria with various names. For instance, in Benue State, it is called Benue State Agricultural and Rural Development Authority (BNARDA).

6. Directorate of Food, Roads and Rural Infrastructure (DFRRI) which was established in 1986 by the then Head of State, General Ibrahim Babangida to improve on rural infrastructure such as rural roads and rural electrification as well as boreholes, clinics and markets.

7. Family Support Programme and the Family Economic Advancement programmes which were established in 1993 to empower rural Women economically in order to boost their economic activities.

8. National Directorate of Employment (NDE) which was established in 1980s to train young school leavers in various skills and to also grant them credit facilities in order to enable them enhance their standard of living. The NDE is still in existence up till now.

9. National Poverty Eradication Programme (NAPEP) which was established in 2001 to replace the previously failed Poverty alleviation programme.

10. SURE- P- was launched by the former President Good Luck Jonathan in 2014 and was poorly implemented by the State Governors.

11. n-Power programme for unemployed youths which was put in place by the present Government in 2016, but took off in 2017 to provide employment to 500,000 unemployed graduates in Nigeria. So far, the first batch of 200,000
unemployed NCE and degree holders has been employed and placed on N30,000.00 monthly salary and were posted to teach in rural primary schools. This is a good Omen for economic security of this country.

12. Social welfare stipends of N5,000 to Vulnerable citizens which also took off in 2017 but only in some few selected States of the Federation (Northeast).

13. Universal Free Primary Education (UPE) This was launched in 1978 to provide free Primary and Teacher Grade II education to Nigerians. Albeit the past and present governments had good intentions in putting in place the above listed poverty reduction programmes in Nigeria, those good intentions were not enough as far as appropriate machinery was not put in place to monitor and evaluate implementation of such laudable programmes.

3.0 EFFECTS OF POVERTY ON SOCIO-POLITICO ECONOMIC STABILITY/NATIONAL SECURITY

Poverty as a social malady has several excruciating effects on socio-politico-economic stability/National security of this country, Nigeria. Some of these effects include:

1. **It brings about brain drain in Nigeria.** In other words, absolute poverty in Nigeria may force our first class University graduates to migrate from this country to advanced countries that are more economically secured. This ugly development leads to loss of skilled labour to advanced nations.

2. **It reduces economic growth rate of a nation and this affects its rapid economic development.** In other words, poverty prevents poor nations from executing economic development projects. That is the more reason why our critical infrastructure are in sordid and deplorable conditions (eg. Roads, power supply).

3. **It enslaves poor nations to advanced countries.** This is due to overdependence of poor nations on importation of foreign goods and services as well as excessive borrowing from foreign nations under some conditionalities.
4. **It breeds crimes or rascalism or hooliganism:** Poverty is the root cause of crimes or rascalism in our society and crimes prevent businesses from thriving by generating instability and uncertainty at both micro and macro-economic levels. Poverty begets hooliganism and alcoholism. Wherever there is poverty, there is also crime or rascalism or hooliganism. There is need to provide qualitative education to our youths, since schooling youths spend more time at school and have lesser time to indulge in criminal activities.

5. **It affects parental care and ability to pay children school fees.** Poor parents can hardly take good care of their children talkless of paying their school fees. In fact, most of the drop out from school are children from poor families. Parents are advised not to be idled but to engage themselves in useful economic activities that can empower them economically.

6. **It prevents people from having good housing and sanitation facilities.** Majority of our poor people are living in thatched grass huts and have no sanitation facilities and as such defecate indiscriminately in the bush or in open places.

7. **It prevents people from having access to good quality drinking water.** Poor people usually obtain their sources of drinking water from stagnant ponds, streams and rivers. In most cases, they have to travel 4-5 kilometers away in search of good drinking water. Provision of boreholes, sunk wells and dams can help go a long way in reducing their suffering in obtaining sources of good drinking water.

8. **Poverty is a major cause of social tensions and it threatens to divide a nation due to income inequality.** This occurs when wealth in a given country is unevenly or poorly distributed among its citizens. For instance, if a particular part of a country is being marginalized economically, politically, socially and otherwise, there will be some social movements and/or tensions that are capable of dividing the entire nation along religious and ethnic lines.

9. Poverty can destabilize the entire nation as a result of high level of youths unemployment, a situation that may degenerate into a
civil revolution that is capable of overthrowing a sitting government.

10. Poverty begets child labour or child abuse, malnutrition, domestic violence and child diseases of all kinds. Children from poor families are always sent out by their parents to sell pure water, groundnuts and other food items in order to supplement household economy. Most of these abused children are highly malnourished, diseased and are in squalors. Some of them are even not allowed to go to school by their poor parents. In most of the homes of poor families, domestic violence is the order of the day.

11. **Children’s anti-social behavior is a product of poverty.** One of the effects of poverty on children development is that it causes anti-social behavior in children. Such poor children are always aggressive. This is as a result of discriminations and social exclusion which push them into more aggressiveness, less-self control and nuance in reaction to stressful events. Policy makers should understand that not just income but a child’s social environment at large that plays a big role in child development. His parenting, housing, school violence, sanitation, wholesome food and water, will affect child development in his social setting.

12. **It reduces life expectancy of Nigerians.** If you visit rural areas these days, you will be amazed to see that the real old people whom you used to see in those old days are no longer found there. Why is it so? The probable answer is that the poor people live shorter lives than the rich people in urban areas. This could be true because the poor is squalid, malnourished, diseased and less economically secured to take good care of himself/herself and his children.

13. **Children born into poor families are often born underweight,** which according to the Centre for the Future of Children, is the key risk factor for infant mortality. It also has the potential to permanently retard physical growth, brain development and cognitive functioning (Center for Hunger and Poverty, 1998). This, in addition to the parents’ low level of education, may lead
to kids who enter school behind their peers and fail to level up throughout their academic career (RSSFeed, 2016).

14. The Feminization of Poverty. This connotes the effects of poverty on women. With the social changes made in the last decades, more and more women are finding themselves in the position of having to suddenly live on their own, or having to raise their children alone. This could be as a result of broken homes or other reasons that may force women to become the bread winners with limited resources. Consequently, they now face the direct reality of life or direct effect of feminist poverty on their economic stability.

15. Finally, Poverty breeds Terrorism. Poverty fuels terrorism by creating a state of misery and frustration that pushes people to join terrorist organizations such as Boko Haram in Nigeria, AlQaeda in Iraq or Iran etc. Most of the terrorists do come from poorer countries with high unemployment, and most of these terrorist organizations are sponsored by rich men who provide much higher salaries than other jobs to attract youths who are wallowing in abject poverty (RSSFeed, 2016).

STRATEGIES FOR MITIGATING THE EFFECTS OF POVERTY ON SOCIO-POLITICO-ECONOMIC STABILITY/NATIONAL SECURITY

Absolute or extreme poverty, albeit cannot be wiped out completely, its effects can be mitigated through the following strategies:

1. By increasing per capita income among Nigerians. Per capita income is the ratio of a country’s Gross National Product (GNP) to the total population of that nation. By Gross National Product it connotes the total national production and consumption of all final goods and services (C) plus gross investment (IG). Thus, GNP = C + IG,

   While per capita income = \( \frac{\text{GNP}}{\text{Total Population}} \)
According to Age (2017), if a country is able to increase her domestic production, and at the same time is able to maintain a manageable population, her per capita income would be high and vice versa. There is need for this country to control her population through legislation and to ban importation of goods and services that can be produced locally. And by so doing, it will boost domestic production, thereby increasing per capita income in Nigeria.

2. **Industrialization of all Local Government Areas:**

   At least all the Headquarters of 774 Local Government Areas in Nigeria should be industrialized so as to provide employment opportunities to our youths. This will help to mitigate high level of poverty in Nigeria.

3. **Resuscitation and Revitalization of all moribund industries.**

   By so doing, more employment opportunities would be created, thus reducing high level of poverty in Nigeria. Here, we advocate the use of public-private partnership, since the government alone cannot succeed in this hectic task.

4. **Urbanization:** More urban centres should be opened and industrialized so as to create more job opportunities for rural youths.

5. **Exploitation and utilization of untapped human and natural resources.** There are superfluous human and natural resources that are lying fallow without exploitation. For instance, Benue and Kogi States may have crude petroleum, gas and other minerals as well as entertainment and tourism facilities but because exploration of these resources is yet to be done, it may be difficult to exploit or tap them.

6. **Proper Orientation, Organization and discipline of the Nigerian Society.**

   According to Age (2017), when a society is properly oriented, organized and disciplined, it can be prosperous on the scantiest natural and human resources. That explains why Nigeria is wallowing in abject poverty in spite of the fact that she has been endowed with superfluous human and natural resources. This is where President Buhari’s Social Orientation Campaign on
change begins with me as well as his fight against corruption in Nigeria have become germane, apt and timely. We call upon National Orientation Agency and Religious Organizations to assist the nation in diffusing this message to Nigerians.

7. **Adoption of Unicamera Legislature in Nigeria.**
   It is an implicit fact that bicamera legislature is costing Nigeria more than if she were practising Unicamera legislature, thus draining her economy and rendering her less secured economically. In fact, the monthly salaries of 106 Senators and 360 members of National House of Representatives alone can completely wipe out absolute poverty of 170 million Nigerians. There is need to slash salaries of key political office holders, especially that of Senators, House of Representatives, State Houses of Assembly, Governors/Deputy Governors, President and Vice President by at least 50%.

8. **Reformation of 1999 Constitution and placing a ceiling of two tenures** maximum on Senators and House of Representatives. There is need to reform the 1999 Nigerian constitution so as to accommodate current societal needs and aspirations. In fact, the reformation should raise academic qualifications for all elective posts to at least NCE, ND or first degree. This will create opportunity for our graduates to get more political jobs. Besides, the reformation should place a ceiling of only two tenures for Senators and House of Representatives. A situation where some Senators or House of Representatives are serving four (4) or five (5) tenures is an aberration, since it is depriving our youths of political jobs, thus pauperizing them.

9. **Abrogation of the Land Use Act of 1978**
   According to FAO (2003), poverty and hunger are often due to lack of access to enough land of good quality. There is need to abrogate the Land Use Act of 1978 and reform it into legislated Land Use Act of 2017 so as to make land available and accessible to the Landless for agricultural, industrial and other purposes.
5.0. Conclusion
Poverty, especially absolute poverty is a social disease that is more contagious and zoonotic than even some human and livestock diseases. It has affected many households in Nigeria and has numerous excruciating effects on the socio-politico-economic stability and national security of our dear country, Nigeria. Precisely speaking, this social malady abets brain drain, reduces economic growth rate of our nation, enslaves our poor nation, breeds crimes or rascalism or hooliganism, affects parental care and ability to educate their children, prevents poor households from having access to good housing and drinkable water, abets terrorism, begets child labour, reduces life expectancy of most Nigerians and facilitates feminization of extreme poverty, all of which have adverse effects on the socio-politico-economic stability and national security of this toddling nation.

In spite of the numerous programmes or policies put in place by the successive past and present governments of this country to mitigate absolute poverty in Nigeria, the present spate of absolute poverty in this country is alarming, and worrisome, considering its present growth rate of 62.6 percent (UNPD, 2016). It has, therefore, become very pertinent to strategize appropriate roadmap for shaping the future of Nigerian populace with a view towards mitigating the alarming spate of absolute or extreme poverty among Nigerians. It is my candid and clarion call on all well-to-do Nigerians, Donor nations and the private sector to assist this country in reducing the rate of absolute poverty ravaging our nation, since the government alone cannot win this social war against destitution, pauperism, indigence and penury. I also call upon the United Nations (UN) to assist the Nigerian government to endavour to successfully implement Agenda 2030 for Sustainable Development Goals (SDGs), a plan of action that seeks to eradicate poverty in all its ramifications from developing nations around the world. On that note, I rest my case.

Thank you and May the Almighty God bless you all.
References


CHAPTER FOUR

4.0 IMPACT OF GLOBALISATION ON NIGERIA’S ECONOMIC DEVELOPMENT AND NATIONAL SECURITY IN NIGERIA

4.1 Introduction

I am elated, enthused, humbled and feel highly honoured to be invited by the Commandant, Air War College, Nigeria Air Force Base, Makurdi to present a lecture titled “The impact of globalization on Nigeria’s economic development and national security” to this cream of erudite students drawn from the Nigerian Armed Forces on the occasion of the Air War College course 1/2016. I was told that this lecture is part of the “Economy and National Development module of this course” these students must take. I must commend the Commandant and his staff for hosting these senior military officers at this excruciating recession period. I also appreciate the organizers of this lecture for inviting me to share my civilian ideas with the military officers, so that together we can move Nigeria forward economically, politically and socially in spite of the security challenges facing this nation as a result of the advent of globalization.

The entire world today is confronted with global economic recession, insecurity, youths’ unemployment, sordid physical, social, and institutional infrastructure, abject penury and looming famine. Most of the scholars, the world over are of the view that these lingering problems were brought about by one phenomenon called globalization. I believe it is against this backdrop that this lecture was designed to expose to our senior military men and women as well as the general public to the negative and positive impact of globalization on economic development and national security in Nigeria.

This paper is thematically designed using down-to-earth and methodical approach and it consists of five (5) parts:
1. Conceptual clarifications;
2. Structure of Nigeria’s economy;
3. Impact of globalization on Nigeria’s economic development;
4. Impact of globalization on Nigeria’s national security;
5. The future of globalization for Nigeria’s economic development and national security.

2.0. Conceptual Clarifications
There are some key concepts which need to be clarified for you to actually have a grasp of the subject matter. These include the following:
i. Globalization;
ii. Economic development and
iii. National security.

2.1. The Concept of Globalization
Globalization is recently becoming a topical and contentious issue in the global village in which we all live and are either directly or indirectly feeling its impact. Globalization can be conceptualized as a bilateral or multilateral relationship existing between two or more countries of the world for social, economic and political purposes with a view towards assisting the underdeveloped or developing nations to develop their economies through liberalized trading, movement of people, goods and services across international borders without hindrances. It can also be defined simply as the free movement of people, industrial and agricultural goods and services from one country or continent to another without any barriers. Globalization can also mean a symbiotic relationship between developed nations of the world and developing nations, in which the developed nations are the producers of new technologies, while the developing nations are the consumers of foreign technologies. Globalization could also mean the growing interdependence or interconnectedness existing among nations of the world, since no nation can exist in isolation, no matter its level of political, industrial and socio-economic development.
Globalization is driven by technological advancement or industrialization and through this; countries that are less developed can import foreign goods and services into their countries. Besides, they can also export their domestic products to developed nations of the world. Globalization underscores liberalization of trading and investment, whereby any country from any part of the world can produce any product or technology and market it in any part of the world without any hindrances.

Globalization brings about good relationship between the developed and underdeveloped or developing nations in terms of trading, investment, religious, political, sportive activities and international security services. Besides, it brings about economic prosperity or development of the trading nations. In spite of the numerous benefits globalization has brought to Nigeria as one of the developing countries of the world, it seems globalization is being used as a foreign tool for dumping already used or sub-standard products or technologies into our country, thus making Nigeria as a dumping ground for foreign by-products. In fact, globalization has impacted negatively on our economy, culture, health, environment, politics and national security. That explains why we have assembled here this morning to brainstorm on the impact of globalization on Nigeria’s economic development and national security.

2.2 The Concept of Economic Development
According to Age (2015), economic development is a broader concept than economic growth and for one to actually understand the concept of economic development; he/she must first of all understand the concept of economic growth. According to this scholar, economic growth connotes an increase in the total amount or volume of goods and services produced or consumed by a nation per annum. These goods could be industrial, manufactured or agricultural goods. Economic growth does not in any way reflect the well-being of human beings in any country. Economic development on the other hand, can be conceptualized as an increase in the per capita productivity of any nation accompanied by the qualitative transformation of the socio-economic living standard of the
generality of the citizenry of any nation. In concrete terms, it connotes maximum and adequate satisfaction of the basic human needs such as food, shelter, water, clothing, education and good health. Economic development encompasses progress, improvement and transformation in the totality of the human life, be it economic, agricultural, social, political or otherwise. It is possible for a nation to achieve economic growth (i.e. increase in per capita production) without an appreciable level of economic development.

According to Sule (2006), economic development refers to the process which aims at maximum improvement of material, cultural, social and political aspects of a man. According to him, it further seeks to develop the full potentials of man. In other words, development is a dynamic process which is expected to move man from his erstwhile position of want and deprivation to a stage where his total being could be transformed mentally and technologically. True economic development means the development of man, thus unfolding and realizing his creative potentials, enabling him to improve his material conditions and standard of living through the use of resources available to him.

From the foregoing, it is clear that economic development does not start with material things or goods and services. It starts with people, their orientation, organization and discipline. That is the more reason why when developmental efforts are focused on material things, all human resources remain latent or dormant, untapped potentials and society remain poor amidst the most opulent material resources. Conversely, when a society is properly oriented, organized and disciplined, it can be prosperous on the scantiest material resources or natural wealth. That again explains why Nigeria, albeit endowed with superfluous material and human resources, she is still wallowing in abject poverty, due to lack of orientation, discipline and organization, epitomized by high degree of corruption of the political leaders. In fact, the war against corruption embarked upon by President Muhamadu Buhari is in the right direction and as such I call upon the military and the general public to support him.
According to Sule (2006), economic development also has to do with attaining desirable and internationally acceptable standard in the social, economic and political spheres of a nation. It includes: life sustenance, self – esteem and freedom. Life sustenance is concerned with the provision of basic human needs that are sine qua non for keeping body and soul together. These are the items which Maslow classified as the physiological needs: food, water, shelter, clothing etc. Self esteem is concerned with the feeling of self respect and independence, while freedom is concerned with exemption from a state of want, ignorance and squalors. Nigeria is an independent nation but can we regard it as being self – sufficient and self – reliant? The answer is capital NO.

In differentiating and classifying economically developed countries of the world, these three core values become very germane, hence we more often than not talk about developed and developing countries. While the developing countries (e.g. Nigeria) lack these three core values or are in short supply, the developed countries (e.g. U.S.A) experience abundance or superfluous supply of these core values. That means, Nigeria is still a toddler nation. It is not so? It is.

2.2.1 Indices for Measuring Economic Development

There are many indices that can be harnessed to determine whether or not economic development has taken place in any nation. The universally accepted economic development indices include the following:

i. High standard of living;
ii. High rate of literacy and numeracy;
iii. Provision of better infrastructural facilities;
iv. Declining mortality rate;
v. Declining rate of unemployment;
vi. Political and religious stability;
vii. Good governance and;
viii. Favorable balance of trade.

1. High Standard of Living

This refers to the well being of the people which can be determined by increase in productive capacity of the people, which leads to a
more favorable balance of trade, increase in both the Gross National Product (GNP) and Gross Domestic Product (GDP) and increase in per capita income. The GNP is the total national production and consumption of all final goods and services (c) plus gross investment (IG). Thus, \( \text{GNP} = C + IG \).

If for instance, a country is able to increase her domestic production, and at the same time is able to maintain a manageable population, her per capita income would be high and vice versa. Thus, per capita income = \( \frac{\text{GNP}}{\text{population}} \). Gross domestic product (GDP), on the other hand, refers to the total market value of all final goods and services produced by a country per annum. In other words, it is a monetary measure of the market value of all final goods and services produced by a country per annum. Nominal GDP estimates are commonly used to determine the economic performance of a whole country or region, and to make international comparisons. GDP can be determined using three approaches:

a. The production or output or value added approach.

b. The income approach and

c. The expenditure approach.

The most direct of the three is the production approach, which sums the outputs of every category of enterprise or sector of economy to arrive at the total GDP.

The income approach works on the principle that the income of the productive factors must be equal to the value of their products and determines GDP by finding the sum of all producers' income. The expenditure approach works on the principle that all of the products must be bought by consumers, hence the value of the total products must be equal to the total expenditure of consumers.

The GDP in Nigeria expanded to 8.99 percent in the third quarter of 2016 over the previous quarter. The GDP growth rate in Nigeria averaged 0.77 percent from 2013 to 2016 reaching 9.19 percent in the third quarter of 2015 and -13.70 percent in the first quarter of 2016.
### Table 1: Nigeria’s GDP growth rate

<table>
<thead>
<tr>
<th>Year</th>
<th>Quarter</th>
<th>Actual</th>
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<tbody>
<tr>
<td>2016</td>
<td>Q 1</td>
<td>-13.7%</td>
</tr>
<tr>
<td>2016</td>
<td>Q 2</td>
<td>0.82%</td>
</tr>
<tr>
<td>2016</td>
<td>Q 3</td>
<td>8.99%</td>
</tr>
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</table>

Source: Adapted from Google (2016)

### Table 2: Nigeria’s GDP

<table>
<thead>
<tr>
<th>GDP</th>
<th>Current</th>
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<tr>
<td>GDP Growth rate</td>
<td>8.99</td>
</tr>
<tr>
<td>GDP Annual growth rate</td>
<td>-2.24</td>
</tr>
<tr>
<td>Total GDP</td>
<td>481.07</td>
</tr>
</tbody>
</table>

Source: Adapted from Google (2016)

### Table 3: The world’s GDP

<table>
<thead>
<tr>
<th>S/No</th>
<th>Country</th>
<th>Year</th>
<th>Current GDP (%)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Nigeria</td>
<td>2016</td>
<td>8.99</td>
</tr>
<tr>
<td>2</td>
<td>Bangladesh</td>
<td>2016</td>
<td>7.05</td>
</tr>
<tr>
<td>3</td>
<td>Venezuela</td>
<td>2013</td>
<td>6.80</td>
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<td>4</td>
<td>Vietnam</td>
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<td>Angola</td>
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<td>Egypt</td>
<td>206</td>
<td>4.90</td>
</tr>
<tr>
<td>7</td>
<td>Cape Verde</td>
<td>2014</td>
<td>4.50</td>
</tr>
<tr>
<td>8</td>
<td>Morocco</td>
<td>2015</td>
<td>4.50</td>
</tr>
<tr>
<td>9</td>
<td>Pakistan</td>
<td>2015</td>
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<td>10</td>
<td>Algeria</td>
<td>2014</td>
<td>4.00</td>
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<td>11</td>
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<td>2014</td>
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</tr>
<tr>
<td>12</td>
<td>United Arab Emirates</td>
<td>2015</td>
<td>3.90</td>
</tr>
<tr>
<td>13</td>
<td>South Africa</td>
<td>2016</td>
<td>3.30</td>
</tr>
<tr>
<td>14</td>
<td>Indonesia</td>
<td>2016</td>
<td>3.20</td>
</tr>
<tr>
<td>15</td>
<td>United states</td>
<td>2016</td>
<td>3.20</td>
</tr>
<tr>
<td>16</td>
<td>Sri Lanka</td>
<td>2016</td>
<td>2.60</td>
</tr>
<tr>
<td>17</td>
<td>Paraguay</td>
<td>2016</td>
<td>2.50</td>
</tr>
<tr>
<td>18</td>
<td>Namibia</td>
<td>2016</td>
<td>-6.20</td>
</tr>
<tr>
<td>19</td>
<td>Senegal</td>
<td>2016</td>
<td>-2.50</td>
</tr>
</tbody>
</table>
2. High Rate of Literacy and Numeracy
In the developed economies of the world, the ability of a nation to provide qualitative education for her citizenry can be regarded as one of the macro policy objectives of economic development. Usually, in such a developed country, a substantial part of the national budget is set aside for funding of the education sector (Age, 2015). In Nigeria, only 8% of the 2016 annual budget was allocated to the education sector as against 26% prescribed by the global best practices. It seems the Nigerian government prefers quantitative education to qualitative education. This is discernable from proliferation of Federal, State and private universities that are bereft of improved physical, social and institutional infrastructural facilities. The fall out of this, is the churning out of half-baked graduates annually.

3. Provision of Improved infrastructural Facilities
Developed economies of the world pay more attention to provision of improved physical, social and institutional infrastructural facilities to both rural and urban areas. This is done deliberately to checkmate rural-urban migration. In Nigeria, these facilities are in sordid and deplorable conditions. If you go to rural areas, for instance, you will be amazed at the level of inaccessibility, especially during rainy season due to poor rural roads, lack of bridges across rivers or streams and lack of toilet and improved housing facilities. That is Nigeria for you.
4. Declining Mortality Rate
Improvement in health care delivery facilities as well as trained medical personnel are sine qua non for longer life expectancy and declining mortality rate in every nation. A healthy nation is a rich society that can actively or meaningfully contribute to its socio-economic development by being productive (Age, 2015). According to this scholar, a situation where our political elite go abroad for medical treatment without providing improved medical facilities as well as trained medical personnel to our domestic hospitals or clinics is an aberration, and a gross instance of misgovernance or corruption, all of which abet underdevelopment of the health sector.

5. Declining Rate of Unemployment
According to the National Bureau of Statistics (NBS, 2016), unemployment in Nigeria in the second quarter hits 13.3%, underemployment hits 19.3%, while youth unemployment / underemployment hits 49.5%. High rate of unemployment is a clear indicator of economic underdevelopment, while low rate of unemployment is an indicator of high level of economic development. According to Age (2015), unemployment is one of the causes of most of the social ills in our society such as armed robbery, kidnapping, thuggery, prostitution, drug trafficking, drug abuse, cultism and cattle rustling.

6. Political, Religious and Economic Stability
Political, economic and religious stability are sine qua non for economic growth and development of all nations of the world (Age, 2015). According to this scholar, there is no sane investor who would like to invest in a turbulent or chaotic environment where anarchy reigns. In this regard, democratic leadership, rule of law and good governance are germane to political, religious and economic stability.

In Nigeria, political, economic and religious instability have become the order of the day, as it is clearly discernible from the activities of some social movements such as Boko Haram, the Islamic fundamentalist sect in the North eastern parts of Nigeria, the
Niger Delta Avengers in the South-South, MASSOB and indigenous people of Biafra (IPOB) in the South eastern parts of Nigeria, the Fulani Herdsmen crisis in the middle belt and the Islamic movement (Shiite) in Kaduna and Kano States. These social movements have caused loss of millions of lives and properties in Nigeria. Besides, they have abetted economic recession through vandalisation of petroleum pipelines in the Niger delta region.

7. Favourable Balance of Trade
A balance of trade (BOT) is the difference between a country’s imports and exports for a given period of time. A country that imports more goods and services than it exports has a trade deficit. In other words, it has a negative balance of payment. That is, more money is going out than coming in. Conversely, a country that exports more goods and services than it imports has a positive or balance of payment. That is, more money is flowing in than flowing out. The excess money coming in can be harnessed for economic development.

Table 4: Nigeria’s Balance of Trade

<table>
<thead>
<tr>
<th>Nigeria Trade</th>
<th>Current</th>
<th>previous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance of trade</td>
<td>-27238.30</td>
<td>-32</td>
</tr>
<tr>
<td>Exports</td>
<td>74759.80</td>
<td>85</td>
</tr>
<tr>
<td>Imports</td>
<td>774998.20</td>
<td>89</td>
</tr>
<tr>
<td>Current account (BOP)</td>
<td>-404.65</td>
<td>14</td>
</tr>
<tr>
<td>Current account GDP</td>
<td>-3.80</td>
<td>0.2</td>
</tr>
<tr>
<td>Terms of Trade</td>
<td>77.72</td>
<td>80</td>
</tr>
<tr>
<td>Foreign Direct investment</td>
<td>673.35</td>
<td>88</td>
</tr>
<tr>
<td>Capital flows</td>
<td>7092.36</td>
<td>-86</td>
</tr>
<tr>
<td>Gold reserves</td>
<td>21.37</td>
<td>21</td>
</tr>
<tr>
<td>Crude oil production</td>
<td>1476.00</td>
<td>12</td>
</tr>
<tr>
<td>External debt</td>
<td>11261.89</td>
<td>11</td>
</tr>
<tr>
<td>Terrorism index</td>
<td>9.31</td>
<td>9.2</td>
</tr>
</tbody>
</table>

Source: Adapted from Google (2016)
Current account is the sum of the balance of trade (exports minus imports of goods and services), net factor income such as interest and dividends) and net transfer payments such as foreign aids.

From the foregoing, how would you characterize the spate of economic growth and development in Nigeria? I think, it is still a toddling nation, yet to be developed economically albeit it is growing economically.

**Table 5: World’s Balance of trade**

<table>
<thead>
<tr>
<th>S/No.</th>
<th>Country</th>
<th>Period</th>
<th>Balance of Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Afghanistan</td>
<td>Dec.2015</td>
<td>-4809.97</td>
</tr>
<tr>
<td>2</td>
<td>Albania</td>
<td>Jun.2016</td>
<td>-353.80</td>
</tr>
<tr>
<td>3</td>
<td>Algeria</td>
<td>Dec.2015</td>
<td>-6.77</td>
</tr>
<tr>
<td>4</td>
<td>Angola</td>
<td>Dec.2015</td>
<td>-10272.80</td>
</tr>
<tr>
<td>5</td>
<td>Argentina</td>
<td>Jun.2016</td>
<td>-2679.00</td>
</tr>
<tr>
<td>6</td>
<td>Australia</td>
<td>Jun.2016</td>
<td>-15535.00</td>
</tr>
<tr>
<td>7</td>
<td>Austria</td>
<td>Jun. 2016</td>
<td>414.00</td>
</tr>
<tr>
<td>8</td>
<td>Azerbaijan</td>
<td>June.2016</td>
<td>-409.00</td>
</tr>
<tr>
<td>9</td>
<td>Bahamas</td>
<td>Jun.2016</td>
<td>-157.70</td>
</tr>
<tr>
<td>10</td>
<td>Bangladesh</td>
<td>Jun.2016</td>
<td>773.00</td>
</tr>
<tr>
<td>11</td>
<td>Belgium</td>
<td>Jun.2016</td>
<td>1853.00</td>
</tr>
<tr>
<td>12</td>
<td>Benin</td>
<td>Dec.2014</td>
<td>-884.91</td>
</tr>
<tr>
<td>13</td>
<td>Botswana</td>
<td>Jun.2016</td>
<td>11404.90</td>
</tr>
<tr>
<td>14</td>
<td>Brazil</td>
<td>Oct.2016</td>
<td>-3339.00</td>
</tr>
<tr>
<td>15</td>
<td>Bulgaria</td>
<td>Sept.2016</td>
<td>366.70</td>
</tr>
<tr>
<td>16</td>
<td>Burkina Faso</td>
<td>Dec.2015</td>
<td>448.30</td>
</tr>
<tr>
<td>17</td>
<td>Burundi</td>
<td>Dec.2015</td>
<td>-371.20</td>
</tr>
<tr>
<td></td>
<td>Country</td>
<td>Date</td>
<td>Value</td>
</tr>
<tr>
<td>---</td>
<td>-------------</td>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>18</td>
<td>Cameroon</td>
<td>Dec. 2013</td>
<td>-580.02</td>
</tr>
<tr>
<td>19</td>
<td>Canada</td>
<td>Sept. 2016</td>
<td>-18299.00</td>
</tr>
<tr>
<td>20</td>
<td>Chad</td>
<td>Dec. 2015</td>
<td>963.10</td>
</tr>
<tr>
<td>21</td>
<td>Chile</td>
<td>Sept. 2016</td>
<td>-2772.00</td>
</tr>
<tr>
<td>22</td>
<td>China</td>
<td>Sept. 2016</td>
<td>712.00</td>
</tr>
<tr>
<td>23</td>
<td>Colombia</td>
<td>Dec. 2016</td>
<td>-2784.00</td>
</tr>
<tr>
<td>24</td>
<td>Congo</td>
<td>Dec. 2016</td>
<td>-2919.80</td>
</tr>
<tr>
<td>25</td>
<td>Costa Rica</td>
<td>Jun. 2016</td>
<td>152.20</td>
</tr>
<tr>
<td>26</td>
<td>Egypt</td>
<td>Jun. 2016</td>
<td>-4189.70</td>
</tr>
<tr>
<td>27</td>
<td>Gambia</td>
<td>Jan. 2016</td>
<td>-1631.53</td>
</tr>
<tr>
<td>28</td>
<td>Germany</td>
<td>Oct. 2016</td>
<td>24200.00</td>
</tr>
<tr>
<td>29</td>
<td>Ghana</td>
<td>Jun. 2016</td>
<td>-532.04</td>
</tr>
<tr>
<td>30</td>
<td>India</td>
<td>Jun. 2016</td>
<td>-300.00</td>
</tr>
<tr>
<td>31</td>
<td>Iran</td>
<td>Mar. 2016</td>
<td>-937.00</td>
</tr>
<tr>
<td>32</td>
<td>Iraq</td>
<td>Dec. 2015</td>
<td>15861.00</td>
</tr>
<tr>
<td>33</td>
<td>Israel</td>
<td>Jun. 2016</td>
<td>2810.00</td>
</tr>
<tr>
<td>34</td>
<td>Niger</td>
<td>Dec. 2015</td>
<td>-921.70</td>
</tr>
<tr>
<td>35</td>
<td>Nigeria</td>
<td>Jun. 2016</td>
<td>-404.65</td>
</tr>
</tbody>
</table>

Source: Adapted from Google (2016)

### 2.3 The Concept of National Security

National security is a multi-sectoral and multi-dimensional concept, since it encompasses security of life and property, economic security of food and health of the people and environmental security etc. National security can therefore, be conceptualized as a conglomeration of all spheres of security such as economic security, political security, environmental security, energy security, cyber
security, food security, military security as well as protection and preservation of all that the society considers to be indispensable and invaluable (Imobeghe, 2000).

According to Wikipedia (2016), security is the degree of resistance to, or protection from harm. It applies to any vulnerable and valuable assets such as person, dwelling community, items, nations or organization. National security is a concept that a government along with its parliaments should protect the nation or state and its citizens against all kinds of national or international crises through a variety of power, diplomacy, economic power, military might and so forth.

This concept was developed in the United States after World War II and initially it was focused on the military might. However, the trend has changed now and it encompasses a broad range of facets, all of which impinge on the non-military or economic security of the nation and the values espoused by the entire society. In order for a nation to possess national security, it needs to possess economic and political security, energy security, environmental security, food security, cyber security and the military might. There is no single universally accepted definition of national security. The variety of definitions provides an overview of the many usage of this concept. Initially, national security was defined as freedom from military threats and political coercion. Later the definition was expanded to cover non-military security as suited the circumstances of the time.

Macmillan online Dictionary (2016) defines national security as the protection of the safety of a country’s secrets and its citizens. According to the National Defense College of India (1990), national security is an appropriate and aggressive blend of political resilience and maturity, human resources, economic structure and resources and the military might. Harold Brown, U.S. Secretary of defense (1977-1981) in the Carter’s administration, defined national security as the ability to preserve the nation’s physical integrity and territory, to maintain its economic relations with the rest of the world on reasonable terms, to preserve its nature, institution and governance from disruption from outside, and to control its borders. This
definition had two elements such as economic and environmental security. In 1990, a Harvard University Professor of History, Charles Maier defined national security as capacity to control those domestic and foreign conditions that the public opinion of a given community believes are necessary to enjoy its own self – determination or autonomy, prosperity and well being”. The earliest mention of the term national security can be traced to Yale University in 1790 in reference to its relation with domestic industries.

2.3.1 Measures to be taken to ensure National Security
There are so many measures that can be taken by any nation to ensure sustainable national security and some of these include:

i. Use of diplomacy or stick and carrot approach to rally allies and isolate threats.

ii. Marshalling economic powers to facilitate or compel cooperation.

iii. Maintaining effective armed forces that are adequately motivated, well equipped and periodically trained to update their skills and knowledge.

iv. Implementing civil defense and emergency measures including putting in place anti-terrorism legislation.

v. Ensuring protection of critical infrastructure.

vi. Ensuring intelligence service to detect and defeat or avoid threat, and espionage and to protect classified information, and

vii. Using counter intelligence services or secret police to protect the nation from internal and external threats or aggressions.

2.3.2 Main Elements or Forms of National Security
The main elements of national security include:

1. Military Security: this was the earliest recognized form of national security which implies the capability of a nation to defend itself and to deter military aggression. In other words, it implies the capability of a nation to enforce its policy choices by use of military force.

2. Political Security: this is about the stability of the social order. It specifically addresses threats to sovereignty.
3. **Economic Security**: this connotes availability and accessibility to natural resources, the creation and protection of jobs that supply defense and non-defense needs. Third world countries are less secured economically due to lack of employment for their citizens.

4. **Environmental Security**: this deals with environmental issues which threaten the national security. Romm (1993) classified these issues into three:
   a. Transnational environmental problems that threaten a nation’s security. These include global environmental problems such as climate change due to global warming, deforestation and loss of biodiversity, etc.
   b. Environmental or resource problems that threaten a nation’s security. These are problems whose outcomes would result in conventional threats to national security as first or higher order outcomes. Such disputes could range from heightened tension or outright conflict due to disputes over water scarcity in the Middle East, to illegal immigration into the USA caused by the failure of agriculture in Mexico. The genocide in Rwanda caused by rise in population and dwindling availability of farmland is an example of the extremity of outcome arising from problem of environmental security.
   c. Environmental threatening outcomes of warfare. For example, Romans destroyed the fields of Carthage by pouring salt over them, Saddam Hussein’s burning of oil wells in the Gulf war etc.

5. **Security of Energy and National Resources**
   Natural Resources include water, sources of energy, land and minerals. Availability of adequate natural resources is important for a nation to develop its industry and economic power. Lack of resources is a serious challenge for Japan to overcome in order to increase its national power. In the Persian Gulf war of 1991 fought over economic issues, Iraq captured Kuwait in order to capture its oil well, among other reasons. Water resources are
subject to disputes among nations, including the two nuclear powers, India and Pakistan. Nations that lack natural resources can attain energy and natural resources security by acquiring the needed resources by force, negotiation and commerce (Wikipedia, 2016).

6. **Cyber Security:** recently, cyber security began to be viewed as a pressing national security issue. Electronic information systems are vital for maintaining a national security of any country. Possible unauthorized access to the critical governmental infrastructure by anybody can create a serious threat and have a negative impact on political, economic and military security of a given nation (Wikipedia 2016).

In the United States, the Bush administration in January 2008, initiated a comprehensive national cyber security initiative (CNCI). It introduced a differentiated approach, such as identifying existing and emerging cyber security threats, finding and plugging existing cyber vulnerability and apprehending actors trying to gain access to secure Federal information systems. President Obama issued a declaration that the “cyber threat is one of the most serious economic and national security challenges we face as a nation and that America’s economic prosperity in the 21st century will depend on cyber security” (Wikipedia, 2016).

7. **Food security:** This means the ability of a nation to ensure availability, affordability and accessibility of the citizenry to nutritious food, at all times for a healthy living. Any nation that fails to do this, subjects her citizens to chronic food insecurity and this is capable of threatening her national security.

**THE STRUCTURE OF NIGERIA’S ECONOMY**

According to Wikipedia (2016), the word economy is derived from two Greek words, “Oikoc and Veuoum”. While Oikoc means “household, Veuoum means “manage”. That is to say, Oikoc Veuoum or economy literally means household management of resources to produce goods and services that can be distributed or marketed and consumed in order to satisfy human wants. Advanced
learners Dictionary defines economy as “interplay of the four factors of production such as land, labour, entrepreneur and capital to enhance the wealth of a nation”

According to Wikipedia (2016), economy deals with production, distribution, or trade and consumption of goods and services by different agents in a given geographical location. Economic agents can be individuals, businesses, organizations, or governments.

There are three main sectors of economic activity, primary, secondary and tertiary. The primary sector deals with the production of commodities as is the case in farming or mining. The secondary sector deals with manufacturing and processing of industrial goods and services, while the tertiary sector deals with provision of supportive services to other sectors.

A market based economy is where goods and services are produced and exchanged according to demand and supply between participants by barter or a medium of exchange with a credit or debit value accepted within the network (Wikipedia, 1026). A green economy is a low–carbon, resource efficient and socially inclusive. In a green economy, growth in income and employment are driven by public and private investments that mitigate carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services (Wikipedia, 2016).

Table 6: Nigeria’s Economy

<table>
<thead>
<tr>
<th>Currency</th>
<th>Nigerian Naira (₦)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal year</td>
<td>1 April, 2012 – 31 March, 2015</td>
</tr>
<tr>
<td>GDP: Sectoral</td>
<td>Year 2012</td>
</tr>
<tr>
<td>Agriculture</td>
<td>30.9%</td>
</tr>
<tr>
<td>Industry</td>
<td>43.0%</td>
</tr>
<tr>
<td>Services</td>
<td>26.0%</td>
</tr>
<tr>
<td>GDP</td>
<td>YEAR</td>
</tr>
<tr>
<td>Nominal</td>
<td>2016</td>
</tr>
<tr>
<td>PPP</td>
<td>2016</td>
</tr>
<tr>
<td>GDP rank</td>
<td>2016</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------</td>
</tr>
<tr>
<td>Nominal</td>
<td>2016</td>
</tr>
<tr>
<td>PPP</td>
<td>2016</td>
</tr>
<tr>
<td>Growth rate</td>
<td>2016</td>
</tr>
<tr>
<td>Inflation</td>
<td>2015</td>
</tr>
<tr>
<td>Population below $ 1</td>
<td>2013</td>
</tr>
<tr>
<td>Poverty line</td>
<td>2016</td>
</tr>
<tr>
<td>Labour force</td>
<td>2015(Q2)</td>
</tr>
<tr>
<td>Unemployment</td>
<td>2015(Q1)</td>
</tr>
<tr>
<td>Exports</td>
<td>2014</td>
</tr>
<tr>
<td>Main export partners</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>2015</td>
</tr>
<tr>
<td>Spain</td>
<td>2015</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2015</td>
</tr>
<tr>
<td>South Africa</td>
<td>2015</td>
</tr>
<tr>
<td>Brazil</td>
<td>2015</td>
</tr>
<tr>
<td>Imports</td>
<td>2015</td>
</tr>
<tr>
<td>Main import partners</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>2015</td>
</tr>
<tr>
<td>USA</td>
<td>2015</td>
</tr>
<tr>
<td>India</td>
<td>2015</td>
</tr>
<tr>
<td>Belgium</td>
<td>2015</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2015</td>
</tr>
<tr>
<td>Public debt</td>
<td>2015</td>
</tr>
<tr>
<td>Gross external debt</td>
<td>2015</td>
</tr>
</tbody>
</table>

Source: Adapted from CIA World Fact book (2016 online).

Nigeria is a middle income, mixed economy and emerging market with expanding manufacturing, financial service, communications, technology and 21st largest economy in the world in terms of nominal GDP, and the 20th largest economy in terms of purchasing power parity (PPP). In Africa, it is the largest economy and its manufacturing sector became the largest on the continent in 2013 (Wikipedia, 2016).
Previously hindered by years of mismanagement, economic reforms of the past decades have put Nigeria back on track towards achieving its full economic potential. Nigerian GDP at purchasing power parity (PPP) has almost tripled from $170 billion in 2000 to $451 billion in 2012, although estimate of the size of the informal sector which was not included in official figures put the actual figures close to $630 billion. Correspondingly, the GDP per capita doubled from $1400 per person in 2000 to about $2,800 per person in 2012. Albeit much has been said of its status as a major exporter of crude oil, oil only contributes about 2.7% of the total world’s oil supply. In comparison, Saudi Arabia produces 12.9%, Russia produces 12.7% and the United States of America (USA) produces 8.6% (Wikipedia, 2016).

Broadly speaking, Nigeria’s economy has the following sectors: Primary sector that deals with production of raw materials, Secondary sector that processes raw materials into finished products
and the Service sector that renders supportive services or skills and knowledge to other sectors.

**PRIMARY SECTOR**

**Agriculture**

According to Wikipedia (2016), 70 percent of Nigerians are employed in agriculture. In fact, Nigeria ranks 6th worldwide and first in Africa in farm output. It has suffered from years of mismanagement, inconsistent and poorly conceived policies, neglect and lack of basic infrastructure. Table 6 shows that the sector accounts for over 30.9% of the GDP in 2012 and drops to 17.8% of the GDP in 2015. It has 19 million herds of cattle, the largest in Africa. It is however, no longer a major exporter of cocoa, groundnuts (peanuts), rubber and oil palm. It is a pity that agriculture has failed to keep pace with Nigeria’s rapid population growth to the extent that the nation that used to be exporter of food, now relies on imports to sustain itself.

Recent research shows that Nigeria has a land mass of 923,769 square kilometers of arable land (NPC, 2006) with a teeming population of over 170 million people. In spite of the challenges, the prospect for the agricultural sector is very bright due to the growing demand for food driven by a large population and growing incomes as well as higher prices due to high demand in the international and domestic markets. For instance, 100kg bag of milled rice now sales at N120,000.00 in Nigeria as against N60,000 in 2015. Again, 100kg bag of maize that used to be sold at between N8,000 and N10,000 in 2015 is now sold at between N15,000 and N17,000.

According to Wikipedia (2016), the Federal Ministry of Agriculture and Rural Development announced a supportive programme towards creating a Nigerian agricultural sector that worths $256 billion by 2030. By this gesture, government intends to stop food importation valued at over N1 trillion annually and to ensure a massive growth in the sector. As against the annual loss of funds to importation, N 350 billion would accrue to the nation’s
economy by the end of 2015 following imports substitution policy for rice, while the substitution of wheat flour contents in bread with cassava flour is estimated to generate over N60billion. According to the Minister of Agriculture, Chief Audu Ogbeh (2016) cited in Odoshimokhe (2016), the Nigerian government spent about $9billion on the importation of rice alone.

The key to unlocking the growth and development potentials of the agricultural sector in Nigeria is to empower the small scale rural farmers economically through granting of micro-credit facilities to them at a single digit interest rate and to ensure availability and accessibility to improved farm inputs at subsidized prices.

SECONDARY SECTOR
Manufacturing sector
The main industries that constitute this sector include crude oil refining, cement, construction materials, food processing and food products, beverages and tobacco, textiles, apparel and foot wears, wood products, pulp paper products, pharmaceutical products, plastic and rubber products, electrical and electronic products, base metals, iron and steel, information technology, automobile manufacturing and others (Wikipedia, 2016).

The Nigerian manufacturing sector performed poorly in the out gone and even in the present year, as it contributes only 5% of the nation’s GDP. According to data obtained from the office of the Director – General, West African Institute of Financial and Economy Management, “In developed countries where the real sectors are thriving, manufacturing sector contributes as much as between 35% and 40% to the GDP. For instance, in Malaysia, the manufacturing sector contributes about 45% to the GDP”. In recent times, it has been found that political and economic factors contributed greatly to the decline in the manufacturing sector. For instance, poor infrastructure and epileptic power supply are key impediments to the sector. The industry as a whole operates on more than 70% of energy it generates using stand by generators. And operating these generators greatly increases the cost of manufacturing goods in Nigeria. Other factors include increase in the prices of petroleum
products used by the industry, multiple taxation, unabated smuggling and inadequate finance, both locally and abroad. Besides, vandalisation of the petroleum pipelines by the Niger Delta avengers in the Niger Delta region has contributed greatly to the decline of this sector. We are grateful to the prompt and professional intervention of the Nigerian army that has saved the nation from total collapse of the petroleum industry. Permit me to briefly review or appraise petroleum, textile and telecommunication sub sectors that constitute the manufacturing industry in Nigeria.

1.1 Nigeria’s Petroleum Industry

The petroleum industry in Nigeria is the largest on the African continent. In 2014, the Nigeria’s petroleum industry contributed about 14% to its economy (Wikipedia, 2016). According to the CIA World fact Book (2016), Nigeria’s main export partners are the United States, India, Brazil, Spain, France and the Netherlands. Nigeria is an important oil supplier to the United States. In the last nine (9) years, the USA has imported between 9-11 percent of its crude oil from Nigeria, however, USA import data for the first half of 2012 show that Nigeria’s crude is down to 5 percent of its total crude imports. In 2011, about 33 percent of Nigeria’s crude oil exports were sent to the USA, making Nigeria its fourth largest foreign oil supplier. Presently, the total oil export to USA has fallen due to the fact that some gulf coast refiners have reduced Nigerian imports in favour of domestically produced crude oil, and also due to the fact that two refineries in the USA east coast, which were significance buyers of Nigerian crude oil had been idled since 2011.

As a result, Nigerian crude oil export into the USA has fallen to 5 percent in the first half of 2012, down from 10 and 11 percent in the first half of 2011 and 2012 respectively (Wikipedia, 2016). Nigeria is Africa’s largest oil producer and had been a member of the Organization of Petroleum Exporting Countries (OPEC) since 1971. The Nigerian economy is heavily dependent on the oil sector, which accounts for over 95 percent of export earnings and about 40 percent of government revenues, according to the International Monetary Fund cited in Wikipedia (2016).
Nigeria’s petroleum industry started oil exploration beginning with the first commercially viable discovery at Oloibiri in the Niger Delta in 1956, with a modest production capacity of 5,100 barrels per day (bpd). Reserves of crude oil stood at 28.2 billion barrels. Natural gas reserves stood at 165 trillion standard cubic feet (SCF), including 75.4 trillion SCF of non-associated gas (NNPC, 2016). Presently, Nigeria has crude oil production capacity of 1.949 million bpd, which places Nigeria first in Africa as the largest producer and sixth largest oil producing country in the world. Nigeria appears to have a greater potential for natural gas than crude oil. Nigeria produces only high value, low sulphur content, light crude oils such as Antan Blend, IMA, Odudu Blend, pennington light, Qua-Iboe light and Ukpokiti (NNPC, 2016).

The NNPC through its subsidiary, the Nigerian Petroleum Development Company (NPDC) is directly responsible for four oil and gas fields with a total production capacity of 15,000 bpd. The Nigerian gas company, a subsidiary of NNPC transmits gas to major commercial centres in the country. The Escravos-Lagos pipeline feeds the commercial nerve centre of the nation, as well as fuelling the main power station at Egbin, near Lagos (NNPC, 2016). In fact, the Nigeria’s crude oil and gas industry production capacity would have been higher if it were not due to incessant vandalisation of the pipelines by the militia activities of the Niger delta Avengers. Besides, the present economic recession has lowered the world market prices of crude oil from $85 in 2014 to $45 per barrel in December 2016. It had gone up to $58.37 per barrel in January 2017. There is hope that the world market price may hit $80 per barrel in 2017 as soon as Nigeria moves out of this global economic recession.

According to the Vanguard online (2016), the Minister of State for Petroleum Resources, Dr. Ibe Kachikwu reported that the new roadmap for oil and gas sector tagged “7Big win” will bring about massive development in the sector. According to this newspaper, the Minister said that the major focus of the roadmap would be on Niger Delta and security. In fact, the roadmap provides workable plans which will ensure that adequate infrastructure are put
in place to ramp up the national crude oil production to a target of about 2.8 to 3 million bpd. Another major focus of the roadmap would be to upgrade the nation’s refineries and increase local production capacity with the objective of reducing importation of petroleum products by 60 percent in 2018. The Minister promised that Nigeria will be a net exporter of petroleum products and value added petrochemicals by 2019.

The prospect for Nigeria’s crude oil and gas industry is very bright. According to The Nation Newspaper (2016), a total of 224 firms had bid to buy Nigerian crude oil through the 2016/2017 Nigerian national petroleum corporation (NNPC) crude term contract. In fact, Nigeria’s crude oil is a hot cake now due to its sweet or light nature. Already, Indian and Chinese firms had signed a memorandum of understanding (MOU) with the Minister of State for Petroleum worth $115 billion to invest in the Nigeria’s oil and gas sector (The Nation Newspaper, 2016). Besides, OPEC has exempted Nigeria and Libya from the petroleum output cuts (The Nation, Jan 2011).

1.2 Telecommunications Sector
With the growth rate of 32.5% and GDP contribution of 7%, Nigeria has established itself as the largest telecommunication market in Africa. Nigeria’s telecommunication sector is undergoing rapid transformation on account of explosive growth and rapid infrastructural development (Wikipedia, 2016). In fact, liberalization of the sector along with increased competition among players have brought about substantial benefits to the consumers in terms of low subscription rates and freedom of choice. Besides, the Nigerian government is making efforts to transform the country’s economy into knowledge based economy.

According to Wikipedia (2016), the introduction of mobile number portability (MNP) along with issuance of 3G and 4G license will also play an important role in driving the growth of telecommunication sector in the country. In fact, the mobile market of the country possesses tremendous growing potential, considering the high penetration rate of over 60 percent. The telecommunication
sector is so far the only sector that has impacted positively on the economic development of Nigeria due to availability, accessibility, affordability, compatibility and high level of environmental friendliness of its services. There is no household in Nigeria that does not own at least two mobile handsets, and if you multiply that by a teeming population of 170 million Nigerians, you will be amazed at the total number of 340 million subscribers benefiting from telecommunication services in Nigeria daily. In fact, 95.5% of telecommunication services are available, affordable and accessible to remotest rural Nigerians.

1.3 Textile Industry
The cotton textile and Garment (CTG) industry used to be the highest employer of labour, taking after the three tiers of government. However, the industry has gone moribund, and into Oblivion due to high cost of production, inadequate power supply, multiple taxation and influx of cheaper and fake imported textile materials (Chikezie, 2016). Worried by the trend, the Federal Government came up with a bailout intervention programme. In fact, the Central Bank of Nigeria (CBN) approved the bailout in 2009 to promote the development of the CTG industry. Seven years after the disbursement of ₦100 billion bailout packages to the CTG, the apex bank announced additional ₦50 billion special intervention in 2016 to facilitate the takeover of existing debts which offered long term loans and working capital to CTG operators.

The government did that as a way of showing its commitment to rescue the manufacturing sector and also to implement the diversification policy of President Muhammadu Buhari administration. The move was meant to provide additional funds to kick start operation and sustain production and most importantly to retain the staff they have and possibly to employ more (Chikezie, 2016).

In spite of the efforts made by the Federal government, only 11 firms (4.4%) have skeletal operation out of 250 factories that were functional in the 1980s. The majority of these companies asked their employees to go home. Export of textile production, which
stood at $44 million in 2008, has declined to $11 million. Right now, the industry is operating at an average of 20 percent capacity. According to Chikezie (2016), only sixty fabric producers remain in business, 30 in garment manufacturing and 30 in other aspects of textile industry. According to this scholar, it is regrettable that all cotton producers have folded up due to scarcity of cotton.

Right now, most of Ankara or printed fabrics seen in the markets were imported from neighboring countries such as Ghana, Benin Republic, and Cote D’Ivoire. Others were smuggled into the country from Asian countries including China. Besides infrastructure decay, the textile sector is highly affected by high level of smuggling activities, low purchasing power and the influx of foreign substandard fabrics.

In 2010, the Federal government placed a ban on importation of textile fabrics. But rather than bring about the intended succor, the policy indirectly abetted smuggling and the influx of textile fabrics. Statistics have shown that smuggled imported textiles account for over 85 percent of fabric in the local markets, thus robbing the government of its due revenue. Most of the smugglers would bring in low quality textile fabrics into Nigeria and label it made in China or America. In 2015, textile importations stood at $4 billion and the importers complied with the policy of paying textile industry development levy, yet the 10 percent of that has not been disbursed to the textile industry.

These challenges can be mitigated if and only if the government can diligently look at the problems of the sector holistically with a view to revitalizing the moribund sector. I posit tightening of security at the porous borders to checkmate smuggling, disbursement of 10 percent of the textile industry development levy to the operators, provision of constant electricity power supply and pumping of more funds to the textile industry to enable them improve on their decayed and sordid infrastructure and to employ more youths.
THE SERVICE SECTOR
According to Wikipedia (2016), the service or tertiary sector consists of all the parts or all activities of the economy, where by people offer their knowledge, skills and time to improve on productivity, performance, potentials and sustainability. This service can otherwise be known as affective labour.

The basic characteristic of this sector is the production of services instead of end products. Services are also known as intangible goods, including advice, access, experience and discussion. The production of information has long been regarded as service, but some economists now attribute it to a fourth sector, the quaternary sector.

The tertiary or service sector of Nigeria’s Economy involves the provision of services to other businesses as well as final consumers. Services may include the health, the transport, the banking, distribution and sales of goods from producers to consumers. The focus of service provision is on people, interacting with people and serving the consumers, other than transforming physical goods. Nigeria ranks 63rd Worldwide and fifth in Africa in service’ output. However, low power generation has crippled the growth of this sector.

THE IMPACT OF GLOBALISATION ON NIGERIA’S ECONOMIC DEVELOPMENT
Globalization has both positive and negative impact on economic development of any nation.

Positive impact of globalization on Nigeria’s economic development
i. It creates new opportunities, new ideas and opens new markets that entrepreneurs might not have had access to in their countries.
ii. It creates greater opportunities for firms in less industrialized countries to tap or key into more and larger markets around the world and by so doing, it brings about a robust or better economy through introduction of rapid development of the capital market.
iii. It enhances accessibility to capital flows, technologies, human capital and cheaper imports and larger exports markets.

iv. It allows businesses in less industrialized countries to become part of international production networks and supply chains that are the main conditions of international trading.

v. It brings about more job opportunities for the exporters.

vi. It introduces new technologies such as advances in telecommunications, satellites, mobile wireless computers and handsets.

vii. It enhances the living standard of most Nigerians

viii. It increases the economic growth rate of this country (e.g. 2.1% in the third quarter of 2016). Generally, economies that globalize have higher growth rates than non-globalizers.

Culturally speaking, it brings in different ideologies and thought process among Nigerians. Politically speaking, the advent of western democratic system has an impact on politics of developing economies in terms of awareness creation and the voting culture.

Negative Impact of Globalization on Nigeria’s Economic Development

i. It brings about unfavorable balance of trade with its concomitant negative balance of payment. Under such a situation, more money is flowing out of the country than coming in, hence low rate of economic development. According to Wikipedia (2016), this situation has led to increasing number of people living below the poverty line of IUSD ($1) per day and this has perpetuated already existing inequalities between the rich and the poor in Nigeria.

ii. It causes fears and security threat due to too much flow of arms or weapons into Nigeria.

iii. It brings about loss of national integrity and economic security due to overdependence on foreign currencies that led to high inflation rate, economic depreciation of the value of Nigerian currency (₦). For instance, IUSD ($1) is now exchanging for ₦305 per $1, official price and ₦490 per dollar in the parallel market.
iv. The growth of international trade is exacerbating income inequalities, both between and within industrialized and less industrialized nations.

v. Global commerce is increasingly dominated by transnational corporations which seek to maximize profit without regard for the developmental needs of individual countries.

vi. Protectionist policies in industrialized countries prevent many producers in the developing countries from accessing export markets.

vii. It brings about the spread of pandemic diseases of human beings (e.g. Ebola virus, HIV/AIDS), as well as livestock and crop pests and diseases (e.g. avian flu) from one country to another. This is a threat to environmental and human health security of our nation.

viii. Cultural uniqueness is lost in favour of homogenization and universal culture that draws heavily from American or western culture. Besides losing uniqueness of our Nigerian culture, it has affected the economic development of our country. In other words, overdependence on foreign goods and services, has led to a negative balance of payment. This discourages domestic production in Nigeria as a result of preference for foreign goods and services. For instance, most of our political leaders, youths and women these days prefer American goods (e.g. cloths) and as such do not patronize made in Nigeria goods. Even the style of dressing has been westernized since the advent of globalization. So when you see girls or boys half-naked going about in our universities, market places, churches, don’t blame them, rather blame Nigeria for welcoming an international phenomenon called globalization.

ix. It subjects national borders to serious security risk due to free movement across borders, most of which are too porous.

x. It impacts negatively on the human environments which are exploited for mining or extraction of natural resources, thus causing environmental degradation and destruction of biodiversity.
xi. It spreads social evils such as terrorism, kidnapping, armed robbery, child and drug trafficking, drug abuse, and money laundering. For instance, the Boko Haram, Shiite and ISIS we have been hearing about are the by-products of globalization.

xii. It affects human health through consumption of junk food imported into Nigeria. In fact, these junk food and sweet drinks are capable of increasing the level of blood sugar and cholesterol in human body with its concomitant life threatening diseases such as diabetics and high blood pressure which can in turn give rise to stroke, kidney failure etc.

4.0 IMPACT OF GLOBALISATION ON NIGERIA’S NATIONAL SECURITY

Globalization affects all elements of national security ranging from economic security, politics, military, environmental, energy and national resources security to cyber security. Our concern here is to critically identify and discuss the impact of globalization on Nigeria’s national security. First and foremost, globalization has led to threat and decline in security of our porous borders, which are vulnerable to threats from neighboring countries. It is a pity to know that all Nigerian borders are porous, and as a result of the porosity of our borders, there is incessant influx of immigrants into Nigeria. For instance, the Nigeria-Benin border, which is located in the western part of the country, is particularly notorious for all sorts of illegal trans-border activities such as smuggling of goods, human and drug trafficking and a host of others.

Secondly, globalization bred terrorism in Nigeria. As a result of the porous nature of Nigerian’s borders, terrorists from other countries had unfettered freedom to move in and out of Nigeria with impunity. Most of the Boko Haram terrorists were trained abroad before gaining entry into Nigeria through porous borders. Without liberalization policy that was put in place by the Nigerian government to create an enabling environment for all foreign investors, there wouldn’t have been any room for globalization in Nigeria. We were all living witnesses to September 11th, 2001 terrorist attack in USA, which shows how the AI Queda organization
was able to effectively exploit new technologies, communications, global financial networks and the ease of movement of terrorists to attack USA in 2001.

Thirdly, the international community had also benefitted from some of the products of globalization such as military weaponry and telecommunication gadgets. In Nigeria, we are all living witnesses to the emergence of Boko Haram terrorists in the North east, the Niger delta Avengers in the South–south, indigenous people of Biafra (IPOB) and MASSOB in the South east and recently the Shiite in Kano, Plateau and Kaduna States. All these social movements became notorious in Nigeria due to sophisticated military weaponry which they stockpiled as a result of the advent of globalization in this country.

Without the advent of globalization, majority of our military men and women wouldn’t have had ample opportunity of being trained abroad using global best practices. This is a positive impact of globalization on the Nigeria’s national security. Is this a myth or a reality?

Furthermore, the sophisticated weaponry Nigeria had been importing to combat terrorism and other national civil wars wouldn’t have been possible without the advent of globalization in Nigeria. In 2014, 2015 and 2016, Nigeria had been fighting Boko Haram terrorists and to enable her win this war, it imported war planes and other sophisticated weapons. It also sought the help of international community to come and intervene. I remember vividly how some foreign countries like Niger, Cameroon, Germany, France and US sent their military troops to come and give a helping hand in combating Boko Haram insurgency in Nigeria.

Moreso, the global financial networks provided to Nigeria in combating terrorism by international community wouldn’t have been possible if Nigeria was not one of the globerlisers.

Environmental degradation cum pollution could be regarded as one of the negative impact of globalization on Nigeria’s national security. As a result of the use of imported farm machinery as well as agrochemicals, mining equipment, military weapons and explosives, the environment is being polluted and degraded leading
to destruction of biodiversity. This trend affects sustainable
development in Nigeria.

**Cyber Security Threat:** This is a negative impact of globalization on Nigeria’s national security. The advent of globalization has made it possible for some criminals to commit cyber crimes in Nigeria. Through the use of internet, it is possible for some cyber criminals to have access to Federal government information system, thus revealing official secret. You would recall that when Donald Trump, the new American President was campaigning in 2016, he accused his political rival, Mrs. Hilary Clinton of revealing cyber security information while in office as the Secretary of the USA during President Barack Obama’s administration.

**Food Security Threat:** Globalization can bring about excessive importation of agricultural commodities. When more agricultural commodities are imported than being exported, it will lead to a negative balance of payment that may discourage domestic production, which if not mitigated early enough, can lead to shortage of food in the country. Besides, most of imported foods are those that have lost their shelf life and are just dumped into our country and are no longer nutritious and if consumed can lead to botulism.

**THE FUTURE OF GLOBALIZATION ON NIGERIA’S NATIONAL SECURITY**

Nigeria, like other developing nations of the world, is today being confronted with so many excruciating challenges, most of which are traceable to the advent of globalization. Some of these challenges include economic recession, terrorism, political thuggery, rigging of election results, kidnapping, human and drug trafficking, drug abuse, armed robbery, cultism, corruption, money laundering, vandalisation of oil and gas pipelines including vandalisation of electricity power equipment, proliferation of firearms and a host of others. In fact, the list is endless and only God knows how we can come out of these challenges, which are bordering on national security.
According to This Day Newspaper (2016), the former Secretary General of NATO and one time Prime Minister of Denmark at the Nigerian summit on national security in 2016, organized by the council on African security and development (CASADE), University of Wisconsin Research park, USA, in conjunction with the Institute for Peace and Conflict Resolution, of the Ministry of Foreign Affairs, said that the meeting was not only apt and timely going by the increasing spate of violent destruction of lives and property, but was highly commendable due to the fact that it was dedicated to one of the challenges of our time-terrorism. According to this newspaper, the Boko Haram killings in the Northeast, the beheading of people by ISIS and their murderous assaults in Paris, and the Alshabaab slaughters in Kenya, had compelled the international community and Nigeria in particular, to rethink national security. This is a good omen for National security in Nigeria.

The summit which has as its theme, “confronting and containing threats from terrorism and sectarian insurgency”, brought together past and present military experts, active and engaged civilians, policy makers and members of the intelligence community, who came together to share a common vision of a secure and prosperous Africa. Addressing participants at the summit, the convener and CASADE’s Director and Editor-in – Chief, Prof. John Ifediora, said, “we are coming together not only to articulate our answers to the security challenges and opportunities that face African nations, but to strategize on how to present received conclusion and suggestions to the public and government” (This Day Newspaper, 2016).

As long as the numerous economic, socio-cultural, political, environmental, energy and cyber security challenges caused choately or inchoately by globalization are not adequately addressed by the Nigerian government, her national security shall continue to derail and remain vulnerable to international security threats.
Conclusion
Globalization did not just come to developing countries by chance. It was through a common global foreign policy called liberalization policy, which was sold and bought by all developed and the developing nations of the world. Albeit it was meant to develop underdeveloped or less developed countries (LDCs), through transfer of technologies from technologically advanced or industrialized countries of the world to developing nations, it appears globalization has impacted more negatively on the economic development and national security of this country (Nigeria). It has brought about national security challenges such as economic recession, terrorism, political thuggery, rigging of election results, smuggling, kidnapping, money laundering, corruption, human and drug trafficking, vandalisation of critical infrastructure, environmental degradation or pollution and cyber security threat.

Recommendations
In order to come out of the numerous challenges choately or inchoately induced by globalization on the economic development and Nigeria’s national security, the following recommendations are germane to this discourse:

1. There should be a ban on bilateral relationship between Nigeria and the most notorious terrorist nations such as Afghanistan, Egypt, Iraq, Iran and Syria etc. so as to abate transnational terrorism in Nigeria.

2. The use of carrot and stick or diplomacy and dialogue should always be harnessed in conflict resolution. Force should sparingly be used on those who refuse to talk with the Nigerian government for resolution of conflict.

3. Unfavorable balance of trade and its concomitant negative balance of payment should be checkmated so as to fast track rapid economic development of this country. To do this, we advocate for more exportation than importation of goods and services into Nigeria. This will enhance domestic production and increase foreign exchange earnings of this country.
4. There should be attitudinal change to made in Nigeria goods and services, since most of the imported goods are not only fake but unwholesome for human consumption. We should imbibe President Buhari’s campaign on change begins with me (or you and i) into our social systems.

5. There is need to close our porous borders so as to checkmate smuggling activities and influx of immigrants into Nigeria. This can be done by firstly identifying all porous international borders in Nigeria, then siting of military police and customs stations in such places in order to man such porous borders.

6. Greening of Nigeria’s economy or agriculture is advocated. This is to mitigate emission of green house gases such as carbon monoxide, methane, sulphur and others that can cause environmental pollution, degradation and destruction of biodiversity. This could perhaps enhance the food security status of the nation and economic development through organic farming.

7. There is need for a stronger democratic voice in the world that can help Nigeria in blowing her own trumpet against some byproducts of globalization such as international or ambushed terrorism, corruption, money laundering etc.

8. Cyber security: there is need to put in place a legislated policy to checkmate cyber crimes such as hacking of data, leaking of government confidential information to the public.

9. Increasing annual budgetary allocations and disbursements to the rural and agricultural sectors. This can ensure adequate and timely execution of rural and agricultural development projects that can improve the well-being or standard of living of the Nigerian populace. By so doing, rural-urban migration of our youths would be mitigated.

10. Provision of qualitative education and improved health care delivery service. Efforts should be made by the Nigerian government as well as the private sector to underscore provision of qualitative education and improved health care delivery services to the Nigerian masses rather than provision of quantitative education and poor health care delivery services. A
situation where for instance, more Federal, State and private universities are established without adequate funding or provision of critical infrastructure amounts to a caricature of our Nigerianised system of education. Again, a situation where the global best practice of setting aside 26% of the total annual budget for the education sector is deliberately being violated (8% in 2016) is a bad omen for economic development of this country. More so, why are our political leaders deceiving the masses by asking them to register with the National Health Insurance Scheme, when they know very well that our hospitals are only meant for the poor and as such always travel abroad for their treatment? There is need to show more political will to these sectors through increasing annual budgetary allocations and disbursements, and provision of critical infrastructure as well as trained medical personnel and drugs to our hospitals. It is only by so doing that, life expectancy of Nigerians can increase from 45 to 100 years or above.

11. Resuscitation of the existing crude oil refineries and building of more refineries in Nigeria. To ensure sustainable economic development in Nigeria, there is need to resuscitate the four (4) existing crude oil refineries in Portharcourt (2), Warri (1) and Kaduna (1), while efforts should be made to explore other States for crude oil in Nigeria (e.g Kogi and Benue) and to establish at least two (2) more refineries in Nigeria.

12. Diversification of Nigeria’s economy and youths employment. Over dependence of Nigeria’s economy on sweet crude oil has cost us the present excruciating economic recession we are all experiencing right now, due to declining global oil market prices. There is need to revitalize Nigerian agriculture, textile manufacturing industry, mining, transport, telecommunications and tourism industries. These, when done can go a long way in providing more employment opportunities to our teeming youths, whom our proliferated universities and other tertiary institutions are churning out annually.

13. Integration of military might with other forms of national security.
Gone were the days when use of military might to control and prevent any kind of national or international security threats was a vogue. The use of military force alone is no longer a vogue these days, hence it should be integrated with other elements of national security such as economic security, environmental security, political security, energy and natural resources security and cyber security for better result.

My candid message to you and the President of Nigeria is that, there is no short cut to attainment of economic development and national security in this country, except through addressing issues relating to economic development and Nigeria’s national security holistically. In carrying out your various military duties, do not forget to rethink national security, walk national security, eat or drink national security, talk national security and act national security. Let all Nigerians rethink national security now and forever more so as to ensure sustainable economic growth and development in Nigeria.

Thank you all for granting me your audience
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CHAPTER FIVE

5.0 THE GREEN ALTERNATIVE: AGRICULTURE PROMOTION POLICY (APP)

According to the Federal Ministry of Agriculture and Rural Development (FMARD, 2017), the Federal Government on Monday, 15\textsuperscript{th} August, 2016 inaugurated a roadmap for the agricultural sector tagged “The Green Alternative: Agriculture Promotion Policy, 2016 – 2020”. This policy document was presented by the Vice President, Prof. Yemi Osinbajo, who said that the problem with Nigerian agriculture has never been that of lack of a well formulated policy but policy implementation. He, therefore, requested for the full participation of everyone as the new policy document navigates every area of the agricultural terrain. According to the Vice President, the Federal Government is ensuring that all Nigerians are involved in agriculture and that “we are recruiting 100,000 Agricultural Extension Workers as part of the 500,000 teacher corps recruitment exercise under the n-power programme”. According to the FMARD (2017), the Vice President maintained that the move to diversify the economy through the agricultural sector had become necessary due to the huge food importation bill and the need to create jobs for the teeming population of youths in Nigeria. In addition to that, he said that the home grown school feeding programme will provide one meal a day for primary school pupils and this food will come from farms in every State of the Federation. He assured farmers that the Bank of Agriculture would be recapitalized and repositioned to meet their financial needs by giving them agricultural credit facilities at low interest rate of a single digit.

Speaking at the occasion, the Minister of Agriculture and Rural Development, Chief Audu Ogbeh, said that the vision for putting in place this new policy document (APP) was to revive the agricultural sector in order to boost food production in the country. According to him, the policy will serve as the new fulcrum for economic diversification, inclusive growth and sustainable
agriculture development. He added that, in this new policy, we will reflect on years of neglect where agriculture was seen as a refuge for the wretched and unsophisticated. The emphasis on “Green” is to capture the essence, spirit and orientation of the new policy document. It is to underscore, not only the imperative of building a strong, vibrant and resilient economy, but also at green refreshing, generating, transformative agriculture-led economy. It is to ensure mutual nexus between efficient, effective and productive agricultural production on one hand, and environmental sustainability on the other hand (FMARD, 2017). The APP plans to consolidate on the gains of Agricultural Transformation Agenda (ATA) and further promote the value chains of agriculture in the country. One major feature of this policy is that the government intends to attract more investment opportunities into the agricultural sector in Nigeria.

According to FMARD (2016), Nigeria is facing two key gaps in agriculture today. These include inability to meet domestic food demand and inability to export her agricultural produce at the quality standard specified by the trading nations. While the former borders on low per capita productivity, the latter challenge is driven by an inefficient system for setting and enforcing food quality standards, as well as poor knowledge of processing and packaging of crop produce. Putting Nigeria’s agriculture sector on a path to grow will require actions to solve these two lacuna.

The advent of APP is a deliberate effort by President Muhammadu Buhari to close these gaps. This policy is formulated with the belief that it will enhance per capita agricultural productivity and favourable balance of payments through favourable balance of trade. The APP prioritizes increase in production of rice, wheat, maize, soyabean, horticulture (fruits and vegetables), sugar cane, aquaculture (fish), dairy and beef cattle production.

For export markets, the policy prioritizes the production of the following crops and livestock: cowpeas, cocoa, cashew, cassava (starch, chips and ethanol), ginger, sesame, oil palm, yam, fruits and vegetables, cotton and beef cattle. In both cases, the FMARD plans to partner with the private sector, investors, farmers, processors and other stakeholders so as to deepen the supporting infrastructure to
ensure that quality standards are defined and met across the value chains.

Vision and Objectives of APP

According to FMARD (2016), building on the successes and lessons from ATA, the Vision of the Buhari administration for agriculture is to work with the key stakeholders to build an agribusiness economy capable of delivering sustainable development and meeting domestic food security goals, generating exports and supporting sustainable income and job creation. In this regard, the specific objectives for the period 2016 – 2020 include:

1. Grow the integrated agriculture to achieve 6-12% GDP growth rate.
2. Integrate agricultural commodity value chains into the broader supply chain of Nigerians and global industry, driving job growth, increasing the contribution of agriculture to wealth creation, and enhancing the capacity of the country to earn foreign exchange from agricultural exports.
3. Promote responsible use of land, water and other resources to create a vibrant agricultural sector offering employment and livelihood for growing population.
4. Facilitate the Government's capacity to meet its obligations to Nigerians on food security, food safety, and duality nutrition. This policy allocates only 2.0% of the Federal budget to the agricultural sector, instead of 10% in line with the Maputo Declaration.
5. Create a mechanism for improved governance for agriculture by the Supervising institutions and improving quality of engagement between the Federal and State governments.

APP is anchored on three main pillars in line with constitutional provision for the role of Federal government in agriculture development:

a. Promotion of agricultural investment;
b. Financing agricultural development programmes; and
c. Research for agricultural innovations and productivity (FMARD, 2016).
Agricultural Challenges to be Addressed by APP

The new Agriculture Promotion Policy intends to address the following identified challenges:

1. **Policy Framework**
   
   Nigeria suffers from policy instability driven by high rate of turnover of programmes and personnel, which in turn has made application of policy instruments unstable (FMARD, 2016). The fallout of all these is uneven development of the agric. Sector, poor policy implementation, lack of transparency and accountability, violation of the rule of law and the constitution. This discourages investors from investing in agricultural sector in Nigeria. To address this challenge, Nigeria needs to create a policy structure that matches evidence-driven co-ordination among; decision-making authorities with public goals to ensure agricultural transformation. Building that evidence-base requires that Nigeria should always adopt a consistent fact-base to drive decision-makings as well as building on previous successes (FMARD, 2016).

2. **Political Commitment**
   
   This pertains to non-implementation of international protocols or conventions, agreed upon by members of the comity of nations. For instance, failure of Nigeria to implement the Maputo Declaration that prescribes a minimum of 10% of annual budgetary allocation to the agricultural sector. Political commitment at both the Federal and State levels will be required to enforce reforms (FMARD, 2016).

3. **Agricultural Technology**
   
   Persistent shortcomings of the National Agricultural Research system (NARS) to generate and commercialize agricultural innovations that meet local market needs affects adoption of improved technologies by the majority of farmers in Nigeria. Again, failure to also deliver already proven technologies available on the shelf to the end users is another challenge. The former challenge has to do with lack of commitment on the part of...
the government to adequately fund research and Extension, while
the latter pertains to shortage of qualified extension workers to
disseminate improved agricultural technologies to the end users,
most of whom are rural peasants. To address these require a lot of
commitment by the political leaders to ensure adequate funding of
research and extension and to ensure that more qualified extension
workers are employed and posted to rural areas so as to
disseminate improved technologies to the end users.

4. Infrastructure deficit
Nigeria's agricultural sector suffers from lack of physical, social
and institutional infrastructural facilities. Even when few exist,
they are in most cases in sordid and dilapidated or deplorable
conditions. To address these challenges needs the commitment of
the political leaders to allocate at least 10-20% of their annual
budgets to execution of critical infrastructure in Nigeria using
integrated Rural and Agricultural development approach (IRAD).

5. Finance and Risk Management
Nigeria's agricultural sector continues to have poor access to
financial facilities that can empower farmers economically to
adopt improved technologies with a view to enhancing their
productivity and standard of living. The worst part of the story is
that the lending rate is too prohibitive (15-35%).

The Central Bank of Nigeria (CBN), the Bank of Agriculture
(BOA) and other commercial banks need to reduce interest rates
of agricultural loans and to de-emphasise use of collaterals.

6. Institutional Reform and Realignment
Today, many Federal and State Agricultural institutions only exist
on paper. In Local Government Areas where the majority of
farmers are found, none of these institutions exist even on paper.
There is a need to streamline, classify mandates and ensure
continued accountability for better results. A turnaround will
mean, employing more extension workers up to at least 15,000,
setting up more operational co-ordination mechanisms between
the Federal and State governments on one hand and between Federal government and National Council on Agriculture on the other hand.

In addressing these challenges, the government promised to apply prudent, market-based policy measures to grow the sector, with a clear recognition that widespread poverty reduction through the transformation of the agricultural sector is integral to the country’s long run economic growth trajectory and prosperity (FMARD, 2016).

**Agricultural Promotion Policy Thrust**

According to the FMARD (2016), new policy regime, tagged the “Agricultural Promotion Policy” is founded on the following guiding principles:

1. Agriculture as a business: focusing the policy instruments on a government-enabled, private sector-led engagement as the main growth driver of the sector. This was also reflected in the ATA policy.

2. Agriculture as key to long-term economic growth and security—focusing policy instruments to ensure that the commercialization of agriculture includes technologies; financial services, input supply chains, and market linkages that directly engage rural poor farmers because rural economic growth will play a critical role in the country’s successful job creation, economic diversity, improved security and sustainable economic growth (FMARD, 2016).

3. Food as a human right – focusing the policy instruments for agricultural development on the social responsibility of the government in respect of food security, economic security and equity in the Nigerian society, and compelling the government to recognize, protect and fulfill the irreducible minimum degree of freedom of the people from hunger and nutrition (FMARD, 2016).

4. Value chain approach – focusing the policy instruments on enterprise development across successive stages of agricultural commodity value chains for the development of crop, livestock
and fisheries sub-sectors, namely input supply, production, storage, processing /utilization, marketing and consumption. According to FMARD (2016), building complex linkages between value chain stages will be an important part of the ecosystem that will drive sustainable development for the benefit of all Nigerians.

5. Prioritizing crops – focusing policy instruments on achieving improved domestic food security and boosting export earnings requires a measure of prioritization. Therefore, for domestic crops, the initial focus in 2016-2018 will be on expanding the production of rice, wheat, maize, soyabeans, and tomatoes. For export crops, the initial focus will be on cocoa, cassava, oil palm, sesame and gum Arabic. From 2018 onwards, the export focus will add banana, ´avocado, mango, cashew and fish (FMARD, 2016).

6. Market – orientation-emphasis will be placed on market-oriented agriculture to ensure that what is produced is marketed.

7. Factoring climate change and environmental sustainability – emphasis will also be placed on strategies for mitigating climate change and efficient utilization or consumption of natural resources within the carrying capacity of the nation with a view to ensuring that the present generations meet their needs without compromising the ability of future generations to meet their own needs.

8. Participation and Inclusiveness – all relevant policy stakeholders such as farmers’ organizations, cooperatives and other groups, as well as NGOs,CBOs, CSOs, academics, researchers, development partners and the private sectors will be involved at all stages of policy development, starting from planning, formulation, implementation, monitoring and evaluation.

9. Policy integrity – focusing policy instruments on measures for sanitizing the business environment for sustainable agriculture, in terms of transparency and accountability, due process or rule of law, ensuring efficient allocation of and use of public funds and fighting corruption in all its ramifications. This also applies
to compliance with international commitments, protocols and conventions that Nigeria is a signatory to.

10. Nutrition sensitive agriculture – cases of poor feeding or malnutrition of children (≤ 5 years), nursing mothers, and persons with chronic illnesses, disabilities and other vulnerable groups will be considered.

11. Interdependence of agriculture – focusing of policy instruments on the connected relationships between agriculture and other non-agricultural sectors at the Federal and State levels, particularly, industry, environment, power or energy, water sectors.

According to the FMARD (2016), within policy principles, the Federal Government will concentrate on providing an enabling environment for all stakeholders at the Federal and State levels to play their distinctive roles. The policy emphasis will be on providing a conducive legislative and agricultural knowledge framework, macro-policies, security, enhancing physical infrastructure and institutional mechanisms for co-ordinating and enhancing access to adequate farm inputs, finance, information on improved agricultural innovations as well as other agricultural extension services and marketing.

Observations and Comments
The APP is very comprehensive, well formulated with laudable macro-policy objectives that are capable of driving Nigeria’s agriculture to sustainability. However, it is not certain whether the new policy has been legislated upon and assented to by President Mohammadu Buhari before it was presented to the Public domain on Monday, 15th August, 2016 by the Vice President, Prof. Yemi Osinbajo. If it was, I commend the Nigerian Government for giving us a well articulated and legislated Agricultural Policy. Conversely, if it wasn’t, then I posit that due process should be followed before its implementation.

Secondly, it was observed that in spite of this comprehensive policy document, it is bereft of explicit policy instruments that can
be harnessed to achieve its macro-policy objectives. Ideally, Agricultural policy instruments need to be explicitly stated, instead of stating them implicitly. There is need to clearly show the entry plan, workplan, action plan and the exit plan, which are sine qua non for effective and efficient policy implementation. It is only a government that has a hidden agenda that states its policy instruments implicitly. This government has a trusted, transparent and accountable leadership and as such policy makers should reconsider this relevant issue.

Thirdly, it was observed that only 2.0% of the Federal budget is allocated to the agricultural sector. This was found in the new policy document and it is completely a violation of the Maputo declaration, which prescribes a minimum of 10% of the annual budget to be set aside for the agricultural sector. This is where the policy integrity has been compromised, through non-compliance with international protocols and conventions that Nigeria is a signatory to. Policy makers should reconsider their error and step up the annual Federal budgetary allocation of 10% to Agricultural sector.

Finally, the APP fails to capture other sub-sectors of agriculture such as Agricultural Extension, Technology Development and transfer, Agricultural Credit, Agricultural Insurance, Agricultural Research, Agricultural Manpower Development and Training, Agricultural produce marketing and a host of others that were captured in the 1988 National Agricultural Policy.
References
CHAPTER SIX

6.0 CONTROL OF POST-HARVEST LOSSES OF HORTICULTURAL, ROOT AND TUBERS, CEREALS AND LEGUMINOUS CROP PRODUCE IN NIGERIA.

6.1 The Concept of Post-Harvest Losses

Post-harvest losses can be defined as measurable qualitative and quantitative damages or spoilage in the post-harvest value chain caused by natural or artificial phenomena. These losses affect both the quality and quantity of crop produce, thus reducing their economic value and the total income of the producers. Albeit the per capita agricultural productivity of horticultural/root and tuber crop producers seems to be on the increase in Nigeria these days, almost half of what is produced is lost due to poor handling, processing, preservation, storage and transportation to the markets, where the majority of consumers are found. This development is worrisome, loathsome and despicable, considering the teeming population of Nigerians to be fed with what is domestically produced. From Agricultural Extension perspective, post-harvest losses can be conceptualized as all the natural and artificial damages that occur to agricultural crop produce after harvest and that can be traced from pre-harvest production value chain to Post-harvest value chain, culminating at the stage of retail marketing. Simply put, Post-harvest losses are the qualitative and quantitative spoilage of crop produce after-harvest. It should be noted that, time, money and human efforts are required to cultivate crops for human and livestock consumption and for marketing or commercial purposes. The fact that the farmer produces enough marketable surplus which can be sold or marketed means that he has automatically become part of the market economy. That being the case, he must sell his surplus crop produce in order to recover his cost of production and to maximize profit.
It has been found that estimates of the post-harvest losses of agricultural food crops in the developing world from mishandling, processing, pest and disease infestation and storage are put at 25 percent. This implies that one quarter of what is produced never reaches the consumer for whom it was produced and that efforts and money required to produce it are lost forever.

Horticultural crops such as vegetables and fruits as well as root and tuber crops such as yam, potatoes and cassava are less hardy, perishable and vulnerable to natural and artificial phenomena and if care is not taken in harvesting, handling, processing, storage and transporting to the final consumers, they will soon deteriorate or decay and become unwholesome for human consumption.

According to Wikipedia (2016), estimates of production losses in developing countries are hard to judge. However, some researchers have put losses of sweet potatoes, plantain, banana, tomato and citrus some time as high as 50 percent or half of what is produced. It has, therefore, become germane or very imperative for the growers, consumers, researchers, Agricultural Extensionists, the three tiers of government and the policy makers to collaborate and synergize strategies for checkmating or mitigating the looming peril of post-harvest losses of horticultural, root and tuber crop produce in Nigeria.

Post harvest value chain encompasses all post-harvest activities in the value chain, starting from harvesting, handling, sorting, processing, storage, packaging, assembling, transporting and marketing. According to Food and Agriculture Organization (FAO, 1989), losses of horticultural crop produce are a major challenge in the post harvest value chain globally.
Table 1: Estimated annual Production and Post-harvest losses of horticultural Crop produce in Nigeria

<table>
<thead>
<tr>
<th>Crop Produce</th>
<th>Benue Production ($10^3 MT$)</th>
<th>Nigeria Estimated Losses (%)</th>
<th>National annual average Losses ($10^3 MT$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Citrus</td>
<td>1,067.13</td>
<td>32,013.9</td>
<td>20-95</td>
</tr>
<tr>
<td>2. Mangoes</td>
<td>986.35</td>
<td>29,590.5</td>
<td>20-80</td>
</tr>
<tr>
<td>3. Garden egg</td>
<td>24.66</td>
<td>739.8</td>
<td>40-100</td>
</tr>
<tr>
<td>4. Okro</td>
<td>29.79</td>
<td>893.7</td>
<td>30-70</td>
</tr>
<tr>
<td>5. Pepper</td>
<td>10.14</td>
<td>304.2</td>
<td>10-20</td>
</tr>
<tr>
<td>6. Tomato</td>
<td>18.85</td>
<td>565.5</td>
<td>20-50</td>
</tr>
</tbody>
</table>

Annual losses in Fruits and vegetables: $13,028.5 - 55.794.6 \times 10^3 MT$

Source: Adapted from Ariahu (2016)

According to Ariahu (2016), annual losses of horticultural crop produce range from $13.03 \times 10^6$ to $55.8 \times 10^6 MT$. These losses are worrisome and a big shame on Nigeria that has many mouths to feed with what is domestically produced.

Table 2: Estimated annual Production and Post-harvest losses of root and tuber crop produce in Nigeria

<table>
<thead>
<tr>
<th>Crop Produce</th>
<th>Benue Production ($10^3 MT$)</th>
<th>Nigeria Estimated Losses (%)</th>
<th>National annual average Losses ($10^3 MT$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cassava</td>
<td>3,559.5</td>
<td>106,785</td>
<td>10-25</td>
</tr>
<tr>
<td>2. Yam</td>
<td>2,874.3</td>
<td>86,229</td>
<td>20-67</td>
</tr>
<tr>
<td>3. Cocoyam</td>
<td>11.2</td>
<td>336</td>
<td>10-40</td>
</tr>
<tr>
<td>4. Sweet potato</td>
<td>195.1</td>
<td>585.3</td>
<td>50-80</td>
</tr>
<tr>
<td>5. Ginger</td>
<td>0.27</td>
<td>8.1</td>
<td>5</td>
</tr>
</tbody>
</table>

Annual losses of Root and tuber crop produce: $30,884.4 - 89286.91 \times 10^3 MT$

Source: Adapted from Ariahu (2016)
According to Ariahu (2016), annual losses of root and tuber crop produce range from $30.88 \times 10^6$ and $89.29 \times 10^6$ MT. This again, is alarming and a bigger shame on this country with a projected population of 450 million Nigerians by 2050.

6.2 Causes of Post-Harvest Losses of Horticultural, Root and Tuber Crop Produce in Nigeria.

Post-harvest losses of horticultural, root and tuber crop produce in Nigeria are caused by a wide variety of factors ranging from pre-harvest growing conditions to poor handling, processing, preservation and storage of agricultural commodities. These losses are not only a waste of food but also a waste of human efforts, farm inputs, livelihoods, investment or income and scarce resources such as land and water.


On-Farm Causes of Losses or Pre-Harvest Causes

There are several factors affecting post-harvest losses which can be traced from the soil in which the crop is grown to the handling of crop produce by the time it reaches the market. In fact, pre-harvest production practices can adversely affect post-harvest returns. Some of these practices include irregular soil water supply (scarcity of soil water), or too much water supply, nutrient deficiency or wrongful fertilizer application (over application) and control of weeds, pests and diseases. Albeit a growing crop plant such as tomato needs continuous supply of water for photosynthesis and transpiration to take place, too much supply of water through rainfall or irrigation can lead to water logging, wilting or decay of growing crop plants. The water logged soil affects aeration and biodiversity. In fact, too much rainfall can lead to flooding, which can in turn lead to water logging, soil erosion, run off and the washing away of growing crop plants in the field. On the other hand, too little or irregular supply of
soil water can lead to wilting and cracking of fruits or stems and of course defoliation.

Growing crop plants require availability of soil nutrients to thrive. However, nutrient deficiency can lead to stunted growth, discoloration of leaves, abnormal or premature ripening and poor quality produce. Too much fertilizer or wrongful application of fertilizer can lead to wilting or death of growing crop plants (example, tomato, pepper, okra etc). All these pre-harvest practices can affect the development and post-harvest conditions of horticultural and root crop produce, thereby contributing to post-harvest losses.

Weeds also compete with growing horticultural and root crop plants such as vegetables and fruit crops (orange, mango etc) and yam for soil water, soil nutrients, soil air and growing spaces, thereby causing poor quality produce, low yields and low economic value of produce.

Post Harvest Causes of Losses of Horticultural and Root Crop Produce

Post harvest causes of losses of horticultural and root crop produce in Nigeria include the following:

i. **Exhausted water and food reserves:** Fruits and Vegetables are living plants that contain 65-95 percent water. When food and water reserves are exhausted, produce dies and decays. According to Wikipedia (2016), anything that increases the rate at which food and water reserves are used up, increases the likelihood of losses.

ii. **High ambient temperature and lower atmospheric humidity.** Increase in normal physiological changes can be caused by high ambient temperature and low atmospheric humidity and physical injury. Such physical injury may come from careless handling, thus resulting to internal or external bruises, splitting and skin breaks, thereby increasing chances of water loss.

iii. **Respiration and fermentation:** Respiration is a continuous process in a living plant and cannot be stopped without causing damage to either the growing crop plant or harvested produce. It
uses stored starch or sugar and stops when reserves of these are exhausted, thus causing aging. Respiration depends on adequate ventilation or good air supply. However, when the air supply is restricted or completely stopped, fermentation takes place instead of respiration, thus leading to spoilage.

iv. Poor ventilation of produce warehouse: Poor ventilation of produce warehouse leads to accumulation of Carbon IV oxide (CO2). The high concentration of CO2 leads to spoilage of farm produce in the warehouse.

v. Dehydration: Fresh produce continues to lose water after harvest. Water loss in horticultural produce causes shrinkage and loss of weight. The rate of dehydration varies with the products. For instance, leafy vegetables lose water faster because they have a thin skin with many spores. Potatoes, on the other hand, have thick skin with few spores. Irrespective of whatever product, in order to extend or increase shelf-life or storage life, the rate of dehydration should be minimized. According to Wikipedia (2016), the most important factor is the ratio of the surface area of the fruit or vegetable to its volume. The greater the ratio, the more rapid will be the loss of water. In fact, the rate of water loss is related to the difference between water vapor pressure inside the produce and in the air or atmospheric pressure. There is need to keep vegetable or fruit produce in a moist atmosphere (refrigeration) to avoid spoilage caused by dehydration.

vi. Pest and disease infestation: According to Nyaika (2015), post-harvest horticultural crop losses are due to various factors such as pest and disease infestation both during pre and post-harvest. According to Wikipedia (2016), diseases caused by fungi and bacteria can cause post-harvest losses, while viral diseases can mainly affect growing crop plants during pre-harvest production. Fungal and bacterial diseases can spread through microscopic spores in the air, soil ad contaminated planting materials. These diseases can cause skink blemishes, which may reduce economic value of produce, but do not render fruits and vegetables
inedible. Infection of produce can occur at any time. It is usually as a result of poor harvesting and handling injuries.

vii. Premature harvesting: Ripening occurs when a fruit is fully matured. Ripening is characterized by senescence and breakdown of the fruits. There are two categories of ripped fruits, viz, climatic fruits and non-climatic fruits. Climatic fruits are those that can be harvested when partially matured but before ripening has begun. These include banana, water melon, tomato; plantain, mango, pawpaw etc. In commercial fruit marketing, the rate of ripening is controlled artificially, so as to ensure efficient transportation and distribution, which are planned. Ethylene gas is produced in most plant tissues and is very helpful in starting off the ripening process. This gas can be used for the ripening of climatic fruits. However, it has been discovered that natural ethylene produced by the fruits can lead to in-storage losses. For instance, the gas destroys the green colour of plants. Leafy vegetables will be damaged if stored with ripening fruits. Ethylene production is increased when fruits are injured or decaying and this can cause early ripening of climatic fruits, during transportation, thus leading to spoilage.

Non-climatic fruits, on the other hand, are fruits that can only ripen when still attached to the parent plants. Their consumption quality suffers if they are harvested prematurely as their sugar and acid contents do not increase further. In this category, you have citrus, grapes and pineapple. Early harvesting is often carried out for export shipments to minimize loss during transportation with the concomitant loss of flavor.

2.3 Causes of Losses in the Marketing Chain

Post-harvest losses in the marketing chain are caused by the following factors:

i. Lack of knowledge on proper post-harvest handling practices: Fruits and vegetables are very susceptible to mechanical injury. This can occur at any stage of the marketing chain and can be due to poor harvesting practices such as the use of dirty cutting knives, contaminated containers used during
harvesting and marketing, containers with sharp edges or poor nailing, over packing or under packing of containers. The resultant damage can include splitting of fruits, internal bruises, superficial grazing and crushing of soft produce. Poor handling of vegetables and fruits can render them vulnerable to fungal and bacterial disease attacks, increased dehydration and respiration rate, all of which can lead to spoilage.

ii. **Contaminants introduced:** Some fruits and vegetables are also susceptible to contaminants introduced after harvest by the use of contaminated field boxes, dirty water used for washing produce before packaging, decaying, rejected produce lying around packaging houses and unhealthy produce contaminating healthy produce in the same packaging houses.

iii. **Transportation and breakdown of vehicles:** The way and manner transporters overload, squeeze and overpack fruit and vegetable produce in their vehicles in order to maximize income or revenue can cause a lot of damages.

   Besides, the deplorable conditions of our rural and urban roads lead to vehicular vibration, thereby causing a lot of damages to overloaded produce. This overloading can subject the produce to extreme overheating, which can in turn lead to decay and increased dehydration of produce. In fact, breakdown of vehicles during transportation of fruits and vegetables is a significant factor to losses of produce in Nigeria, because these crop produce are perishable when left exposed to solar energy for a day or more while repairs are carried out by motor mechanics.

iv. **Poor marketing facilities:** In most of our urban and rural markets in Nigeria, there are no good marketing structures and facilities that can provide protection for produce against thieves, pests and weather vagaries or climate change. And poor quality markets can lead to rapid deterioration of fruit and vegetable produce. The worst thing is that trying to sort produce by separating the saleable from unsaleable produce at retail marketing stage can lead to more losses. Arrival of fresh supplies in a market that has been stocked with older supplies
may lead to a glut in the market, a situation that can lead to the existing or older stock being discarded or sold at very low prices.

iv. Lack of proper storage and packing Facilities: Lack of proper storage and packaging facilities can also cause loss of horticultural and root crop produce through reduction of shelf-life.

vi. Lack of agro based industries: That can process raw horticultural and root crop produce into finished products can also cause spoilage of excess produce that are yet to be marketed.

vii. Risk and Uncertainty: Both risk and uncertainty cause serious losses or reduction in farm outputs in the long run, thereby reducing the profit margins of the farmers. Agricultural production and post-harvest activities are associated with a lot of risk and uncertainty. While risk can be defined as an unpleasant, unknown outcome with well defined possibilities, uncertainty is a situation or occurrence whose probability or possibility cannot be estimated or quantified ahead of time. Uncertainty is usually a natural phenomenon (e.g flood, drought, and earthquake). Risk could also refer to eventualities which are measurable in quantitative terms (e.g fire outbreak, accident, post-harvest losses). Risk and uncertainty contribute greatly to post-harvest losses of horticultural and root crop produce in Nigeria. According to Ariahu (2016), food losses could be caused by accidental and non-accidental causes.
The agents of food losses are presented on Table 3 below:

Table 3: Agents of post-harvest Food losses

<table>
<thead>
<tr>
<th>Food Spoilage agents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accidental/Natural</strong></td>
</tr>
<tr>
<td>1. Drought, flooding, tsunami</td>
</tr>
<tr>
<td>1. Oil spillage, fire</td>
</tr>
<tr>
<td>2. Volcanic eruption and ash</td>
</tr>
<tr>
<td>3. Radioactive fallouts, wind</td>
</tr>
<tr>
<td>4. Landslides, earthquakes</td>
</tr>
</tbody>
</table>

Source: Adapted from Ariahu (2016)

6.3 Strategies for Mitigating Post-Harvest Losses of Horticultural and Root Crop Produce in Nigeria.
Post-harvest losses of horticultural and root crop produce can be better mitigated using the following strategies rather than managing the losses:

1. Adoption of correct and improved pre-harvest production technologies. Farmers are advised to always read instructions that accompany all agrochemicals and comply with such instructions before usage. Besides, they are advised to always adopt improved agronomic practices in producing vegetables, fruit crops, yam, cassava and sweet potatoes. Where they have challenges, they should always contact Agricultural Extension Personnel for more information.
2. Adoption of dry season farming and mitigation of climate change. In order to ensure sustainable agriculture, which is the panacea for food security, farmers are advised to adopt dry season farming. Farmers can be assisted by the government, commercial banks, non-governmental organizations (NGOs), donor agencies and other well to do individuals to procure irrigation equipment, and construct dams and canals which can enable them to practise dry season farming. Besides, farmers need to be educated on how to adapt to climate change. They should be enlightened on indigenous climate change mitigation and adaptation strategies. By so doing, it will go alone way in reducing post-harvest losses of food in Nigeria.

3. Provision of improved storage and packing facilities: Farmers are advised to procure improved storage and packaging facilities for vegetables, fruits and yam tubers. This will prevent unnecessary physiological changes that are caused by high ambient temperature and low atmospheric humidity. They should also be careful in handling crop produce during processing, storage, packaging and transportation to the final consumers in order to avoid causing physical injuries to crop produce. These injuries or bruises can render crop produce vulnerable to dehydration and pathogenic organisms that can cause decay of crop produce. Refrigerators are recommended for storage of vegetables and fruits, while yam barns or thatched grass huts are recommended for storage of yam tubers and sweet potatoes. For cassava, it is better to process it into cassava flour or chips, gari, akpu etc before storage in bags or baskets.

4. Provision of adequate ventilation in warehouses: Farmers are advised to provide adequate ventilation in their warehouses in order to ensure adequate aeration. This is done to prevent fermentation and accumulation of carbon IV oxide (CO₂) that can cause spoilage of crop produce.

5. Control of pest and disease infestation: Efforts should be made to control pest and disease infestation both in the field and in the warehouses. There are so many bacterial, fungal and viral diseases that can attack growing crop plants in the field.
store, however, only fungal and bacterial diseases have been found to be deleterious to crop produce. Farmers are advised to always contact Agricultural Extension staff to assist them in identifying or diagnosing diseased conditions on their farms. They can also contact crop pathologists from Ministry of Agriculture for assistance.

6. Avoid early harvesting of Non-climatic fruits and storage of leafy vegetables with injured climatic fruits. When non-climatic fruits such as orange, and pineapple are harvested early, they tend to lose flavour, since their acid and sugar contents cannot increase further. When leafy vegetables are stored with injured climatic fruits, the ethylene gas produced by the injured climatic fruits can destroy the green colour of the vegetables.

7. Provision of marketing information on proper post-harvest practices.
There is need to create awareness to the growers and marketers about proper post-harvest handling practices since horticultural and root crop produce are vulnerable to mechanical injuries, which can occur at the pre-harvest and post harvest value chain. This when done, can minimize vulnerability of crop produce to bacterial and fungal infections, increased dehydration and respiration rate.

8. Culling of healthy produce from unhealthy produce and storage in clean containers: Farmers are advised to always separate healthy produce from unhealthy produce and to always store their produce in clean containers that are not contaminated. They should avoid using dirty water for washing of produce prior to storage.

9. Provision of improved rural infrastructural facilities such as good roads and other means of transportation to facilitate evacuation of farm produce from rural to urban centres, where the majority of consumers are found.

10. Establishment of Agro-based industries: There is need for the public and private sectors to collaborate and establish agro-based industries to convert raw produce into finished products which have longer shelf-life.
11. Provision of improved marketing, storage and packaging facilities in rural and urban areas can also help to prevent post-harvest losses of crop produce in Nigeria.

12. Agricultural insurance: crop producers and marketers are advised to insure their farm enterprises with reliable insurance companies against risk and uncertainty. By so doing, they can be compensated if risk and uncertainty occur at any stage of production and post-harvest value chain.

13. **Price contracting:** This is a situation whereby a farmer enters into agreement with the buyers on the price and quantity of produce to be supplied and sold prior to production. This is to guide against fluctuation of prices in the future as well as post-harvest losses that may occur at any stage of production and Post-harvest value chain.

### 6.4 Post Harvest Handling, Processing and Storage Practices for Horticultural, Root and Tubers, Cereals and Leguminous Crops

According to the National Agricultural Extension and Research Liaison Services (NAERLS, 2017), after maturity and harvest, handling, processing and storage practices are the major determinants of the quality of crop produce. Post-harvest handling and processing involves all treatments and processes that occur from the time when crop produce are harvested until the crop produce reach the final consumers.

**Importance of Post-Harvest Handling and Processing**

According to NAERLS (2017), the gains of proper Post-harvest handling and processing include the following:

i. Perishable Produce can be changed into stable commodities with longer shelf-life.

ii. Losses are reduced by preventing stored produce from being infected by insects and other pests (e.g. rodents)
iii. Supply of produce to the market can be controlled to avoid having a glut in the market that can result to low prices of crop produce.

iv. Net economic value of crop produce can be improved by raising its quality and the quantity of final finished products.

Post-Harvest Handling and Storage of Fruits and Vegetables
Fruits and vegetables are of great importance in human nutrition as they supply vitamins and minerals to human diet, provide variety to the food and make food more appetizing. In their fresh forms, fruits and vegetables are highly perishable after harvest (NAERLS, 2017). The heavy losses that occur to these crop produce are mainly due to loss of moisture or dehydration; Change in composition and metabolism; and pathological attack. The factors that predispose these produce to causal agents, however, include: Nature of the crop, its initial quality, mechanical injury; high ambient temperature; relative humidity, Poor handling and storage.

General principles of reducing post-harvest losses in fruits and vegetables
The crucial factors in reducing post-harvest losses in fruits and vegetables include:
(a) High initial quality of crop produce to be stored.
(b) Careful handling before and during storage and
(c) Provision of cool storage environment.

The General Principles of Enhancing Shelf-Life of Fruits and Vegetables
According to NAERLS (2017), the general principles of extending shelf-life of fruits and vegetables include:
i. Varietal differences in storability;
ii. Careful harvesting with clean knife and without injuring fruits;
iii. Careful handling before and during packaging;
iv. Sorting and cleaning;
v. Proper packaging;
vi. Transportation and
vii. Proper storage and processing.
Let us now discuss these in relation to mangoes, tomatoes, Onions and leafy vegetables.

**Reduction of Post-Harvest Losses in Mangoes**
Usually, it is only the matured mango fruits that can be stored successfully. Any mechanical injury to mango fruit causes rapid deterioration. Cool storage at high relation humidity is the most effective method of preservation (NAERLS, 2017)

**Harvesting of Mango Fruits**
Harvest at mature green stage when the shoulders are raised above the stem insertion. Pluck fruits carefully to avoid mechanical injury. To do that, one person should be plucking fruits using “go-to-hell” while two other persons should stand under the mango tree with a device for catching the plucked fruits. Farmers are advised to harvest at cool time of the day.

**Handling of Mango Fruits**
(a) Do not expose the fruits to the sun.
(b) Separate any diseased or damaged fruit.
(c) Place in ventilated packaging containers.
(d) Leave space between the top of the packed fruits and overlying container to avoid bruises.
(e) Load and unload fruits carefully.
(f) Transport during the cool part of the day.

**Storage of Mango Fruits**
i. Transfer fruits carefully into a cool store or thatched grass shed.
ii. Separate damaged or ripped fruits and disposed of them quickly.
iii. Use a clean, cool and well ventilated store and evaporative cooler or cool chamber at temperature not below 8°C (NAERLS, 2017).

**Reducing Post-harvest Losses in Tomatoes**
According to NAERLS (2017), the storage life of tomato fruits depends largely on the varieties. The thick skin varieties are generally more resistant to storage diseases and physiological
disorders than thin skin varieties. Mechanical injury can shorten the shelf-life of tomatoes and as such tomato fruits should be carefully handled.

**Harvesting of Tomato Fruits**

i. They should be harvested in the cool part of the day.

ii. Use hand picking to harvest green, mature fruits, and

iii. Hand pick carefully so as to minimize mechanical damage

**Handling of Tomato fruits**

a. Transfer harvested fruits to a cool, well ventilated and thatched grass shed.

b. Avoid heaping of tomatoes.

c. Separate diseased and damaged fruits and dispose of them quickly.

d. Remove ripped fruits and dispose of them.

e. Pack carefully and transport in an appropriate vehicle to the market.

**Storage of tomatoes**

i. After un-loading, separate diseased ripped and damaged fruits.

ii. Store in a clean, cool and ventilated store in thin layers or in containers meant for transportation.

iii. Wrap in perforated polythene bags and store in evaporative cooler or in the lower part of the refrigerator.

**Processing of Tomatoes**

According to NAERLS (2017), tomatoes can be preserved for months in fresh form as tomato paste by canning and by sun drying before storage.

**Drying of Tomatoes**

Slice tomato fruit into two halves and remove the seeds. After that, you can dry the pulp in solar dryer or under the sun, but shaded from the direct rays of the sum. After drying, store in polythene bags in the desk or in an airtight container.
Reduction of Post-Harvest Losses in Onion

Different varieties of Onion vary in their resistant to storage rots and bolt. In fact, bolted onions do not store well. However, mature onions can store well at low temperatures and low relative humidity.

Harvesting of Onions

If grown under irrigation, shut off irrigation at least one (1) week before harvest. You have to harvest at maturity, when the junction between the bulb and the green leaves becomes soft and the top begins to bend over, but before the leaves dry down completely. Harvest carefully to prevent mechanical damage (NAERLS, 2017).

Curing of Onions

Spread bulbs thinly in the sun for about four (4) days with the leaves on. Bulbs are properly cured and suitable for storage when the neck is tight and the outer scales are dry and rustled when handled. You have to harvest carefully so as to prevent mechanical damage.

Handling of Onions

i. Cut leaves at least 5cm away from the bulb.
ii. Separate diseased and damaged bulbs from the lot.
iii. Place bulbs in suitable containers and transport in appropriate vehicle.
iv. Avoid wetting of the fruits during transportation, storage and marketing as this will lead to rapid deterioration or spoilage.

Storage of Onions

i. Separate damaged, bolted or immature onions from the lot.
ii. Store in containers used for transportation or spread thinly in clean, cool, well ventilated stores or in the refrigerator.
iii. Depending on the relative humidity, it may be necessary to re-dry the bulbs periodically during ambient storage.
iv. During storage, separate sprouted and diseased bulbs and dispose of as quickly as possible. You should always remember that medium sized bulbs (about 100g) store better than large sized bulbs.
Reducing Post-Harvest losses in Leafy Vegetables
Leafy Vegetables include bitter leaf, fluted pumpkin, African spinach, water leaf and a host of others. These can deteriorate rapidly after harvest, especially under dry and warm environment. That being the case, post-harvest preservation measures should be taken within minutes of harvest so as to avoid rapid deterioration.

Harvesting and Handling of Leafy Vegetables
Farmers are advised to harvest at cool time of the day. Soon after harvest, convey the produce quickly to the market in suitable containers, especially those line with clean and wet jute bags so as to maintain the freshness of the leafy vegetables. Ensure that these produce are not exposed to direct sun rays after harvest.

Storage of Leafy Vegetables
(a) Storage of small quantities of leafy Vegetables
In storing small quantities, the following procedures can be adopted:
  i. Cut off the roots of the vegetables.
  ii. Wash stems with clean potable water.
  iii. Place in polythene bags and seal.
  iv. Store in the refrigerator (4-8°C) or in an evaporative cooler.

(b) Storage in bulk at ambient temperature
In the case of bulky quantities of leafy vegetables, storage can be done using the following procedures:
  i. Cut off the roots of the vegetables.
  ii. Wash stems with potable water
  iii. Bunch up the vegetables to any size of your choice
  iv. Dip the bunched stems into a bucket half-filled with clean water and allow them to remain in that position throughout the storage period of 6 days.
  v. Sprinkle water on the leaves daily.
  vi. Cover the leaves with thin polythene bags or sheets which can be tied to the bucket closely to conserve moisture.
  vii. Keep in the coolest place, except in the refrigerator.
  viii. Open the Polythene sheets or bags daily and sprinkle water.
The bulky vegetables stored in this way can remain fresh for 6 days after which efforts should be made to dispose of them (marketing). This is to avoid deterioration of leafy vegetables. Remember; in this bulky form, you cannot store the bunched stems of leafy vegetables in the refrigerator due to the bulkiness involved.

(c) Storage in clay pots
i. You can select a sizeable clay pot of your choice, wash and place on a firm support or stand.
ii. Place a layer of wet jute bag at the bottom of the pot. Ensure that the jute bag is clean.
iii. Place a wire gauze on the wet jute bag.
iv. Cut off the roots of vegetables, wash and place on the wire gauze inside the clay pot.
v. Place another wire gauze on the vegetables followed by another layer of clean wet jute bag. In this way, you can have as many layers of vegetables as possible depending on the size of your clay pot.
vi. Keep the jute bag moist always by sprinkling water.

(d) Storage of leafy vegetables in baskets
i. Obtain a vegetable basket made of raffia or other smooth surface, flexible plant materials. This basket should be well-ventilated.
ii. Cover the outside of the basket completely with jute bag.
iii. Place a layer of a clean jute bag at the bottom of the basket.
iv. Store leafy vegetables in layers as done in the clay pot.
v. Keep the jute bag moist always so as to conserve moisture and to keep the stored vegetables fresh.

Drying of Leafy Vegetables
Leafy vegetables can be preserved for a long time by drying or freezing as described by NAERLS (2017) below:
i. Cut off the roots of vegetables and wash with clean water.
ii. Blanch in boiling water or steam for about 5 minutes.
iii. Remove blanched vegetables and drain off water.
iv. Dry vegetables in the sun or in a solar dryer.
v. Store in an airtight container or in polythene film in the dark so as to prevent sun rays from degrading the green colour of the leafy vegetables, thereby preserving the nutritive value of leafy vegetables.

**Freezing of Leafy Vegetables**
Leafy vegetables can be preserved by freezing. To do this, wash, blanch and drain off water. After that, package in polythene film and store in the freezer.

**Use of Evaporative Coolant Structure (ECS)**
According to NAERLS (2017), the term evaporative cooler refers to a cooler which works on the principle of cooling resulting from the evaporation of water from the surface of structures. This cooling is associated with high relative humidity of the air in the chamber from which evaporation takes place, thus making the environment in the chamber very conducive for fruit and vegetable storage. Examples of various models that exist include pot-in-pot ECS, Metal-in-pot ECS, metal-in-block ECS, Metal-in-metal ECS, etc. Evaporative coolers are a very good development since many Nigerian fruits and vegetables such as banana, plantain, mango cannot be stored in the domestic refrigerator because of their susceptibility to chilling injury.

**Post-Harvest Handling, Storage and Processing of Root and Tuber Crop Produce**
Root and tuber crops include yam, cassava, sweet potato, irish potato, carrots, etc. Here, we shall be looking at post-harvest handling and processing of cassava and yam.

**Cassava Processing**
Cassava tubers can be processed using a combination of activities and processes: Peeling, boiling, steaming, slicing, grating, soaking or steeping, fermenting, pounding, frying, roasting, pressing of grated and bagged cassava, drying and milling. The desired product determines a combination of activities or processing methods to be used.
Cassava contains a poisonous substance or chemical known as hydrogen cyanide or hydrocyanic acid. This acid is toxic and deleterious to both man and farm animals. This acid is found in both the leaves and tubers and this must be removed before human and livestock consumption. The level of acidity or toxicity of this chemical varies with the varieties of cassava. For instance, bitter cassava contains more cyanide than sweet cassava. This acid can be removed by processing cassava leaves and tubers using the following processing methods: Peeling, fermenting, grating, frying and drying. These are more effective methods of processing cassava with a view towards reduction of high concentration of hydrocyanic acid contents. Boiling freshly peeled cassava tubers is the least effective method of reducing cyanide, hence it is only recommended for low-cyanide cultivars (NAERLS, 2017). Besides, peeled tubers can be sliced into cassava chips or cassava flour.

Gari Processing from Cassava Tubers
Cassava tubers can be processed into gari using the following sequential procedures:

i. Peeling;
ii. Washing;
iii. Grating;
iv. Fermenting for 2-3 days;
v. Packing in polythene bags and pressing;
vi. Pulverization using a sieving device;
vii. Frying;
viii. Cooling and spreading on clean mat to dry and
ix. Sieving and bagging.

Processing of Yam Tubers
Yam tubers can be processed using the following methods: peeling, washing, slicing into yam chips or flour, roasting of tubers, boiling and pounding into pounded yam, which is a delicacy among Tiv people in Benue State. The yam flour can be dried thoroughly, bagged and stored in a cool dry place until the need for use arises.
Post-Harvest Handling and Processing of Cereals

Some of the common post-harvest handling and processing methods include: drying, shelling, threshing, cleaning, parboiling, milling and a host of others. These practices may vary with different classes of crops. Let us discuss some of the common processes in details.

1. Drying of Cereals

This refers to the reduction in the moisture content of cereal crop produce. Drying is done with the main purpose of preventing germination, growth of bacteria and fungi and to retard considerably the attack of insect pests.

Albeit drying of matured cereal crop produce starts in the field, it is important to properly re-dry maize at home after harvest. This is necessary to reduce moisture contents so as to facilitate safe storage, retain high quality and to add value to the crop produce or grains. A common method of drying involves spreading the cobs on bare ground. Although this method is very easy and more cost effective, the produce are vulnerable to bad weather conditions, microbial contamination, contamination from soil and animal dung and destruction by animals, thus reducing both the quality and quantity of cereal produce.

In order to ensure effective drying at low-cost, the following drying methods are recommended:

i. Drying of cereal grains on mats;

ii. Drying on tarpaulin or plastic sheets;

iii. Drying on wire mesh;

iv. Drying on concrete or cemented floors;

v. Drying on cribs or in improved ventilated structures and

vi. Drying in batch or bin dryers, column dryers, rotary dryers and tray dryers, etc.

In deciding which method of drying to be adopted, one needs to consider the quantity of produce to be dried, drying rate required (how fast), prevailing weather conditions and economic factors.
2. Shelling / Threshing of Cereals
Shelling or threshing is a process of separating grains from the panicles or cobs or seed heads of harvested cereal crops. In order to mitigate damage done to grains, it is important to avoid techniques that crush and damage grains, thus subjecting them to the attack of insect pests and fungi. For instance, beating harvested cereal crops with sticks or allowing cattle to trample upon are not recommended threshing techniques. Besides, before threshing, ensures that the grains are neither too moist (soft) nor too dry (Brittle). It is best done when grains contain moisture content of about 14-16%, although paddy rice is commonly threshed at bout 18-20% moisture content. Sorghum and millet seed heads and paddy panicles can be threshed or shelled manually by hand and this can be done conveniently by beating the harvested paddy panicles against a threshing platform that has high sides that can prevent the loss of threshed grains. Use can also be made of Mechanical threshers or combined rice harvesters that can harvest and thresh at the same time (NAERLS, 2017).

3. Cleaning of Cereal Grains
Cleaning is a process of removing foreign materials from threshed or shelled cereal grains. This is done to improve the quality of threshed grains by winnowing. After winnowing, other heavy impurities that were not separated can be removed by sieving.

4. Grading of Cleared Grains
Grading is a process of sorting out and classifying crop produce into various categories based on the laid down quality standards or specifications. This is done to meet the specified standard set by the buyers or international trading agencies. According to NAERLS (2017), each of the national grading standards in different countries set limits in each of the five purity attributes.

For instance, grades 1 and 2 quality standards for maize are laid down as can be seen on table 1 below.
### Table 1: Trade quality standards for grades 1 and 2 maize

<table>
<thead>
<tr>
<th></th>
<th>Purity attributes</th>
<th>Maximum % or quantity by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Grade 1</td>
</tr>
<tr>
<td>i</td>
<td>Foreign matter (Max %)</td>
<td>0.5%</td>
</tr>
<tr>
<td>ii</td>
<td>Broken Maize (max %)</td>
<td>2%</td>
</tr>
<tr>
<td>iii</td>
<td>Pest damaged maize (Max %)</td>
<td>1%</td>
</tr>
<tr>
<td>iv</td>
<td>Rotten and diseased (max %)</td>
<td>2%</td>
</tr>
<tr>
<td>v</td>
<td>Discolored Maize (Max %)</td>
<td>0.5%</td>
</tr>
<tr>
<td>vi</td>
<td>Moisture content (Max %)</td>
<td>12.0%</td>
</tr>
<tr>
<td>vii</td>
<td>Aflatoxin level</td>
<td>&lt;10ppb</td>
</tr>
</tbody>
</table>

Source: adapted from NAERLS (2017)

### Some Recommended Grains Storage Facilities

To ensure that harvested cereal grains are properly stored with a view to enhancing both the shelf-life and quality of produce, the following storage facilities are recommended:

1. **Hermetic Storage facilities**

   These are storage facilities that when sealed, exclude oxygen and water from moving either into or out of the internally stored grains thereby increasing the build-up of carbon IV Oxide (CO2), which becomes toxic and deleterious for the survival of insect pests and other pathogenic organisms such as fungi and bacteria. Such storage facilities provide hermetic storage environment that are safer for the storage of cereal grains. Examples of these include PIC bags (Triple bags) PVC tanks, metal silos; plastic PVC for liquid can be converted for storage of grains, etc. Multi-layers polythene storage bags create a highly effective, hermetic storage environment for all crop produce. It is water resistant and completely airtight.

   Farmers are advised to provide protection against storage loss agents such as rodents and insect pests (eg. Weevils and Termites). They should also ensure that cereal grains are stored in a cool and dry environment.
Some Agro Processing Methods of Cereal Produce

In processing of rice, some agro-processing methods are employed in order to add value to rice produce. These include parboiling, milling and packaging. Let us discuss these in details.

Rice Parboiling

This is a hydrothermal process where a combination of water and heat are used to process paddy rice. When paddy rice is parboiled, it has a more appealing appearance and it also improves the milling qualities and digestibility. In rice parboiling, the following steps can be followed: firstly, select bags of paddy rice to be parboiled, clean and wash paddy rice. After that, soak in hot water at about 70°C, then steam for 30-40 minutes. After steaming, sun dry for 2-3 hours, after that, shade dry overnight, then you can de-stone, mill and package.

Milling and Packaging of Cereal Grains

In rice processing, milling refers to the combined processes of removing the seed coats (husking), the bran layers and then polishing the rice grains. Generally speaking, milling refers to the size reduction of grains into flour with fine particles as it is done in sorghum, Maize and millet. It can be done wet or dry so as to produce a slurry or powder (flour), respectively. After milling of paddy rice, the polished rice can now be bagged or packaged and either stored in a cool and dry store or transported to the market, for marketing purposes.

Post-Harvest Handling and Processing of Legumes

According to NAERLS (2017), proper post-harvest handling and processing of legumes are veritable tools for impacting positively on the income and livelihood of farmers. Improper handling of pods and non-use of improved storage methods can lead to high moisture content and high ambient temperatures that are likely to influence the growth of aspergillus flavus that secretes aflatoxin contamination. This aflatoxin can cause liver cirrhosis in human beings as well as farm animals. Here, we shall be looking at post-harvest handling and processing of cowpeas, groundnut and soyabean.
Drying of Cowpeas, Groundnut and Soyabean
These must be dried in pods before threshing or shelling. It is advisable not to thresh these crop produce immediately after harvest, since the grains or seeds are too moist to be threshed at this time. This is to prevent the seeds from spoilage. You can dry the pods on a mat, tarpaulin, Plastic sheets and on a raised crib. Do not dry beans directly on the ground to avoid being contaminated or eaten by roaming farm animals. Monitor these crop produce during drying in case of rain, animals and other pests.
During drying, farmers are advised to follow these steps:
i. Sort the seed pods and remove foreign materials as well as immature pods.
ii. Arrange the pods loosely on the mat or crib or platform so as to avoid getting moldy.
iii. Dry harvested soyabean for 8-10 days to a moisture content of 14-15%
iv. Dry harvested cowpea for 2 sunny days to a moisture content of 14-15%.
v. Dry harvest groundnut for 6-7 days to a moisture content of 6-8%, and
vi. Test the beans or groundnut to see whether they are dried enough by breaking a few pods open and biting or pinching then with your fingers (NAERLS, 2017)

Threshing or Shelling of Leguminous Crop Produce
Farmers are advised to thresh groundnut pods about 2 to 6 weeks after harvest, especially when the water contents in the pod stabilize at about 10%. This operation entails separation of the pods from the vegetative parts of the plants. Threshing is mostly done by either spreading a mat on the bare ground or raising a stick across or digging a pit and raising a stick across, then beating bunches of groundnut against the raised stick. In this way, the threshed pods will fall on the mat or inside the pit. This prevents the pods from scattering to unknown places. When the pit is filled up, the threshed pods can be removed from the pit or mat and then cleaned by winnowing. This can also be done manually by stripping the pods
individually by small scale farmers. In this case, pods are individually detached from the vines and sun dried without cleaning, thus stabilizing the moisture content at about 6-8%.

Cowpea can be threshed manually by either gathering the pods on a concrete floor and beating them with a stick or bagging the pods before beating with a stick. This should be done when farmers are sure that the pods have dried sufficiently. Besides, use can be made of a multi-crop thresher. Which ever the method used, Cowpea seeds can be easily injured if threshed too roughly or when too dry. Farmers should note that injured seeds when sown will produce weak and stunted plants that possess other abnormalities.

In soyabeans, threshing involves separation of pods from the sheath or vegetative parent plants. This should be done after harvesting and sun drying of the vegetative parts of the parent plants. To do this, farmers are advised to spread the harvested soyabeans on a clean mat, tarpaulin or concrete or cemented floors and beat gently with sticks. Farmers are advised to thresh the pods when the moisture content is about 14-15%. In other words, threshing should be done when the pods are dry enough and some pods have started splitting and scattering seeds.

Drying Threshed Soyabeans and Cowpea
According to NAERLS (2017), threshed beans must be dried again and protected from moisture, Insects, animals and dirt. Farmers are advised to dry threshed grains on mats, tarpaulin, plastic sheets or cemented floors by spreading thinly on the drying surface to allow air to pass through the grains or beans. Turn the beans regularly to ensure evenly drying of beans. Farmers are also advised to dry the beans for 1-3 sunny days or more if the need arises depending on the weather conditions. Avoid the beans getting wet by rain, since this will influence the growth of fungi (Aspergillus Flavus), thus contaminating the beans with aflatoxin. Test the seeds or beans to confirm whether they are properly dried by either biting or pinching them with your fingers. Farmers are also advised to avoid excessive drying, fast drying, and rewetting of beans and to ensure uniformity in drying of beans.
Grading of Dried Cowpea, Soyabean and Groundnut

After cleaning of the threshed leguminous crop produce by winnowing, sort on a platform sorter and remove shriveled, diseased and broken beans. Separate the seeds based on quality. Grading is done principally to ensure good quality grains and to fetch higher prices for the producer. Besides, it is done to minimize post-harvest losses and establish good relationship with buyers.

Storage of Leguminous Crop Produce

Before storage, previous harvest should be removed before putting a fresh harvest. This is to prevent contamination of the fresh harvest with insect pests and diseases contained in the old bags. If the farmer is using an already used bag, it should be washed very well and soaked in hot water for 30-40 minutes and dried well before using it for storage. In close storage structures such as granaries, warehouses, hermetic bins or tanks, control of cleanliness, temperature and relative humidity should be observed.

Storage facilities that can be used by farmers in storing their cowpea, soyabean and groundnut include: hermetic plastic or polythene bags (PIE), hermetic metal silos and plastic tanks. To ensure that the beans are well dried and ready for storage, the moisture meter should be used to check the moisture level. The salt-test method can also be used. This involves placing some soyabean grains in a dry bottle containing salt and placing in the sun. Salt is a hygroscopic substance and will absorb moisture from any substance, and as such the grains will stick to the body of the container if the beans or grains are not dried enough.

Shelling of Groundnut

Farmers are advised to shell their groundnut only when the seeds are needed for sowing, marketing or consumption. This is to protect the seeds from being injured or attacked by insect pests (Weevils) and rodents (eg. Rats). Shelling can be done manually by hand and by mechanical Sheller or decorticator.

During shelling, discoloured groundnut contaminated will aflatoxin should be removed and discarded. Wetting of groundnut
before shelling should be discouraged, since this can influence the
growth of fungi on the shelled seeds, thus contaminating the seeds
with Aspergillus flavus.

Processing of Groundnut
Traditional milling process is time and labour intensive, cumbersome
and exposes the product to losses and adulteration. Innovative
technologies such as decortication, fermentation, extraction and
improved domestic processing can be adopted by farmers (NAERLS, 2017).

Home Work (CA)
6.5 Write a Seminar paper for presentation on any one of the
following topics:
1. Post-harvest Value addition for sustainable Rice production in
Nigeria.
2. Sociological, economic and institutional implications of
preventing post-harvest food losses in Nigeria.
3. Prevention of post-harvest losses of grains and legumes in
Nigeria.
4. Post-harvest loss prevention: warehouse usage and Drying
mechanisms.
5. Post-harvest loss prevention: storage pest control.

Guidelines:
i. Title. Name of author and address
ii. Abstract
iii. Key words
iv. Introduction
v. Discussion
vi. Conclusion and Recommendations
vii. References (APA Style)
≤0> 15pp A4 paper, double line spacing.
References
CHAPTER SEVEN

7.0 AGROENTREPRENEURSHIP: IT’S ROLE IN SUSTAINABLE AGRICULTURE DEVELOPMENT

7.1 The Concept of Agricultural Entrepreneurship

Generally speaking, entrepreneurship can be defined as the art of generating innovative ideas that can be harnessed or funded to generate profit. The profit could come from the sales of various products or services that were created by the said ideas. Such innovative ideas beget new enterprises or companies.

Agricultural entrepreneurship can be conceptualized as the business of producing and marketing agricultural produce or products. By this definition, agriculture is no longer meant for subsisting farming. It should be seen as a business venture that can be tapped to yield profit, rather than producing on a small scale only for family consumption. An agricultural entrepreneur is one who has innovative ideas in the field of agriculture that can lead to setting up of an agricultural enterprise, which when properly funded and managed could yield maximum profit margin. Agricultural enterprises could be in poultry, fisheries, dairy or beef cattle, piggery, arable farming or value addition enterprises etc.

The aim of an agricultural entrepreneur is to maximize profit. He could work alone or in partnership with other people. Usually, every agricultural enterprise starts from small scale, medium to large-scale agribusiness. In starting any agribusiness, initial capital is needed. And this starting capital could come from the savings of an entrepreneur or from borrowing from commercial banks, Bank of Agriculture, Local thrifts and cooperatives etc.

An agricultural entrepreneur takes great risk and uncertainty. If his business fails, he loses his initial capital, but if it progresses, he maximizes profit. To avoid risk and uncertainty, an agricultural entrepreneur can insure his enterprises against risk and uncertainty. Besides, he needs to take proactive measures by diversifying his agribusiness. This implies having several enterprises such as mixed