



Report of the Vision 2020  
National Technical Working Group  
On

**Environment and Sustainable Development**



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### List of Acronyms and Abbreviations

AfDB	African Development Bank
ADP	Agricultural Development Project
ALGON	Association of Local Governments of Nigeria
ASLR	Accelerated Sea Level Rise
ATO	African Timber Organisation
CFC	Chloro-Floro Carbons
CDM	Clean Development Mechanism
CIDA	Canadian International Development Agency
CITES	Convention on International Trade in Endangered Species
CSR	Corporate Social Responsibility
DDDA	Department of Drought and Desertification Amelioration
DESD	Decade of Education for Sustainable Development
DFID	Department for International Development
EHS	Environmental Health and Safety
EHSO	Environmental Health and Safety Officers
EIA	Environmental Impact Assessment
EPI	Environmental Performance Index



FAO	Food and Agricultural Organisation
FEPA	Federal Environmental Protection Agency
FRIN	Forestry Research Institute of Nigeria
FRN	Federal Republic of Nigeria
GEF	Global Environmental Facility
GSSD	Global System for Sustainable Development
HFC	Hydro-Fluro Carbons
HNWCP	Hadejia-Nguru Wetlands Conservation Project
ICZM	Integrated Coastal Zone Management
ITTO	International Timber Trade Organisation
IUCN	International Union for the Conservation of Nature
NLDP	National Livestock Development Programme
IWRMC	Integrated Water Resources Management Committee
IWRMC	Integrated Water Resources Management Committee
LGA	Local Government Areas
MEA	Multilateral Environmental Agreement
MDG	Millennium Development Goals
MoE	Ministry of Environment
MPA	Marine Protected Areas
NABSAP	National Biodiversity Strategy Action Plan
NBS	National Bureau of Statistics
NCCC	National Committee on Climate Change
NCF	Nigerian Conservation Foundation
NDDC	Niger Delta Development Commission
NDRP	National Disaster Response Plan
NEAP	National Environmental Action plan
NEAZDP	North-east Arid Zone Development Programme



NEMA	National Emergency Management Agency
NEPAD	New Partnership for African Development
NESRA	National Environmental Standards and Regulations Enforcement Agency
NGO	Non-Governmental Organization
NIMET	Nigeria Meteorological Agency
NIOMR	Nigerian Institute of Oceanography and Marine Research
NLDP	National Livestock Development Programme
NOSDRA	National Oil Spill Detection and Response Agency
NSDS	National Sustainable Development Strategy
NTFP	Non-Timber Forest products
NWRP	National Water Rehabilitation Project
PSI	Pollution Standard Index
RAMSAR	Wetlands Sites of International Importance under the Wetlands Convention
RBDA	River basin Development Authority
R&D	Research and Development
SCCU	Special Climate Change Unit
SME	Small and Medium Scale Enterprises
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WANI	Water and Nature Initiative
WWF	World Wildlife Fund
UNDP	United Nations Development Programme
UNCTAD	United Nations Convention on Trade and Development
WHO	World Health Organisation
UNIDO	United Nations Industrial Development Organisation
UNICEF	United Nations International Children's Emergency Fund



WMO            World Meteorological Organization



## EXECUTIVE SUMMARY

The environment is the life supporting system for human existence and survival as well as providing physical milieu and the raw materials required for socio-economic progress. If properly managed, it can be geared to meeting our productive socio-economic needs. Sustainable use of natural resources provides a buffer against poverty and opportunities for self-employment in the informal sector. Conversely, if poorly managed, the environment could easily become hazardous and threatening to rapid socio-economic development and human survival. To achieve the required rapid economic growth that will launch Nigeria onto a path of becoming one of the twenty largest economies in the world by 2020, the protection and sustainable use of the country's natural environmental resources is imperative. This implies that the national environmental assets must be maintained at a level that meets the need of the present generation without jeopardizing the interests of future generations (*sustainable development*). The development process envisaged in Vision 20: 2020 principally in terms of economic growth must be made to be compatible with environmental protection. Herein lies the major challenge for the country

For national development to be sustainable it is imperative to conceptualise the environment as a cross-cutting development issue and ensure that our environmental resources are properly valued and accounted for in our development process.

### Major Environmental Threats

The major environmental threats to Nigeria's development include land degradation, deforestation, land, water and air pollution among others that have resulted in the country's poor environmental performance.

**Land degradation:** Land is by far the most important resource necessary for subsistence. Yet much of Nigeria's arable land is being sapped insidiously of its productive potential through overuse, inappropriate technologies and urbanization. Rapid deforestation, resulting from multiple uses of forest resources for human survival (e.g. fuel wood and energy, housing etc.) is a major contributing factor to land degradation. The end result of deforestation which is currently progressing at the rate of 1.36% per annum and other agricultural activities, including intensive grazing, and over-cultivation, is severe land degradation.

**Biodiversity loss:** Biodiversity loss is another problem as it is estimated that 0.4% of the plant species are threatened and 8.5 % endangered, with 0.14% of the animals and insects threatened and 0.22% endangered.

**Energy:** Fossil fuel use, particularly oil and gas exploration, has aggravated the problem of ecological damage in the Niger Delta. Similarly, indiscriminate and illegal mining for tin and columbite on the Jos Plateau and other mineral resources in many parts of Nigeria has left many areas of the country bare, strewn with burrow pits and unproductive. There is also a growing problem of air and water pollution, associated with continued urbanization and



industrialization in the country. Some of these gases have implications for global warming and climate change. Nigerians in general are increasingly being exposed to the hazards of highly polluted gaseous and dust emissions from industries and vehicles and dangerous industrial wastes that are constantly being discharged into their environment.

**Climate change:** In Nigeria, the climate change phenomenon manifests in many respects apart from the rising sea level and inundation of coastal lands by sea water. These include increased frequencies of extreme climatic events like strong storms, floods and above average daily minimum and maximum temperatures.

**Desertification:** Nigeria is one of the most desertification-prone countries in Africa. The problem of drought and desertification is so acute such that between 1976/78 and 1993/95 desertification expanded southwards from 12°30' north to 10°30' north. Also, land brought under agricultural production expanded from 503,000 km<sup>2</sup> to 585,000 km<sup>2</sup>; an increase of 82,040 km<sup>2</sup> (16%), and representing 4560 km<sup>2</sup> per annum. In addition, rivers and lakes are silted leading to rapid drying up of water bodies after ceasing of rain. A typical example is the case of the receding of Lake Chad. In addition, gully erosion, which hitherto was not a major threat, has increased and is threatening 18,400 km<sup>2</sup> (compared to only 122 km<sup>2</sup> in 1976/78). Sand dunes have equally increased by approximately 17 % from 820 km<sup>2</sup> to 4,830 km<sup>2</sup> over the period.

**Floods and erosion:** Flooding and erosion are now more severe phenomena in many parts of the country. The most flood-prone areas in Nigeria include: Low-lying coastal areas of southern Nigeria where annual rainfall is heavy, floodplains of the major rivers such as the Niger, Benue, Gongola, Sokoto, Hadejia, Gurara, Ogun and Anambra, and flat, low-lying areas around Lake Chad. Many urban centers including Dutse, Enugu, Ibadan, Kaduna, Kano, Lagos, Maiduguri, Onitsha, Owerri, Port Harcourt, and Sokoto now experience more flood episodes.

**Urban decay:** The rapid and unplanned urbanization has had profound impact on the country's socio-economic development and environmental sustainability. The growth rate of the number of urban centres which was 15% in 1950 rose to 23.4 % in 1975, 36% in 1991, 48.2% in 2005 and has been projected to 55.9% by 2015. Human settlements, especially the towns and cities experience an array of problems which have been classified into four, namely, serviceability, livability, poverty and manageability. Basic services such as water and sanitation, waste management, transportation, health and education are inadequate and overstretched. Poor solid waste management constitutes a major environmental problem in most cities and urban areas. Estimates of annual generation of municipal solid wastes for Lagos, Calabar, Port Harcourt and Warri are about 1,400,000; 190,000; 650,000 and 66,721 tonnes respectively.

**Global performance:** The country's large population of 140 million and its rapid growth rate of 2.8 % are contributing to its environmental degradation. Despite its relatively low level of industrialization, Nigeria continues to rank very low in terms of its environmental performance. In 2008, the country's Environmental Performance Index (EPI) was 56.2, ranking it as number 126 out of 149 countries surveyed in the world. The low EPI figure puts the country behind many other African countries like Mauritius (78.1), Egypt (76.3), Ghana (70.8), Kenya (69.0), Mauritius (78.1), South Africa (69.0) and Cameroon (63.8).



## **National Efforts to Address the Environmental Threats**

The national efforts to address environmental problems in Nigeria fall into three categories, namely: (i) institutional/policy, (ii) legal/regulatory, and (iii) special initiatives and actions.

The establishment of the Federal Environmental Protection Agency (FEPA) and later upgraded to a full-fledged Ministry of Environment demonstrates government's commitment to the institutionalisation of environmental management in the country. Other institutions that have been established include the National Oil Spill Detection and Response Agency and the National Environmental Standards and Regulations Enforcement Agency. Government has also instituted the following policies among others: National Policy on Environmental Sanitation, National Policy on Medical Waste Management, National Policy on Drought and Desertification, Urban Development Policy, National Policy on Flood and Erosion Control. Other regulatory measures such as the Environmental Impact Assessment Act and the Harmful Waste Act have also been enacted to promote environmental protection.

The country is also a signatory to several treaties and international conventions for the use of natural resources and biodiversity, including (i) Convention on Biological Diversity, (ii) RAMSAR Convention on the Conservation of Wetlands of International Importance, Habitat II Agenda (iii) Convention concerning the Protection of the World Culture and Nature Heritage, (iv) Convention on International Trade in Endangered Species and (v) Convention on Migratory Species of Wild Animals, (vi) United Nations Framework Convention for Climate Change, (vii) Kyoto Protocol, among others. Nigeria took active part in the development of the African Timber Organization (ATO) from its inception in 1992. Government is also supporting the implementation of the Integrated Ecosystem Management Project in the Transboundary Areas between Nigeria and Niger Republic.

## **Issues and Challenges**

Although technology will provide additional opportunities to accelerate the rapid economic growth that will drive the attainment of the goals of Vision 2020, the country will, in the short-term, continue to largely depend on these resources. To this end, a number of priority environmental issues that must be properly tackled stand out. They include: (i) sustainable management of natural resources, (ii) harnessing of natural resources for equity and benefit sharing, (iii) climate change, (iv) land degradation and desertification, (v) waste management, (vi) pollution, (vii) environmental hazards and disasters, (viii) urban decay, (ix) sustainable management of the coastal environment, (x) weak environmental governance, (xi) inadequacy of information and poor environmental education and awareness, (xii) dichotomy between environment and growth, environment and poverty reduction and limited private sector participation in environmental management.



Addressing these issues and understanding the trade-offs between present and future consumption of resources have to be carefully analyzed. This raises a number of challenges that must be overcome. Some of the main challenges are: (i) sustainable management of natural resources, (ii) adoption of environmentally sound technology, (iii) mitigation and adaptation to climate change, (iv) land degradation and desertification, pollution control, (v) waste management, (vi) environmental hazards and disasters, (vii) integrated coastal management, (viii) urban decay, (ix) inadequate environmental awareness, (x) limited private sector participation and (xi) weak environmental governance.

### Opportunities

In spite of the above challenges and concerns there are a number of “win-win” opportunities, where all three aspects of development will be promoted at the same time in an integrated and sustainable manner. They include: (i) green jobs and carbon trading, (ii) waste to wealth, (iii) conservation of natural resources for economic growth, (iv) productivity and poverty alleviation and sustainable livelihoods, (v) best management practices, (vi) development of ecotourism, (viii) wetland and waste management, (ix) innovative technological development from natural products, (x) industrialization, (xi) trade and investment opportunities, (xii) foreign exchange earnings through export, (xiii) employment of environment advocacy group, (xiv) research and development, (xv) engagement of development partners and technological transfer, (xvi) urban renewal for sustainable economic development and improved human well-being, (xvii) establishment of environmental information system, and (xviii) coordinated and participatory approach to environmental management.

### Key Success Factors

The following key success factors were identified as critical for the promotion of environmental sustainability that is imperative for the achievement of the goals of Vision 20:2020: They include: (i) environmental education and awareness, (ii) participatory involvement of all stakeholders in decisions about the environment, (iii) integrated approach to environmental management, (iv) policy consistency and political will, (v) adequate funding, (vi) effective institutional coordination, (vii) implementation of multilateral environmental agreements, (viii) information and knowledge sharing, (ix) development of environmental friendly infrastructure, (x) reinforcement and promotion of indigenous knowledge for sustainable use and conservation of natural resources.

### Vision, Objectives and Goals for the Environment and Sustainable Development Sector of Vision 20: 2020

Nigeria aims to be a nation that has ***a healthy environment for sustainable socio-economic development***. The objectives are to:

- Prevent further loss of biodiversity and restore already degraded areas and protect ecologically sensitive sites;



- Harness and sustain natural resource use;
- Reduce the impact of climate change on socio-economic development processes.
- Make Nigeria a visible actor in global climate change response.
- Halt land degradation, rehabilitate degraded areas, combat desertification and mitigate impacts of the droughts
- Secure a clean environment through appropriate waste management
- Reduce the occurrence and impact of environmental hazards and disasters
- Halt land degradation, rehabilitate degraded areas, combat desertification and mitigate impacts of the droughts.
- Raise the level of awareness on the state of the Nigerian environment.
- Improve the overall governance of the environment.

These will be achieved through the following goals:

- i. Increasing forest cover from the present 6% to at least 12% of the landmass by 2015 and 15% by 2020
- ii. Establishing an integrated coastal zone management system
- iii. Strengthening the protection of 8 national Parks and 60 biodiversity hotspots including RAMSAR sites;
- iv. Developing the platform and enabling environment for sustainable use of natural resources
- v. Enhancing the capacity of Nigerians to adapt to climate change.
- vi. Maximizing Nigeria's potential to benefit from climate change adaptation and/or mitigation by appropriate international negotiation positioning.
- vii. Reducing environmental pollution-related health risks by at least 50% by 2020.
- viii. Having clean urban centres by 2020
- ix. Reducing loses and impacts due to floods, erosion, drought, etc. by at least 50% by 2020
- x. Enhancing national capacity to implement the National Action Plan to Combat Desertification.



- xi. Establishing at least 1500km of green belt to slow the advance of the Sahara Desert, enhance environmental sustainability and control land degradation.
- xii. Rehabilitating at least 20% of the degraded lands by 2015 and at least 50% by 2020 for poverty reduction and job creation.
- xiii. Increasing public information, education and participation on environment and environmental process among at least 50% of the population.
- xiv. Mainstreaming environmental education and research into the national education system.
- xv. Achieving an integrated coordination of the implementation of national environmental policies, programmes and regulations as well as international conventions.
- xvi. Establishing a functional Environmental Information Management System (EIMS).

### **Strategic priorities**

#### ***Sustainable management of natural resources:***

- i. Implementing massive afforestation and reforestation programmes.
- ii. Promoting agro forestry initiatives and community woodlots.
- iii. Conducting an evaluation of all wetlands in accordance with Ramsar criteria.
- iv. Developing and implementing an Integrated Coastal Area/Plan
- v. Conducting an evaluation of all wetlands in accordance with Ramsar criteria.
- vi. Developing and implementing an Integrated Coastal Area/Plan
- vii. Conducting an evaluation of all wetlands in accordance with Ramsar criteria.
- viii. Developing an integrated Information Management System for enhancing the effectiveness of the ICZM
- ix. Restoring at least 60,000 hectares of oil-degraded and/ or alien species-invaded mangroves by 2015 and 130,000 hectares by 2020.
- x. Implementing the National Biodiversity Action Plan by 2020
- xi. Adopting environmental accounting procedure for incorporating the cost of externalities into the capital outlay of the private sector.



***Climate change:***

- i. Capacity building and/or strengthening of relevant institutions at all levels (Federal, State and Local).
- ii. Promoting synergy between climate change response and national development.
- iii. Awareness creation and community mobilization.
- iv. Ensuring adequate funding for climate change initiatives from national and international sources Supporting research in adaptive capacity building.
- v. Intensifying the implementation of climate change Conventions and other relevant MEAs.
- vi. Evolve an efficient M&E mechanism to monitor and manage the initiatives.

***Pollution control and waste management***

- i. Strengthening pollution control standards and improving the coordination of their implementation
- ii. Attaining full compliance with pollution control standards in industries, automobiles, aircrafts and electric generating plants
- iii. Eliminating gas flaring and incidences of oil spillage
- iv. Evolving a clean environment where waste is effectively managed and landscape4 beautified on a sustainable basis.

***Environmental hazards:***

- i. Improving institutional legal and regulatory framework as well as the capacity of communities to cope with disasters.
- ii. Hazard Vulnerability Mapping
- iii. Promoting disaster risk management including risk transfer mechanisms
- iv. Creating awareness about the devastating impact of floods, erosion and other environmental hazards and risks
- v. Institutionalization of monitoring and evaluation framework

***Land degradation and desertification:***

- i. Putting in place an effective institutional framework.
- ii. Creation of data base on the extent of land degradation and desertification by 2015.



- iii. Promotion of awareness and active participation of communities in land management, particularly rehabilitation of degraded lands, programmes.
- iv. Developing and implementing the national strategy for the Green Wall Sahara Initiative.
- v. Rehabilitation of degraded land to promote sustainable utilization of land resources.

***Environmental education and Awareness***

- i. Adopt and implement the United Nations Decade of Education for Sustainable Development(DESDE)
- ii. Implementing innovative public environmental education programmes.

***Environmental Governance***

- i. Strengthening the capacity of institutions for enhanced coordination of environmental issues and programmes.
- ii. Updating and enforcing all environmental laws, regulations and standards to promote environmental justice among other things.
- iii. Updating and enforcing all environmental laws, regulations and standards to promote environmental justice among other things..
- iv. Fulfilling the country's obligations to international conventions and frameworks for environmental protection and sustainable development.
- v. Improving environmental data collection, analysis and monitoring.



## 1 INTRODUCTION

The goal of Nigeria's Vision 20:2020 is to position the country to become one of the top 20 economies in the world by 2020. A major objective of the vision is to stimulate economic growth and launch the country onto a path of sustained and rapid socio-economic development.

Rapid economic growth will be dependent on growths in many sectors (e.g. agriculture, energy, tourism, manufacturing, etc), which will have significant impact on the environment. Thus, the issue of sustainable development is critical to the attainment of the goals and objectives of the vision.

Achieving rapid economic growth to launch the country onto a path of rapid socio-economic development and the imperative of protecting and maintaining the natural environment must go hand in hand. This is because the environment is the life supporting system for human existence and survival as well as providing physical milieu and the raw materials required for socio-economic progress. The natural environment also purifies the air and water, produces healthy soils, cycles nutrients and regulates the climate. All these are important for developing and maintaining human health, creating national wealth and reducing poverty (UN, 2005). If properly managed, it can be geared to meeting our productive socio-economic needs. Conversely, if poorly managed, the environment could easily become hazardous and threatening to rapid socio-economic development and human survival.

The first two chapters put the issues of environmentally sustainable development for the Vision 20:2020 in perspectives. It emphasizes that the natural environment is the fibre that binds the economic, social and political/governance pillars of the Vision together. Starting with an overview of the concept of sustainable development, the first chapter provides an overview of the environment and looks at many facets of the environment to draw out the main challenges that should be addressed in the process of implementing the vision so as to ensure an environmentally sustainable development that will meet the needs and aspirations of the current generation without depriving the coming generations the environmental resources to meet their own needs. Opportunities that exist in these challenges are identified. Strategies, projects and programmes that are critical for sustainable national development are recommended for both medium and long-term implementation.

### 1.1 Imperatives for sustainable development paradigm in Vision 2020

The vital roles that natural environmental resources play in the economic life of the citizens have been generally overlooked by economists and decision-makers. Little attention is paid to the extent to which sustainable use and conservation of natural resources provides a buffer against poverty and opportunities for self-employment in the informal sector. This has led to a situation where the authorities are unwilling or have been unable to make the requisite investment in natural resource management and conservation. There is also the failure of conventional



measures of national income to recognize the unsustainable depletion of biological and other resources as a loss to the country's wealth.

Recent development trends have, however, recognized that socio-economic development devoid of environmental sustainability is not healthy. A core element of sustainability is the maintenance of environmental assets to a level that meets the need of the present generation without jeopardizing the interests of future generations. *Sustainable development* implies that development, principally in terms of economic growth, and environmental protection can be compatible. It is "a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations" (WCED, 1987, p.46). In addition to addressing the long-term realization of human needs, sustainable development emphasizes the rational use of resources and the inextricable integration of economic, social and environmental objectives of development.

The recent focus on the environment-development nexus recognizes that environmental sustainability is both a moral imperative and a prerequisite for sustainable economic development. The Nigeria's economic system reflects human interactions with the environment and our societal values. Societies everywhere are closely and inextricably linked to the natural environment in which they are embedded. Human productive and social activities, as well as social structures and relations are shaped to a significant degree by a number of factors. These may include the natural resource mix available, physical geography, weather patterns, amenability of natural conditions to transformation, and a variety of other characteristics of the environment.

Where human interactions with the environment result in degradation, including depletion of renewable and non-renewable resources and pollution of air, water and soils, it can be a significant source of stress upon human societies. The issue of environment has, therefore, become part of the tapestry of the world's political, economic and social relationships. In the same vein, poor and unsustainable economic development is also a major problem of our time. It has resulted in an unacceptable level of poverty. Poverty along with environmental threats weighs heavily on Nigeria and on the future of its people.

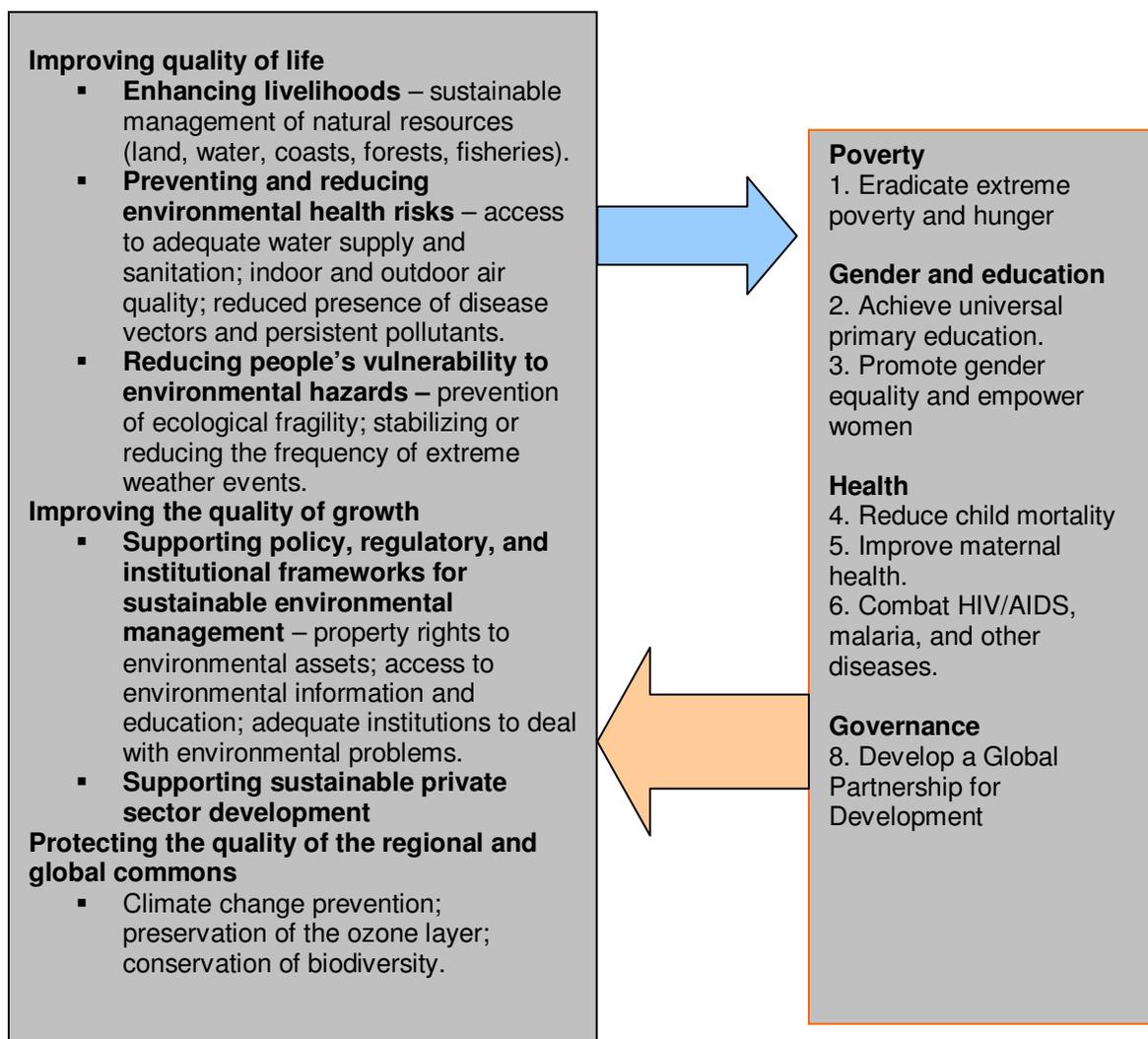
Widespread poverty and environmental destruction may become major constraints to the realization of the targets of Vision 2020 and the general socio-economic development of Nigeria. This has become critical in the face of rapid population growth while the capacity of the land and the country's resources to provide people with food and life's basic needs is being exceeded in areas that once produced amply. Damage to the natural resources has a profound impact on economic development in general and poverty in particular. Thus, unless the soil, biological and water resources are maintained and enhanced, the number of those who suffer from poverty, malnutrition and hunger will grow. All this calls for the need to put the nexus between meaningful economic development and the environment in its proper sustainable development context.



Mainstreaming sustainability into the socio-economic development of Nigeria within the framework of Vision 2020 presents a framework for utilizing the natural resources as a tool and the foundation for human development based on social equity. Nigeria's comparative advantage for adopting sustainable development paradigm in the new global economy can be grouped into the following main categories (NBSAP, 2006):

1. Natural Capital: Land, water, air vegetation. The existence of rich and unique biological diversity that is linked to very resilient cultural systems that have resisted complete assimilation to modernization, which will permit pluralism in the technological choices available to us to create enormous assets.
2. Human Capital: Skills, knowledge, capacity and adaptive strategies. Globally acknowledged capacity and capability to produce and deploy highly trained multi-disciplinary workforce and world-class scientists through investment in education and training that could expand the country's human capital stock.
3. Human-made Capital: Physical goods and services - A modest industrial base with a sophisticated private sector that could be supported to expand Nigeria's man-made capital.
4. Social capital: This relates to the importance of social cohesion, common identification and ownership of the structure of governance.

Given Nigeria's enormous endowment of human and natural capital, the country's development vision should embrace this development paradigm that is socially compatible with rapid and sustainable development aimed at reducing poverty and designing a secure future. The socio-economic development envisaged in Vision 2020 will be sustainable if it improves the quality of life of Nigerians and conserves the country's environmental vitality and diversity. It is also central to the achievement of the Millennium Development Goals in the country (Figure 1).



**Figure 1.1 Environmental sustainability and the Millennium Development Goals**

*Source: Environment and the Millennium Development Goals, World Bank (2002)*



## **2 THE STATE OF THE ENVIRONMENT: SITUATION ANALYSIS, CHALLENGES AND OPPORTUNITIES**

### **2.1 Global Trends: Nigeria's Environmental Performance**

Nigeria is naturally well endowed and, in ecological terms, is a land of extremes. In the south, lush forests (mangrove forest, fresh water swamp forest and lowland forest) dominate the "natural" vegetation. This gives way to Guinea savanna in the middle belt, while savanna woodland and thorny vegetation dominate the semi-arid and arid regions of the north. Annual rainfall increases from north to south, from less than 600 mm in the north-eastern-most zone to more than 3000 mm in the southern-most part. Thus while rainfall is usually abundant and reliable in the south, it is generally inadequate and highly variable - spatially, seasonally, and from year to year - in the north. Consequently the carrying capacity of traditional farming and livestock practices vary from one zone to the other.

Nigeria's environment is, however, under increasing threat from human activities and natural disasters. There are already certain ominous problems with the environment and visible scars associated with the destruction of the natural resource base (land, water and air) upon which all life depends are being noted. The country's large population of 140 million and its rapid growth rate of 2.8 per cent are contributing to its environmental degradation.

The key environmental issues facing Nigeria can include of land degradation, deforestation, land, water and air among others. Land is by far the most important resource necessary for subsistence. Yet much of Nigeria's arable land is being sapped insidiously of its productive potential through overuse, inappropriate technologies and urbanization. Rapid deforestation, resulting from multiple uses of forest resources for human survival (e.g. fuel wood and energy, housing etc.) is a major contributing factor to land degradation. The end result of deforestation and other agricultural activities, including intensive grazing, and over-cultivation, is severe land degradation.

Fossil fuel use, particularly oil and gas exploration, has aggravated the problem of ecological damage in the Niger Delta. Similarly, indiscriminate and illegal mining for tin and columbite on the Jos Plateau and other mineral resources in many parts of Nigeria has left many areas of the country bare and unproductive.

There is also a growing concern about air and water pollution, associated with continued urbanization and industrialization in the country. As far back as 1986, when the country was flaring only about 17 million cubic metres of natural gas per year, it was estimated that gas flaring was responsible for an annual emission of about 2,700 tonnes of dust, 160 tonnes of oxides of sulphur, 5,400 tonnes of carbon monoxide and 27,000 tonnes of oxides of nitrogen into the atmosphere. Some of these gases have implications for global warming and climatic changes. Nigerians in general are increasingly being exposed to the hazards of highly polluted gaseous and dust emissions from industries and vehicles and dangerous industrial wastes that are constantly being discharged into the environment (Oladipo, 2008).



Although there have been many national efforts to tackle the problems, Nigeria continues to rank very low in terms of its environmental performance rating. In 2008, the country's Environmental Performance Index (EPI)<sup>1</sup> was 56.2, ranking it as number 126 out of 149 countries surveyed in the world. The low EPI figure puts the country behind many other African countries like Mauritius (78.1), Egypt (76.3), Ghana (70.8), Kenya (69.0), Mauritius (78.1), South Africa (69.0), and Cameroon (63.8). A value of 56.2 indicates that Nigeria has limited capacity to handle environmental problems and it has not been able to minimize its high rate of air, land and water pollution. When compared with Norway (93.1), Canada (86.6) and Venezuela (80.0) with similar oil resources, Nigeria has a lot to do to achieve the MDG 7 of maintaining environmental sustainability for meaningful socio-economic development. A point to note is that the largest economy in the world (USA) ranks 39<sup>th</sup> among the countries surveyed, while the 3<sup>rd</sup> largest economy ranks 105, an indication of an apparent poor relationship between environmental performance and economic development.

## 2.2 Local and Sectoral Context

The poor state of Nigeria's environment becomes more glaring when put into sectoral perspectives. Thus, the current situation of environmental degradation, national efforts to tackle them, and challenges and opportunities for sustainable environmental management are discussed with respect to the following:

- i. Biodiversity;
- ii. Climate Change;
- iii. Coastal and Marine Environment
- iv. Deforestation;
- v. Drought and Desertification;
- vi. Environmental Health and Safety;
- vii. Floods and Erosion;
- viii. Human Settlements;
- ix. Land Resources Use and Changes;
- x. Pollution (Air, Land and Water);

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<sup>1</sup> The Environmental Performance Index (EPI) was developed by Yale University Centre for Environmental Law and Policy to assess environmental health and ecosystem vitality of 149 countries world wide. It is based on 25 well-selected performance indicators (2008 Environmental Performance Indicators, Yale University)



- xi. Water Resources;
- xii. Waste;
- xiii. Wetlands;

The analysis takes cognizance of the fact that environment is a major cross cutting development issue that directly and indirectly impacts on other key development thematic areas such as agriculture and food security, energy, housing, transport, tourism, urban and rural development, water and sanitation, and even the Niger Delta (Appendix I).

## 2.2.1 Biodiversity

### ***Status of the Biodiversity***

Nigeria occupies a unique geographic position in Africa and the variability in climate and geographic features endows her with one of the richest biodiversity in the continent. Its diversity of natural ecosystems includes, beginning from savanna (Sahel, Sudan, Guinea and Derived), lowland rainforest, freshwater swamp forest, mangrove forest and coastal vegetation, and along the eastern border with Cameroon, a montane forest zone.

According to the National Biodiversity Strategy and Action Plan (2006) document, Nigeria possesses more than 5,000 recorded species of plants, 22,090 species of animals, including insects and 889 species of birds, and 1,489 species of micro-organisms. It is estimated that 0.4% of the plant species are threatened and 8.5 % endangered, with 0.14 of the animals and insects threatened and 0.22% endangered. By 1992, the country study listed 135 reptile species, 109 amphibian species and 648 fish species and the forests along the south-eastern border with Cameroon are known to be a hotspot for amphibian biodiversity. Nigeria is known as a global hotspot for primate species, with a great diversity found especially in the Gulf of Guinea forests of Cross River State and adjacent parts of Cameroon. Some important endemic birds and mammals include three monkey species, the white-throated monkey (*Cercopithecus erythrogaster*), Sclater's guenon (*Cercopithecus sclateri*) and the Niger Delta red colobus (*Ptilocolobus pennanti epieni*) and four birds Ezealor, 2002), the Anambra waxbill (*Estrilda poliopareia*), the Ibadan malimbe, (*Malimbus ibadanensis*) and the Jos indigobird (*Vidua maryae*) and Rock Firefinch (*Lagonosticta sanguinodorsalis*). The most endangered gorilla subspecies on earth, the Cross River gorilla (*Gorilla gorilla diehli*) with an estimated population of less than 250 individuals is found only in a couple of protected areas near the Nigeria/Cameroon border.

The IUCN Red List of Threatened Species (i.e. of globally threatened species) (NBSAP 2006) includes 148 animals and 146 plants that are found in Nigeria. Of these, 26 animals and 18 plants are classified as endangered and another three animals and 15 plants are critically endangered worldwide.



Natural and human-made threats, socio-cultural problems as well as direct and indirect consequences of socio-economic development, particularly agriculture, have contributed to the depletion of biodiversity at all levels. Within the last 30 years, about 43% of the forest ecosystem has been lost through human activity. Close to 96% of the original 20% forest cover has been cleared and only 2% of what remains is little undisturbed. This has resulted in massive loss of the very rich and diverse forest flora and fauna, including indigenous tree species. Large parts of the savanna are also being ravaged by man-induced desertification, causing ecosystem impoverishment and biodiversity loss. The protected area system in Nigeria currently covers only 5.7% of the land mass. The number of threatened and endangered species has also been on the increase.

The conservation of biodiversity will provide numerous socio-economic and environmental benefits and in the long run, will result in the ability of future generations to meet their needs.

### ***National Efforts at Biodiversity Conservation***

In the past two decades, Nigeria had made bold but unsustainable efforts towards biodiversity conservation. These steps relate to the strengthening of policy, legislative and institutional frameworks and the implementation of intervention measures aimed at the conservation of biological diversity, the sustainable utilization of its components and equitable sharing of benefits.

Nigeria is a signatory to several treaties and international conventions for the use of natural resources and biodiversity, including

- (i) Convention on Biological Diversity,
- (ii) Ramsar Convention on the Conservation of Wetlands of International Importance Especially as Waterfall Habitat (1971),
- (iii) Convention concerning the Protection of the World Culture and Nature Heritage Convention,
- (iv) 1973 Convention on International Trade in Endangered Species (CITES); and
- (v) Convention on Migratory Species of Wild Animals (1973).

The country has also supported the establishment and functionality of various agencies that directly or indirectly contribute to the sustainable use and conservation of biodiversity. They include

- (i) National Parks Service,
- (ii) Forestry Research Institute of Nigeria,
- (iii) National Center for Genetic Resources and Biotechnology,



- (iv) Universities/Colleges of Agriculture, Fishery and Forestry, and
- (v) National Environmental Standards and Regulations Enforcement Agency (NESREA). At the State level, there exist the State Forestry Services, which are responsible for forest and biodiversity management, plantation establishment and management of Game Reserves. There are also other relevant ministries including agriculture, health, water resources, education and commerce.

Major past and on-going biodiversity-related policies and programmes of government include activities centered on

- (i) The development of a national biodiversity strategy and action plan (NABSAP),
- (ii) Establishment of National Committee on Wetlands and Aquatic Resources,
- (iii) Identification of fourteen more wetlands sites of international importance under the Wetlands Convention (RAMSAR),
- (iv) Biodiversity inventories,
- (v) Rehabilitation of degraded natural ecosystems,
- (vi) Control of alien and invasive species and
- (vii) Development of bio-safety guidelines.

Others include the management of protected areas, species and watersheds, capacity building on conservation technologies and techniques, sustainable use of wetlands, demonstration projects on medicinal plants and environmental education and awareness activities.

### **The Situation**

It is no longer a subject of controversy that the climates of the world are changing. Evidences include the phenomenal thawing of ice in the cold latitudes as well as ice-capped mountain tops and the associated global rise in sea levels. It remains unclear however, what the character of the new climates will be when they become fully established. While certain areas could become drier, others could be wetter. Also, major shifts of climatic belts could occur. How, when and where these could happen remain largely unresolved (IPCC 2007; Shaw et al. 2007; Stern 2006). But there is no longer any major contention of the fact that climate change is a serious threat to poverty eradication and sustainable development in general.

The Stern Review (Stern 2006), for example, concluded that (i) the costs of climate change-induced extreme weather events could reach 0.5-1% of GDP by the middle of the century; (ii) a 2 to 3 degree Celsius rise in temperature could reduce global output by 3%; and (iii) if that rise should become 5 degrees, up to 10% of global output could be lost. The Review also concluded that it would cost 1% of GDP to stabilize emissions at manageable levels. These are issues that Vision 2020 would need to take into account in driving the high rate of economic growth



imperative for its success. But the report also indicated a number of opportunities that can be exploited while trying to manage climate change by highlighting the role of employment creation programs in developing countries, such as Nigeria that can help to buffer households from the effects of poor harvests and other negative shocks.

In Nigeria, the climate change phenomenon manifests in rising sea level, inundation of coastal lands by sea water, and increased frequencies of extreme climatic events like storms, floods and above average daily minimum and maximum temperatures (NBS, 2006; MoE, 2008). There have also been marked intra- and inter annual rainfall variability (Odekunle 2008; Adesina 2008). As shown by Ojo (2008), the durations and intensities of rainfall have increased in the last three decades, producing large run offs, floods and water logging in some parts of southern Nigeria. Also, temperatures have continued to be above normal with relatively higher figures in 1973, 1987 and 1998. Most stations have had temperature increases of 0.2 to 0.3°C per decade.

The actual and potential impacts of climate change in Nigeria are considerable and have far reaching effects. All aspects of the socio-economic development, including the natural ecosystems are vulnerable to climate change. It presents significant threats to the achievement of the Millennium Development Goals especially those related to eliminating poverty and hunger and promoting environmental sustainability. Climate change threatens to set back national efforts to improve the lives and well-being of the people and to meet the goals of Vision 2020 and the MDGs.

Climate change will have direct impacts on biodiversity – from ecosystems to species level – and this will vary from one region to the other. While some species, like grasshoppers or other pests may increase in abundance or range, climate change will increase existing risks of extinction of many threatened species or lead to loss of biodiversity.

Climate change is expected to increase the frequency and intensity of severe weather events. Unfortunately, many States in Nigeria largely lack the infrastructure necessary to respond adequately to such events. Diseases such as malaria are likely to have wider ranges, impacting more on poor people that are already most affected by such diseases.

Changing rainfall patterns could devastate the rain-fed agriculture on which much of the population of Nigeria depends for survival. Increased occurrence of drought may lead to declining agricultural yields and diminished food security. Water supplies may also be altered, primarily through changes in temperature and rainfall. Sea level rise may lead to increasing coastal inundation and flooding of low-lying areas (e.g. Lagos and Port-Harcourt).

In general, climate change has the potential to generate large local-to-regional disruptions in ecosystems and adverse impacts on food security, fresh water resources, human health, and settlements, resulting in increased loss of life and property.



### ***National Responses***

There have been many global actions against climate change mainly through the United Nations Framework Convention on Climate Change (UNFCCC) established as a platform for global response to climate change. Nigeria is a party to the Convention and has signed several agreements emanating from the many negotiations. As a member of the Party, Nigeria has prepared her First National Communication on Climate Change (NCC) (MoE 2003), is preparing the Second National Communication, established a national Focal Unit – the Special Climate Unit (SCU), put in place an Inter-ministerial Committee on Climate Change and a National Committee on Climate Change (NCCC), among other things. The National Assembly has been brought into the picture, and there is presently a Committee of the House on Climate Change. As a non-Annex 1 (developing country) country, Nigeria, is expected to focus on adaptation to the change. Through some collaborative effort with Henrich Boll Foundation Stiftung (Nigeria) a strategy of action document has been prepared (HBF 2008). This document can be used to guide the country's adaptation efforts.

It is predicted that African countries will suffer the most of the impacts of climate change although it has contributed very minimally to the process that is known to have precipitated the change (e.g. Mkandla 2009). Their weak economies and fragile political systems weaken their resilience to such perturbations that might come with climate change. These make them highly vulnerable to climate change.

#### **2.2.3 Coastal and Marine Environment**

##### ***The Situation***

The Nigerian coastal and marine environment stretches for about 853 km along the coastline and inland for a distance of about 15km in Lagos in the west to about 150km in the Niger Delta and about 25km east of the Niger Delta. It consists of barrier bar/lagoon system, the Mahin mud coast, the Niger Delta, Strand coast and a moderately wide continental shelf. It is home to about 25% of the country's population and harbours a wide variety of opportunities and resources. Oil production in the region makes Nigeria to be one of the largest oil producers in Africa, the eleventh largest producer of crude oil in the world, providing the country about 90% of its foreign exchange earnings.

A major feature of Nigeria's coastal and marine environment is the Niger Delta, which covers 70,000 km<sup>2</sup>, and that makes it one of the largest wetlands in the world. The mangrove forests of Nigeria rank as the largest in Africa, the third largest in the world. 7000 km<sup>2</sup>, of the African total mangrove stock of 9,730 km<sup>2</sup>, is found in the Niger Delta. Other wetland types in the complex include freshwater swamps and Barrier Island swamp forests. Fishing is a major activity especially in the coastal and marine environment of Nigeria. Up to 60% of fishes caught between the Gulf of Guinea and Angola breed in the mangrove belt of the Niger delta. Average capture fisheries from the coastal and marine area excluding aquaculture is estimated at 309,062 million metric tons (FAO 2006). This sector is a high foreign exchange earner,



generating about U.S. \$20 million annually through the export of shrimps alone and providing direct and secondary employment to more than one million Nigerians.

The coastal and marine environment also harbors non-fuel minerals like sand and heavy minerals. It also contained recreational and scenic resources including beaches, coastal lagoons and estuaries. Almost half of Nigeria's industries are located within the coastal zone mainly due to accessibility of ports, raw materials and energy.

### ***Major Environmental problems***

Like many ecosystems in Nigeria, the marine and coastal areas of the country suffer from many environmental problems that must be addressed for sustainable development. Industrialization, urban development, and oil and gas exploration and exploitation have infringed on the people and their environment, leading to the opening up of previously pristine ecosystems. This has resulted in the alteration of habitats, biodiversity loss, deforestation and pollution (Amakiri 2005). While natural hazards, such as floods, are clearly responsible for some of the environmental impacts, industrial activities have no doubt aggravated the situation.

Pressures from unsustainable exploitation of coastal resources, large populations, and climate change are causing widespread environmental problems in the coastal and marine areas. This makes the region to be one of the most environmentally ravaged areas of the world. Major areas of environmental challenges include (see Awosika, 2008):

- **Pollution:** This is in the form of oil spills, gas flaring, industrial and agricultural effluents, sewage and solid wastes and air pollution from power plants, gas flaring and vehicular emissions. Oil spill is a major environmental problem causing wide spread pollution in the coastal zone, and affecting livelihood of 20 million people in the region. The region experiences frequent oil spills Nigeria is responsible for 13% of the gas flaring going on in the world. This is equal to 23 billion m<sup>3</sup>/year of flared gas, which is sufficient to meet Nigeria's energy needs, leaving a healthy balance for export. Gas flaring also affects communities' livelihood and exposes them to an increased health risk and acid rain.
- **Modification of ecosystem:** The coastal and marine areas of Nigeria have undergone modifications, especially in the last thirty years, due to human activities.. In general, these modifications are in the form of biodiversity loss, coastal erosion, flooding, deforestation, salt water intrusion and invasive species. The Bar Beach is the fastest eroding beach in Nigeria with erosion rates of between 20 and 30m annually. Other areas experiencing erosion include the Mahin mud coast (25 to 30m annually); Escravos (18-24m annually); Forcados (16-29m annually); Brass (16-19m annually); (Kulama 20-24m annually) and Bonny (10-14m annually).
- **Depletion of fisheries resources:** Demand for fish and uncontrolled fishing methods



are causing depletion of fisheries resources within the coastal and marine area. The Nigerian coastal waters are most probably over-exploited with regard to shrimp resources while the breeding grounds/nurseries of commercially important fish/shell fish species are affected.

- **Solid waste:** This constitutes a major environmental problem in the coastal cities of Nigeria like Lagos, Warri, Port Harcourt and Calabar, as most of the wastes are discharged into coastal waters. The largest generators of solid wastes are the steel, food processing and tanning industries. Estimates of annual generations of municipal solid wastes for Lagos, Calabar, Port Harcourt and Warri are 1,400,000; 190,000; 650,000 and 66,721 tones respectively ((LAWMA) 1999).
- **Climate change and sea level rise:** Climate change and the associated sea level rise of between 0.5 and 1 metre will worsen the ongoing changes along the country's coastline. For instance, the residential, commercial and tourist facilities on the Victoria, Ikoyi and Lagos Island estimated at well over U.S \$12billion will be lost. In addition, the Niger Delta could lose well over 15,000 km<sup>2</sup> of land by the year 2100 with a one-meter sea level rise affecting well over 1.5 million people in the Niger Delta (Awosika, 2008)

## 2.2.4 Deforestation

### **Status**

Forestry contributes about 3% of the GDP and accounts for a high proportion of domestic energy, food and medicinal supply of the rural population (and increasingly the urban population). Nigerian forests also play a major role in the rural economy through the Non-Timber Forest Products (NTFPs). For instance, about 150 indigenous woody plants have been identified as producing food for human and livestock consumption (Vision 2010). A lot of other plants are being used for medicinal purposes to cure such diseases as hypertension, diabetes, sickle cell anaemia and bronchial asthma. The value of lost forest cover has been estimated at US\$750 million annually at 1989 prices (World Bank 1990).

The forest resources of Nigeria are under immense human pressure. As at 1977, the total area occupied by forest reserves in Nigeria was approximately 10 per cent of the total landmass. It is now about 6% of Nigeria's landmass. This is considerably lower than forest estate covers of at least 25 per cent that obtains in many other countries in line with international standards (FAO 1990). The proportion is, however, reducing by the day as less than 1 per cent of forest areas cleared for domestic and commercial purposes get reforested. In the 1980s, about 400 hectares of forest and woodland out of every 1000 hectares suffered from deforestation while only 26 hectares were reforested on an annual basis (UNDP Nigeria, 1996). According to Food and Agricultural Organization (FAO 1990), the remaining forest area in Nigeria will likely disappear by 2020 if the current rate of forest depletion continues unabated.



The annual rate of deforestation of the woodlands averaged 3.5 per cent between 1980 and 1990. For northern Nigeria alone, the annual deforestation of woodlands ran to about 92,000 hectares, while the whole country consumed about 50 to 55 million cubic metres of woods annually. The southern rain forest, which covers only 2 per cent of the total land area in Nigeria, is being depleted at an annual rate of 1.6 per cent (Salami and Balogun 2006). Nigeria has the highest rate of deforestation in Africa and loss of primary forest in the world (FAO 2005). Over 25,000 ha of the gazetted forest are being lost to de-reservation annually (Oyebo, 2006).

A major contributory factor of massive deforestation and de-vegetation is the almost total dependence of over 70 per cent of rural population in Nigeria on the forest resources for livelihood and economic survival. Fuelwood extraction, shifting cultivation and conversion of forest to agricultural land are some of the activities with the most serious impact on the forest resources in Nigeria. Other practices that are contributing to vegetation degradation in Nigeria include intensive grazing, persistent bush burning, and reduction in or absence of fallow periods, as well as extension of agricultural activities into less-favoured, often environmentally fragile areas.

### ***National Efforts to Sustainably Manage the Country's Forest Resources***

Nigeria has signed and ratified several international Environmental Conventions and other Agreements relating to forest management: it signed the Convention on Biological Diversity in 1992 and ratified it in 1994. Likewise it signed the UN Framework Convention for Climate Change in 1992 and ratified it also in 1994, while the Kyoto Protocol was ratified in 2004, entering into force in 2005. Nigeria took active part in the development of the African Timber Organization (ATO) from inception (1992). Moreover, Nigeria is member of the Forest Stewardship Council (FSC) and of the International Timber Trade Organization (ITTO), the latter organization being active, among others, in the development of Criteria and Indicators for Sustainable Forest Management. These Conventions and Agreements are all highly relevant for Nigeria's forest resources and indicate the need for its sustainable management and further development.

The origin of organized forestry management in Nigeria can be officially traced to the creation of an office of Woods and Forests in Lagos 1897. Then it was decided that about 30% of the total land area would be set aside for forestry (Lowe, 1994). The intention of Forestry Department was to supervise the management and exploitation of forests within and outside the reserves. However, the post-independence era witnessed monumental population growth, extensification of agricultural activities, transformation of the economy and increased urbanization process. These led to a situation whereby the Nigerian forests (made up of both reserved and non-reserved or free areas) have been subjected to unguarded exploitation over the years. Presently, forest reserves cover less than 10% of the national territory, mostly of the savanna woodland type. The southern rainforest, the source of the country's timber resources, cover only about 2% of the total land area as at now. Even this forest cover is being depleted at an estimated rate of 1.36% per year. This implies deforestation on a large scale and has brought with it significant negative impacts on the flora and structure of Nigeria's forest.



The major problem is that government policies after independence have leaned towards a more rapid forest exploitation rather than conservation. These policies were politically driven with questionable economic gains that led to loss of biodiversity. The situation is particularly serious because the most vulnerable groups in Nigeria, particularly women and the poor, depend on wood due to the unaffordability and/or unavailability of other domestic energy sources (Salami, 2006).

The projected level of supply and demand for wood indicates that from year 2005 to 2020, there is the possibility of an annual deficit of about 80 million m<sup>3</sup> to 100 million m<sup>3</sup> Non Timber Forest Products (NTFPs) are derived from the forests and as the forests disappear, so too do these NTFPs which in the past, provided a source of income. This is particularly alarming as most rural communities and the urban poor rely on NTFPs for income, subsistence, trade, health and domestic energy. Deforestation is widespread and has left practically no state untouched while the health of the remaining forest in Nigeria is undoubtedly weak. Oyebo (2006) warned that without systematic management of these resources, the down trend will continue until the very last productive tree is harvested. The recent statement of Mr President on funding afforestation in the country is a major intervention. The President had directed that the Ecological Fund office should direct its resources to addressing afforestation in the country (FMoE 2009).

## **2.2.5 Drought and Desertification**

### ***The Situation***

Drought and desertification are twin environmental problems affecting many parts of Nigeria. While drought is largely a natural phenomenon, desertification is not. Drought occurs as a result of inadequate rainfall to meet agro-ecosystem needs. Desertification, on the other hand, is the most severe form of land degradation. Desertification results mainly from climatic variations and human activities. In general, unsustainable human activities that take place in fragile ecological areas aggravate drought and desertification.

Nigeria is one of the most desertification-prone countries in Africa. The problem of drought and desertification is so acute that between 1976/78 and 1993/95 desertification expanded southwards from 12°30' to 10°30' (Hewawasam et al, 2003). Also, land brought under agricultural production expanded from 503,000 km<sup>2</sup> to 585,000 km<sup>2</sup>, an increase of 82,040 km<sup>2</sup> (16%), and representing 4560 km<sup>2</sup> per annum. In addition, rivers and lakes silted leading to rapid drying up of water bodies after the rains. A typical example is the case of the receding Lake Chad. Also, gully erosion, which hitherto was not a major threat, increased threatening about 18,400 km<sup>2</sup> (compared to only 122 km<sup>2</sup> in 1976/78). Sand dunes have equally increased by approximately 17 % from 820 km<sup>2</sup> to 4,830 km<sup>2</sup> over the period.

Addressing desertification has become a major development and environment issue in many parts of Nigeria, particularly in the region north of latitude 10°N. It has been estimated that between 50 and 75% of Bauchi, Borno, Gombe, Adamawa, Jigawa, Kano, Katsina, Kebbi, Sokoto, Yobe, and Zamfara States are affected by desertification. These states account for



about 35% of the country's total land area. In addition, seven adjacent states to the south have about 10 to 15% of their land areas threatened by desertification. It is estimated that the country could be losing about 351,000 hectares of its landmass to desert-like conditions annually. Significant physical and ecological impacts of drought and desertification included loss of biodiversity, rapid deterioration of ecosystems, degradation of land cover, loss of soil fertility and depletion of water resources.

Drought and desertification bring about severe disruption of the socio-economic development of the affected areas. Persistent droughts, in particular, often result in crop failures of crops and death of livestock eventually resulting in famine. Rural-rural and rural-urban migration are key features of drought and desertification-induced changes in population dynamics.

### ***National Efforts to Combat Desertification***

Nigeria is a contracting party to the United Nations Convention to Combat Desertification (UNCCD). By being party to the UNCCD, the country has committed itself to mobilize and secure action to arrest expansion of deserts and arrest land degradation. Nigeria has developed and is implementing a National Action Programme (NAP) to combat desertification, in addition to putting in place a Nation Drought and Desertification Policy and developing a Drought Preparedness Document. Other recent initiatives include:

- formulation of the National Policy on drought and desertification as well as a guideline to combat drought and desertification by Federal Ministry of Environment;
- development and implementation of the GreenWall Sahara Nigeria Programme (Dogara 2008),
- development and implementation of the Desert to Food Programme initiative,
- support to the implementation of the Integrated Ecosystem Management Project in the Transboundary Areas Between Nigeria and Niger Republic, and
- implementation of the MDG Projects on the rehabilitation of ten oases and provision of potable water to communities for drinking and farming in the affected areas.

## **2.2.6 Environmental Health and Safety**

### ***Situation Analysis***

Recent national, regional and local development blueprints have limited or no place for Environmental Health and Safety (EHS). Public awareness and perception of environment, health and safety requirements, standards and practices are thus inadequate. Consequently, land-use planning and physical infrastructure development are often initiated with limited consideration of their EHS implications. These have culminated in a multiplicity of EHS problems such as fatal collapse of mega-structures; unpredicted floods and fire outbreaks; defective municipal waste management systems; inadequate household and public toilet



facilities; poor food safety and hygiene protocols; defocus on the prevention of environment-related and food-borne diseases and their predisposing factors; and the full manifestation of aesthetic pollution indices in densely populated settlements e.g. obnoxious odours, irritating sounds, offensive sights, overcrowded places; and the destruction of urban open spaces and green areas.

Many Nigerian public and private institutions do not have EHS policies and guiding principles and are thus not practically committed to the global environment, health and safety stewardship. There is shortage of environmental health and safety officers (EHSOs) needed to address the myriads of environmental health hazards and their adverse influences on man. Natural and man-made disasters as well as hyper-diseases (epidemics and pandemics) often plunge victims into unjustifiable suffering due to unpreparedness and limited involvement of EHSOs in analyses, predictions and intervention processes. In South Africa, the job specifications of sanitary inspectors include inter alia, the prevention and control of infectious diseases, epidemics, licensing of premises, labeling of foods and noise pollution control.

### ***Global Trends***

In Europe, United States of America and South Africa, EHS is a discrete profession with the recognition of the EHSOs as critical components of the overall healthcare management. Health and educational institutions, industries, military and paramilitary barracks, sports/games, superstores and hospitality facilities have functional Environmental Health and Safety Departments headed by EHSOs. South Africa has a people-oriented National EHS Action Plan that is incorporated into the country's overall Sustainable Development Agenda. There are also regulatory structures with specific agencies or group of persons legally empowered to enforce actions required to protect and improve EHS standards.

### ***National Efforts to institutionalize Environmental Health and Safety***

The development of environmental health and safety (EHS) in South Africa dates back to 1656 when the washing of clothes in streams was prohibited, and when livestock meant for human consumption was slaughtered only at specified places. In Nigeria, it was not until 1899 that sanitary inspectors were introduced into few towns after establishing the link between the incidence of malaria fever and the state of the environment. Between 1900 and 1919, proactive environmental health measures were taken by a special sanitary unit of the colonial government to minimize the incidence of malaria fever. These focused primarily on the control of the adult and developmental stages of the vector mosquitoes and secondarily on the use of quinine as prophylactic and curative therapy. Sanitation policies and legislation were enacted which made it an offence to allow the breeding of mosquitoes in private and public compounds. These obligations were enforced by sanitary inspectors and prosecutions to the extent of demolishing unsanitary dwellings and compelling owners of undeveloped lands close to human settlements to clear them of overgrown vegetation.



By the 1950s, sanitary inspectors had constituted a formidable driving force in ensuring compliance to prevailing environmental sanitation standards. The need for personal hygiene was introduced, imbibed and incorporated into the curricula of schools. Preventive healthcare soon gained prominence especially as it was relatively inexpensive and involved public awareness and participation.

The post independence Nigeria however, experienced a gradual turndown of events typified by the systematic phase-out of environmental health units and sanitary inspectors from government administrative structures and hygiene from schools' curricula. Public indifference to environmental sanitation and hygiene ensued; public awareness, environmental ethics and stewardship nose-dived; sanitary conditions of settlements and workplaces declined; vulnerability and incidence of environment-related diseases increased; absenteeism of sick children from schools hiked; manpower working hours and productivity dropped; and government expenditure on curative healthcare sky-rocketed. The adverse effects of these changes on human survival, livelihoods and well-being have been felt nation-wide and by every community and individual. All these impact negatively on the social and economic development of the country.

### **2.2.7 Floods and Erosion**

#### ***Situation Analysis***

Flooding is becoming a more severe phenomenon in many parts of Nigeria. Flooding is aggravated by poor land use and watershed management practices. Human activities such as unplanned rapid urbanization, blockage of river/drainage channels, land clearing for agricultural purposes and deforestation contribute immensely to flooding. The most flood-prone areas in Nigeria include:

- i. Low-lying coastal areas of southern Nigeria where annual rainfall is heavy;
- ii. The floodplains of major rivers such as the Niger, Benue, Gongola, Sokoto, Hadejia, Katsina-Ala, Donga, Kaduna, Gurara, Ogun and Anambra, etc.
- iii. The flat, low-lying areas around Lake Chad .

Many urban centers including Dutse, Enugu, Ibadan, Kaduna, Kano, Lagos, Maiduguri, Onitsha, Owerri, Port Harcourt, and Sokoto now experience more frequent floods.

Erosion of various types, including sheet, rill and gully is becoming more prevalent in many parts of the country. Coastal erosion is particular, is aggravated by human activities such as construction of harbour protecting structures and jetties, sand mining, and deforestation of coastal vegetation. Sea level rise as well as localized subsidence also exacerbates the rates of



coastal erosion. More than 50 erosion sites have been identified along the 835km coastline of Nigeria, with estimated mean shoreline retreats of 2 – 30 m per year (FGN, 1997). Apart from Lagos, other coastal settlements badly affected by erosion, as documented by Ibe (1988), include Ugborodo and Escravos (18-24m annually), Forcados (20 - 22m annually), Brass (16 – 19m annually), Kulama (15 - 20m annually), Bonny (20 - 24m annually) and at the entrance of river Opobo (10-14m annually).

Gully erosion is most visible in Anambra, Enugu and Imo. Other badly affected states include Ekiti, Gombe and Kogi. Gully menace has been identified in many parts of Nigeria including the Shemanker valley, north western part of Sokoto, the Mambilla Plateau, the Zaria area of Kaduna State as well as Auchi and Abudu Areas of Edo State. The South Eastern states of Abia, Anambra, Ebonyi, Enugu and Imo States have been ravaged by gullies of strong magnitudes. Some of the major active gullies include those in Agulu, Nnaka, Ekwulobia, Nnobi, Nnewi, Oraukwu, Alor (Anambra State); Item, Ohafia, Arochukwu, Isukwato, Isu Ochi (Abia State); Arondizuogu, Amucha, Ideato, Okigwe (Imo State); Enugu - Ngwo, Eke, Abor, Ekwegbe (Enugu State) and parts of Ebonyi State.

Spectacular gullies have destroyed vast areas of land in Nanka, Agulu and Oko in Anambra state, Okigwe in Imo state, and parts of Abia, Enugu, and Ebonyi. Those of Anambra State present a sad picture of the disastrous physical and socio-economic effects of gully erosion in Nigeria.

Sheet erosion occurs commonly in Nigeria although its effect is not easily perceived because of its 'deceitful' slow progress. Sheet erosion slowly removes the surface solid layers by rainfall runoff down slopes, thereby resulting in soil degradation and impoverishments, loss of farmlands, pollution and siltation of available sources of drinking water. Sheet erosion has been identified as being active in Anambra, Imo, Plateau and Sokoto States, as well as many parts of Kwara State.

Wind erosion is common in northern Nigeria particularly where the vegetation cover is scanty causing extensive removal of topsoil. The eleven desert frontline states including Adamawa, Borno, Bauchi, Gombe, Jigawa, Katsina, Kano, Kebi Sokoto, Zamfara and Yobe States are the most vulnerable.

In general, erosion results in the depletion of farmlands, loss of forest resources and reduction in agricultural outputs. It also results in loss of land resources for other developmental purposes, destruction of properties and social amenities, as well as loss of lives.

### ***National Efforts***

The Federal Government is currently undertaking a Land Degradation Mapping and Assessment for the prevention of erosion hazards in the country. The strategy is to ensure that



the problem of erosion and flooding is adequately captured using available and up-to-date data. The Remote sensing and Geographic Information System (RS/GIS)-based approach would provide information on the number, total land area affected and morphometry of gullies occurring at different parts of the country. Other activities of the Ministry include:

- Several physical erosion and flood control projects are being implemented across the nation with support from the National Ecological Fund
- Intensified implementation of the National Policy on Erosion, Flood Control and Coastal Zone Management
- Launching of awareness campaign to control incidences of erosion as in Imo State.

## 2.2.8 Human Settlements

### *Situation Analysis*

Nigeria's urbanization trend and cycle is typical of most developing countries. Its dynamism is driven by a number of factors, including a high rate of population growth, oil boom, abandonment of agricultural activities, location of investment and rural-urban migration. Investment in physical infrastructure, administrative change such as the creation of more states, local government areas and Abuja FCT, educational institutions, industrial policy and investment decisions as well as adoption of modern information and communication technology are other factors driving the process of urbanization in the country.

The rapid and unplanned urbanization has had profound impact on the country's socio-economic development and environmental sustainability. The rate of urbanization which was 15% in 1950 rose to 23.4 % in 1975, 36% in 1991, 48.2% in 2005 and has been projected to 55.9% by 2015 (World Bank 2009, UN-Habitat 2008). The average annual rate of urbanization between 1950 and 2005 is estimated to be 3.7% (FRN, 2004). The number of urban centers increased from just 56 in 1953 to 450 in 2000. Current estimates put the number of urban centers at more than 840 as all the 36 state capitals and headquarters of the 774 local government areas have now been designated as urban centers by the government (Federal Ministry of Environment, Housing and Urban Development, 2008a).

Urban land use has increased from 0.2% of the total national land area in 1976 to 0.6% in 1995 and 1.7% in 2007. The annual growth rate is about 8.5% between 1976 and 1995 and 15.7% between 1995 and 2007 (Federal Ministry Environment, Housing and Urban Development, 2008a). Although rural areas have been expanding especially in population the pace is much lower than those of urban areas. Agriculture and in recent decades off-farm economic activities are the key drivers of rural settlements.



If well planned and managed, cities and towns can engender economic and social progress, promotion of literacy and education, improvement of the general state of health and economic well-being, greater access to social services, and cultural, political and religious participation. However, if cities and towns are not properly managed, they may generate major environmental problems that could impact negatively on economic growth and sustainable national development (Federal Ministry of Environment, Housing and Urban Development, 2008b).

The human settlements especially the towns and cities experience an array of problems which have been classified into four namely: serviceability, livability, poverty and manageability. Basic services such as water and sanitation, waste management, transportation, health and education are inadequate and overstretched. Urban waste management is a growing problem due to rapid growth and the limited capacity of most municipal authorities to collect and safely dispose both solid and liquid wastes. In 2002 only 64.21 % of the population had access to safe drinking water but this declined to 49.1 % in 2007. The proportion of the population with access to basic sanitation in 2002 is 39.4% compared to 42.9% in 2007 (Office of Senior Special Adviser to the President on MDGs, 2008). The organic growth of the urban centres inhibits effective planning, supply and management of basic services and land use.

Only 34 percent of Nigerian households have access to electricity, fuel wood therefore constitutes a major source of household energy and a cause of biodiversity reduction. The widespread use of electricity generators has become a major source of air and noise pollution in the urban centers. Atmospheric pollution from industries, automobiles, and emission of green house gases is a major health hazards in the urban centers. Indoor air pollution from cooking is also a major problem in both urban and rural areas.

There is a huge unmet urban housing need leading to the emergence of numerous slums and squatter settlements. In 2005, the share of the slum dwellers in the urban population was about 65.8 million (UN-Habitat 2008). The share of the population with access to secure tenure in 2004 was a mere 31.0% although it rose to 43.6% in 2006 (Office of the Senior Special Assistant to the President on MDGs, 2008). Urbanization has driven the conversion of agricultural land use to residential, industrial and other forms of land uses thus posing a challenge to food security. Furthermore, urbanization leads to loss of environmentally sensitive land and amenity value, in addition to the fact that the built environment is a major consumer of natural resources such as timber, granite, sand and cement among others. Paving of roads, houses, commercial and industrial estates and de-vegetation especially trees traditionally referred to as the “lungs of the city” because of the ecological services they render, have been destroyed in most cities and towns, consequently, there has been an increase in run-off from rain causing flooding and erosion in and around major urban centers apart from reduction in biodiversity. Informal sector activities which provide employment for most Nigerians contribute immensely to pollution, illegal construction and environmental degradation. Finally, the problem of urban poverty could be appreciated from a recent survey which indicated that between 5% and 20% of the urban labour force in Nigeria are unemployed as a result of their lack of education or skill (SER 2008).



### ***National Efforts***

National efforts to address the challenges of sustainable urban development in Nigeria have centered on:

- Formulation of a National Policy on Housing in 2001 with the goal of ensuring that all Nigerians own or have access to decent, safe and sanitary housing at affordable cost with secure tenure, through private sector initiative, with government encouragement and involvement.
- An Urban Development Policy was formulated in 2001 the goal of which was to develop a dynamic system of urban settlements, which would foster sustainable economic growth, promote efficient urban and regional development and ensure improved standard of living and well being of all Nigerians.
- The Urban and Regional Planning Act of 1992.
- Ozone Layer Protection: The Ozone Project and Implementation Unit has undertaken installation and supply of refrigerant and recycling equipment to meet national targets and commitments to the Montreal Protocol.
- Waste Management: Provision of plants to convert urban waste to organic fertilizer for example in Ibadan and Minna.
- Preparation of a National Renewable Energy Master Plan.
- Establishment of the Infrastructure Concession Regulatory Commission
- Implementation of the UN-Habitat Sustainable Cities Programme Environmental Planning and Management in Ibadan, Lagos, Onitsha and Kano
- Implementation of the UN-Habitat Healthy and Safer Cities Programmes
- Implementation of the UNICEF-Assisted Urban Basic Services Projects
- Implementation of the World Bank assisted Community-Based Urban Development Programme.
- Creation of the Federal Ministry of Housing and Urban Development in 2003.

In spite of the foregoing responses, the extant human settlements planning and management framework and procedures are too weak and slow to deal effectively with the problems of organic urban development, and violation of physical planning laws and regulations. Public agencies charged with the responsibilities of providing basic services, housing, maintenance of

roads among others are very ineffective, lethargic and unable to meet their obligations. Consequently, the following challenges confront the sub-sector:

## 2.2.9 Land Resources and Uses

### *Situation Analysis*

Land is the most important resource necessary for sustenance. Land cover is central to environmental processes through its influence on biodiversity, water, energy, trace gas emissions, carbon cycling, and a wide range of socio-economic and ecological processes that affect livelihoods (Abbas, 2009). With a total land area of 923,773 square kilometers which is richly endowed with abundant and diverse renewable and non-renewable resources. Human intervention, however, has resulted dramatic changes in the land use of the country's bio-physical environment.

Table 2.1 shows the pattern of land cover changes between 1975 and 2005 in Nigeria. The results of static land cover changes for the 30-year period show that disturbed forest increased by about 33%, extensive small holder rain fed agriculture by about 13% and flood plain agriculture by 123%. Forest plantation increased by 58% and rain fed arable crop plantation by 3000%. All these suggest intensification in southward movement of the grazing zone in the country. The increase in flood plain agriculture suggests intensification of cultivation within the Fadamas while other surrounding lands are already close to the climatic limit of cultivation. A 425% increase in the extent of sand dunes/aeolian deposits and the over 50% decrease in the area of undisturbed forest is a strong evidence of land degradation.

**Table 2.1 Changes in some land use-land cover in Nigeria between 1975 and 2005**

No	Land use type	Area (km <sup>2</sup> ) 1975	Area (km <sup>2</sup> ) 2005	Change 1975- 2005	%Change
1	Agricultural Tree Crop Plantation	824.15	1656.88	832.73	101.0
2	Alluvial	523.61	282.38	-241.23	-46.1
3	Discontinuous grassland dominated by grasses and bare surfaces	7614.72	1251.23	4902.51	64.4
4	<b>Disturbed Forest</b>	<b>14677.70</b>	<b>19491.29</b>	<b>4813.59</b>	<b>32.8</b>
5	Dominantly grasses with discontinuous shrubs and scattered trees	13053.77	12487.62	-566.15	-4.3



No	Land use type	Area (km2) 1975	Area (km2) 2005	Change 1975- 2005	%Change
6	Dominantly shrubs and dense grasses with a minor tree component	118529.55	85020.98	-33508.57	-28.3
7	Dominantly trees/woodlands/shrubs with a subdominant grass component	154933.40	83281.15	-71652.25	-46.2
<b>8</b>	<b>Extensive small holder rainfed agriculture</b>	<b>170837.55</b>	<b>192892.33</b>	<b>22054.77</b>	<b>12.9</b>
9	Extensive Small Holder Rainfed Agriculture with Denuded Areas	447.88	10118.47	5700.58	129.0
<b>10</b>	<b>Floodplain Agriculture</b>	<b>9671.81</b>	<b>21576.03</b>	<b>11904.21</b>	<b>123.1</b>
<b>11</b>	<b>Forest Plantation</b>	<b>1000.85</b>	<b>1581.24</b>	<b>580.39</b>	<b>58.0</b>
12	Forested Freshwater Swamp	18564.71	16696.51	-1868.20	-10.1
13	Graminoid/sedge Fresh Water Marsh	5882.74	1136.51	-4746.22	-80.7
14	Grass Land	1196.74	8146.74	6950.00	580.7
15	Gullies	125.35	19070.48	18945.13	15113.2
16	Intensive row crops	3292275.97	373481.34	44253.37	13.4
17	Irrigation Project	148.85	1008.86	860.01	577.8
18	Livestock Project	51.02	139.65	88.63	173.7
19	Major Urban	1102.58	1362.37	259.79	23.6
20	Mangrove Forest	10157.12	10067.31	-89.81	-0.9
21	Minor Urban	958.69	4022.98	3064.29	319.6
22	Montane Forest	7900.02	8053.76	153.74	1.9

No	Land use type	Area (km <sup>2</sup> ) 1975	Area (km <sup>2</sup> ) 2005	Change 1975- 2005	%Change
23	Montane Grassland	2502.27	3898.15	1395.88	55.8
24	Natural Water bodies/Ocean	6766.53	15588.36	8821.83	130.4
<b>25</b>	<b>Rainfed Arable Crop Plantation</b>	<b>15.92</b>	<b>521.39</b>	<b>505.46</b>	<b>3175</b>
26	Reservoir	1331.41	2901.16	1569.75	117.9
27	Riparian Forest	7506.46	5330.46	-2176.01	-29.0
28	Rock Outcrop	1445.15	2647.96	1202.81	83.2
29	Salt marsh/Tidal Flat	18.84	596.92	578.08	3068.37
<b>30</b>	<b>Sand dunes/Aeolian</b>	<b>1032.77</b>	<b>5428.30</b>	<b>4395.53</b>	<b>425.6</b>
31	Shrub/Sedge Graminoid freshwater Marsh/Swamp	17749.63	10251.68	-7497.95	-42.24
32	Teak/Gmelina plantation	624.44	1156.43	531.99	85.19
<b>33</b>	<b>Undisturbed Forest</b>	<b>28022.42</b>	<b>13477.90</b>	<b>-14544.52</b>	<b>-51.90</b>
34	Canal		30.76	3076	
35	Mining Areas		61.15	61.15	

**Source: Abbas, 2009**

In general, the results presented by Abbas (2009) indicate loss of prime arable lands. In the northern and central parts of the country, the Sudan savanna ecology is transiting to Sahel, an indication that desertification intensity is increasing. In a similar manner, the Guinea savanna in the south is giving way to Sudan savanna grassland.

### **National Efforts**

Several attempts by government have been directed at the multiple functions that land performs. For example, the exploitation of mineral resources for socio- economic development provides both a challenge and opportunity. More importantly with respect to human settlements, the proportion living in rural areas is rapidly declining, while urban areas are rapidly expanding.



There are also institutional and policy reforms embarked upon by government such as the Land Use Act of 1978 and the Urban and Regional Planning Acts of 1992.

## **2.2.10 Environmental Pollution**

### ***Situation analysis***

Environmental pollution in Nigeria is currently of greater in magnitude than in decades past as a result of the high rate of population growth and urbanization, modernization of agriculture, especially in the growing use of agrochemicals, the introduction of new technologies and consumer products, and, the ineffectiveness of the institutional, logistical and policy arrangements that have been put in place over the years to tackle the menace. Thus environmental degradation due to pollution must be tackled head-on if Nigeria is to achieve the vision of becoming one of the leading twenty economies in 2020, as a healthy environment is the basis of economic prosperity and sustainable development. Essentially this calls for a robust and holistic approach to pollution management in the country.

The dominant types of pollution in Nigeria are air, water, soil and noise pollution. Industries were the major sources of pollutants in Nigeria in 1980s and 1990s when well over 5,000 industrial facilities and 10,000 small scale industries were in operation on the Nigerian landscape. Constantly smoke from factory chimneys and dust are spewed into the air, untreated industrial effluent discharged directly into open drainage channels and some industries bury expired chemicals and hazardous waste in their backyards or dump them haphazardly, thereby threatening water quality in rivers and wells. The total dependence of manufacturing industries on diesel-powered electric generators is the main driving force of air pollution in major industrial centres in Nigeria. In 1998 the Federal Environmental Protection Agency (FEPA) reported that air pollution load for Lagos state industries was about 51800metric tonnes, consisting of sulphur dioxide (37.6%), nitrogen oxides (31.5%) and particulates (26.5%).

Although many of the industries have closed down, pollution has by no means abated as those functioning still rely entirely on diesel-powered generators. Furthermore, the country has witnessed a tremendous upsurge in the number of automobiles and commercial motorcycles as well as electric generators. These contraptions have become the new and widespread sources of pollution in Nigeria. The major pollutants from automobiles, and electric generators are carbon emissions, spent oil and battery acid which are dumped haphazardly and excessive noise from two. It has been estimated that about 80 million litres of used crankcase oil from mechanic workshops, industries, power stations and commercial houses are dumped directly into drains and ground surfaces in urban centres. Studies elsewhere have identified excessive exposure to noise as detrimental to the neuro-endocrine, cardiovascular, respiratory and digestive systems. In addition chronic exposure to noise has been found to cause fatigue, reduced concentration and work efficiency.

Pollution from oil exploration and exploitation activities in the Niger Delta remains unabated. Oil spills from leaking underground pipelines and storage tanks are a regular occurrence, rendering



vast tracts of land and water bodies unproductive in the region. National Oil Spill Detection and Response Agency (NOSDRA) recorded in first half of the year 2007 a total of 424 spill incidents involving 33,799 barrels of oil. Of these spill incidents 196 were due to Equipment or operation failure, 143 were caused by sabotage while the sources of the remaining 85 were in contention. As well, pollution from gas flaring continues unabated. The resultant heat stress and acid rain continue to degrade the ecosystem.

Pollution of air, water and soil in Nigeria also comes from extensive use of fertilizers on farms, dumping of expired and contraband chemicals and pesticides in the country, improper storage and handling of chemicals as well as improper disposal of hospital and municipal wastes.

An emerging and rapidly growing source of pollution is e-waste especially resulting from spent ICT materials imported from developed countries. This form of waste contains deadly chemicals and toxins. The poor regularly sort through waste dumps to scavenge for anything they could sell and so unwittingly expose themselves to toxic hazards and health risks.

### ***National Efforts***

The national efforts to address environmental pollution in Nigeria fall into three categories, namely:

- i. institutional/policy,
- ii. legal/regulatory, and
- iii. special initiatives and actions.

The establishment in 1988 of FFEPA and its State counterparts State Environmental Protection Agencies/Authorities (SEPA) marked the beginning of the institutionalisation of pollution control in Nigeria. Other institutions that have emerged with a mandate to promote environmental quality are the NOSDRA (2006) and National Environmental Standards and Regulations Enforcement Agency (NESREA) (2007). Government has also instituted policies on environmental sanitation and medical waste management with a view to controlling pollution in the country. In addition to the laws establishing these agencies, other regulatory measures such as the Environmental Impact Assessment Act (2004) and the Harmful Waste Act (2004) have also been enacted.

A few special initiatives of the Federal Government that have direct bearings on pollution control are

- (i) the Integrated Waste Management Facility pilot project through public-private partnership in selected towns;



(ii) community-based waste management pilot projects in Maiduguri and Otta which is private sector-driven and MDG supported, and

(iii) the establishment of a National Expert Committee on Mercury to provide guidance on appropriate strategies to address the mercury challenge.

It is obvious from the foregoing that Nigeria is not lacking in the areas of laws, regulations and institutions to combat environmental pollution in the country. Pollution is still pervasive in the country because the institutions set up to combat it are very weak in enforcing compliance with pollution standards and abatement measures.

### **2.2.11 Waste Management**

#### ***Situation Analysis***

The problem of solid waste Management is a major concern in Nigeria. By 1989, an estimated 2.2 million tonnes of garbage per year was being generated in Nigeria, equivalent to about 20 kg of solid waste per capita. It was estimated that by the year 2000, Lagos metropolis alone was generating about 998,081 tonnes of solid waste per year.

In Nigeria, waste is indiscriminately disposed such that solid waste dumps dot the urban landscape. In fact only about 30 -50% of waste is collected (Osibanjo, 2008). Most of the urban areas lack effective system of refuse collection. As a result, most urban households resort to open dumping of refuse. The common arrangement, in the very few urban communities where a system is in place, is for waste management authorities to collect refuse from households and public containers. Unfortunately, the operation of the waste management authorities is inefficient and ineffective as evidenced by mounds of decomposing rubbish that is a part of the regular landscape of many of the urban areas.

On the whole, solid waste disposal creates environmental problems in two main ways. First, much of it is not collected in major cities, and the rate of waste collection is generally between 30 – 50%. The remainder is usually burned or dumped haphazardly in illegal landfills or streets, where it creates health hazards and block drains, contributing to urban flooding. Secondly, because of the inability to sort waste at source, household and industrial wastes, including toxic ones, are often handled together, leading to soil and groundwater pollution (UNEP, 2000). In view of the mass amount of waste in many urban centres of Nigeria, Nigeria cities have been described as some of the dirtiest, the most unsanitary, and the least aesthetically pleasing in the world (Mabogunje, 1996).

The situation is compounded by the following:

- Unplanned sitting of waste dumps;



- Preponderance of non-biodegradable materials such as plastic bags and containers in waste materials;
- Rampant sewage leakages;
- Increasing dumping of e-waste (outdated computers and ICT equipment) and medical waste in the country.

### ***National Efforts***

Efforts have been made by the Nigerian government to tackling the problem of waste management. Some Institutional and legal frameworks have been put in place to enhance effective waste management. Such institutional frameworks included the establishment of the defunct FEPA in 1988, Federal Ministry of Environment in 1999 and NESREA in 2007. Regionally, the existence of the Environmental Protection Agencies in all the states and the Federal Capital Territory (FCT) was another attempt to enhance effective waste management. In terms of legal framework, several laws which promote effective waste management have been put in place.

## **2.2.12 Water Resources Management**

### ***Situation analysis***

According to State of the Environment Report (2008), the total surface water resources potential for Nigeria is 267.3 billion cubic metres while the groundwater potential is put at 51.9 billion cubic metres, giving a total of 319.2 billion cubic metres. In addition, the number of relatively large dams completed or under construction in Nigeria about 160 with a total active storage capacity of 30.7 billion cubic metres

Furthermore, over 23,000 boreholes have been sunk throughout the country, more than 50% of which is concentrated in three northern hydro-geological areas which also happen to be areas where large dams have been developed in response to water needs and challenges. These include the Chad basin area that constitutes some 20 per cent of the Nigerian land – the largest – but contributes only 3% of the mean annual yield or runoff. Wet season water surplus increases southward in line with the rainfall distribution and the dry season water deficiency increases northward as a result of the inter-play of rainfall and evapotranspiration trends over the country. Consequently, groundwater recharge is adequate in the southern wet areas, but the situation is different in the northern parts where the amount of recharge is very small and variable, usually made worse by drought incidents. Thus, over exploitation of groundwater resources has been identified in some of the northern areas such as the case of the Tagwal-EI Fadama sub-basin of Katsina-Daura area where more than 40 boreholes have been sunk.



## **National Efforts**

Although the Federal Government got involved in the management of water resources in 1976 when the Federal Ministry of Water Resources and the 11 River Basin Development Authorities (RBDAs) were created, the water supply situation in Nigeria today is unsatisfactory. For instance, the operational efficiency of the State Water Agencies (SWA) in Nigeria is unacceptably low as indicated by the monitoring indicators compiled under the National Water Rehabilitation Project (NWRP). It is estimated that only about 35% of the rural population have access to safe and reliable water supply and adequate sanitation facilities. A national analysis on housing condition and facilities conducted in 1994/95 indicated that only 24.2 % of households had access to pipe-borne water, 9.6 % to borehole water, 27.3 per cent to well water and 38.9 per cent to stream/pond. While access to safe water remains better in urban areas in 1995 (71 per cent compared to 48 per cent for rural areas), access decreased in urban areas between 1995 and 1999 but increased by 9 per cent in the rural areas within the same period (Olofin, 2008).

### **2.2.13 Wetlands**

#### **Current Situation**

Wetlands are defined by the Ramsar Convention as "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres". Thus the wetlands described include mangrove and freshwater marshes and swamps, nearshore coral reefs, sea grass beds, riverine and underground systems.

Collectively, wetlands are of considerable socio-economic and ecological values. Socio-economically, wetlands support livelihoods as bases for crop production, grazing animals, fishing, and medicinal plants among others. Ecologically, wetlands are instrumental in water storage, filtration and supply, flood control and also perform sediment, nutrient and toxin retention functions. Wetlands are also important habitats for bio-diversity.

The Convention on Wetlands came into force for Nigeria on 2 February 2001. Nigeria presently has 11 sites designated as Wetlands of international importance, with a surface area of 1,076,728 hectares. The sites are as follows:

- i. Apoi Creek Forests. 30/04/08; Bayelsa
- ii. Baturiya Wetland. 30/04/08; Kano
- iii. Dagona Sanctuary Lake. 30/04/08; Yobe; 344 ha
- iv. Foge Islands. 30/04/08; Kebbi, Niger State
- v. Lake Chad Wetlands in Nigeria. 30/04/08; Borno
- vi. Lower Kaduna-Middle Niger Floodplain. 30/04/08; Kwara, Niger State
- vii. Maladumba Lake. 30/04/08; Bauchi; 1,860 ha
- viii. Nguru Lake (and Marma Channel) complex. 02/10/00; Jigawa, Yobe



- ix. Oguta Lake. 30/04/08; Imo; 572 ha
- x. Pandam and Wase Lakes. 30/04/08; Nasarawa; 19,742 ha;
- xi. Upper Orashi Forests. 30/04/08; Rivers State; 25,165 ha

### **National Efforts**

One of the most notable national efforts is at finding a solution to the Hadejia-Nguru Wetlands by the construction of the Tiga and Challawa dams on the Hadejia River and its tributaries. The Hadejia-Nguru Wetlands is the premier Ramsar site in the country. The construction of the dams greatly altered the river's natural flow patterns and brought about adverse changes to the environment and the livelihoods of the communities along the basin. Some of the other national and international initiatives in respect of the basin include the establishment of the World Bank Agricultural Development Projects (ADPs) in early 1980s, National Fadama Development Programme (NFDP) phase 1 in the 1990s, River Basin Development Authorities (RBDAs), Hadejia-Nguru Wetlands Conservation Project (HNWCP), North East Arid Zone Development Programme (NEAZDP) and more recently the DFID-JWL project, IUCN/Water and Nature Initiative (WANI) and Lake Chad Basin Commission/GEF projects.

### **2.3 Issues and Challenges**

In the country's endeavour to utilize its environment for socio-economic development, the issues of sustainable use and conservation of natural resources to continue to meet the need of the current generation without jeopardising the chances of the future or coming generations are critical. In this regard, it is imperative to check against environmental degradation (degradation of air, land and water) and ensure that the various sectors of Nigeria's development take cognizance of the imperative to mainstream environment into their development programmes, projects and initiatives. This calls for the need to see environment as a cross-cutting development issue and ensure that our environmental resources are properly valued and accounted for in our development process.

The future economic growth of Nigeria will continue to rely on its natural resource base, including oil. Although technology will provide additional opportunities to accelerate the rapid economic growth that will drive the attainment of the goals of Vision 2020, the country will, in the short-term continue to largely depend on these resources. To this end, a number of priority environmental issues that must be properly tackled stand out. They include:

1. Sustainable management of natural resources
2. Harnessing of natural resources
3. Climate change
4. Land degradation and desertification
5. Waste management



6. Pollution
7. Environmental hazards and disasters
8. Urban decay
9. Integrated coastal management
10. Weak environmental governance
11. Inadequacy of environmental education and awareness
12. Dichotomy between environment and growth, and environment and poverty alleviation
13. Limited private sector participation in environmental management

Addressing these issues and understanding the trade-offs between present and future consumption of resources have to be carefully analyzed. This raises a number of challenges that must be overcome. The main challenges include:

### **2.3.1 Sustainable management of natural resources:**

Environment-unfriendly agricultural practices such as large-scale deforestation and land clearing, nutrient mining, excessive irrigation water supply, inappropriate use of agrochemicals and fertilizers, have resulted in alteration in vegetation cover, soil degradation, as well as distortion in drainage system, loss of biodiversity, pollution, increase incidence of disease vectors and the like in many parts of Nigeria.

Poor forestry and afforestation practices, inappropriate fishing practices and poor livestock practices are contributing to a high rate of natural resource depletion. Poor forestry and afforestation practices result in increased risk of wild fire, invasion of alien tree species, and the lowering of the surrounding water-table. Inappropriate fishing practices such as over fishing, the use of Gammalin 20 etc., explosives and jetties, result in poisoning of the marine food web and damage to the substrates, acute decline of certain species of fish, increased coastal sedimentation, downstream eutrophication etc. Uncontrolled and poor livestock practice results in overgrazing and disruption of the ecological system, soil degradation, fall in water level of aquifers, pollution of surface water bodies, invasion of alien pests and disease agents, conflicts between farmers and pastoralists; etc

In the area of water resources development, uncoordinated dam construction and the inundation of river valleys have invoked a complex range of channel responses, culminating in increased land degradation and loss of biodiversity, reduction in peak flows and water storage capacity of many reservoirs, downstream of the dam. The general failure to adopt best practices



in solid mineral development has resulted in aggravated environmental problem, in particular deforestation and general land degradation as well as pollution

Problems with energy development and consumption result from oil spills, gas flaring and deforestation. Nigeria continues to suffer the effects of oil spills, as well as air pollution from the flaring of gas which occurs during the exploitation of oil. The indoor air pollution from unvented bio-fuel cooking stoves is probably a major cause of respiratory illness in many parts of Nigeria. Reliance on biomass (especially in the form of charcoal) also encourages land degradation.

### **2.3.2 Environmentally Sound Technology:**

The exploitation of natural resources, consumption of energy, production processes and generation of environmental pollution, wastes and degradation depend on the types of technology adopted. Global experience also shows that all of the aforementioned features usually increase with rising rate of gross national product. However, the competitiveness of nations is now largely determined by the production and export of environmentally friendly products and services.

A very significant proportion of the technology used in the country is imported and not commonly environmentally unfriendly, yet, Nigeria's transition to sustainable development is imperative. Sustainable development can only be achieved by the decisions and actions of Nigerians on the basis of its own interests, needs and priorities including its responsibilities to the regional and wider international communities. The challenge then is to adopt and use environmentally sound technologies (ESTs), whether exogenously or endogenously developed because they will contribute significantly to productivity and the sustainability of resources through renewable-energy generation, pollution control, and waste reduction.

### **2.3.3 Climate change:**

Climate change is a challenge for four main reasons:

- i. The effects of the change are already manifesting in increasing extreme climatic events particularly storms, flooding and rising temperatures as well as altered climatic and weather regimes. These are creating many other effects such as declining productivity of rain-fed agriculture and relocation of populations with all its consequences. In the long run all the sectors of the economy could be severely impacted with huge losses including life. This would slow down the pace of development in the country as many economic activities are climate sensitive. There could be shift in the boundaries of ecological belts.
- ii. The requirement for coping with the change is enormous: basic infrastructures must work for the country to effectively adapt to the visible consequences of the change. This is estimated to be in many billions of US dollars (HBF 2008). The Stern Review on the Economics of Climate Change (2006) estimates that the amount of money needed for deforestation avoidance or prevention would be between \$5 and 10



- billion annually for all developing tropical countries with forest resources among which Nigeria is crucial. Indeed, it can be anticipated that coping with the well established change would require measures that are beyond the capacities of individuals, communities and even governments in the country.
- iii. Climate change would *not* stop in the foreseeable future even if all the known factors can be put under control. This makes it a particularly precarious phenomenon of all time for the country.
  - iv. Nigeria may become a dumping ground for environmentally unfriendly products. For example, as the US government sets emission standards, many of the Sub Urban Vans (SUV) in the country may be outlawed. Many of these could find their way into Nigeria.

#### **2.3.4 Land degradation and desertification:**

Major development and environment problems affecting many parts of the country result from a combination climatic variations and unsustainable human activities.

The major challenges faced in attempts to combat land degradation and desertification include:

- meeting the energy, water, food and other needs of the people living the affected areas, particularly in view of scarce natural resources and pervasive poverty;
- influencing the socio-cultural perception of the people concerning the root causes of drought and desertification to enable them develop appropriate adaptation strategies and coping mechanisms;
- availability of correct information on the extent and severity of land degradation and desertification;
- unpredictability of drought and determination of the impact of climate change on desertification intensity;
- limited political will to mainstream the National Action Plan (NAP) to combat desertification and mitigate the impact of persistent drought and other sustainable land management initiatives into national development programmes;
- ineffective implementation of planned initiatives in the medium-term sector strategy;
- multiplicity of agencies responsible to combat desertification and non-existence of a national coordinating body to tackle the problem in a coherent manner devoid of duplication of efforts;
- inadequate financing for sustainable land management to combat desertification;
- inappropriate management mechanisms and failure of regulatory failure;



- inadequacy of information for education, policy advocacy and planning as well as monitoring of trends and impact of the twin environmental problems of drought and desertification; and
- continued predominance of subsistence agriculture characterized by low inputs and the attendance low output that poses a serious problem of food security, as well as poor land use practices, poor land use planning and inadequate land characterization and land capability classification.

### **2.3.5 Waste management:**

Poor waste management that is prevalent in Nigeria is inimical to the sustenance of the environment as well as the overall economic development of the country. Some of the challenges of sustainable waste management in include:

- Raising the low level of awareness of the implications of waste on the health and general wellbeing of the citizens
- Strengthening waste management institutions to cope with increasing volumes of waste especially in urban areas. This will involve improvement in funding, as well as ensuring strict enforcement of laws on waste management.
- Domestication of Multilateral Agreements (MEAs) on waste already ratified by the country. Such agreements include the Basel, Stockholm, and Rotterdam Conventions.
- Controlling indiscriminate dumping of industrial wastes on land, water and air.

### **2.3.6 Pollution:**

There are three dimensions to the challenge of environmental pollution in Nigeria. First, the sources of the specific pollutants must be carefully identified through the application of appropriate technologies. The other dimension are those of acquiring the technology and developing appropriate legal framework, institutions and human capacity to bring the pollutants to acceptable levels that conform to international standards.

### **2.3.7 Environmental hazards and disasters:**

Despite their devastating impacts on many sectors of the economy and the livelihoods of the people, managing environmental hazards and disasters faces a number of challenges. They include

- Lack of comprehensive annotated checklist of existing/potential nation-wide, regional and local environmental hazards and disasters, their effects on man and mitigation/control protocols;
- Non-establishment of early warning systems for the purpose of detecting the initial effects of environmental hazards and disasters and utilizing the indicators as precursors to portray the manifestation of future full-scale EHS impacts;



- Inadequate human capacity for the effective prediction, mitigation and management of environmental hazards and disasters;
- Limited research and documentation of apparent and potential environmental hazards and disasters and their impacts on the ecosystem, human health and resources; and
- Inadequate equipment, materials and other resources to institute timely intervention measures including rescue operations, medical/social care and rehabilitation of victims.

### **2.3.8 Urban decay:**

Nigeria ranks among the most urbanized countries in the world with the rate projected to increase from 48.2% in 2005 to 56% in 2015. Perhaps the most significant characteristic of the macro-economic context of human settlements development is urban decay which manifests as slums and squatter settlements in the country's cities and towns. The pace of urbanization increase has been such that maintenance of modest environmental standards inevitably had to lag behind.

Basic services such as piped water, electricity, roads, improved sanitation and health care are typically insufficient to meet the needs of these densely populated settlements. Furthermore, these areas are in a state of urban squalor and over-crowdedness characterized by decrepit structures, poor sanitary conditions, over-crowding, under-provision of amenities and general deterioration of the urban environment. The functionality of most urban areas is thus reduced in addition to exerting adverse impacts on households, macro-economic performance and social well-being. This situation poses a major challenge to economic growth and sustainable development.

### **2.3.9 Integrated coastal management:**

Nigeria's coastal region suffers degradation from diverse of human activities, particularly oil exploration and exploitation, agricultural and industrial development. Attempts to address critical environmental problems have been mainly piece meal. The main challenge for the sustainable management of the coastal and marine environment is to put in place an integrated approach that will address the issues.

### **2.3.10 Weak environmental governance:**

Environmental governance is the sum of organizations, policy instruments, financing mechanisms, rules, procedures and norms that regulate the processes of environmental protection. It is about how decisions are being made, who is responsible, how they carry out their mandate, and how they are accountable.

Although Nigeria has been a party to a number of international high-powered gatherings, agreements and commitments, little progress has been achieved in improving the environment and in pursuing sustainable development. In general, environmental trends continue to be



negative and the promise of significant financial resources to address the challenges has not materialized. Key among the reasons is weak and fragmented environmental governance. Many of the institutions dealing with environmental issues adopt sectoral approaches. This has led to a number of overlapping functions that are usually conflicting. The institutions are generally weak, under-funded and ineffective in their core functions. Above all, there is limited coordination of their activities. They need to be strengthened with renewed mandates and improved funding for an effective and functional environmental governance structure in the country.

#### **2.3.11 Inadequacy of environmental education and awareness:**

Nigerians are poorly aware of their environment and the damages being done to it through various activities like bush burning, littering/open dumping of human waste, polluting rivers with sewage among others. Also the changing climatic patterns and their increasingly grievous consequences are little appreciated. Moreover, there is no established environmental protocol or information system for Government Executives, parents, teachers and the youth, to enable them access environmental information. The current provisions in national educational curricular, as well as R&D programmes are inadequate in providing environmental awareness. In addition, there is the challenge weak environmental legislation and enforcement to coordinate environmental planning and action.

#### **2.3.12 Dichotomy between environment and growth, and environment and poverty alleviation:**

Environmental issues and concerns are lowly rated in national priorities. The fact, therefore, is that over time environmental degradation and intractable poverty have become more complex. Alleviating poverty and protecting the environment for sustainable development is not only necessary but also imperative.. For sustainability, there is the need to maintain balance between (i) maintaining a constant natural capital stock and environmental “sink” capacity and (ii) improving the quality of life through poverty alleviation.

#### **2.3.13 Limited private sector participation in environmental management:**

A prosperous economy depends on a well-defined and functional market. But for environmental resources, the market forces are not functioning well and this is one of the reasons for environmental degradation. The private sector as a major player in the market forces must therefore be adequately involved in environmental management.

Factories for instance, normally release their effluents into the environment (e.g. streams used for bathing, drinking or fishing); thereby reducing the quality of the environment. These effects do not enter into the private calculations of the firms. There is therefore a need to improve the level of private sector participation in environmental management to take economic responsibilities for damages done to the environment. This would mean establishing a framework for proper environmental valuation of the activities of the private sector. The cost of



environmental mitigation needs to be incorporated into the capital outlay as part of the Corporate Social Responsibility (CSR) of every private establishment.

## 2.4 Opportunities

The management of the environment for rapid economic development to make the country one of the 20 largest economies in the world provides it a number of “win-win” opportunities. These include:

1. Green jobs and carbon trading
2. Waste to wealth
3. Use and conservation of natural resources.
4. Best management practices
5. Development of ecotourism
6. Wetlands management
7. Innovative technological development for natural products
8. Industrialization, trade and investment opportunities
9. Foreign exchange earnings through export
10. Employment of environment advocacy groups
11. Research and development
12. Engagement of development partners and technological transfer
13. Urban renewal
14. Establishment of Environmental Information System
15. Coordinated and participatory approach to environmental management Nigeria
16. Integrated ecosystem management

### 2.4.1 Green jobs and carbon trading:

To mitigate and adapt to the climate change, attention would have to shift to technologies and practices that are ‘clean’ and environmentally friendly particularly with respect to energy sources. In this way new jobs would be created in both the public and private sectors. CDM projects such as generating energy from renewable sources like biomass and solar as well as the use of efficient stoves would attract more investments which would create jobs. Already, many young people are involved in provision of solar panels at the small scale.

Trees are important in the environment for many life-support processes. As the awareness of their significance in addressing climate change becomes more appreciated, more and more hectares of land in the country would be grown to trees creating jobs in the forestry sector.

### 2.4.2 Waste to wealth:

Effective waste management could provide opportunities of turning waste to wealth. This is in the sense that waste management will not only be a source of revenue, but will also be utilized



as raw materials for organic fertilizers and biogas domestic. Further more, waste could also be utilized for generating carbon credits.

#### **2.4.3 Use and conservation of natural resources:**

Efficient management of natural resources is an essential component of sustainable development and a stable, secure and prosperous society. Rural populations in several parts of the country retain a basic reliance on natural resources that directly supply a wide range of their needs and often display a remarkable knowledge of these resources. The sustainable use of the resources would make substantial contributions towards adaptation to climate change, and protection of watersheds. Judicious and coordinated harness of wild and domesticated biodiversity will supply food, medicines and wealth to the population. Similarly, if the varied energy sources is properly harnessed, a steady supply of electricity can be guaranteed. Putting an end to gas flaring has significant environmental and economic benefits.

#### **2.4.4 Best management practices:**

Best practices are successful development management initiatives which (i) have a demonstrable and tangible impact on improving people's quality of life, (ii) result from effective partnership between the public, private and civic sectors of society, and (iii) are socially, culturally, economically and environmentally sustainable. They are usually promoted and used as a means of (a) improving public policy based on what works; (b) raising awareness of decision-makers at all levels and of the public of potential solutions to common social, economic and environmental problems; and (c) sharing and transferring knowledge, expertise and experience through networking and learning. In the promotion of environmental sustainability for Vision 2020, the documentation and dissemination of environment "best practices" that are innovative or creative, replicable, sustainable, relevant, participatory and with impact will contribute to the promotion of sustainable development of Nigeria, especially in this era of "green economy".

#### **2.4.5 Development of ecotourism:**

With such a large land mass, which stretches from the Sahel to the Atlantic coast, and harbours diverse people and cultures, Nigeria has the potential to develop as a significant tourist destination. The country has many natural and man-made attractions, potentially large domestic markets, access to primary foreign markets, and a small, but expanding tourism services sector, that should form the basis of a viable tourism industry. However, many areas of the tourism resource base are both fragile and irreplaceable. This calls for mainstreaming of ecological sustainability in the tourism industry. The pursuit of ecotourism will provide a good opportunity for the tourism sector in Vision 2020 to also encompass the principles of economic and socio-cultural sustainability. Economic sustainability will ensure that the tourism industry is economically efficient and that resources are sustainably managed. Social and cultural sustainability will ensure that the development of the sector increases people's



control over their lives, is compatible with the culture and values of people affected by it, and maintains and strengthens community identity.

#### **2.4.6 Wetland management:**

A number of opportunities exist in efforts to sustainably manage wetlands and waste in the country. They include:

- Creation of a wetland mitigation bank to mitigate impacts from any activity. Credits generated and used by the bank sponsor or sold to another party can be used to offset impacts to wetlands that occur in other locations.
- Innovative wetland restoration through which sustainable production of non-timber products can be grown. .
- Converting degraded land in the inland valleys and watersheds to farm lands.
- Sustainable creation of wetlands in coastal areas to support small and medium enterprises.
- Increasing Ramsar site to provide opportunities for ecotourism and international cooperation for the wise use of wetlands.
- Developing new techniques for managing wetlands.
- Using constructed wetlands for waste water treatment.
- Using constructed wetlands to provide ground water recharge.
- Reducing the effect of flooding along rivers and streams through eco-engineering practices.
- Conservation and restoration of large riparian corridors, floodplains and mangroves to serve as nursery reservoirs.
- Development of indigenous biotechnology that can be applied in the restoration of wastelands.
- Using degraded or waste lands to grow bio-energy products.
- Integration of the National Wetland Policy with other strategic and planning processes.

#### **2.4.7 Innovative technological development from natural products:**

The country's natural resources have large potentials for propelling development. The main challenge is to develop appropriate technologies to convert them into valuable finished products.



#### **2.4.8 Industrialization, trade and investment opportunities:**

Nigeria still has a number of globally significant biological resources that can be transformed into products, which could form the basis for some industrial expansion.. This provides a good opportunity for the private sector to partner with government to explore the trade and investment potentials.

#### **2.4.9 Foreign exchange earning through exports:**

In the context of carbon trading, sustainable management of natural resources, particularly the forest provides a good opportunity to earn foreign exchange.

#### **2.4.10 Facilitating the emergence of environment advocacy organizations:**

Non-governmental organizations (NGOs) have been active in keeping environmental issues in the front burner of public discourse. With good political will, a well-formulated integrated approach to sustainable management of the environment will include building partnerships with NGOs, and using them as environment advocacy groups.

#### **2.4.11 Enhanced Research and Development (R&D):**

Sustainable environmental management would trigger off the following opportunities that could accelerate the rate of research for development in the country:

- Capacity building and training to produce personnel specialised in environmental management.
- The development of generic methodologies for addressing environmental problems.
- The development of indigenous technologies and domestication of conventional ones.
- The development of a practical and cost effective Environmental Management Plan and veritable implementation strategies.
- The development of the knowledge base necessary to engineer stable management schemes for environmental problems.
- The development of appropriate Environmental Training Manual.
- Encouragement of Participatory Research and Development where other stakeholders contribute to the process.

#### **2.4.12 Engagement of development partners for technology transfer:**

Nigeria can take advantage of international opportunities to complement her efforts in pollution control. This can take the form of bilateral agreements on technology transfer for pollution management. A number of countries have developed pollution control technologies from which Nigeria can domesticate. The bilateral agreement could involve staff training exchange programmes and cooperation to develop technologies to control specific pollutants.



#### **2.4.13 Urban renewal:**

The country is urbanizing at a very rapid rate, the consequence of which is the emergence of urban slums and associated environmental problems. Promoting urban environmental sustainability in the implementation of Vision 2020 provides a good opportunity to implement an urban renewal programme for sustainable economic development.

#### **2.4.14 Establishment of Environmental Information System:**

A major problem in evaluating the environment of the country is the paucity of relevant data. The recognition that environmental sustainability is critical to the attainment of the goals of Vision 2020 provides a good opportunity to put in place a functional environmental information system, which is imperative for the proper monitoring of and reporting on the state of the country's environment.

#### **2.4.15 Coordinated and participatory approach to environmental management:**

Environmental management remains largely sectoral. This creates overlapping of function and duplication of efforts with little achievement. There is a need to streamline environmental management concerns in the country.

#### **2.4.16 Integrated Ecosystem Management:**

Sustainable management of the environment requires an integrated approach rather than the piecemeal initiatives that are currently the norm. Adopting an integrated ecosystem management would provide a strategic way to handle environmental challenges in a more coherent manner. The adoption of this approach would mean seeing the various parameters of the environment as interrelated.

### **2.5 Key Success Factors**

The following factors are critical to promoting of environmental sustainability for achieving the goals of Vision 20:2020:

1. Environmental awareness and education
2. Participatory involvement of stakeholders in decisions.
3. Integrated approach to environmental management
4. Policy consistency and political will
5. Adequate funding
6. Effective institutional coordination
7. Implementation of Multilateral Environmental Agreements (MEAs)
8. Information and knowledge sharing
9. Development of environmental friendly infrastructure
10. Reinforcement and promotion of indigenous knowledge.



### **2.5.1 Environmental awareness and education:**

Given the world's increasing technological sophistication and the close interaction between technological progress and environmental concerns, there is a need to develop an environmentally literate citizenry. Formal and informal environmental education would be effective means to involve creating appropriate awareness of critical environmental issues.

### **2.5.2 Participatory involvement of stakeholders in decisions-making:**

Irrespective of socio-economic status, everyone depends on the environment for survival. Thus, ensuring environmental sustainability in the development process of the country requires that all stakeholders be involved in making decisions about the environment. This will be critical in achieving the goals of Vision 2020.

### **2.5.3 Integrated approach:**

The current approach to environmental management in Nigeria is largely sectoral. The integrative nature of the environment requires that the imperative of multi-sectoral approach is given a priority attention to ensure the sustainable use and conservation of the country's natural resources for meaningful socio-economic development.

### **2.5.4 Policy consistency and political will:**

Frequent policy shifts and limited or lack of political will are some of the problems that contribute to environmental degradation in the country. Thus policy consistency for the sustainable use and conservation of the natural resources of Nigeria, as well as enhanced political will to make environmental concerns a national development priority are critical for the success of ensuring environmental sustainability in the implementation of Vision 2020.

### **2.5.5 Adequate Funding:**

Adequate funding of environmental programmes and projects is critical to attaining sustainable development. In the face of competition for funding among different development needs and initiatives, funding for environmental management is usually at a disadvantage. Thus, Nigeria needs to put in place a coherent and explicit resource mobilization strategy for environmental management. In addition to the Ecological Fund additional sources of funding such as the establishment of an environment endowment fund and taxation should be explored. Building Public-Private Partnerships (PPP) and collaborating with development partners should also be explored towards mobilizing resources for environmental management.

### **2.5.6 Effective institutional coordination:**

The involvement of several institutions in environmental management has resulted in overlapping functions. Also, these institutions are weak and poorly funded. A key success factor for ensuring a safe and healthy environment the context of Vision 2020 will be the development and adequate funding and coordination environmental management activities in the country.



### **2.5.7 Implementation of MEAs:**

Nigeria is a signatory to many Multi-lateral Environmental Agreements (MEAs) and Conventions. Some of these are (i) Convention on biological Diversity, (ii) Protocol on Biosafety to the Biodiversity Convention (the *Cartagena Protocol*), (iii) Framework Convention on Climate Change (UNFCCC); (iv) Protocol to the UNFCCC; (v) Convention to Combat Desertification, (vi) Convention for the Protection of the Ozone Layer (1985). Effective implementation of the MEAs will provide a good opportunity for Nigeria to meet her international environmental obligations, and ensure environmental sustainability in her development process towards achieving the goals of Vision 2020. This would require increasing national awareness about the MEAs, mainstreaming them into national development plans and strategies, ensuring multi-stakeholders involvement in their implementation, building capacity needs, and ensuring adequate financing.

### **2.5.8 Information and knowledge sharing:**

Information and communication and technology (ICT), has turned the world into a global village. Real time information about the state of the environment can readily be documented. Information and knowledge sharing about best environmental practices for sustainable development is a success factor in the national effort to mainstream environmental sustainability into Vision 2020. This requires that the country develops systems for environmental information sharing and knowledge networking for sustainability, such as the Global System for Sustainable Development (GSSD). GSSD is an adaptive, interactive system for knowledge networking, knowledge management, and knowledge sharing for use in conjunction with internet resources to (i) define the dimensions and dilemmas of changing from current policies and strategies based on imperatives of growth, (ii) identify policies and strategies that facilitate social and environmental sustainability, and (iii) track the range of policy responses nationally and internationally.

### **2.5.9 Development of environment-friendly infrastructure:**

In the pursuit of infrastructural development that will be required for the realization of the goals of Vision 2020, adequate consideration must be given to the development of infrastructure that will not further damage the environment.

### **2.5.10 Reinforcement and promotion of indigenous knowledge:**

Truly sustainable systems are known to survive with minimum support from outside. Despite the fact that most environmental problems revolve around human misuse of the land resources, it is equally the case that most rural communities possess or have generated a wealth of knowledge, based on the understanding of their environment, on the conservation and sustainable use of their resources. Such indigenous knowledge that is often ignored, together with local organizations, could provide the bases for participatory approaches to development that is generally agreed is both cost-effective and sustainable. A key success factor therefore is



ensuring that development plans, programmes and projects are built on what the people already know and practice.

Integrating indigenous knowledge and practices that are environmentally sustainable into natural resources management for poverty reduction will (a) provide possibility for testing/assessing/understanding traditional natural resource management practices before introducing new techniques; (b) adapting rather than doing away with indigenous knowledge and finding alternatives to supplement the decrease in traditional outputs; (c) providing space/time/funds to promote indigenous knowledge of natural resource management practices and make the public and government aware of the sustainability of indigenous resource management; and (d) addressing local natural resource management needs and interests as identified by local people.



### 3 STRATEGIES

It is important to be fully aware of the severity and complexity of the country's environmental situation in planning sustainable use of environmental resources. The rapid deterioration of the nation's environmental quality and depletion of its natural resources are threatening to lives. Protecting the environment is the foundation for national development. This demands that environmental resources are sustainably utilized. There should therefore be a shift in the usual approach to environmental issues. In particular, it is imperative to transit from (a) a focus on socio-economic growth to environment and socio-economic development; and (b) from the primary use of administrative methods of environmental management to an integrative administrative system.

To address the worsening environmental conditions in the country, it is crucial to pursue a visionary approach that would ensure a sustainable environment for national development. It is also imperative to implement actions and initiatives that will promote the sustainability of the country's environmental resources. Sustainable use of natural resources and environmental protection must be given higher priority in the drive for national socio-economic growth. This section presents the Environment Vision of development for Nigeria. It also highlights the environment goals, objectives, strategies and actions/initiatives that would enable the country upscale and sustain its economy to one of the largest 20 economies in the world within the framework of environmental sustainability.

#### 3.1 Vision and Goals

The following environment vision is informed by the principle of sustainable development and the need for equity in access to the benefits of a clean environment. The realization of the vision is focused on seven key strategic thrusts and eleven goals.

##### Vision

The vision for the environment thematic sector is ***“a healthy environment for sustainable socio-economic development”***.

##### Objectives, Goals, Strategies and Initiatives

The main strategic thrusts for the realisation of the vision are:

1. Sustainable use and conservation of natural resources
2. Climate Change
3. Land degradation and desertification
4. Pollution and waste management
5. Environmental hazards



6. Environmental awareness and education
7. Environmental governance

For each of the strategic thrusts, the **objectives, goals, strategies and initiatives** are given in Table 3.



**Table 3.1: Vision, Objectives, Goals, Strategies and Initiatives for the Environment and Sustainable Development Sector of Vision 2020**

**VISION: “A healthy environment for sustainable socio-economic development”.**

Focal Area	Objectives	Goals	Strategies	Initiatives
Sustainable Use and Conservation of Natural Resources	To prevent further loss of biodiversity, and restore already degraded areas as well as protect ecologically sensitive sites	Increase forest cover from the present 6% to at least 12% of the landmass by 2015 and 15% by 2020	Implementing massive afforestation and reforestation programmes.	Increase forest reserves from the present 6% to at least 12% of the landmass by 2015 and 15% by 2020
				Establish in every State at least additional 500 hectares of forest Plantation by 2015 and 1000 hectares by 2020.
				Establish at least 1 million seedlings plant nurseries per state by 2015 and 2 million each by 2020 in the all states on an annual basis.
				Monitor land cover change by producing national land use/land cover map at a scale of 1:100,000 by 2015 and update it by 2020.
		Promoting agro forestry initiatives and community woodlots.	Identify and provide economic incentive (e.g. giving seedlings free of charge) to farmers and restore degraded agricultural lands for woodlot establishment and agroforestry.	
		Conducting an evaluation of all wetlands in accordance with Ramsar criteria.	Inventorise and classify all wetlands by 2015 for drinking water wildlife conservation and ecotourism.	
		Establish an integrated coastal zone management system	Developing and implementing an Integrated Coastal Area/Plan	Review the Integrated Coastal Zone Management (ICZM) Plan of Gulf of Guinea and domesticate it for Nigeria in terms of an Integrated Coastal Area Management Plan.
	Develop and implement a comprehensive mangrove restoration and management Plan.			



Focal Area	Objectives	Goals	Strategies	Initiatives
				Inventorize and develop a programme to remove 50% of invasive species by 2015 and complete by 2020
				Develop and implement an integrated Information Management System for enhancing the effectiveness of the ICZM
				Develop at least 1 Marine Protected Areas (MPA) in each littoral state by 2015
				Establish common approaches, methodologies, guidelines and best practices for the sustainable development of coastal and marine environment.
				Restore at least 60,000 hectares of oil-degraded and/ or alien species-invaded mangroves by 2015 and 130,000 hectares by 2020.
				Produce at least 1 million mangrove seedlings per littoral state per year by 2020.
		Strengthen the Protection of 8 national Parks and 60 Biodiversity Hotspots including Ramsar sites	Conducting an evaluation of all wetlands in accordance with Ramsar criteria.	Protect all Wildlife in the Parks.
			Developing an integrated Information Management System for enhancing the effectiveness of the ICZM	Inventorize and classify by 2015 all wetlands within the country for wildlife conservation, pastoralism, and tourism development
			Restoring at least 60,000	Develop at least 1 Marine Protected Areas (MPA) in each littoral state by 2015.
		Establish common approaches, methodologies, guidelines and best practices		
Produce and plant at least 1 million mangrove seedlings per				



Focal Area	Objectives	Goals	Strategies	Initiatives
			hectares of oil-degraded and/or alien species-invaded mangroves by 2015 and 130,000 hectares by 2020.	littoral state per year by 2020.
	To harness and sustain natural resource use	Develop the platform and enabling environment for sustainable use of natural resources	Implementing the National Biodiversity Action Plan by 2020	Develop at least 5 SMEs per local government by 2015 in the areas of essential oils, medicinal plants, natural dyes, fibres, resins, gums, tropical fruits, nut and organic products.
Develop the capacity of local communities to wisely harness and process Non-Timber Forest Products (NTFPs) and other natural resources for their sustainable e livelihoods				
Identify and protect natural resources for ecotourism development				
Strengthen the capacity of relevant institutions				
			Adopting environmental accounting procedure for incorporating the cost of externalities into the capital outlay of the private sector.	Initiate by 2012, an inventory and evaluation of economically important bio-resources and complete it by 2020.
				Improve on the implementation of all regulations as a matter of urgency (e.g. Polluter pay principle, EIA Act, etc.) relevant for sustainable use of natural resources
Climate Change	To reduce the impact of climate change on socio-economic development processes.	Enhance the capacity of Nigerians to adapt to climate change.	Capacity building and/or strengthening of relevant institutions at all levels (Federal, State and Local).	Strengthen the capacity of the Special Climate Change Unit and/or Climate Change Agency, as well as other line ministries to effectively carry out their functions regarding climate change response, including CDM
				Establish Climate Change offices in all the States and LGA Offices
				Establish procedures for CDM projects, and generate at least 50 CDM projects by 2020.



Focal Area	Objectives	Goals	Strategies	Initiatives
			Promoting synergy between climate change response and national development.	<p>Mainstream climate change issues into sustainable development policies.</p> <p>Formulate and implement programmes, projects and actions in various sectors (e.g. agriculture, biodiversity, forestry, livestock management, water resources management, etc.) that will offset the vulnerability of Nigeria to climate change and facilitate adaptation to it.</p>
			Awareness creation and community mobilization	<p>Develop and implement strategy to accelerate the process of effective education, training, awareness and capacity building to speed up national climate change response.</p> <p>Empower local people through increased awareness of the impacts of climate change and provision of access to scientific information and appropriate adaptation technologies.</p>
			Ensuring adequate funding for climate change initiatives from national and international sources.	<p>Develop and implement strategies to identify and effectively tap into Climate Change Funds within the UNFCCC</p> <p>Promote and develop an investment friendly environment to attract foreign partners to invest in climate change or green economy related climate change.</p> <p>Promote the adoption of environment friendly technologies in energy (e.g. renewable energy) and other sectors small-scale enterprises that help respond to climate change e.g. efficient wood stoves.</p>
			Supporting research in adaptive capacity building	<p>Scope the nation's potentials for CDM and locate viable investors.</p> <p>Develop and implement a National Action Plan on Climate Change and a National Adaptation Plan of Action (NAPA).</p>



Focal Area	Objectives	Goals	Strategies	Initiatives
				Support research and development (R&D) in climatic change adaption and establish a database of climate change related research, development and demonstration projects.
				Support and facilitate research into the development and adoption of locally available renewable energy sources.
	To make Nigeria a visible actor in global climate change response.	Maximize Nigeria's potential to benefit from climate change adaptation and/or mitigation by appropriate international negotiation positioning.	Intensifying the implementation of climate change Conventions and other relevant MEAs	Maintain a proactive and appropriate participation in UNFCCC and related meetings.
				Develop and regularly review national positions on climate change and Earth Negotiations.
Pollution Control and Waste Management	To reduce the level of environmental pollution to acceptable international standards	Reduce environmental pollution-related health risks by at least 50% by 2020.	Strengthening pollution control standards and improving the coordination of their implementation	Support biennial regional meetings in climate change response and Nigeria's participation in all negotiations.
				Build evaluation procedures in various sectoral activities
				Develop an inventory of major environmental pollutants, techniques and technologies for pollution monitoring and their effects on health by 2015
				Develop a national Pollution Standards Index (PSI) for air, water and soil
				Establish pollution monitoring stations across the country. (Establish 36 well equipped pollution monitoring stations in all state capitals and FCT by 2015)
				Review pollution guidelines and standards for manufacturing



Focal Area	Objectives	Goals	Strategies	Initiatives
				industries and automobiles (including outboard engines and motorcycles), electric generating sets and aircraft using the PSI as the baseline.
				Undertake massive retrofitting of automobiles that are older than eight years
				Promote research and development of indigenous pollution control technologies.
				Legislate and enforce laws governing long haulage of hazardous products.
				Build capacity through training and retraining of pollution monitoring personnel.
				Review environmental impact assessment guidelines that are related to environmental pollution control by 2012
				Rigorously enforce the environmental impact assessment (EIA) law
				Update the techniques and technologies for the enforcement of the national environmental standards.
			Attaining full compliance with pollution control standards in industries, automobiles, aircrafts and electric generating plants	Retrofit old and build new treatment facilities in all major industrial estates.
				Enforce the new national pollution guidelines and standards by 2012.
				Develop and maintain a sound data base on the compliance status of industries, automobiles (including outboard engines and motorcycles), electric generating sets and aircraft etc. by 2015).



Focal Area	Objectives	Goals	Strategies	Initiatives
				Introduce attractive incentives such as tax rebates for industries that meet pollution control standards.
				Provide legal and financial support base for environmental conservation/advocacy groups to thrive
				Re-introduce regular sanitary inspection of residences and public and private work places.
			Eliminating gas flaring and incidences of oil spillage	Put an immediate ban on gas flaring and enforce full compliance
				Remediate and restore all the sites that have been impacted by oil spills by 2015.
				Strengthen the capacity of the institutions such as NOSDRA and NEMA responsible for surveillance and control of oil spill, pipeline vandalisation.
To secure a clean environment through appropriate waste management	Have clean urban centres by 2020	Evolving a clean environment where waste is effectively managed and landscape beautified on a sustainable basis.	Immediate cleaning up all the garbage heaps that litter the urban centres by 2012.	
			Develop and implement an integrated sustainable waste management system by 2015 major cities.	
			Develop and implement a national strategy for urban landscaping and beautification.	
			Modernize sewage system in major urban centres and including state capitals by 2020.	
Environmental Hazards	To reduce the occurrence and impact of environmental hazards and disasters	Reduce loses and impacts due to floods, erosion, drought, etc. by at	Improving institutional legal and regulatory framework as well as the capacity of communities to cope with	Domesticate both the Hyogo Framework for Disaster Risk Reduction (2005-2015) and African Regional Strategy for Disaster Risk Reduction by 2010.



Focal Area	Objectives	Goals	Strategies	Initiatives
		least 50% by 2020	disasters.	<p></p> <p>Review the National Disaster Response Plan (NDRP) and enact legislation to support it by 2012.</p> <p>Enact legislation to support the functionality of the National Platform for Disaster Reduction, and replicate it at state and local government levels by 2015.</p> <p>Mainstream disaster risk reduction (DRR) into development planning policies, programmes and plans by 2012.</p> <p>Establish functional emergency management committees in all local government areas by 2012.</p> <p>Strengthen the capacity of National Emergency Management Agency and other relevant agencies to better respond to environmental hazards and disasters.</p>
			Hazard Vulnerability Mapping	<p>Replicate the Pilot Project on Comprehensive Assessment of Disaster Risk Reduction Capacity by 2012.</p> <p>Map the high risk areas prone to erosion, flood and rainstorm among others 2016.</p>
			Promoting disaster risk management including risk transfer mechanisms	<p>Strict enforcement of the policy on compulsory comprehensive insurance cover for all buildings and homes by 2012.</p> <p>Develop appropriate infrastructure for controlling environmental hazards.</p> <p>Develop DRR Plans for major cities and towns by 2020.</p>



Focal Area	Objectives	Goals	Strategies	Initiatives
				Establish the National Catastrophe/Risk Insurance Pool to facilitate disaster risk redistribution by 2015.
			Developing multi-hazards early warning systems.	Strengthen the capacity of the Nigerian Meteorological Agency, the River Basin Authorities and the Hydrological Services for real time data gathering, forecasting and dissemination in respect of major environmental hazards by 2012.
				Develop and adopt a comprehensive early warning system for disaster risk reduction by 2015.
				Resuscitate existing seismographic stations and seismological centers for monitoring land movement should be resuscitated by 2015.
			Creating awareness about the devastating impact of floods, erosion and other environmental hazards and risks	Promote public education and awareness on environmental hazards and disasters as well as appropriate measures for disaster risk reduction, response and rehabilitation.
			Institutionalization of monitoring and evaluation framework	Establish a framework to ensure that all the environmental hazard management programmes and projects are monitored and evaluated
Land Degradation and Desertification	To halt land degradation, rehabilitate degraded areas, combat desertification and mitigate impacts of droughts.	Enhance national capacity to implement the National Action Plan to Combat Desertification.	Putting in place an effective institutional framework.	Strengthen the capacity of the Department of Drought and Desertification Amelioration (DDDA) in the Federal Ministry of Environment to co-ordinate activities for combating desertification. Establish desertification control offices in all the 11 frontline



Focal Area	Objectives	Goals	Strategies	Initiatives
				states and their LGAs.
				Undertake an assessment of the National Policy on Drought and Desertification and the translation of the National Drought Preparedness Strategy into project initiatives.
				Establish drought and desertification monitoring and early warning systems.
				Facilitate the establishment of a National Commission on Drought and Desertification by 2012.
		Establish at least 1500 km of green belt to slow the advance of the Sahara Desert, enhance environmental sustainability and control land degradation.	Creation of data base on the extent of land degradation and desertification by 2015.	Undertake a baseline study to quantify the extent and severity of land degradation and desertification.
				Set up models to quantify and predict future trends of land degradation and desertification processes.
				Use pilot areas for a quantitative evaluation of accelerated erosion and the effects of conservation measures in the water erosion prone areas of Nigeria.
			Promotion of awareness and active participation of communities in land management, particularly rehabilitation of degraded lands, programmes.	Develop and implement a strategy to accelerate the process of effective formal and informal education, training and awareness and capacity building to improve national response to combating desertification and ameliorating land degradation.
				Empower local people through increased dissemination of information on combating desertification and mitigating the effects of drought.
				Strengthen the capacity of the Arid Zone Research Centre to play an effective advocacy role on the socio-economic impact of desertification.



Focal Area	Objectives	Goals	Strategies	Initiatives
			Developing and implementing the national strategy for the Green Wall Sahara Initiative.	Launch and implement a massive afforestation programme for the establishment of 1500 km of green wall in the frontline states by 2015.
				Strengthen the capacities of the Departments of Forestry and/or Drought Desertification in each of the affected States to manage the green belt for environmental sustainability.
		Rehabilitate at least 20% of the degraded lands by 2015 and at least 50% by 2020 for poverty reduction and job creation.	Rehabilitation of degraded land to promote sustainable utilization of land resources.	Produce maps of areas that are prone to erosion.
				Apply modern and indigenous soil defence and restoration techniques and sustainable land management practices, including dune fixation, windbreaks, dykes, biological and agroforestry.
			Promote active involvement of communities in the practices of sustainable land management.	
Environmental Education and Awareness	To raise the level of awareness on the state of Nigeria's environment.	Increase public information, education and participation on environment among at least 50% of the population.	Adopt and implement the United Nations Decade of Education for Sustainable Development(DESD)	Develop and implement a communications strategy to create awareness about environmental management for sustainable development and DESD, particularly among the youths and the rural majority.
				Review appropriate national policies to implement ESD through an intersectoral approach
		Mainstream environmental education and research into the national education system.	Implementing innovative public environmental education programmes.	Develop and conduct public education programmes to affect attitudinal change towards environmental management.
				Infuse environmental responsibility into educational programmes in the formal and mass literacy educational system
			Create an enabling environment for effective environmental	



Focal Area	Objectives	Goals	Strategies	Initiatives
				<p>management among planners and decision-makers</p> <p>Partner with the media and NGOs in the public education programmes.</p> <p>Prepare and implement environmental curricula for capacity building at all levels of teaching including at the National Institute of Policy and Strategic Studies and in all Professional Institutes</p> <p>Legislate the use Environmental Sustainable Personnel in all the sectors of the economy.</p>
Environmental Governance	To improve the overall governance of the environment.	Achieve an integrated coordination of the implementation of national environmental policies, programmes and regulations as well as international conventions.	<p>Strengthening the capacity of institutions for enhanced coordination of environmental issues and programmes.</p> <p>Updating and enforcing all environmental laws, regulations and standards to promote environmental justice among other things.</p>	<p>Strengthen the capacity of the Federal Ministry of Environment to effectively perform the core functions of legal /policy making, law enforcement, environmental monitoring and coordination of environmental management.</p> <p>Strengthen the capacity of the National Council on Environment to ensure effective linkages among institutions responsible for environmental management in the country.</p> <p>Resuscitate the National Committee on Sustainable Development to promote a holistic approach to sustainable development issues.</p> <p>Formulate and/or review national laws, regulations, standards and policies and develop appropriate guidelines for environmental management.</p> <p>Develop a policy framework to harmonize environment-related laws and institutions, and promote the capacity for collective enforcement of environmental standards.</p> <p>Develop a policy on environmental policy</p>



Focal Area	Objectives	Goals	Strategies	Initiatives
				Update and seek accelerated passage of environmental laws that are inclusive of adequate enforcement measures.
				Strengthen the capacity of NASREA to enforce environmental laws and regulations.
			C	Identify opportunities for economic benefits to be derived from sustainable environment for various targeted groups.
				Build on/strengthen cost -benefit analyses and quantification of trade-offs in environmental assessments.
				Strengthen institutional capacities for multi-sectoral planning and strengthen linkages between institutions of planning and environmental management.
				Produce, legislate and implement a National Environment Action Plan (NEAP) and a National Sustainable Development Strategy (NSDS).
			Fulfilling the country's obligations to international conventions and frameworks for environmental protection and sustainable development.	Formulate and/or review all relevant national policies and guidelines to domesticate and guide the implementation of international Conventions by 2015.
				Strengthen negotiating capabilities through top talent development and compliance with Multilateral Environment Agreements (MEAs).
				Develop a National Policy on trans-boundary environmental issues.
				Build public-private and civil society partnerships for environmental management in general, and domestication of environmental conventions in particular.
Establish a	Improving environmental data	Design and implement a comprehensive National		



Focal Area	Objectives	Goals	Strategies	Initiatives
		functional Environmental Information Management System (EIMS).	collection, analysis and monitoring.	Environmental Information System Develop and implement an implementation monitoring plan/programme Upgrade the capacity of institutions for enhanced environmental data and information collation and analyses . Build/or strengthen capacity for environmental resource information management Establish a programme of environmental research. Produce State of the Environment Reports on biennial basis.



## 4 IMPLEMENTATION ROADMAP

### 4.1 Implementation Plan – Short Term, Medium Term and Long Term

The following table (Table 4.1) summarizes the main planning elements for the implementation of the initiatives that have been identified, taking cognizance of the need to implement initiatives on short, medium and long-term basis:

**Table 4.1: Implementation Plan for the Environment and Sustainable Development Sector of Vision 2020**

**VISION: “A healthy environment for sustainable socio-economic development”.**

Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
Sustainable Use and Conservation of Natural Resources	Implement massive afforestation and reforestation programmes.	Increase Forest reserves from the present 6% to at least 12% of the landmass by 2015 and 15% by 2020			2020	FMENV(Forestry)	State /LGA Govt (Forestry Unit)  FRIN	FGN/State/LG A/World Bank
		Establish in every State at least additional 500 hectares of forest Plantation by 2015 and 1000 hectares by 2020.			2020	FMENV(Forestry)  State/LGA(forestry Unit)	State /LGA Govt (Forestry Unit)  FRIN Community	FGN/State/LG A/World Bank/WWF



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
							Cooperatives	
		Establish at least 1 million seedlings plant Nurseries per state by 2015 and 2 million each by 2020 in the all states on an annual basis.			2020	FMENV(Forestry) State/LGA(forestry Unit)	State /LGA Govt (Forestry Unit) FRIN Community Cooperatives	FGN/State/LG A/World Bank/WWF/AP Leventis Foundation
		Monitor land cover change by producing national land use/land cover map at a scale of 1:100,000 by 2015 and update it by 2020.			2020	Fed Surveys	FMENV(Forestry) National Center for remote sensing in Jos	FGN/State/LG A/World Bank/WWF/GE F/ADB/AP Leventis Foundation etc
	Promoting agro forestry initiatives and community woodlots.	Identify and provide economic incentive (e.g. giving seedlings free of charge) to farmers and restore degraded agricultural habitats for woodlot establishment and agroforestry		2015		FMENV(Forestry/ Desertification )	FMA&WR State/LGA	FGN/State/LG A/World Bank/WWF/GE F/UNEP/ADB/ AP Leventis Foundation etc
	Conduct an evaluation of all existing wetlands in accordance with Ramsar	Inventorise and classify all wetlands by 2015 for drinking water and wildlife conservation, pastoralism, and tourism development		2015		FMENV(Wetlands)	State/LGA(Forestry Units)FMA&WR/Min of Culture and Tourism National Institute of	FGN/State/LG A/World Bank/WWF/GE F/UNEP/ADB/ AP Leventis Foundation/We



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
	criteria.						Fresh Water Research	tlands International/W TO
Developing and implementing an Integrated Coastal Area/Plan	Review the Integrated Coastal Zone Management (ICZM) Plan of Gulf of Guinea and domesticate it for Nigeria in terms of an Integrated Coastal Area Management Plan		2015			FMENV	State/LGA(ENV UNITS)/NIOMR/Ministry of Niger Delta/NDDC	FGN/State/LGA/World Bank/UNEP/ADB/AP Leventis Foundation/Wetlands International/Large Guinea Marine Ecosystem
	Develop and implement a comprehensive mangrove restoration and management Plan		2015			FMENV	State/LGA(ENV UNITS)/NIOMR/Ministry of Niger Delta/NDDC	FGN/State/LGA/Oil and Gas Companies/Ministry of Niger Delta
	Inventorize and develop a programme to remove 50% of invasive species by 2015 and complete by 2020				2020	FMENV	State/LGA(ENV UNITS)/NIFFR/NCF/	FGN(FMENV)/State(MENV)
	Develop and implement an integrated Information Management System for		2015			FGN/State	States/Min of Niger delta/FMA&WR(River	FGN/State/World Bank/ADB



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		enhancing the effectiveness of the ICZM					Basins)	
		Develop at least 1 Marine Protected Areas (MPA) in each littoral state by 2015		2015		FGN/State	States	FGN/State/World Bank/ADB
		Establish common approaches, methodologies, guidelines and best practices for the sustainable development of coastal and marine environment						
		Restore at least 60,000hectares of oil-degraded and/ or alien species-invaded mangroves by 2015 and 130,000 hectares by 2020.			2020	FMENV	State/Oil and Gas Companies	FGN/State/World Bank/ADB
	Conduct an evaluation of all existing wetlands in accordance with Ramsar	Strengthen and Protect the 8 national Parks and 60 Biodiversity Hotspots		2015		FMENV	Min of Culture and Tourism/NGO/NCF	FGN/WWF/ADB/UN_WTO



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
	criteria.	For ecotourism development						
	Fully implement the National Biodiversity Action Plan by 2020	Develop at least 5 SMEs per local government by 2015 in the areas of essential oils, medicinal plants, natural dyes, fibres, resins, gums, tropical fruits, nut and organic products.		2015		FEMNV	Min of Commerce/Min of Science and Technology/Raw Material Institute/Min of Health/State Govt	FGN/State/UN CTAD/Pharmaceutical Industries/Worldbank
		Develop the capacity of local communities to wisely harness and process Non-Timber Forest Products (NTFPs) and other natural resources for their sustainable livelihoods			2020	FMENV	State/LGA/NGO	FGN/State/UN CTAD
		Identify and protect natural resources for ecotourism development, principally through concessioning (e.g. beaches, wildlife safari, ecologies)			2020	FMEV	Ministry of Culture and Tourism,  National Tourism Board;  WTO	Federal Government, WTO, Private Sector Operators



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
	Adopt environmental accounting procedure for incorporating the cost of externalities into the capital outlay of the private sector.	Initiate by 2012, an inventory and evaluation of economically important bio-resources and complete it by 2020.			2020	FMENV	National Economic Council/Min of Finance	FGN/Worldbank/ADB
		Improve on the implementation of all regulations as a matter of urgency (e.g. Polluter pay principle, EIA Act, etc.) relevant for sustainable use of natural resources		2015		FMENV	State/LGA/	FGN/State/LGA/Worldbank/ADB
Climate Change	Capacity building and/or strengthening of relevant institutions at all levels (Federal, State and Local).	Strengthen the capacity of the Special Climate Change Unit and/or Climate Change Agency, as well as other line ministries to effectively carry out their functions regarding climate change response, including CDM	2010			Federal Ministry of Environment;	UNDP; UNFCCC	Federal Government of Nigeria; UNDP; UNFCCC
		Establish Climate Change offices in all the States and LGA Offices	2010			State Ministries of Environment	State Environmental Protection Agencies	State and Local Governments
		Develop procedures for CDM project, and generate at least 500 CDM Projects	2010 (Development)		2020 (500 CDM)	Federal Ministry of Environment	DNA; UNDP; UNFCCC	Federal Government of Nigeria;



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		by 2020.	of CDM procedures)		Projects )			UNDP; UNFCCC
	Promoting synergy between climate change and national development.	Mainstream climate change issues into sustainable development policies of Nigeria, including Vision 2020		2015		National Planning Commission	Federal Ministry of Education; UNDP;	Federal Government of Nigeria; UNDP
		Formulate and implement programmes, projects and actions in various sectors (e.g. agriculture, biodiversity, forestry, livestock management, water resources management, etc.) that will offset the economic vulnerability of Nigeria to climate change and facilitate adaptation to it.		2015		Federal Ministry of Environment ;	All line ministries; Private Sector Organizations; UNDP	Federal Government of Nigeria; Private Sector Organizations; UNDP
	Awareness creation and community mobilization	Develop and implement strategy to accelerate the process of effective education, training, awareness and capacity building to speed up national climate change response.		2015		Federal Ministry of Environment	Federal Ministries of Education, Information & Communication; Civil Society	Federal Government of Nigeria; UNDP
		Empower local people	2010			Federal Ministry of	Federal Ministries of	Federal



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		through increased awareness of the impacts of climate change and provision of access to scientific information and appropriate adaptation technologies.				Environment	Education; Information & Communication; Civil Society	Government of Nigeria; Private Sector Organizations; UNDP
	Ensuring adequate funding for Climate Change initiatives from national and international sources.	Develop and implement strategies to identify and effectively tap into Climate Change Funds within the UNFCCC	2010			Federal Ministry of Environment	DNA, UNDP, UNEP	Federal Government of Nigeria; UNDP
		Promote and develop an investment friendly environment to attract foreign partners to invest in climate change or green economy related climate change.		2015		Federal Ministry of Environment	Federal Ministries of Trade & Commerce; Industry; Culture & Tourism; UNCTAD	Federal Government of Nigeria; UNDP
		Promote the adoption of environment friendly technologies in energy (e.g. renewable energy) and other sectors small-scale enterprises that help respond to climate change		2015		Federal Ministry of Environment	Federal Ministries of Science and Technology; & Industry; Civil Society	Federal Government of Nigeria; UNDP



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		e.g. efficient wood stoves						
	Supporting research in adaptive capacity building	Scope the nation's potentials for CDM and locate viable investors.	2012			Federal Ministry of Environment	Federal Ministries of Science and Technology; & Industry; DNA; UNEP; UNDP	Federal Government of Nigeria; UNDP
		Develop and implement a National Action Plan on Climate Change and a National Adaptation Plan of Action (NAPA).	2012			Federal Ministry of Environment	Federal Ministries of Science and Technology; & Industry; DNA; UNDP; Civil Society	Federal Government of Nigeria; UNDP
		Support research and development (R&D) in climatic change adaption and establish a database of climate change related research, development and demonstration projects.		2015		Federal Ministry of Environment	Federal Ministries of Science and Technology; Industry & Education; DNA; UNEP; UNDP; Civil Society	Federal Government of Nigeria; UNDP
		Support and facilitate research into the development and adoption of locally available renewable energy sources.		2015		Federal Ministry of Environment	Federal Ministries of Science and Technology; Industry & Education; DNA; UNEP; UNDP; Civil Society	Federal Government of Nigeria; UNDP



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
	Intensifying the implementation of Climate Change Convention and other relevant MEAs	Maintain a proactive and appropriate participation in UNFCCC and related meetings	2010			Federal Ministry of Environment	DNA; UNEP; UNDP	Federal Government of Nigeria; UNDP; UNFCCC
		Develop and regularly review national positions on Climate Change and Earth Negotiations.	Continuous	Continuous	Continuous	Federal Ministry of Environment	DNA; UNEP; UNDP; Civil Society	Federal Government of Nigeria; UNDP; UNFCCC
		Support biennial regional meetings in climate change response and Nigeria's participation in all negotiations	Continuous	Continuous	Continuous	Federal Ministry of Environment	DNA; UNEP; UNDP	Federal Government of Nigeria; UNDP; UNFCCC
	Evolve an efficient M&E mechanism to monitor and manage the	Build evaluation procedures in various sectoral activities	2010			Federal Ministry of Environment	Federal Ministries of Science and Technology; Industry & Education; DNA; UNEP; UNDP; Civil	Federal Government of Nigeria; UNDP



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
	initiatives						Society	
Pollution Control and Waste Management	Strengthening pollution control standards and improve the coordination of their implementation	Develop an inventory of major environmental pollutants, techniques and technologies for pollution monitoring and their effects on health		2015		Federal Ministry of Environment	State governments	Federal and state governments
		Develop a national Pollution Standards Index (PSI) for air, water and soil	2012			Federal Ministry of Environment	Federal Ministry of Agriculture and Water Resources, Federal Ministry of Industry	Federal and state governments, UNIDO, WHO, UNDP
		Establish pollution monitoring stations across the country.		Major urban centres (2015)	All state capitals (2020)	Federal Ministry of Environment, State governments	Local governments, UNIDO, WHO	Federal Government, State governments, Local governments, UNIDO, WHO, UNDP



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		Review and update, using the new PSI as the baseline, existing pollution guidelines and standards for manufacturing industries and automobiles (including outboard engines and motorcycles), electric generating sets and aircraft, clarify areas of ambiguities and strengthen areas of weakness		2015		Federal Ministry of Environment	Federal Ministry of Industry, Federal Ministry of Justice	Federal Government
		Promote research and development of indigenous pollution control technologies.		Meeting institutional and infrastructural requirements (2015)	Generation of usable data (2020)	Federal Ministry of Environment	Federal Ministry of Science and Technology, National Universities Commission/universities	Federal government, UNIDO
		Build capacity through training and retraining of pollution monitoring personnel.				Federal Ministry of Environment	Federal Ministry of Health	Federal Government,



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
				2015				UNIDO
		Review and update environmental impact assessment guidelines that are related to environmental pollution control	2012			Federal Ministry of Environment	Federal Ministry of Works and Housing, Federal Ministry of Science and Technology	Federal Government
		Rigorously enforce the environmental impact assessment (EIA) law immediately	2010			Federal Ministry of Environment, State Governments	Federal Ministry of Justice, National Assembly	Federal and state governments
		Update the techniques and technologies for the enforcement of the national pollution control standards.		2015		Federal Ministry of Environment	Federal Ministry of Science and Technology, NUC/universities	Federal and state governments, UNIDO
	Attaining full compliance with pollution control standards in industries, automobiles, aircrafts and electric generating plants	Build new treatment facilities in all major industrial estates in major cities where none exists or expand and upgrade existing ones		2015		Federal Ministry of Environment	Federal ministries of industry, transport and justice; state governments	Federal and state governments
		Enforce the new national pollution guidelines and				Federal Ministry of	Federal Ministry of Justice, state	Federal and state



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		standards	2012			Environment	government, national assembly	governments
		Develop and maintain a sound data base on the compliance status of industries, automobiles (including outboard engines and motorcycles), electric generating sets and aircraft	2012			Federal Ministry of Environment	Federal ministries of industry and justice, state governments	Federal and state governments
		Introduce attractive incentives such as tax rebates for industries that meet pollution control standards	2012			Federal Ministry of Environment	Federal Ministry of Industry, National Assembly, Federal Ministry of Justice	Federal and state governments
		Provide legal and financial support base for environmental conservation/advocacy groups to thrive	2012			Federal Ministry of Environment	National Assembly, Federal Ministry of Justice	Federal and state governments
		Re-introduce regular sanitary inspection of human dwellings and public and				Federal Ministry of	Federal ministry of Environment, state and local	Federal and state



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		private work places immediately	2010			Health	governments, traditional/religious institutions	governments
	Eliminating the incidence of oil spillage and gas flaring	Put an immediate ban on gas flaring and enforce full compliance	2010			Federal ministry of Environment	NNPC, NDDC, Ministries of justice, transport, the Niger Delta,	Federal Government, NNPC, oil companies
		Remediate and restore all the sites that have been impacted by oil spill by 2015		50% (2015)	100% (2020)	Federal Ministry of Environment	NNPC, NDDC, Ministry of the Niger Delta,	Federal Government, NNPC, NDDC, oil companies
		Strengthen the capacity of the institutions responsible for surveillance of and control of oil spill, pipeline vandalism such as NOSDRA and NEMA	2012			Federal Ministry of environment	NOSDRA, NEMA, state governments, NDDC, NNPC, Ministry of the Niger Delta	Federal Government, NNDC, NDDC, NNPC, Ministry of Niger Delta
	Evolving a clean environment where waste is effectively managed on a sustainable basis.	Immediate cleaning up all the garbage heaps that litter the urban centres	2012			Federal ministries of environment and health,	State and local governments, traditional/religious institutions	Federal and state governments, NGOs
						Federal ministries of environment and	State and local governments, Federal	Federal, state and local



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		Develop and implement a comprehensive sustainable waste management system in major cities		2015		health	Ministry of Works and Housing, traditional/religious institutions	governments
		Modernise sewage system, first in major urban centres of the country and later in the state capitals.		Major urban centres (2015)	Other state capitals (2020)	Federal M\ministry of Environment, Federal Ministry Works and Housing	Federal and state ministries of health, works and housing, local governments	Federal and state governments, UNIDO, WHO, World Bank
		Develop and implement a comprehensive urban landscaping programme for urban beautification		2015		Federal M\ministry of Environment, Federal Ministry Works and Housing	Federal and state ministries of health, works and housing, local governments	Federal and state governments, UNIDO, WHO, World Bank
Environmental Hazards	Improving institutional , legal framework and capacity of communities	Domesticate both the Hyogo Framework for Disaster Risk Reduction (2005-2015) and African Regional Strategy for Disaster Risk Reduction	2010			National Emergency Management Agency (NEMA), Federal Ministry of Justice	National Assembly, Federal Ministry of Environment, State Emergency Management Agencies (SEMAs)	Federal Government, UNDP



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		Review the National Disaster Response Plan (NDRP) and enact legislation to support it. This legislation should compel all stakeholder members to promptly mobilize to affected areas	2010			NEMA, Federal Ministry of Justice	National Assembly, Federal Ministry of Defence, Federal Ministry of Police Affairs, Federal Ministry of Health, UNICEF and UNDP	Federal Government of Nigeria
		Enact legislation to support the National Platform for Disaster Risk Reduction, strengthen its capacity and replicate it at state and local levels				NEMA, Federal Ministry of Justice	National Assembly, SEMAs	Federal Government of Nigeria
		Mainstream disaster risk reduction (DRR) into development planning policies, programmes and plans		2012		NEMA and Federal Ministry of Environment	SEMAs, UN-ISDR,	Federal Government of Nigeria, UNDP, UK-DFID, European Union
		Establish functional emergency management committees in all local government areas	2010			NEMA, SEMAs	ALGON	State governments
		Strengthen the capacity of National Emergency		2012		NEMA, and Federal	Federal Ministry of Environment, SEMAs,	Federal Government



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		Management Agency and other relevant agencies to be able to better respond to environmental hazards				Ministry of Defense	Red Cross, Ministry of Works, Housing and Urban Development	of Nigeria, UNDP, UK-DFID, UNICEF,
	Hazard Vulnerability Mapping	Replicate the Pilot Project on Comprehensive Assessment of Disaster Risk Reduction Capacity which includes identification of vulnerable areas in all states, including Abuja and implement the recommendations			2015	NEMA	SEMAs, Federal Ministry of Environment,	Federal Government of Nigeria, UNDP, European Union, UNICEF
		Map out the high risk areas especially areas prone to erosion, flood and rainstorm among others to provide basis for comprehensive and coordinated mitigation, preparedness and response planning by 2015 and integrate the maps areas into human settlements management.			2016	NEMA, SEMAs, Federal Ministry of Works, Housing and Urban Development (Federal Surveys Department)	Federal Ministry of Transport, Federal Ministry of Science and Technology, Federal Ministry of Agriculture and Water Resources	Federal Government of Nigeria, UNDP. UN-ISDR, UNEP
	Promoting disaster risk management including risk transfer	Strict enforcement of the policy on compulsory comprehensive insurance cover for all buildings and homes with a view to		2012		NEMA, National Insurance Commission	SEMAs, Local Emergency Management Committees, National Insurance Association	Federal Government of Nigeria



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
	mechanisms	redistributing risks and reducing disaster impacts by increasing financing for post-disaster reconstruction and rehabilitation by 2012						
		Develop appropriate infrastructure for controlling environmental hazards			2015	NEMA, Federal Ministry of Environment	Federal Ministry of Works, Housing and Urban development, State Ministries of Works, SEMAs, UK-DFID, CIDA, European Union	Federal Government of Nigeria, European Union, UK-DFID, Canadian International Development Agency, UNDP
		Develop DRR Plans for major cities and towns			2020	NEMA, and State Departments responsible for urban and regional planning	Federal Ministry of Environment, Federal Ministry of Works, Housing and Urban Development, SEMAs	Federal Government of Nigeria, State governments
		Establish the National Catastrophe/Risk Insurance Pool to facilitate disaster risk redistribution			2015	NEMA, National Insurance Commission	National Assembly, National Insurance Association, Nigerian Agriculture and Rural Development Bank, Securities and Exchange	Federal Government of Nigeria, commercial banks, World Bank, UN-



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
							Commission, World Bank	ISDR, UNEP,
	Developing multi-hazards early warning system	Strengthen the capacity of the Nigerian Meteorological Agency, the River Basin Authorities and the Hydrological Services for real time data gathering, forecasting and dissemination in respect of major environmental hazards by 2012		2012		NEMA, Federal Ministry of Transport	Federal Ministry of Agriculture and Water Resources, Federal Ministry of Science and Technology	Federal Government of Nigeria, UNDP, WMO, UN-ISDR
		Develop and adopt a comprehensive early warning system for disaster risk reduction by 2015			2015		World Meteorological Organisation (WMO)	Federal Government of Nigeria, UNDP, WMO, UN-ISDR, USAID
		Resuscitate all existing seismographic stations and seismological centers for monitoring land movement			2015	Federal Ministry of Agriculture and Water Resources	Federal Ministry of Science and Technology, NEMA,	Federal Government of Nigeria
	Creating awareness about the devastating impact of floods,	Promote public education and awareness on environmental hazards and disasters as well as		2012		Federal Ministry of Environment, NEMA	SEMAs, UNDP	Federal government of Nigeria, State



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
	erosion and other environmental hazards and risks	appropriate measures for disaster risk reduction, response and rehabilitation by 2012						governments, UNDP, UN-ISDR
	Institutionalization of monitoring and evaluation framework	Establish a framework to ensure that all the environmental hazard management programmes and projects are monitored and evaluated	2010			Federal Ministry of Environment, NEMA	SEMAs	Federal government of Nigeria
Land Degradation and Desertification	Putting in place and effective and properly constituted institutional framework.	Strengthen the capacity of the Department of Drought and Desertification Amelioration (DDDA) in the Federal Ministry of Environment to co-ordinate activities for combating desertification.	2010			Federal Ministry of Environment	UNDP State Ministry in charge of Forestry GEF Federal Ministry of Agriculture FAO	Federal Government of Nigeria,  UNEP, NEPAD
		Establish desertification control offices in all the 11 frontline states and their LGAs	2010			Federal Ministry of Environment, SEPAs	State ministry in charge of Forestry, LGAs of all Frontline States	Federal Government of Nigeria,  Governments



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
								of the Frontline states
		Undertake a good assessment of the National Policy on Drought and Desertification and the translation of the National Drought Preparedness Strategy into project initiatives that can be implemented in practical terms.		2012		Federal Ministry of Environment	Federal Ministry of Justice, NESREA, NASRDA, National Remote Sensing Center, NIMET	Federal Government of Nigeria
		Establish drought and desertification monitoring and early warning systems.	2010			Federal Ministry of Environment	State Ministries in charge of Environment, NIMET, Universities/Research Institutes	Federal Government of Nigeria
		Facilitate the establishment of a National Commission on Drought and Desertification by 2010	2010			Federal Ministry of Environment	State Ministries in charge of Environment, NIMET, NASRDA, The National Assembly	Federal Government of Nigeria
	Creation of data base on the extent of land degradation and	Undertake a major baseline study to truly quantify the extent and severity of land		2011		Federal Ministry of Environment	State Ministries of Environment, Federal Surveys Department,	Federal Government of Nigeria,



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
desertification by 2015		degradation and desertification.					NASRDA	African Development Bank, ICARDA, GEF.
		Set up models to quantify and predict future trends of land degradation and desertification processes.		2012		Federal Ministry of Environment	NASRDA, National Remote Sensing Center, Research Institutes	Federal Government of Nigeria,
		Use pilot areas for a quantitative evaluation of accelerated erosion and the effects of conservation measures in the water erosion prone areas of Nigeria.		2011		Federal Ministry of Environment	Universities/Research Institutions, State Governments, Federal/States Ministries of Water Resources	Federal Government of Nigeria
Promotion of awareness and active participation of communities in land management, particularly rehabilitation of degraded land		Develop and implement a strategy to accelerate the process of effective formal and informal education, training and awareness and capacity building to improve national response to combating desertification and ameliorating land degradation.		2015		Federal Ministry of Environment	State Ministry of Environment, Federal and State Ministries of Education, and Information, UNDP	Federal Government of Nigeria, State and Local Governments



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
	programmes.	Empower local people through increased dissemination of information on combating desertification and mitigating the effects of drought.	2010			State Governments	Local Governments, NGOs and CBOs	States and Local Governments
		Strengthen the capacity of the Arid Zone Research Centre to play an effective advocacy role on the socio-economic impact of desertification	2010			Federal Government	Universities/Research Institutes, UNCCD, NIMET	Federal Government, UNDP
	Developing and implementing the National strategy for Green Wall sahara initiative.	Launch and implement a massive afforestation programme for the establishment of 1500 km of green wall in the frontline states by 2015.		2015		Federal Government of Nigeria	UNCCD, The 11 Frontline states, Local Governments, NGOs and CBOs, GEF, Universities/Research Institutes.	Federal Government of Nigeria, Private Sector
		Strengthen the capacities of the Departments of Forestry and/or Drought Desertification in each of the affected States to manage the green belt for environmental sustainability.		2015		Federal Government of Nigeria	UNCCD, The 11 DFS, Local Governments, NGOs and CBOs, Universities/Research Institutes	Federal Government of Nigeria.



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
Environmental Education and Awareness	Adopt and implement the United Nations Decade of Education for Sustainable Development(DES D)	Develop and implement a communications strategy to create awareness about environmental management for sustainable development and DESD, particularly among the youths and the rural majority.		2012		National Council on Education	Federal Ministry of Environment, UNESCO	Federal Government of Nigeria
		Review and consolidate appropriate national policies to implement ESD through an intersectoral approach so that the role of sustainable development in education systems is clear and reinforced		2012		National Research Council on Education	Federal Ministry of Environment, Federal and State Ministries of Education, UNESCO	Federal and State Governments of Nigeria
	Implementing innovative public environmental education programmes.	Develop and conduct public education programmes to affect attitudinal change towards environmental management.		2015		Federal Ministry of Environment	National Research Council on Education, UNESCO	Federal and State Governments of Nigeria
		Infuse environmental responsibility into educational programmes in the formal and mass literacy educational system			2020	National Research Council on Education	Federal Ministry of Environment, UNESCO,	Federal and State Governments of Nigeria
		Develop an enabling			2020	Federal Ministry of	National Planning	Federal and



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		environment for effective environmental management among planners and decision-makers				Environment	Commission and State Planning Commissions	State Governments in Nigeria
		Partner with the media and NGOs in the public education programmes for awareness-raising on the importance of environmental management.	Continuous	Continuous	Continuous	Federal Ministry of Environment	National Research Council on Education, UNESCO	Federal and State Governments of Nigeria
		Prepare and implement an environmental curriculum appropriate to building capacity at all levels of teaching including at the National Institute of Policy and Strategic Studies and in all Professional Institutes			2020	National Research Council on Education	Federal Ministry of Environment, UNESCO, NIPPS	Federal and State Governments of Nigeria
		Institute a legislative requirement for Environmental Sustainable Personnel in all the primary, secondary and tertiary sectors of the economy and politics		2015		Federal Ministry of Environment	National Research Council on Education, UNESCO	Federal and State Governments of Nigeria



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
Environmental Governance	Strengthening the capacity of institutions for enhanced coordination of environmental issues and programmes.	Strengthen the capacity of the Federal Ministry of Environment to effectively perform the core functions of law/policy making, law enforcement, environmental monitoring and coordination of environmental management.		2012		Federal Ministry of Environment	UNDP, UNEP, UNIDO	Federal Government, Development Partners
		Strengthen the capacity of the National Council on Environment to ensure effective linkages among institutions responsible for environmental management in the country.		2012		Federal Ministry of Environment		Federal Government, Development Partners
		Resuscitate and make functional the National Committee on Sustainable Development to promote a holistic approach to sustainable development issues.	2010			Federal Ministry of Environment		Federal Government, Development Partners
	Updating and enforcing all environmental laws, regulations and standards for	Formulate and/or review national laws, regulations, standards and policies and develop appropriate guidelines for environmental		2015		Federal Ministry of Environment	Federal/State Ministries of Justice;	Federal/State Governments, Development Partners



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
environmental justice.		management.						
		Develop a policy framework to harmonise environment-related laws and institutions, and promote the capacity for collective enforcement of environmental standards.		2012		Federal Ministry of Environment	Federal/State Ministries of Justice, National Assembly;  Nigerian Bar Association;  UNEP	Federal/State Governments , Development Partners
		Update and seek passage of environmental laws that are inclusive of adequate enforcement measures.		2015		Federal Ministry of Environment	Federal Ministry of Justice, National Assembly;  Nigerian Bar Association;  UNEP	Federal/State Governments , Development Partners
		Develop a policy on environmental justice		2012		Federal Ministry of Environment	Federal Ministry of Justice, National Assembly;  Nigerian Bar Association;  UNEP	Federal Government; Development Partners
		Strengthen the capacity of NASREA to enforce environmental laws and		2012		Federal Ministry of Environment		Federal/State Governments ,



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		regulations						Development Partners
	Mainstream environmental principles, standards and instruments into sectoral plans and legislation.	Identify opportunities for economic benefits to be derived from sustainable environment for various targeted groups.	2010			Federal Ministry of Environment	National Planning Commission; UNDP, UNEP	Federal/State Governments , Development Partners; Private Sector
		Build on/strengthen cost benefit analyses and quantification of trade-offs in environmental assessments.		2012		Federal Ministry of Environment	Academic Research Institutions	Federal/State Governments , Development Partners; Private Sector
		Strengthen institutional capacities for multi-sectoral planning and strengthen linkages between institutions of planning and environmental management.		2015		Federal Ministry of Environment	National Planning Commission	Federal/State Governments , Development Partners; Private Sector
		Produce, legislate and implement a National Environment Action Plan (NEAP) and a National	2010			Federal Ministry of Environment	Federal Ministry of Justice; National Assembly,	Federal/State Governments , Development



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		Sustainable Development Strategy (NSDS).					UNDP	Partners; Private Sector
	Fulfilling the country's obligations to international conventions and frameworks for environmental protection and sustainable development.	Formulate and/or review all relevant national policies and guidelines to domesticate and guide the implementation of international Conventions by 2015.		2015		Federal Ministry of Environment	State Ministries of Environment and/or State Environmental Agencies; NGOs	Federal/State Governments , Development Partners; Private Sector
		Strengthen negotiating capabilities through top talent development and compliance with Multilateral Environment Agreements (MEAs).	2010			Federal Ministry of Environment	Environment Agencies; Research Institutions; NGOs; UNDP and UNEP	Federal/State Governments , Development Partners; Private Sector
		Build public-private and civil society partnerships for environmental management in general, and domestication of environmental conventions in particular.			2020	Federal Ministry of Environment	NGOs, Private Sector Operators	Federal/State Governments , Development Partners; Private Sector
		Develop a policy on transboundary environmental issues	2012			Federal Ministry of Environment	Federal Ministry of Foreign Affairs	Federal Government



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
	Improving environmental data collection, analysis and monitoring.	Design and initiate establishment of a National Environmental Information System		2015		Federal Ministry of Environment	National Planning Commission (NBS), Federal Ministry of Science and Technology (NITDA); UNEP	Federal/State Governments , Development Partners; Private Sector
		Develop and implement an implementation monitoring plan/programme		2015		Federal Ministry of Environment	UNEP	Federal/State Governments , Development Partners
		Upgrade the capacity of institutions for enhanced environmental data and information coverage and application.		2015		Federal Ministry of Environment	National Planning Commission (NBS), Federal Ministry of Science and Technology (NITDA); UNDP; UNEP	Federal/State Governments , Development Partners; Private Sector
		Build/or strengthen capacity for environmental and natural resource information management		2015		Federal Ministry of Environment	State Ministries of Environment and/or State Environmental Agencies;	Federal/State Governments , Development Partners; Private Sector
		Establish a programme of		2012		Federal Ministry of	Academic Research	Federal/State



Focal Area	Strategies	Initiatives	Timeline			Implementation		Funding sources
			Short term	Medium term	Long term	Implementing Agencies	Collaborating Agencies	
		environmental research.				Environment.	Institutions	Governments , Development Partners; Private Sector
		Produce State of the Environment Reports on bi-ennial basis.	2010			Federal Ministry Environment	National Planning Commission (NBS), Fedearl Ministries and Inter-Ministerial Committee on Sustainable Development	Federal/State Governments , Development Partners; Private Sector



## 4.2 Implementation Monitoring Tool

Table 4.2 summarizes the tool that would be required to monitor the implementation of the environmental sustainability aspect of Vision 20:2020 to ensure coherence and impact.

**Table 4.2: Implementation Monitoring Tool for the Environment and Sustainable Development Sector of Vision 2020**

<b>VISION: “A healthy environment for sustainable socio-economic development”.</b>									
<b>Focal Area</b>	<b>Strategies</b>	<b>Initiatives</b>	<b>Monitoring Agency</b>	<b>Monitoring Frequency</b>	<b>KPI</b>	<b>% Completion</b>	<b>Issues</b>	<b>Risks</b>	<b>Mitigation</b>
Sustainable Use and Conservation of Natural Resources	Implement massive afforestation and reforestation programmes.	Increase Forest reserves from the present 6% to at least 12% of the landmass by 2015 and 15% by 2020	Independent /NGO/Professional bodies	Two Yearly	Percentage Forest cover	6%	Deforestation	Funding	Advocacy /Lobby
		Establish in every State at least additional 500 hectares of forest Plantation by 2015 and 1000 hectares	Independent /NGO/Professional bodies	Two Yearly	Hectareage of Forest Plantation established	0%	Deforestation	Funding	Advocacy /Lobby



		by 2020.							
		Establish at least 1 million seedlings plant Nurseries per state by 2015 and 2 million each by 2020 in the all states on an annual basis.	Independent /NGO/Professional bodies	Yearly	No of tree seedlings produced per state per year	0%	Loss of Biodiversity	Funding	Advocacy /Lobby
		Monitor land cover change by producing national land use/land cover map at a scale of 1:100,000 by 2015 and update it by 2020.	Independent /NGO/Professional bodies	Every Five Years	New Image Maps at 1:100000	50%	Landcover maps old and at large scale of 1:250000	Funding	
	Promoting agro forestry initiatives and community woodlots.	Identify and provide economic incentive (e.g. giving seedlings free of charge) to farmers and restore degraded agricultural habitats for woodlot establishment and agroforestry	Independent /NGO/Professional bodies	Yearly	Percentage hectareage of degraded land restored	0%	Lack of incentive	Funding	Advocacy
	Conduct an evaluation of all existing wetlands in accordance with Ramsar criteria.	Inventorise and classify all wetlands by 2015 for drinking water , wildlife conservation pastoralism, and	Independent /NGO/Professional bodies	Yearly	Number of wetland sites classified	5%	Loss of wetlands Degradation of	Funding	Advocacy



		tourism development					wetlands		
	Developing and implementing an Integrated Coastal Area/Plan	Review the Integrated Coastal Zone Management (ICZM) Plan of Gulf of Guinea and domesticate it for Nigeria in terms of an Integrated Coastal Area Management Plan	Govt Funded monitoring agencies (NIOMR/RS UST/Institute of Oceanography Calabar/Univ. of Uyo)	Yearly	Domesticated ICZM Action Plan document	5%	Lack of an ICZM Plan	Inability to coordinate implementing multi-agencies	Advocacy
		Develop and implement a comprehensive mangrove restoration and management Plan	Govt Funded monitoring agencies (NIOMR/RSUST/Institute of Oceanography Calabar/Univ. of Uyo)	Yearly	Hectarage of mangrove restored per State	0%	Loss of mangroves	Community upheaval	Conflict Resolution/ Advocacy
		Inventorize and develop a programme to remove 50% of invasive species by 2015 and complete	Govt Funded monitoring agencies (Professional bodies/NGOs /	Yearly	Percent of invasive species removed	0%	Loss of native species to Invasive species	Funding	Advocacy



		by 2020	Universities)						
		Develop and implement an integrated Information Management System for enhancing the effectiveness of the ICZM	Govt Funded monitoring agencies(NI OMR/  RSUST/Institute of Oceanography Calabar/University of Uyo	Yearly	Established Computer based GIS decision support system	0%	Lack of cohesive information system	Funding	Advocacy
		Establish and develop at least 1 Marine Protected Areas (MPA) in each littoral state by 2015	Govt Funded monitoring agencies(NI OMR/  RSUST/Institute of Oceanography Calabar/University of Uyo	Every 5 Years	Established MPA per Littoral State	0%	Loss of Marine Biodiversity	Funding	Advocacy
		Restore at least 60,000hectares of oil-degraded and/ or alien species-invaded mangroves by 2015 and 130,000 hectares by	Govt Funded monitoring agencies (Professional bodies/NGOs /	Yearly	Percent of invasive species removed	0%	Loss of native species to Invasive species	Funding	Advocacy



		2020.	Universities)						
		Produce at least 1 million mangrove seedlings per littoral state per year by 2020.	Independent /NGO/Professional bodies	Yearly	No of tree seedlings produced per state per year	0%	Loss of Biodiversity	Funding	Advocacy /Lobby
	Conduct an evaluation of all existing wetlands in accordance with Ramsar criteria.	Strengthen and Protect the 8 national Parks and 60 Biodiversity Hotspots  For sustainable livelihoods	Govt Funded monitoring agencies (Professional bodies/NGOs / Universities)	Yearly	Percentage of Biomass increase per year	10%	Loss of Biodiversity	Funding	
		Inventorize and classify by 2015 all wetlands within the country for wildlife conservation, pastoralism, and tourism development							
		Develop at least 1 Marine Protected Areas (MPA) in							



		each littoral state by 2015.							
	Develop an integrated Information Management System for enhancing the effectiveness of the ICZM	Establish common approaches, methodologies, guidelines and best practices							
	Restore at least 60,000 hectares of oil-degraded and/or alien species-invaded mangroves by 2015 and 130,000 hectares by 2020.	Produce and plant at least 1 million mangrove seedlings per littoral state per year by 2020.							
	Fully implement the National Biodiversity Action Plan by 2020	Develop at least 5 SMEs per local government by 2015 in the areas of essential oils, medicinal plants, natural dyes, fibres, resins, gums, tropical fruits, nut and organic products.	Independent /NGO/Professional bodies	Every Years	Number of SME per LGA per Year	0%	Unexplored economic potentials of bio-resources	Funding	Advocacy
		Develop the capacity of local communities to wisely harness and	Independent /NGO/Profes	Yearly	Number of Trained Biotrade	0%	Low Capacity of Biotrade	Funding	Advocacy



		process Non-Timber Forest Products (NTFPs) and other natural resources for their sustainable livelihoods	sional Bodies/Univer sities		entrepreneurs per LGA		Skills		
		Identify and protect natural resources for ecotourism development, principally through concessioning (e.g. beaches, wildlife safari, ecologies)	Private sector operators, WTO	Annually	Number of tourists	10%	Poor approach to ecotouris m	Funding	Advocacy
	Adopt environmental accounting procedure for incorporating the cost of externalities into the capital outlay of the private sector.	Initiate by 2012, an inventory and evaluation of economically important bio-resources and complete it by 2020.	Independent /NGO/Profes sional Bodies/Unive rsities	Yearly	Stock and value document of bio-resources per LGA	0%	Lack of valuation of bio- resources	Funding	Advocacy
		Improve on the implementation of all regulations as a matter of urgency (e.g. Polluter pay principle, EIA Act, etc.) relevant for sustainable use of natural resources	Independent /NGO/Profes sional Bodies/Unive rsities	Yearly	Number of prosecuted Polluters per Year	50%	Weak Environme ntal Governan ce	Funding	Advocacy



<b>Climate Change</b>	Capacity building and/or strengthening of relevant institutions at all levels (Federal, State and Local).	Strengthen the capacity of the Special Climate Change Unit and/or Climate Change Agency, as well as other line ministries to effectively carry out their functions regarding climate change response, including CDM	Independent Evaluation Body; Federal Ministry of Environment	Annual	Staff in climate offices skillful in Climate Change Issues	25%	Weak Capacity of staff in Climate Agencies	Lack of Fund; Change of Policy	Advocacy for Government response by Civil Society & International support
		Establish Climate Change offices in all the States and LGA Offices	Independent Evaluation Body/ Federal Min of Environment.	Annual	Functional climate offices established in States and LGAs	0	Climate offices not yet in place.	Lack of Fund; Change of Policy	Advocacy for Government response/Lobbying
		Develop procedures for CDM project, and generate at least 500 CDM Projects by 2020.	Independent Evaluation Body/ Federal Min of Environment.	Monthly	Viable CDM projects established	5%	Less than 5 CDM have been developed so far.	Poor focus on the strategy; Change of Policy	Advocacy for Government attention by Civil Society
	Promoting synergy between climate change and national development.	Mainstream climate change issues into sustainable development policies of Nigeria, including Vision 2020	Independent Evaluation Body/ Federal Ministries of Environment/ Education.	Annually	Climate consciousness in every sector	0	Climate change issues not mainstreamed.	Poor Governance; Poor monitoring	Advocacy for Government attention by Civil Society/Lobbying



		Formulate and implement programmes, projects and actions in various sectors (e.g. agriculture, biodiversity, forestry, livestock management, water resources management, etc.) that will offset the economic vulnerability of Nigeria to climate change and facilitate adaptation to it.	Independent Evaluation Body/ National Planning Commission	Monthly	New Viable socio economic development projects/programme in every State/LGA	10 %	Many existing projects do not support sustainable development	Poor funding; Poor Governance;  Poor monitoring	Advocacy for Government attention by Civil Society
	Awareness creation and community mobilization	Develop and implement strategy to accelerate the process of effective education, training, awareness and capacity building to speed up national climate change response.	Independent Evaluation Body/ Federal Ministry of Environment	Quarterly	Citizens become aware of critical climate issues	5%	Awareness of climate issues crucial to addressing them	Poor Funding; Poor Governance;  Poor monitoring	Advocacy for Government attention by Civil Society
		Empower local people through increased awareness of the impacts of climate change and provision of access	Independent Evaluation Body/ Federal Ministry Environment	Bi-annually	Citizens begin to take climate change responsive actions	0	Local people must be able to take appropriate actions	Poor Funding; Poor Governance;  Poor monitoring	Advocacy for Government attention by Civil Society

		to scientific information and appropriate adaptation technologies.					to adapt to climate change		
	Ensuring adequate funding for Climate Change initiatives from national and international sources.	Develop and implement strategies to identify and effectively tap into Climate Change Funds within the UNFCCC	Independent Evaluation Body/ Federal Ministry of Environment/ Finance	Quarterly	International funds are tapped for specific climate change activities.	0	The Country should avail itself of international funds for climate change	Poor Governance;  Low capacity to access funds	Advocacy for Government attention by Civil Society
		Promote and develop an investment friendly environment to attract foreign partners to invest in climate change response ventures.	Independent Evaluation Body/ Federal Ministries of Environment/ Commerce & Industry	Monthly	New environmentally friendly investments made by foreign investors	0	Improved investment needed to strengthen economy.	Poor Funding; Poor Governance;  Poor monitoring	Advocacy for Government attention by Civil Society
		Promote the adoption of environment friendly technologies in energy (e.g. renewable energy) and other sectors small-scale enterprises that help respond to climate change e.g. efficient	Independent Evaluation Body/ Federal Ministries of Environment/ Science & Technology	Bi-annually	Environmental friendly technologies are used in various sectors.	0	Clean technology could propel sustainable development.	Poor Funding; Poor Governance;	Advocacy for Government attention by Civil Society



		wood stoves							
	Supporting research in adaptive capacity building	Scope the nation's potentials for CDM and locate viable investors.	Independent Evaluation Body/ Federal Ministries of Environment	Annually	CDM potentials in various sectors established; Investors attracted.	0	CDM potentials are needed to attract CDM investments	Poor Funding; Poor Governance;	Advocacy for Government attention by Civil Society
		Develop and implement a National Action Plan on Climate Change and a National Adaptation Plan of Action (NAPA).	Independent Evaluation Body/ Federal Ministry of Environment	Annually	Clearly defined actions for adaptation; Implementation of Adaptation plans;	0	No Climate Action Plan exists	Poor Funding; Poor Governance;	Advocacy for Government attention by Civil Society
		Support research and development (R&D) in climatic change adaption and establish a database of climate change related research, development and demonstration projects.	Independent Evaluation Body/ Federal Ministry of Science and Technology	Annually	New specific climate change related R&D in various sectors; development of a database on R&D	15%	R&D will stimulate the development of viable climate change responses	Poor Funding; Poor Governance;	Advocacy for Government attention by Civil Society
		Support and facilitate research into the development and	Independent Evaluation Body/ Federal	Annually	Development of new clean energy	0	Local clean energy sources	Poor Funding; Poor Governance;	Advocacy for Government attention by



		adoption of locally available renewable energy sources.	Ministry of Science and Technology		sources		are needed for sustainable development		Civil Society
	Intensifying the implementation of Climate Change Convention and other relevant MEAs	Maintain a proactive and appropriate participation in UNFCCC and related meetings	Independent Evaluation Body/ Federal Ministry of Environment	Annually	Nigeria participates effectively in all climate negotiations	0	Active participation in negotiations would aid climate response	Poor Funding; Poor Governance;	Advocacy for Government attention by Civil Society
		Develop and regularly review national positions on Climate Change and Earth Negotiations.	Independent Evaluation Body/ Federal Ministry of Environment	Half-yearly	Country has clear and informed positions in climate negotiations	0	Informed position would help the nation to benefit optimally from climate negotiations	Poor Funding; Poor Governance;  Poor monitoring	Advocacy for Government attention by Civil Society
		Support biennial regional meetings in climate change response and Nigeria's participation in all negotiations	Independent Evaluation Body/ Federal Ministry of Environment	Annually	Country supports at least one regional meeting in 2 years	0	This support would strengthen local and regional response	Poor Funding; Poor Governance;  Poor monitoring	Advocacy for Government attention by Civil Society



	Evolve an efficient M&E mechanism to monitor and manage the initiatives	Build evaluation procedures in various sectoral activities	Independent Evaluation Body	Annually	Country has an efficient M&E Plan	0	M&E would help keep response on course	Poor Funding; Poor Governance;	Advocacy for Government attention by Civil Society
Pollution Control and Waste Management	Strengthening pollution control standards and improve the coordination of their implementation	Develop an inventory of major environmental pollutants, techniques and technologies for pollution monitoring and their effects on health	Independent consortium of scientists and engineers	Quarterly	Data base on (a) pollutants  (b) monitoring techniques and technologies  Reduced reported cases of environmentally-health related Effects of pollutants on health	5%	Weak pollution control standards and coordination mechanism	Poor funding  Policy instability  Lack of political will	Advocacy;  Lobbying of national assembly;  Raising public awareness about environmental issues.
		Develop a national Pollution Standards Index (PSI) for air, water and soil	Independent consortium of scientists	Quarterly	Number of pollution standards developed for pollutants	5%	Lack of comprehensive pollution standard indices	Poor funding  Weak capacity	Advocacy;  Lobbying
		Establish pollution monitoring stations	Independent consortium		Established and functional		Limited and	Poor funding	Adequate policies and



		across the country.	of scientists and engineers	Every 6 months	pollution monitoring stations	5%	rudimentary monitoring stations	Weak capacity	budget in place
		Review and update, using the new PSI as the baseline, existing pollution guidelines and standards for manufacturing industries and automobiles (including outboard engines and motorcycles), electric generating sets and aircraft, clarify areas of ambiguities and strengthen areas of weakness	Independent consortium of scientists and engineers	Every 6 months	Updated national pollution guidelines and standards	0%	Lack of up-to-date pollution guidelines and standards	Poor funding  Possible lack of cooperation from manufacturer	Adequate funding;  Enforcement of pollution control standards
		Promote research and development of indigenous pollution control technologies.	Professional bodies, e.g. Nigerian Society of Engineers, Nigerian Academy of Science	Every 6 months	Functional indigenous pollution control technologies	3%	Rudimentary indigenous pollution control technologies	Poor funding  Weak RD capacity	Adequate funding;  Advocacy
		Build capacity through training and	Nigerian Academy of Science		Number of trained and		Weak monitoring	Poor funding	Adequate funding;



		retraining of pollution monitoring personnel.	Nigerian Society of Engineers  Universities	Every 6 months	effectively engaged pollution monitoring personnel	5%	capacity of personnel	Weak capacity building policies	Political will
		Review and update environmental impact assessment guidelines that are related to environmental pollution control	Independent consortium of scientists and engineers	Quarterly	Updated environmental impact assessment guidelines in tune with pollution control	5%	Inadequate EIA guidelines	Poor funding  Weak capacity of personnel	Adequate funding;  Training for capacity enhancement
		Rigorously enforce the environmental impact assessment (EIA) law immediately	Independent consortium of scientists, engineers and lawyers	Every 6 months	Increase in number of projects executed with full compliance  Decrease in pollution level	3%	Pollution arising from weak enforcement of EIA laws	Poor funding  Weak implementation of EIA laws	Adequate funding;  Advocacy;  Political will to enforce environmental laws
		Update the techniques and technologies for the enforcement of the	Independent consortium of scientists, engineers	Every 6	Number of updated and functional		Obsolete and inadequate	Poor funding	Adequate budget;



		national environmental pollution control standards.	and lawyers	months	equipment	0%	equipment		Political will
	Attaining full compliance with pollution control standards in industries, automobiles, aircrafts and electric generating plants	Build new treatment facilities in all major industrial estates in major cities where none exists or expand and upgrade existing ones	Independent consortium of scientists, engineers and lawyers	Every 6 months	Reduction in pollution levels	3%	Inadequate facilities in some centres  Non-existence of facilities in some centres	Poor funding  Change in policy  Lack of political will	Adequate budget  Advocacy  Lobbying
		Enforce the new national pollution guidelines and standards	Independent consortium of scientists, engineers and lawyers	Quarterly	Reduction in pollution levels	0%	Poor enforcement of pollution guidelines and standards	Ineffective legal provision  Lack of political will	Political will;  Advocacy;  Lobbying
		Develop and maintain a sound data base on the					Rudimentary data generation	Inadequate funding	Adequate funding



		compliance status of industries, automobiles (including outboard engines and motorcycles), electric generating sets and aircraft	Independent consortium of scientists and engineers	Quarterly	Quality pollution data generated, stored and retrievable	5%	capacity  Generatio n of fragmente d and poor quality of pollution data	Frequent policy changes	Advocacy;  Lobbying
		Introduce attractive incentives such as tax rebates for industries that meet pollution control standards	Independent body consisting of scientists, engineers and industrialists,	Every 6 months	Increasing number of industries complying with pollution control standards	0%	Lack of incentives for pollution compliance	Slow passage of enabling laws  Possible weak application of the law if passed	Stiff penalties for offenders  Political will  Lobbying
		Provide legal and financial support base for environmental conservation/advocacy groups to thrive	Independent body of environmental alists, lawyers and financial experts	Every 6 months	Number of environmental conservation/advocacy activities per annum	0%	Weak environmental conservation/advocacy movement/awareness campaign in the country	Slow passage of enabling laws  Poor funding	Political will  Lobbying  Adequate budget



		Re-introduce regular sanitary inspection of human dwellings and public and private work places immediately	Independent body of doctors, environmental manager,	Every 2 months	Percentage reduction in environmental pollution-related health problems	5%	Dirty environment  Many incidents of environmental pollution-related health problems	Poor funding  Low capacity of personnel  Lack of political will	Adequate funding  Capacity building  Political will
	Eliminating the incidence of oil spillage and gas flaring	Put an immediate ban on gas flaring and enforce full compliance	A consortium of scientists, engineers and lawyers	Quarterly	Significant reduction in air pollutants from gas flaring	0%	Health problems related to gas flaring	Lack of cooperation from oil companies  Lack of political will	Lobbying  Political will to implement the policies on gas flaring
		Remediate and restore all the sites that have been impacted by oil spill	A consortium of scientists, engineers and lawyers	Every 6 months	Increase in number of impacted sites restored	0%	Degradation of impacted ecosystems	Slow passage of enabling legislations  Inadequate funding	Political will  Adequate budget



									Effective coordination of all agencies
		Strengthen the capacity of the institutions responsible for surveillance of and control of oil spill, pipeline vandalisation such as NOSDRA and NEMA	An independent body of scientists, engineers and lawyers	Quarterly	Percentage reduction in pollution-related health problems and ecosystem degradation	0%	Frequent oil spills, pipeline vandalisation and environmental pollution	Weak legislation Inadequate funding Weak capacity	Strengthened legal and institutional capacity  Adequate budget
	Evolving a clean environment where waste is effectively managed on a sustainable basis.	Immediate cleaning up of all the garbage heaps that litter the urban centres	A consortium of scientists, engineers and environmental managers	Quarterly	Reduction of environmental pollution-related health problems	5%	Garbage heaps as habitats of disease vectors and sources of pollutants	Weak legislation Inadequate funding Weak capacity	Strengthened legal and institutional capacity  Adequate budget
		Develop and implement a comprehensive sustainable waste management system	A consortium of scientists, engineers, environmental managers and architects	Every 6 months	Reduction in environmental pollution-related health problems	2%	High level of pollution due to improper management of waste	Inadequate funding Weak capacity	Strengthened legal and institutional capacity  Adequate



									budget
		Modernise sewage system in major urban centres and state capitals	An independent consortium of scientists, engineers, and environmental managers	Every 6 months	Reduction of environmental pollution-related health problems	2%	High frequency of flood and pollution due to poor drainage	Inadequate funding  Weak capacity	Strengthened legal and institutional capacity  Adequate budget
Environmental Hazards	Improving institutional, legal framework and capacity of communities	Domesticate both the Hyogo Framework for Disaster Risk Reduction (2005-2015) and African Regional Strategy for Disaster Risk Reduction by 2010	Independent body such as a civil society organisation	Once in 2010	Existence of the approved law in the Gazette	100%	Lack of domestication of the conventions hampers implementation	Inadequate commitment by stakeholders	Advocacy
		Review the National Disaster Response Plan (NDRP) and enact legislation to support it. This legislation should compel all stakeholder	Independent body such as a civil society organisation	Once in 2010	Existence of approved NDRP in the Gazette	100%	Lack of legal framework has rendered the plan redundant	Delay in emergency response mechanism	Lobby national assembly on the need for NDRP law



		members to promptly mobilize to affected areas by 2010							
		Enact legislation to support the National Platform for Disaster Reduction, strengthen its capacity and replicate it at state and local levels by 2010	Independent body such as a civil society organisation	Once in 2010	Existence of the approved law in the Gazette	100%	Lack of legal framework has rendered the platform impotent	Delay in emergency response mechanism	Advocacy and lobbying
		Mainstream disaster risk reduction (DRR) into development planning policies, programmes and plans by 2012	As above	Bi-annual	Number of stakeholders trained per year	25%	Sectoral policies are insensitive to environmental hazards and disaster risks	Inadequate funding	Advocacy
		Establish functional emergency management committees in all local government areas by 2010	As above	Once in 2010	Number of LGAs with Local Emergency Management Committees (LEMCs)	100%	Lack of LEMCs is a breach of the NEMA Act	Funding constraints	Advocacy



		Strengthen the capacity of National Emergency Management Agency and other relevant agencies to be able to better respond to environmental hazards	As above	Bi-annually	Quantity of functional equipment and machinery available	100%	Inadequate capacity hinders appropriate response to environmental hazards	Inadequate funding	Advocacy and providing more resources
	Hazard Vulnerability Mapping	Replicate the Pilot Project on Comprehensive Assessment of Disaster Risk Reduction Capacity which includes identification of vulnerable areas in all states, including Abuja and implement the recommendations by 2010.	As above	Once in 2010	Number of participating states per year	100%	Dearth of information on vulnerability status hampers the design of appropriate mitigation and adaptation measures	Inadequate funding	Advocacy and providing more resources
		Map out the high risk areas especially areas prone to erosion, flood and rainstorm among others to provide basis for comprehensive and coordinated mitigation, preparedness and	As above	Annually	Number of states covered and properly mapped per year	15%	Non-availability of maps of hazard prone areas hinders the design of appropriate	Inadequate funding	Advocacy



		response planning by 2015 and integrate the maps areas into human settlements management by 2016.					mitigation and adaptation measures		
	Promoting disaster risk management including risk transfer mechanisms	Strict enforcement of the policy on compulsory comprehensive insurance cover for all buildings and homes with a view to redistributing risks and reducing disaster impacts by increasing financing for post-disaster reconstruction and rehabilitation by 2012	As above	Annually	Proportion of buildings covered by property insurance per year	33%	Non-enforcement of the law raises the cost of post-event rehabilitation and restitution	Inability to reduce public and private cost of post-disaster rehabilitation and recovery	Advocacy
		Develop appropriate infrastructure for controlling environmental hazards	As above	Annually			Delay in building strong community resilience	Funding	Advocacy
		Develop DRR Plans for major cities and towns by 2020	As above	Annually	Number of major cities and towns with DRR plans per year	10%		Funding	Advocacy and lobbying



		Establish the National Catastrophe/Risk Insurance Pool to facilitate disaster risk redistribution by 2015	As above	Annually	Number of subscribers to the scheme per year	17%	Lack of legally approved risk insurance pool hinders the development and adoption of broad based risk transfer mechanism	Funding and technical knowledge	Advocacy and acquisition of technical knowledge
	Developing multi-hazards early warning system	Strengthen the capacity of the Nigerian Meteorological Agency, the River Basin Authorities and the Hydrological Services for real time data gathering, forecasting and dissemination in respect of major environmental hazards by 2012	As above	Annually	Number of relevant real time data and forecasts made and disseminated per year	33%	Weak capacity thus militating against the gathering and forecasting data required for development of early warning system	Funding	Advocacy and lobbying
		Develop and adopt a comprehensive	As above	Annually		16%	Lack of early	Funding	Advocacy

		early warning system for disaster risk reduction by 2015					warning system reduces national coping capacity		
		Resuscitate all existing seismographic stations and seismological centers for monitoring land movement should be resuscitated by 2015	As above	Annually	Number of seismographic stations and seismological centres resuscitated per year	16%	Lack of seismographic stations and seismological centers inhibit early warning forecasting of environmental hazards	Funding	Advocacy and lobbying
	Creating awareness about the devastating impact of floods, erosion and other environmental hazards and risks	Promote public education and awareness on environmental hazards and disasters as well as appropriate measures for disaster risk reduction, response and rehabilitation by 2012	As above	Quarterly	Number of advocacy and education materials produced and used per year	33%	Inadequate public awareness of environmental hazards increases vulnerability of communities	Funding	Advocacy and lobbying



	Institutionalization of monitoring and evaluation framework	Establish a framework to ensure that all the environmental hazard management programmes and projects are monitored and evaluated	As above	Annually	Number of initiatives monitored and evaluated per year	100%	Lack of institutionalized M & E framework will hinder provision of relevant information on progress towards outcomes	Using in-house monitors could jeopardize objectivity	Deplore reputable civil society organisations
Land Degradation and Desertification	Putting in place an effective and properly constituted institutional framework.	Strengthen the capacity of the Department of Drought and Desertification Amelioration (DDDA) in the Federal Ministry of Environment to coordinate activities for combating desertification.	Environmental Consultants, Local and International Consultants	Quarterly	Number of Trainees per State	Nil	Funding, Quality of potential Trainees	Non cooperation of States and LGAs	Synergy between Federal, States and LGAs
		Establish desertification control offices in all the 11 frontline states and their LGAs	National Planning Commission, The 11 DFS, and LGAs	Bi annual	Offices established in each DFS and LGAs	Nil	Funding	Change in Policy, Corruption	Public Awareness, Appropriate sanctioning
		Undertake a good assessment of the	National Planning	Quarterly	Project Initiatives	Nil	Bureaucra	Faulty	Wide consultation



		National Policy on Drought and Desertification and the translation of the National Drought Preparedness Strategy into project initiatives that can be implemented in practical terms.	Commission, NEMA, NESREA		identified and implemented		tic inertia, Lack of political will, Funding	assessment,	s with all stakeholders, Involvement of Independent Consultants.
		Establish drought and desertification monitoring and early warning systems.	NIMET, NEMA, NESREA	Monthly	Number of Monitoring stations established, Spatial distribution of monitoring stations, Monitoring Equipment provided.	Nil	Funding, Non availability of experts, Faulty and outdated equipment	Faulty for casting and wrong warnings	Recruitment of Experts, Involvement of Independent consultants
		Facilitate the establishment of a National Commission on Drought and Desertification by 2010	National Planning Commission, Independent consultants	Bi annual	Establishment and operation of Commission	25%	Funding, Recruitment and involvement of non experts	Non establishment of Commission, No effective coordination on Draught and Desertification	Provision of adequate funding, Involvement of experts
	Creation of data base on the extent of land degradation and desertification	Undertake a major baseline study to truly quantify the	NASREA, National Planning	Bi-Annual	Composition of Study group, Data on extent	Nil	Funding	Lack of political will	Provision of adequate funding,



	by 2015.	extent and severity of land degradation and desertification.	Commission, Independent consultants.		and nature of land degradation and Desertification				
		Set up models to quantify and predict future trends of land degradation and desertification processes.	NEMA, NIMET, Independent consultants.	Bi annual	Setting up of models, Predictions of future trends.	Nil	Funding, Involvement of mediocres, Procurement and installation of up to date equipment	None or inappropriate predictions	Adequate funding, Involvement of experts
		Use pilot areas for a quantitative evaluation of accelerated erosion and the effects of conservation measures in the water erosion prone areas of Nigeria.	NEMA, States Independent Consultants.	Quarterly	Establishment of Pilot areas, Spatial spread of pilot areas, Conservation measures put in place,	Nil	Political struggles for pilot areas, Funding	No pilot areas established, No practical conservation measures put in place.	Proper and adequate funding, Spatial spread of pilot areas in all geographical zones.
	Promotion of awareness and active participation of communities in land management, particularly rehabilitation of	Develop and implement a strategy to accelerate the process of effective formal and informal education, training and awareness and	National Planning Commission, Federal and State Ministries of Education,	Bi annual	Development of strategy, Implementation of strategy in training and awareness programmes,	Nil	Funding, Willingness to nominate and sponsor participant	No or inappropriate strategy, No practical response measures	Public awareness, Involvement of Independent consultants.



	degraded lands, programmes.	capacity building to improve national response to combating desertification and ameliorating land degradation.	Independent Consultants.		Practical responses to combating and amelioration of draught and desertification.		s,		
		Empower local people through increased dissemination of information on combating desertification and mitigating the effects of drought.	Federal and State Ministries of Education and Information, Environmental Consultants, National Orientation Agency.	Quarterly	Media programmes in local languages, Number of people trained, Practical measures on combating desertification and ameliorating draught effects	10%	Funding,	General apathy form Locals, Corruption	Consultations with all stakeholders, Involvement of CBOs
		Strengthen the capacity of the Arid Zone Research Centre to play an effective advocacy role on the socio-economic impact of desertification	Federal Ministry of Environment, NESREA, Arid Zone Research Centre.	Quarterly	Review, and adherence to existing status of the centre, Number of Centre staff trained, Induced changes resulting from increased advocacy.	Nil	Funding, Acceptance of advocacy	Non acceptance of review of status, Non acceptance of advocacy,	Adequate consultations with Land users, Adequate funding,
	Developing and implementing the	Launch and implement a	Forestry Research	Quarterly	Launch of Programme at	Nil	Funding, Land	Non guarantee of safety of	Adequate funding,



	national strategy for the Green Wall Sahara Initiative.	massive afforestation programme for the establishment of 1500 km of green wall in the frontline states by 2015.	Institute of Nigeria, The Frontline States, LGAs, NNJCC, NGOs and CBOs.		National level, Launch of programme in each Frontline state, Extent of coverage of Green wall project in each Frontline state,		acquisition and compensation, Seedling production and nurseries.	seedlings, Natural disasters, Social conflicts.	Wide consultations with all stakeholders, Involvement of Local communities in maintaining the projects.
		Strengthen the capacities of the Departments of Forestry and/or Drought Desertification in each of the affected States to manage the green belt for environmental sustainability.	Federal Ministry of Environment, NEMA, NNJCC, Independent Consultants	Quarterly	Training programmes for the affected Departments, Effective management of the Green belt, Number and extent of survived Green belt species.	Nil	Funding, Capacity building, Sustainability of the programme	Non sustainability of the Programme, Staff mobility.	Ensure staff mobility, Provide adequate funding. Involve independent consultants.
Environmental Education and Awareness	Adopt and implement the United Nations Decade of Education for Sustainable Development(DES D)	Develop and implement a communications strategy to create awareness about environmental management for sustainable development and DESD, particularly among the youths	National Research Council on Education	Annually	Percentage of Nigerians aware about environmental issues	10%	Integrated approach to environmental education	Lack of political will	Sensitization of policy makers, particularly those in the area of education



		and the rural majority.							
		Review and consolidate appropriate national policies to implement ESD through an intersectoral approach so that the role of sustainable development in education systems is clear and reinforced	National Research Council on Education	Annually	Percentage of Nigerians aware about environmental issues	0	Integrated approach to environmental education	Lack of political will	Sensitization of policy makers, particularly those in the area of education
	Implementing innovative public environmental education programmes.	Develop and conduct public education programmes to affect attitudinal change towards environmental management.	NGOs, National Research Council on Education	Annually	Percentage of Nigerians aware about environmental issues	20%	Poor attitude of Nigerians to environment	Funding	Sensitization of decision makers
		Infuse environmental responsibility into educational programmes in the	NGOs, National Research Council on	Annually	Percentage of Nigerians aware about environmental	20%	Limited knowledge about the environment among	Funding	Sensitization of policy makers



		formal and mass literacy educational system	Education		issues		Nigerians		
		Develop an enabling environment for effective environmental management among planners and decision-makers	NGOs, National Research Council on Education	Annually	Integration of environment into development planning in Nigeria	20%	Poor environmental planning	Lack of budget	Training on environmental planning
		Partner with the media and NGOs in the public education programmes for awareness-raising on the importance of environmental management.	National Research Council on Education	Annually	Number of publications on the environment in national media		Limited awareness about the environment	Funding	Advocacy
		Prepare and implement an environmental curriculum appropriate to building capacity at all levels of teaching including at the National Institute of Policy and Strategic Studies and in all Professional Institutes	NGOs	Annually	Integration of environment into development planning in Nigeria		Poor environmental education	Funding	Advocacy
		Institute a legislative requirement for	NGOs	Annually	Number of schools with		Poor incorporati	Funding	Advocacy



		Environmental Sustainable Personnel in all the primary, secondary and tertiary sectors of the economy and politics			environmental education curriculum		on of environmental concerns into national curriculum		
Environmental Governance	Strengthening the capacity of institutions for enhanced coordination of environmental issues and programmes.	Strengthen the capacity of the Federal Ministry of Environment to effectively perform the core functions of law/policy making, law enforcement, environmental monitoring and coordination of environmental management.	NGOs,	Annually	Coordinated approach to environmental management	25%	Sectoral approach to environmental management in the country.	Lack of political will for reform	Lobbying the national assembly for budget inputs
		Strengthen the capacity of the National Council on Environment to ensure effective linkages among institutions responsible for environmental management in the country.	NGOs,	Annually	Coordinated approach to environmental management	50%	Sectoral approach to environmental management in the country.	Lack of political will for reform	Lobbying the national assembly for budget inputs



		Resuscitate and make functional the National Committee on Sustainable Development to promote a holistic approach to sustainable development issues.	NGOs	Annually	Coordinated approach to environmental management	50%	Sectoral approach to environmental management in the country.	Lack of political will for reform	Lobbying the national assembly for budget inputs
	Updating and enforcing all environmental laws, regulations and standards to promote environmental justice.	Formulate and/or review national laws, regulations, standards and policies and develop appropriate guidelines for environmental management.	Federal Ministry of Justice; NGOs	Annually	Positive changes in the state of the environment.  Number of people convicted for environmental offences.	50%	Poor application of environmental laws	Lack of political will for reform.  Poor interministerial relationships	Advocacy
		Develop a policy framework to harmonise environment-related laws and institutions, and promote the capacity for collective enforcement of environmental standards.	Federal Ministry of Justice; NGOs	Annually	Positive changes in the state of the environment.  Number of people convicted for environmental offences.	50%	Poor and sectoral application of environmental laws	Lack of political will for reform.  Poor interministerial relationships	Advocacy
		Update and seek	Federal	Annually	Positive	50%	Poor	Lack of	Advocacy and



		passage of environmental laws that are inclusive of adequate enforcement measures.	Ministry of Justice; NGOs		changes in the state of the environment.  Number of people convicted for environmental offences.		application of environmental laws	political will for reform.  Poor interministerial relationships	lobbying at the National Assembly
		Develop a policy on environmental justice	Federal Ministry of Justice	Annually	Number of environmental arbitrations;  Number of lawyers trained in environmental law.		Poor application of environmental laws	Lack of political will for reform	Advocacy and lobbying at the National Assembly
		Strengthen the capacity of NASREA to enforce environmental laws and regulations	NGOs	Annually	Positive changes in the state of the environment.  Number of people convicted for environmental offences.	50%	Weak application of environmental laws	Lack of political will for reform.  Poor interministerial relationships	Advocacy and lobbying at the National Assembly



	Mainstream environmental principles, standards and instruments into sectoral plans and legislation.	Identify opportunities for economic benefits to be derived from sustainable environment for various targeted groups.	Ministry of Finance	Annually	Quantification of the country's natural resources		Limited information about the economic values of Nigeria's natural resources	Funding	Advocacy
		Build on/strengthen cost benefit analyses and quantification of trade-offs in environmental assessments.	Ministry of Finance; Research Institutions; NGOs	Annually	Quantification of the country's natural resources		Limited information about the economic values of Nigeria's natural resources	Funding	Advocacy
		Strengthen institutional capacities for multi-sectoral planning and strengthen linkages between institutions of planning and environmental management.	Federal Ministry of Environment ; NGOs	Annually	Integration of environment into development planning	20%	Limited integration of environmental concerns into national development process	Poor interministerial relationships	Advocacy
		Produce, legislate and implement a National Environment Action Plan (NEAP) and a	NGOs, Development Partners	Once	A comprehensive framework to address environmental	25%	No environmental management	Funding	Advocacy

		National Sustainable Development Strategy (NSDS).			problems in Nigeria in a holistic manner		strategy for Nigeria		
	Fulfilling the country's obligations to international conventions and frameworks for environmental protection and sustainable development.	Formulate and/or review all relevant national policies and guidelines to domesticate and guide the implementation of international Conventions by 2015.	NGOs, Development Partners	Annually	A comprehensive framework to address Nigeria's commitment to environmental conventions and multi-lateral environmental agreements (MEAs)	10%	No focused strategy to determine the level of domestication of international conventions in Nigeria	Funding	Advocacy
		Strengthen negotiating capabilities through top talent development and compliance with Multilateral Environment Agreements (MEAs).	NGOs, Development Partners	Annually	Number of experts supporting Government in various negotiations		Limited participatory approach to Nigeria's positions in various negotiations.	Lack of political will;  Funding	Advocacy
		Build public-private and civil society partnerships for environmental management in general, and domestication of	NGOs, Development Partners	Annually	Alliances for environmental conventions		Limited participatory approach to Nigeria's positions	Lack of political will  Funding	Advocacy



		environmental conventions in particular.					in various negotiations.		
		Develop a policy on transboundary environmental issues.	ECOWAS	Annually	Legal and regulatory framework for the management of transboundary ecosystems.		Limited joint approach to environmental problems in the transboundary region	Funding	Advocacy
	Improving environmental data collection, analysis and monitoring.	Design and initiate establishment of a National Environmental Information System	Federal Bureau of Statistics	Annually	A functional environmental database		Poor statistical information on the state of the environment	Funding	Advocacy
		Develop and implement an implementation monitoring plan/programme	National Planning Commission	Annually	State of the Environment Report	10%	Poor reporting on the state of the environment for the country	Funding	Advocacy
		Upgrade the capacity of institutions for enhanced	Federal Bureau of Statistics	Annually	State of the Environment Report	10%	Poor reporting on the state of	Funding	Advocacy



		environmental data and information coverage and application.					the environment for the country		
		Build/or strengthen capacity for environmental and natural resource information management	Federal Bureau of Statistics	Annually	State of the Environment Report	10%	Poor reporting on the state of the environment for the country	Funding	Advocacy
		Establish a programme of environmental research.	Federal Ministry of Environment	Annually	Improved statistical information on the state of the environment		Poor statistical information on the state of the environment	Funding	advocacy
		Produce State of the Environment Reports on bi-ennial basis.	Federal Bureau of Statistics	Annually	State of the Environment Report	50%	Poor reporting on state of the environment for the country	Funding	Advocacy



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## APPENDIX I

### Key environmental issues in a number of sectors that are not considered in this report

#### 1. Agriculture and Food Security

In agriculture, key environmental issues that could result from inappropriate land use practices include soil erosion, grazingland deterioration land pollution due to uncontrolled use of agricultural chemicals. Soil erosion often leads to land degradation, and this could mar the landscape, reduce productivity, and diminish the country's biodiversity. Agricultural chemicals contribute to soil pollution and eventually to water pollution in various ways, such as through the deposition of heavy metals, nitrates and organo-chlorides. Some of the pesticides that do not accumulate in the soil, (e.g. MCPA and 2.4D) produce toxic by-products, and others, (eg. atrazine and simazine) may pollute water sources. Others, (e.g. parquat, malathion and carbaryl) have detrimental effects on health. Nitrogen-based fertilisers also contribute to soil acidification. Leaching of nitrates and phosphates from fertilisers pollutes surface water and causes eutrophication which clogs rivers and leads to reduced water supply. In addition, nitrates in water causes diseases, such as methaemoglobinaemia (blue baby syndrome) and stomach cancer.

In light of the above, efforts within the framework of the Vision 2020 to improve national agricultural productivity and food security should evolve in a manner that would achieve a sustainable balance in the use of land, water and other natural resources between production systems and protection of the environment to secure sustainable livelihoods for farmers and the rural population.

#### 2. Manufacturing Industry

Environmental pollution is a major issue in the manufacturing sector. This is because the sector normally generates a lot of waste (gaseous, liquid and solid) that pollute the environment. This is exacerbated by improper waste disposal. There is also usually the over exploitation of water, forest and mineral resources in the manufacturing process. The siting of any factory needs to be done after careful consideration of the environmental impact of the manufacturing activity.

To adequately mainstream environmental considerations into manufacturing, the sector's operators need to be educated and encouraged to (i) adopt the principle of minimizing or preventing discharge of harmful substances; (ii) use an integrated approach to pollution control; (iii) abide by the "polluter pays" principle; and (iv) participate with other policy initiatives, including those of water resources, human settlement, health and disaster prevention and preparedness. Appropriate rules, laws and regulations need to be in place to (a) ensure that commercial, retail and industrial activity does not compromise the quality of life of Nigerians; (b) ensure that Nigeria remains within all internationally accepted limits of commercial and industrial pollution; and (c) encourage self-regulation by polluting industries and commercial/professional associations.

### **3. Environmental Issues Related to the Tourism Sector**

Key environmental issues in the tourism sector that need to be taken into account in the implementation of the Vision 2020 initiatives include (i) pollution, especially from solid waste disposal by tourists; (ii) congestion from vehicular traffic on major roads, over use of limited facilities at airport and public places; and (iii) cultural pollution due to introduction of undesirable habits such as drug abuse, sexually transmitted diseases, destruction of sacred places and destabilization of the youth.

In light of the above, a national approach to tourism development within the framework of Vision 2020 should have an overall objective of supporting and promoting a sustainable, efficient and diversified tourist industry, based on the broad scale of integrated cultural and ecological attractions of Nigeria. The approach must be in harmony with cultural traditions and sound environmental management, an approach that is often referred to *ecotourism*. The national strategy should (i) address the environmental impacts of tourism; (ii) promote tourism by making full use of the scenic, environmental and biological diversity of the country; (iii) safeguard and use archaeological, historical and cultural heritage sites; (iv) appraise and monitor nature reserves and parks with respect to carrying capacity; and (v) tax tourism to raise revenue for management of natural and cultural resources.

### **4. Mining Industry**

Similar to the manufacturing sector, the key environmental issues that must be taken into consideration in the development of the mining industry include: (i) pollution - air, surface and ground water, pollution by dust and land through dumps and tailings ponds; (ii) land degradation - through removal of top soil and vegetation in open cast mines, construction of haulage roads; (iii) negative visual impacts of landscape alteration - abandoned sink shafts, pits, holes and other excavations, stockpiles and slime dams; (iv) human health and safety - exposure to air pollution by the miners and by the general population living in the vicinity of the mines; (v) resource loss - displacement of human populations and destruction of biodiversity.

The development of the mining industry in the framework of Vision 2020 calls for a policy strategy that will achieve a sustainable, efficient and environmentally sound mining industry as an integral part of the country's economic development. Such a strategic approach should contain the following practical elements (a) promotion of sustained exploration and mineral resources management in order to ensure continued development of the mining industry; (b) development of pollution and waste control measures for all mining operations; and (c) rehabilitation of land and water resources affected by mining activities.

### **5. Energy Sector**

Deforestation, due fuelwood collection, bush clearing for electricity installations using heavy equipment, etc, and pollution, of air by burning of fuel-wood and coal are some of the key environmental issues related to the energy sector. Others include (i) visual impacts from construction of powerlines and consequent destruction of trees; and (ii) human health and safety issues such as respiratory ailments due to smoke and particulate matter from burners and fire places, danger to human life by misuse of electricity.



The promotion of environment-friendly renewable energy sources for the development of sustainable energy for Nigeria should be a major objective of Vision 2020.