

# JOHANNESBURG SUMMIT 2002

## NIGERIA



## COUNTRY PROFILE



UNITED NATIONS

## INTRODUCTION - 2002 COUNTRY PROFILES SERIES

Agenda 21, adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, underscored the important role that States play in the implementation of the Agenda at the national level. It recommended that States consider preparing national reports and communicating the information therein to the Commission on Sustainable Development (CSD) including, activities they undertake to implement Agenda 21, the obstacles and challenges they confront, and other environment and development issues they find relevant.

As a result, in 1993 governments began preparing national reports for submission to the CSD. After two years of following this practice, the CSD decided that a summarized version of national reports submitted thus far would be useful. Subsequently, the CSD Secretariat published the first Country Profiles series in 1997 on the occasion of the five-year review of the Earth Summit (Rio + 5). The series summarized, on a country-by-country basis, all the national reports submitted between 1994 and 1996. Each Profile covered the status of all Agenda 21 chapters.

The purpose of Country Profiles is to:

- Help countries monitor their own progress;
- Share experiences and information with others; and,
- Serve as institutional memory to track and record national actions undertaken to implement Agenda 21.

A second series of Country Profiles is being published on the occasion of the World Summit on Sustainable Development being held in Johannesburg from August 26 to September 4, 2002. Each profile covers all 40 chapters of Agenda 21, as well as those issues that have been separately addressed by the CSD since 1997, including trade, energy, transport, sustainable tourism and industry.

The 2002 Country Profiles series provides the most comprehensive overview to date of the status of implementation of Agenda 21 at the national level. Each Country Profile is based on information updated from that contained in the national reports submitted annually by governments.

Preparing national reports is often a challenging exercise. It can also be a productive and rewarding one in terms of taking stock of what has been achieved and by increasing communication, coordination and cooperation among a range of national agencies, institutions and groups. Hopefully, the information contained in this series of Country Profiles will serve as a useful tool for learning from the experience and knowledge gained by each country in its pursuit of sustainable development.

## NOTE TO READERS

The 2002 Country Profiles Series provides information on the implementation of Agenda 21 on a country-by-country and chapter-by-chapter basis (with the exception of chapters 1 and 23, which are preambles). Since Rio 1992, the Commission on Sustainable Development has specifically addressed other topics not included as separate chapters in Agenda 21. These issues of trade, industry, energy, transport and sustainable tourism are, therefore, treated as distinct sections in the Country Profiles. In instances where several Agenda 21 chapters are closely related, for example, chapters 20 to 22 which cover environmentally sound management of hazardous, solid and radioactive wastes, and chapters 24 to 32 which refer to strengthening of major groups, the information appears under a single heading in the Country Profile Series. Lastly, chapters 16 and 34, which deal with environmentally sound management of biotechnology, and transfer of environmentally sound technology, cooperation, capacity-building respectively, are presented together under one heading in those Country Profiles where information is relatively scarce.

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**LIST OF COMMONLY USED ACRONYMS**

ACS	Association of Caribbean States
AMCEN	Africa Ministerial Conference on the Environment
AMU	Arab Maghreb Union
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CARICOM	The Caribbean Community and Common Market
CBD	Convention on Biological Diversity
CIS	Commonwealth of Independent States
CGIAR	Consultative Group on International Agricultural Research
CILSS	Permanent Inter-State Committee for Drought Control in the Sahel
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COMESA	Common Market for Eastern and Southern Africa
CSD	Commission on Sustainable Development of the United Nations
DESA	Department for Economic and Social Affairs
ECA	Economic Commission for Africa
ECCAS	Economic Community for Central African States
ECE	Economic Commission for Europe
ECLAC	Economic Commission for Latin America and the Caribbean
ECOWAS	Economic Community of West African States
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ESCAP	Economic and Social Commission for Asia and the Pacific
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FIDA	Foundation for International Development Assistance
GATT	General Agreement on Tariffs and Trade
GAW	Global Atmosphere Watch (WMO)
GEF	Global Environment Facility
GEMS	Global Environmental Monitoring System (UNEP)
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GHG	Greenhouse Gas
GIS	Geographical Information Systems
GLOBE	Global Legislators Organisation for a Balanced Environment
GOS	Global Observing System (WMO/WWW)
GRID	Global Resource Information Database
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IAEA	International Atomic Energy Agency
ICSC	International Civil Service Commission
ICSU	International Council of Scientific Unions
ICT	Information and Communication Technology
ICTSD	International Centre for Trade and Sustainable Development
IEEA	Integrated Environmental and Economic Accounting
IFAD	International Fund for Agricultural Development
IFCS	Intergovernmental Forum on Chemical Safety

IGADD	Intergovernmental Authority on Drought and Development
ILO	International Labour Organisation
IMF	International Monetary Fund
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission
IPCC	Intergovernmental Panel on Climate Change
IPCS	International Programme on Chemical Safety
IPM	Integrated Pest Management
IRPTC	International Register of Potentially Toxic Chemicals
ISDR	International Strategy for Disaster Reduction
ISO	International Organization for Standardization
ITTO	International Tropical Timber Organization
IUCN	International Union for Conservation of Nature and Natural Resources
LA21	Local Agenda 21
LDCs	Least Developed Countries
MARPOL	International Convention for the Prevention of Pollution from Ships
MEAs	Multilateral Environmental Agreements
NEAP	National Environmental Action Plan
NEPAD	New Partnership for Africa's Development
NGOs	Non-Governmental Organizations
NSDS	National Sustainable Development Strategies
OAS	Organization of American States
OAU	Organization for African Unity
ODA	Official Development Assistance/Overseas Development Assistance
OECD	Organisation for Economic Co-operation and Development
PPP	Public-Private Partnership
PRSP	Poverty Reduction Strategy Papers
SACEP	South Asian Cooperative Environment Programme
SADC	Southern African Development Community
SARD	Sustainable Agriculture and Rural Development
SIDS	Small Island Developing States
SPREP	South Pacific Regional Environment Programme
UN	United Nations
UNAIDS	United Nations Programme on HIV/AIDS
UNCED	United Nations Conference on Environment and Development
UNCCD	United Nations Convention to Combat Desertification
UNCHS	United Nations Centre for Human Settlements (Habitat)
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNDRO	Office of the United Nations Disaster Relief Coordinator
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees

UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNIFEM	United Nations Development Fund for Women
UNU	United Nations University
WFC	World Food Council
WHO	World Health Organization
WMO	World Meteorological Organization
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization
WWF	World Wildlife Fund
WWW	World Weather Watch (WMO)

**CHAPTER 2: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE  
DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC  
POLICIES**

See under **Chapter 2-Trade** of this Profile.

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## **CHAPTER 2: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES - TRADE**

**Decision-Making:** The institutional mechanisms involved in identifying environmental problems (hot spots) are: The Federal Ministry of Environment with the institutional arrangement of overall coordination of environmental management in Nigeria; Nigeria Delta Development Commission with the mandate to, inter alia, develop, clean up and manage the oil producing areas of Nigeria in an environmentally sustainable manner; Export Commodity Coordinating Committee with the mandate to, inter alia, monitor environmental sustainability of products for export; Federal Produce Inspection Service; National Committee on the Implementation of Nigeria's National Agenda 21; Standards Organization of Nigeria; and, National Agency for Food and Drug Administration and Control. Some of the relevant legislation that have either been reviewed or are under review in response to the possible negative impacts of trade on environment include: Gas Re-Injection Act, Endangered Species (Control of International Trade and Traffic) Act, Minerals Act, Forestry Laws, Harmful Wastes (Special Criminal Provisions, etc) Act.

Nigeria has not agreed to the derogation of any specific environmental legislation or regulation as inducement to foreign direct investment. However, there are some provisions which relate to Investment Protection Assurance as follows: No enterprise shall be nationalized or expropriated by any Government of the Federation; No person who owns, whether wholly or in part, the capital of any enterprise shall be compelled by law to surrender his interest in the capital to any other person; There will be no acquisition of an enterprise by the Federal Government unless the acquisition is in the national interest or for public purpose. In the latter case, a fair and adequate compensation shall be paid without undue delay and authorization given for its repatriation in convertible currency, where applicable. Since the introduction of the Structural Adjustment Programme (SAP) in mid 1986, the Federal Government through the National Planning Commission has built into its Rolling Plans trade and payment liberalization measures aimed at achieving SAP objectives.

**Programmes and Projects:** Nigeria's approach to sustainable development received a boost from the establishment of the VISION 2010 Committee, a body charged with the articulation of a long-term sectoral economic development programme designed to usher the nation into the third millennium. The National Agenda 21 document has, therefore, been prepared to address the environmental implications of this developmental programme.

**Status:** With the return of the NIGERIA to democracy, the confidence of foreign investors has been restored in Nigeria. The abolition/review of many restrictive businesses and financial regulations and the Nigeria's membership of the World Trade Organization (WTO) have enhanced the Nigeria's position in multilateral trade system. Concerted effort is also being made to create an enabling environment for attracting foreign investment to Nigeria. Meanwhile, the following are some of the identified export-induced increases in production that have increased environmental problems in Nigeria: deforestation and desertification resulting from the exploitation of unprocessed log wood for export; Depletion of wild fauna and flora due to exportation of certain endangered species; Oil and Gas exploration which has resulted in serious environmental degradation especially in the Niger Delta area of the country. The linkages that have been identified between poverty and trade and investment in Nigeria are such as Universal application of Valued Added Tax in Nigeria which fails to discriminate in favor of goods and services targeted at the poor; Investment in capital intensive production systems in industry which displaces labor as well as relies on imported inputs thereby penalizing the domestic raw materials which forms the bulk of the output of the poor; Inadequate and/or ineffective communication and transport facilities which heighten the transaction costs of doing business both for the urban and rural poor. The major changes in production and consumption patterns in Nigeria due to increases or decreases in trade, investment and economic growth and the environmental impacts of such changes include: Increased commercialisation, which resulted in intensive exploitation of natural resources, especially land for agriculture and mining. This has often led to rapid deforestation and soil degradation. Mining activities have often left behind pits, which acts as spots for environmental decay. Increased importation of used products such as cars, refrigerators, cloths, tyres, etc thereby increasing the emissions of various gases into the atmosphere and increasing the volume of solid wastes generated.

**Capacity-Building, Education, Training and Awareness-Raising:** See under **Cooperation**.

**Information:** Nigeria prepares reports on trade policy review mechanisms, which are submitted, to World Trade Organisation (WTO) Headquarters in Geneva. Reports are also prepared for UNCTAD, World Customs Organisation and Commonwealth on trade measures such as taxes and tariffs. The Nigerian Export Processing Zones Authority submits reports to the World Export Processing Association at Flagship in USA while the Central Bank sends reports on balance of payment to the IMF and the World Bank. Nigeria also reports to the South Investment, Trade and Technology Data Exchange Cooperation (SITTDEC) under the auspices of South – South Cooperation. Apart from these, Nigeria also reports to the Economic Community of West African States on sub-regional trade, investment and economic growth issues particularly in respect of the implementation of the Protocol on Trade and Investment in the sub-region. The Nigerian Investment Promotion Commission (NIPC) currently provides some of this information on the Internet. Their Internet address is [www/nipc.nig.org](http://www/nipc.nig.org). However, most of these reports are available in hard copies at the originating institutions. The Nigerian Investment Promotion Council has information on trade, investment and economic growth on the Internet via [www/nipc.nig.org](http://www/nipc.nig.org). Information related to trade, investment and economic growth are also made available by hard copies of reports and various publications. Such publications are available with the originating organizations such as the Central Bank of Nigeria, National Planning Commission, Nigeria Securities and Exchange Commission, and the Nigerian Missions and Embassies abroad.

**Research and Technologies:** See under **Cooperation**

**Financing:** The objective of the trade and payment liberalization measures is to encourage a more efficient and rational allocation of available resources through the interaction of market forces, while at the same time allowing local and foreign investors to jointly participate in the development of the economy. The fundamental idea is that in the new market economic climate underlying the SAP, it is essential that the true value of every resource and the long-term costs of exploiting it is known, budgeted, and paid for.

**Cooperation:** As a demonstration of the Nigerian Government's cooperation with the United Nations, its commitment to the implementation of Agenda 21 and the effective resolution of other global environmental issues, the international environmental conventions signed during the Rio Conference in 1992 were ratified in August 1994. These include The Convention on Biological Diversity and the Framework Convention on Climate Change (FCCC) and the Convention to Combat Desertification in Countries Experiencing Drought and/or Desertification, particularly in Africa. In addition, Nigeria has signed memoranda of understanding with many countries in the area of environmental management. Collaborative research and development, which are critical to the enrichment of the applications of science and technology to National development efforts, was fostered through the participation of the Ministry of Science and Technology in the activities of a number of international organizations. This participation included hosting the 1995 Biennial Conference of the Third World Academy of Science at Abuja; promoting networking of science and technology information and other activities through the Third World Network of Scientific Organizations (The Honourable Minister of Science and Technology is the current Chairman for the African Zone), projects funded by the International Foundation for Science (IFS), a body set up to fund Research and Development projects in developing countries in both the private and public sectors, contributing to the funds of the African Regional Centre for Technology, a body set up to promote indigenous technology, technical information dissemination, and technology innovation; and the International Centre for Genetic Engineering and Biotechnology, a body that supports the participation of member countries' scientists, including those from Nigeria, in training courses in biotechnology and genetic engineering.

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### CHAPTER 3: COMBATING POVERTY

**Decision-Making:** The responsible body for this area is the National Planning Commission (NPC). The thrust of current Nigerian Government policy against poverty is to enable the poor and more vulnerable sections of society to achieve sustainable livelihoods. The approach is to economically empower communities, families, and individuals through a sustained, well coordinated, and comprehensive programme of poverty alleviation.

**Programmes and Projects:** According to the Government's policy, the National Planning Commission (NPC) in collaboration with the United Nations Development Programme (UNDP) is articulating a Community Action Programme for Poverty Alleviation (CAPP). The detailed strategies, activities, and targets of the CAPP are still being worked out. There are also specific environmental improvement programmes that have been integrated with poverty alleviation programmes. Examples include:

- The Sokoto Desertification Control Programme, and integrated environmental protection programme jointly funded by the Federal Government of Nigeria (FGN) and the European Economic Community (EEC);
- The Katsina Arid Zone Development Programme, and the North East Arid Zone Development Programme, an integrated programme funded by FGN/EEC; and
- Upgrading and mechanization of traditional methods of processing Nigeria's food resources, a project promoted by the Federal Ministry of Science and Technology. Besides, the Family Economic Advancement Programme (FEAP), the Ministry has designed and produced the following equipment/plants, among others, for nation-wide demonstration and adaptation: groundnut processing technology consisting of a groundnut sheller, a dehuller, and roaster; a hydraulic machine for the production of bricks from local materials; a tiles-production machine for producing roofing tiles from local fibre, cement, and sand; a lime kiln for the production of lime for leather processing and school chalk manufacture; soap making process for cottage/small scale production of both traditional and modern production of soap; mushroom production technology; fat liquor production, a developed process for fat liquor, an essential product required in the leather tanning industry; a pottery/ceramic machine, designed and fabricated for the production of pottery and ceramic wares from local clays; an essential oils distillation plant for the production of essential oils from local plants such as eucalyptus and lemon grass (essential oils are inputs in the food, confectionary, and pharmaceutical industries); and briquette technology for sawdust and agricultural wastes suitable for production of alternate sources to fuel and wood.

Furthermore, on-going Government activities related to poverty have been regularly featured in the National Rolling Plan beginning with the 1990-1992 Plan. They include programmes such as: economic programmes for the empowerment of women; Primary Health Care (PHC) programme, whose purpose is to bring health care, particularly preventive health care to the grass roots of the Nigerian Society; establishment of the Agricultural Development Programme (ADP) in all States of the Federation; establishment of the People's Bank, aimed at extending small credits to people in the informal sector of the economy with the aim of strengthening informal economic activities, cities, and towns and villages; establishment of the National Economic Recovery Fund (NERFUND) which provides easy access to credit by small and medium scale enterprises; establishment of the National Directorate of Employment (NDE), a self employment promotion programme which has largely promoted waste to wealth employment activities; education of itinerant communities such as the Fulani normals, and Ijaws; establishment of the River Basin Development Authorities and provision of rural access roads; and, establishment of the National Agricultural Land Development Authority (NALDA) aimed at promoting integrated rural development.

The government has learnt useful lessons from the past efforts in the conceptualization of the current programmes on poverty reduction. Thus, with the return of democratic governance in 1999, government by early 2001 put in place a comprehensive National Poverty Eradication Programme (NAPEP). The programme consists of four schemes namely:

- (i) Youth Empowerment Scheme (YES);
- (ii) Rural Infrastructure Development Scheme (RIDS);
- (iii) Social Welfare Scheme (SOWESS); and
- (iv) Natural Resource Development and Conservation Schemes (NRDCS).

In order to ensure proper linkages and co-ordination with related sectoral programmes, an elaborate institutional framework for implementation, funding and overall management of NAPEP has been put in place.

**Status:** There is an inextricable link between poverty and environmental degradation. Poverty can be the cause and/or the effect of environmental degradation. An appropriate poverty strategy should: a) provide all persons with the opportunity to earn a sustainable livelihood; b) implement policies and strategies that promote adequate and sustainable levels of funding, and focus on integrated human development policies, including income generation, increased local control of resources, local institution strengthening and capacity-building, and greater involvement of non-governmental organizations and local levels of government as delivery mechanisms; c) develop all poverty-stricken areas through integrated strategies and programmes of sound and sustainable management of the environment, resource mobilization, poverty eradication and alleviation, employment and income generation; d) create a focus in National development plans and budgets on investment in human capital, with special policies and programmes directed at rural areas, the urban poor, women, and children; e) establish appropriate infrastructure and support system to facilitate the alleviation of poverty by implementing projects, programmes, enterprises, and life styles sustainable at the grass roots level.

**Capacity-Building, Education, Training and Awareness-Raising:** Sectoral strategies and action plans that would complement NAPEP programmes have also been put in place and are currently undergoing implementation. In the education sector, improvement of the primary level education has commenced with the implementation of the Universal Basic Education (UBE) programme, while the revitalization of the technical and vocational education is targeted at producing qualified middle human personnel. Other schemes intended to improve the level of education in the country and enhance people's opportunities for employment include the Distance Learning System that will provide many Nigerians opportunity to have formal education while keeping their jobs.

**Information:** The Interim Poverty Reduction Strategy paper, which has just been finalized, accorded the highest priority to agriculture and rural development both for poverty reduction in the rural areas, and for the improvement of the economy generally.

**Research and Technologies:** Technology is being used on upgrading and mechanization of traditional methods of processing Nigeria's Food Resource project, groundnut processing technology and mushroom production technology.

**Financing:** In order to ensure proper linkages and co-ordination with related sectoral programmes, and elaborate institutional framework for implementation, funding and overall management of NAPEP has been put in place. Funding for NAPEP comes from the Federal Government of Nigeria with possible assistance and support through bilateral and multilateral cooperation.

**Cooperation:** See under **Programmes and Projects**.

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## CHAPTER 4: CHANGING CONSUMPTION PATTERNS

**Decision-Making:** In Nigeria there exists a number of public institutions that deal with matters of sustainable consumption and production. Such bodies include: The National Planning Commission (NPC) which is in charge of macroeconomic management: short, medium, and long-term economic planning; Energy Commission of Nigeria coordinates energy policy including matters of consumption and production; Federal Ministry of Industry regulates industrial production; Federal Ministry of Agriculture and Natural Resources regulates consumption and production of Agricultural products and inputs; Federal Ministry of Commerce and Tourism regulates all trade matters (internal & external); Federal Ministry of Water Resources and Rural Development regulates water resources development and poverty alleviation in rural areas; Federal Ministry of Health, that handles health delivery and population matters; National Agency for Food and Drug Administration and Control (NAFDAC), which regulates health standards of food and drugs; Standards Organization of Nigeria (SON), which establishes and monitors industrial quality standards; Department of Petroleum Resources coordinates policies on petroleum production and consumption; Federal Environmental Protection Agency (FEPA) coordinates policies on environment and natural resources conservation; Consumer Protection Council deals with the protection of consumer interests, seeks redress for injury, damage and loss suffered and seeks ways to eliminate hazardous products from the market.

Parallel organizations at State and Local Governments deal with matters of consumption and production at their respective levels and Decree No. 66 of 1992 established the Consumer Protection Council. Regulatory mechanisms which seek to promote sustainable consumption and production are such as Sea Fisheries Decree 1971 as amended in 1992, Water Works Act 1915, Public Health Act 1917, Oil Pipelines Act Cap. 338 LFN 1990, and Minerals Act Cap. 226 LFN 1990. Guidelines to Investors as contained in the National Policy on Industry: Expatriate Quota, Product Standards, Investment Guarantee Approval, Technical Fees Agreement and Management of Industrial Wastes and Expatriate Quota. There are tax concessions for organizations and individuals with initiatives in production processes. The National Policy on Environment, VISION 2010, has recently launched National Agenda 21, National Industrial Policy, National Policy on Agriculture, National Trade and Tourism Policy, Cultural Policy and the National Energy Policy, are some of the policies addressing the concerns of sustainable consumption and production patterns in Nigeria.

The following policies, economic instruments, pricing, subsidies, tax incentives and penalties were also put in place to encourage sustainable consumption and production practices and they include: Policy on Petroleum Pricing involves mainly the removal of subsidies in the prices of petroleum products to enhance efficient utilization; Economic incentives for gas production and utilization including tax holiday and accelerated capital allowance for industries involved in downstream and upstream gas exploitation and utilization; Policy on provision of agricultural extension services to rural farmers; and the Structural Adjustment Programme (SAP). To facilitate the achievement of these objectives the following strategies have been adopted: provision and maintenance of infrastructures like jetties and fishing terminals for fish landing, storage and processing; promoting the proliferation and utilization of the Chorkor smoking kiln for effective fish preservation; provision of extension services on fishing and fish farming techniques, fish to needy farmers; monitoring and surveillance of the Nigeria's water bodies, fishing terminals and other landing sites; manpower development for effective management and running of the sub-sector; and, restocking of water bodies with fast-growing fish species.

**Programmes and Projects:** Government in due consultation with the business community, has been evolving schemes with great potentials for addressing unsustainable consumption and production patterns. Among such schemes are: National Gas Conservation, Recovery and Utilization Programme, Oil Spill Control Programme whose special features include oil spill contingency planning, pipeline corrosion and integrity surveys, and oil spill clean up programmes. Nigeria also has a country programme for the Phase out of Ozone Depleting Substances (ODS). This is an Action Plan for the phase-out of ODS in Nigeria financed by the Multilateral fund of the Montreal Protocol. Highlights of this action plan include: an import ban by 2000 on ODS based equipment; ban on all ODS import to take effect in 2010; putting in place Eco-labeling for ODS-friendly products; and, encouraging recycling of ODS.

**Status:** The current level of efficiency in gas conservation, recovery and utilization is at 30%. Examples of projects and activities that have significant impacts in changing unsustainable consumption and production patterns: LPCA

and NLNG projects - reduction in volume of gas flared Slim-hole and horizontal well drilling physical reduction in the number of holes drilled and land up take during drilling. Agricultural projects - increase in production due to improved agricultural inputs. Ozone Depleting Substance phase-out and gas recovery schemes. Diversification into non-oil sector such as solid minerals and tourism. A few national targets for enhancing energy and material efficiency, waste reduction, recycling include: Stopping of gas flaring by 2010 as contained in Vision 2010; Enforcement of maximum industrial waste segregation, recycling and re-use by 2010; Promote and make compulsory eco-labeling of industrial product by year 2010; Enforcement of relevant sections of Sea Fisheries Decree on discard of by-catch. Priority Constraints to implementing effective programmes to address the issues related to promoting sustainable consumption and production include: Insufficient funds; Community resistance to change; Frequent changes in Government policies and programmes; Weak database; Lack of institutional capacity; Inadequate enforcement of relevant laws, standards and regulations.

**Capacity-Building, Education, Training and Awareness-Raising:** Most environmental awareness programmes conducted by the Federal and State Environmental Protection Agencies, NGOs, and CBOs are comprised of modules on sustainable consumption and production patterns. Provisions for training for the targeted group include: national, state, and community University and community scholarship scheme by public and private sector; vigorous staff training - hands on and relevant courses - by public and private sector; the International Environmental Seminar on the Petroleum Industry and the Nigerian Environment - by industry and the Government held every two years. Through the Federal environmental Protection Agency, Government has evolve a viable partnership with the media by instituting: Media Environmental Management Workshops; Media Environmental Merit Award; National Tree-planting Campaign; Environmental Management Workshop for Policy Makers and World Environmental Day celebration.

**Information:** Kinds of national information available to assist both decision makers and industry managers to plan and implement appropriate policies and programmes towards sustainable consumption and production include: Epidemiological data on diseases associated with industrial air and water pollution; Information on rate of waste generation at household and industrial level; Information on household energy requirements, sources and efficiency; Information on energy materials price movements (gasoline, kerosene, fuel wood, coal, liquefied natural gas, and cooking gas); Information on waste typology and composition; Information on incidence and prevalence of soil erosion; Information on hydrological resources, and water quality; Market based information on industrial product quality and use side effects; Census figures and other demographic information; Data on Housing Conditions (FOS); Data on Household Income and Expenditure Patterns (FOS); Migration Statistics (FOS and National Population Commission); Employment Statistics (FOS and National Manpower Board); Science and Technology Data Bank under the Raw Materials Research and Development Council (RMRDC); Compendium on environmentally sound technologies; Data on agricultural production, utilization, export, etc.

Relevant information is made available to decision makers from the Federal Office of Statistics and/or Departments of Planning, Statistics and Information Management of relevant government of private organisations. As of now, not all information can be accessed through the Internet in Nigeria. Information on sustainable consumption and production is made available by means of: exhibitions and trade fairs, journals and bulletins and pamphlets and brochures. The Raw Materials Research and Development Council has established the Science and Technology Data Bank, Raw Material Display Centres and Catalytic Model Factories to facilitate the adoption of sustainable processing technologies. The National Planning Commission has been identified as the lead Agency to co-ordinate the activities of relevant line Agencies in developing appropriate indicators. Towards this end, National Planning Commission has undertaken two major studies of the impact of sectoral and macro policies on the environment. The two studies are: Impact of Petroleum Pricing Policies on the Environment in Nigeria; and Impact of Fertilizer Pricing Policy on the Environment in Nigeria.

**Research and Technologies:** Methods or processes adopted by some of Nigerian industries in order to attain more sustainable production include: Slim-hole drilling; Use of less toxic, biodegradable drilling fluids; Use of gas in electricity generation and other power sources within plant; Horizontal Drilling in place of straight line drilling; Seismic acquisition using vibrational energy in place of explosive detonations; Compliance with ISO 9000 and 14000 Series; Compliance with EIA regulations. Clean and environmentally sound technologies are promoted and applied in production through various ways. The government has established various centres, institutes and councils

to research, develop, and promote clean and environmentally sound technologies. Other environmentally sound technologies being practised in Oil and Gas industries include: Slim-hole and horizontal drilling; Use of low toxic/non-toxic and biodegradable drilling fluids and additives; Contingency planning; and Environmental Sensitivity Index Mapping. There are other technology-related issues being addresses by the government. The issue of eco-labeling is currently under consideration by the Federal Environmental Protection Agency in collaboration with the Standards Organisation of Nigeria. Guidelines for Environmental Management System and a Blue print on Waste Management in Nigeria are being finalized.

**Financing:** Most Programmes and activities in sustainable consumption and production, like other sustainable development issues are financed from sources, including: National Treasury as part of the annual budget; Industrial Development Fund; Education Trust Fund; Ecological Fund; Oil Mineral Producing Areas Development Commission; and Petroleum Special Trust Fund; External assistance from: World Bank, Department for International Development (DID), UK, German Development Agency (GTZ), Japanese International Cooperation Agency (JICA), Global Environmental Facility (GEF), International Fund for Agricultural Development (IFAD), European Union (EU), ECOWAS Fund, and UN Agencies especially UNDP, UNIDO, FAO, WHO and UNICEF.

**Cooperation:** The government participates in various activities to promote sustainable consumption and production patterns through bilateral and multilateral cooperation. Some of these activities include: Ecologically Sustainable Industrial Development (ESID) with UNIDO in the areas of cleaner production, waste minimisation, etc; The ODS phase out programme with Multilateral Fund administered by UNIDO; UNDP and World Bank for the promotion of ozone-friendly technologies; Sustainable Agriculture and rural development with World Bank, UNDP and FAO for the promotion of environment-friendly agricultural production; Feasibility studies for investment programmes in pollution control and waste management with the World Bank; Greenhouse gas emission control (Inventorisation) with GEF; Rural development and protection of the environment along with human resources development with EU under the Lome Convention; Sustainable agriculture and industrial development with African Development Bank; Poverty alleviation, environmental management and women upliftment with IFAD and ECOWAS Fund; and Productivity improvement, occupational safety and health and women empowerment with ILO.

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## CHAPTER 4: CHANGING CONSUMPTION PATTERNS - ENERGY

**Decision-Making:** Presently, there are three Federal Ministries and an Energy Commission, with policy and planning responsibilities on energy matters and each of the ministries has parastatals that are involved in operational activities in energy. These are the Ministry of Petroleum Resources, with THE NIGERIAN NATIONAL PETROLEUM CORPORATION (NNPC) and its subsidiaries as the operational establishments for the petroleum sub-sector; Ministry of Power and Steel, with THE national electric power authority (NEPA) as the operational arm for the electricity sub-sector; Ministry of Solid Minerals Development, with the NCC as the operational arm for coal, and the Bitumen Project Implementation Committee for tar sands. The Nigerian Nuclear Regulatory Authority (NNRA) is, however, yet to be constituted. In addition to these, there is an office of the Special Adviser to the President on Petroleum and Energy, in the Presidency, charged with advisory responsibility for policy and planning for the energy sector.

The overall management of the Nigeria's mineral and natural resources remains the primary assignment of the Government through its various agencies. Resource development is, however, either by individuals, private corporations, or Government organizations. All these developmental activities, impact on the state of the environment and have contributed to environmental deterioration. The Nuclear Safety and Radiation Protection Legislation was enacted in 1995, which sets standards and procedures for the safe use of nuclear radiation. The Government through the Ministry of Science and Technology, has prepared a National Energy Policy that places emphasis on the exploitation of Nigeria's renewable and alternative energy sources (wind, solar, and biomass), and provides guidelines for environmental protection in the exploitation of Nigeria's fossil energy sources. It will soon be enacted into law. The future strategy for the oil and gas sector is to: a) develop and implement environmental assessment methodology, taking into account the economic, socio-cultural and conservation values of the environment; b) develop a comprehensive set of measures to mitigate any negative impact; c) ensure strict compliance with Environmental Impact Assessment Laws; d) implement Health, Safety and Environmental Management Systems and Quality Assurance Control; e) establish comprehensive waste management programmes; f) implement and continually update fully operational oil spill prevention programmes; g) enforce environmental risk assessment, to predict eventual consequences of accidents and take appropriate mitigation measures; h) design an appropriate facility and operational procedures; i) implement and continually update the National oil spill contingency plan for control, containment, and cleanup; j) review and implement procedures to adequately address in a timely manner the damage to the third parties; k) encourage the general public to report emergency incidents to regulatory bodies; l) ensure an internal and external market for gas; m) stop gas flaring; m) put in place a continuous public awareness programme; n) ensure full compliance with legislation, regulations, and standards of the FEPA and Department of Petroleum Resources; and o) plan long term rational exploitation of both oil and gas reserves and draw up investment strategies.

**Programmes and Projects:** Although the main thrust of Nigeria's petroleum policy is to increase the hydrocarbon reserve base through vigorous exploration, spurred by flexible and competitive fiscal incentives, environmental issues have been accorded considerable prominence in policy design. The Ministry of Petroleum Resources, through various Petroleum Acts and subsidiary legislation ensures that the petroleum industry carries out its activities safely and in an environmentally sound manner. Consequently, the Ministry has, within the past two decades, established measures to address the environmental problems associated with oil exploration, production, processing, transportation, storage, and marketing in the Nigeria. The measures established by the Ministry of Petroleum include: promotion of environmental awareness and consciousness not only amongst the oil operators but in the general public as well as among oil companies through the organization of the Biennial Seminar on the Petroleum Industry and the Nigerian Environment; ensuring that all companies should have effective contingency plans to combat minor to medium oil spills and coordinating the establishment of a national oil spill contingency plan for major or disastrous oil spills; it is mandatory to report all oil spills promptly to the Ministry; carrying out environmental baseline studies and establishing oil pollution; monitoring stations in high risk areas; establishing guidelines and standards for environmental monitoring and control in the petroleum industry including carrying out Environmental Impact Assessments (EIA) and Environmental Evaluation Reports (EER) on new projects, control of chemicals such as dispersant and drilling fluids through mandatory testing for toxicity effects on aquatic organisms and measurement of biodegradability; encouraging the remediation of polluted or contaminated sites

though the use of safe and environmentally sound technologies; promotion of the utilization of associated gas through the implementation of various projects such as the OSO Condensate Project, the OSO Natural Gas Liquefaction (NGL) Project, the Escravos Gas Project and the Nigeria Liquefied Natural Gas (NLNG) Project. Other projects designed to encourage the utilization of gas with the attendant benefit to the environment, are the Escravos-Lagos Pipeline Project, which supplies gas to Egbin Power Station and to some industrial consumers in Shagamu and Lagos, and the proposed West African Gas Pipeline Project which is to supply gas to Benin Republic, Togo, and Ghana: Promoting the use of clean fuels by encouraging a shift from kerosene and wood stove to gas-fired stoves; the gradual introduction of Compressed Natural Gas (CNG) for vehicles as a substitute for petrol; the phasing out of lead from gasoline and use of other oxygenates such as methanol and methyl-tertiary-butyl-ether (MTBE).

**Status:** Wood, petroleum, coal, gas, and water are the main energy sources in the NIGERIA. Although solar and wind energy are abundant, they remained untapped in commercial quantity. The principal current energy source is fossil fuels with hydrocarbons accounting for over 90% of Nigeria's export earnings and 80% of government revenue. The principal mineral resources include fossil fuels (petroleum, natural gas, coal, and lignite), metallic minerals (tin, columbite, iron, lead, zinc, gold), radioactive minerals (uranium, thorite, monazite, and zircon), and non-metallic minerals (limestone, marble, gravel, clay, shale, feldspar, etc.). The oil and gas sector has continued to be the backbone of the Nigerian economy, contributing over 90% of the nation's foreign exchange earnings and at least 80% of the GDP. This situation is likely to continue unchallenged into the future. The development of the oil and gas sector is, therefore, of utmost importance, especially since virtually all of the activities in both upstream and downstream sectors are not only pollution prone, but readily provoke social discord.

**Capacity-Building, Education, Training and Awareness-Raising:** There has been strengthening of institutional framework to promote sustainable energy for development. To this end, there are presently three Federal Ministries and an Energy Commission, with policy and planning responsibilities on energy matters and each of the ministries has parastatals that are involved in operational activities in energy. The energy sector requires a high-level of manpower. There are various programmes for human resources development.

**Information:** Full implementation of the energy data bank development programme supported by UNIDO and UNESCO will ensure availability of relevant information and data on sustainable development and management of energy resources in Nigeria.

**Research and Technologies:** There are two Research Centres for capacity building and research and development (R&D) in renewable energy at Uthman Dan Fodio University, Sokoto and the University of Nigeria, Nsukka. Promotion of the use of compressed natural gas for mass transit vehicles.

**Financing:** The federal government provides funds for energy resources development projects; this is at times supplemented by assistance and support from some international organizations. The government is a joint-financier of the West African Gas Pipeline Project (WAGPP).

**Cooperation:** The government cooperates with various local and international organizations, including the private sector in the development of the energy sector. Some United Nations organizations are working closely with the government for sustainable development of the energy sector.

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## CHAPTER 4: CHANGING CONSUMPTION PATTERNS - TRANSPORT

**Decision-Making:** The primary institutions responsible for the transport and transport-related activities include the Federal Ministry of Transport, the Federal Ministry of Aviation, Federal Ministry of Environment, and Nigerian Police, including the National Road Safety Corps. Most of these institutions have departments and agencies with statutory responsibilities. In Nigeria, the transport sector consumes about 23% of the total commercial energy consumption. Petrol and diesel are the major fuels for transportation; the fuels produce emissions of particulate matter, nitrogen oxides (Nox), carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), major greenhouse gases and volatile organic compounds, with resultant negative environmental and social impacts. In order to strengthen transport infrastructures and develop innovative mass transport schemes, Nigeria is committed to the promotion of alternative fuels such as compressed natural gas (CNG), urban mass transit programme, energy efficiency and clean coal technologies to cut down on emission of GHG.

The government is committed to the promotion of clean environment and an integrated approach to the development of transport systems for sustainable development. The strategy to single out the sources of gaseous emissions and maintain them at the level of full compliance by the year 2010 includes: a) review of existing National guidelines and standards to include vehicles, generating sets, aircraft; b) intensify public enlightenment campaigns at all levels on the benefits of adequate maintenance, retrofitting, adopting effective technology, ensuring efficient energy use, and increased cost benefit; c) maintain a register of technologies, vehicles, generating sets, and aircraft for approval for manufacturing and importation; d) introduce and enforce emission control certificates for vehicles, generating sets, and aircraft by 1999; e) eliminate ODS consuming processes; f) invoke the polluter pays principle immediately; g) ensure 100% waste segregation, recycling and re-use by 1999; h) promote research in Best Available Technology Effective for Local Adoption (BATELA); and i) encourage citizen empowerment in pollution control.

**Programmes and Projects:** A Road Transport Regulatory Body has been established to regulate and co-ordinate road transport modes in the country for the attainment of efficiency and safety levels. Emphasis is placed on fuel efficiency of vehicles, their age and highway designs. Urban mass transport scheme has been introduced with full involvement and participation of state and local governments and private investors. The offices have been established to provide easy evacuation and speeding movement of goods in transit especially to landlocked countries. The government's goal in the rail sub-sector is to put in place at the shortest possible time, efficient and safe modern rail transport service at an affordable cost to users with in-built reliable maintenance programme. Government is also setting in motion, the development of modern rail transportation, which will not be diesel-driven. In order to achieve maximum operating efficiency, government is appointing techno-managerial consultants for the Nigerian Railway Corporation.

The firm or consortium will be expected to provide the Corporation with appropriate restructuring frameworks at the managerial and technical levels for efficient and better performance. In the maritime sub-sector, the present administration has introduced a number of reform measures to a number of strategic port operations with a view to making the nation's ports business friendly and very competitive in the sub-region. The measures are also designed to re-attract cargo from neighbouring countries to the nation's ports. If achieved, these goals will impact positively and appreciably on the social and economic lives of the citizens of the country. The new measures include review of port charges and tariffs, facilitation of cargo delivery within 48 hours, computerization of port operations and the replacement of obsolete port handling equipment. Others are production of a comprehensive master plan for the ports preparatory to involving private sector investors and the introduction of measures to ensure maximum security at the ports as well as removal of long bureaucracy, which causes delays in cargo handlings/operations. In order to provide appropriate grounds for the enforcement of the International Convention for the Prevention of Marine Pollution from Ships etc. and its protocols, the Nigerian Government has strengthened the activities of the National Maritime Authority. In order to provide a veritable alternative mode of transportation for the evacuation of economic goods and persons into the hinterland government has mapped out comprehensive plan to pursue the capital dredging of River Niger. This is to ensure all year navigation on the Niger and Benue rivers and thereby reduce pressure on the highways.

**Status:** In Nigeria, gaseous emissions, especially from fossil fuel burning processes and processes using gas, are source pollution. The obnoxious gases include carbon, nitrous, and sulphur oxides (CO, NO<sub>x</sub>, SO<sub>x</sub>), volatile organic compounds (VOC), HC, ozone depleting substances (ODS), smoke, and particulates originating from vehicle exhausts, generators, aircraft, boilers, etc. The pollution is a major health hazard with the levels of the gases emitted around highways and runways sometimes 10 times higher than permissible levels in Nigeria.

**Capacity-Building, Education, Training and Awareness-Raising:** Procurement of air quality monitoring equipment; training of regulatory officers; conducting of seminars, conferences, and workshops for all stakeholders; and implementation of public awareness programmes, including promotion of strategies that would attract investors to the transport sector. Sensitization and mobilization of stakeholders in the transport sector on energy efficiency.

**Information:** Plans are underway for the establishment of databank on energy efficiency, vehicle emissions, transportation noise and their impacts on the environment.

**Research and Technologies:** Supporting research and technology for energy efficiency, clean energy, and alternative transportation fuels.

**Financing:** Investment in the transport sector is capital-intensive. There is need for more funds for development of infrastructure for distribution of alternative fuels; and production of compressed natural gas for use in buses and mass transit systems. There is also need to remove barriers to accessing international funds for development of the transport sector.

**Cooperation:** Government is working together with some international organizations such as the World Bank, WHO, UNIDO and IMO. Government is also promoting partnership with the private sector.

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## CHAPTER 5: DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

**Decision-Making:** The National Population Commission, the National Planning Commission, the Federal Office of Statistics, and the Federal Ministry of Health are among the primary institutions responsible for population issues in the country. Nigeria has a number of policies that address various areas in the population and development field. The national population policy (NPP) was launched in 1988. The Health policy and National Policy on Women are other relevant policies. There is also an economic policy that takes cognizance of population-related issues such as life expectancy and maternal mortality in national development. This policy was launched early in 2000. On the whole, Nigeria's policies in population-related areas are fairly adequate but the national population policy needs to be updated in line with the programme of action of recent UN conferences and internationally agreed conventions. NPP accords the role of coordinating the implementation of population activities to the Department of Community Development and Population Activities (DCDPA) of the Federal Ministry of Health (FMOH), while specific implementation roles are shared between a number of federal and states agencies, as well as NGOs. Implementation agencies at the federal level include the NPC, the Health Education Unit of the FMOH, the RH Division of FMOH, the Population Information Communication Branch of the Federal Ministry of Information, and the Nigerian Educational Research Development Council (NERDC). In addition, the Population Activities Fund Agency (PAFA), although now defunct, was established with mandate to manage a World Bank facility and fund activities under the NPP.

**Programmes and Projects:** Government has undertaken a number of activities and initiatives to ensure the integration of population into development for development. In addition to the establishment of various institutions promulgation of policies that have been described above, government in very recent time has (i) established functional House and Senate Committees on Population at the National Assembly; (ii) re-structured the implementation and coordination mechanism for the National Population Policy (NPP); (iii) enhanced efforts to source funds for the implementation of NPP; (iv) taken appropriate steps towards the conduct of a national census in 2004; and enacting laws to strengthen a number of national agencies that collect and manage population data.

**Status:** By the last national census, Nigeria had a population of 88.9 million in 1991 with an annual growing rate of about 2.8 per cent, to make it one of the fastest growing population in the world. With a total land area of approximately 923, 768 km<sup>2</sup>, Nigeria is the tenth largest country in the world. It is also by far the most populous country in Africa. Using the annual growth rate, the National Population Commission (NPC) has estimated that the population of the country would be 150 million, 154.8 million and 235.6 million in year 2000, 2010 and 2025 respectively. In other words, the population of the country would triple in the next 20 years. In order, therefore, to even maintain the current low standard of living and quality of life, the country needs to double the number of schools, health facilities, food production, housing, water supply, electricity supply etc in the next 25 years. This poses a great sustainable development challenge to Nigeria. Another population challenge to the sustainable development strides of Nigeria is the age structure of the population.

The country's population can be described as 'young' as almost half of the population (44.9%) was under 15 years of age while old people of 65 years and above constituted only 3.3 per cent of the population according to the 1991 census. The 1991 census also showed that the overall dependency ratio of the country in 1991 was 93.2 reflecting that the index of economic dependence showed a greater burden for employed people with a rate of 93 dependence of every 100 workers. The dependency ratio has remained relatively stable at about 94% since 1991. There are also differences in the distribution of population between the rural and urban areas of the country. In 1952/53, about 10.6 percent of the people lived in urban areas of 20,000 or more people. This proportion increased to 35.7 percent urban in 1991. The rapid rate of rural-urban migration is partly responsible for the high rate of urbanization in the country with its consequent urban problems of housing, sanitation, waste management and crime. Although the vast majority of the population, about 64 per cent, lives in rural areas the urban population has been growing rapidly and has increased significantly from 19 per cent in 1963 to 36 per cent in 1991. The most urbanized states are Lagos (93.7 per cent) Oyo and Oshun (69.3 per cent) and Anambra (61.9 per cent) while the least urbanized are Jigawa (6.9 per cent) Taraba (10.4 per cent) Akwa Ibom (12.1 per cent) and Kebbi (12.4 per cent) The Southern region of the country is the most urbanized with 40 per cent of the country's 329 urban centres ( an urban area is defined as

one with over 20,000 inhabitants) located in the region, the overall rural urban migration in the country in 1991 was stated to be 4.5 per cent.

**Capacity-Building, Education, Training and Awareness-Raising:** Although there are trained planners in various federal and state institutions, skilled manpower to effect integration of population variables into development planning is insufficient. Most State Planning Commission also lack the necessary equipment and materials such as computer and databases to effect planning using modern techniques. Due to increase in public awareness campaigns and education, there is increase in knowledge of contraception among married women, decline in infant mortality rate, and reduction in early marriages.

**Information:** In Nigeria, numerous sample surveys have been conducted in the bid to generate reliable demographic data. The Nigeria Demographic and Health Survey (NDHS), conducted by the Federal Office of Statistics (FOS) in 1990 and the National Population Commission (NPC) in 1999 respectively, is the most prominent of these. The FOS, in collaboration with UNICEF, conducted Multiple Indicator Cluster Survey (MICS) in 1995 and 2000 principally targeted at assessing the progress so far made towards the achievement of the goals of the World Children Summit. The MICS is one of the modules of National Integrated Survey of Households (NISH). FOS also conducts General Household Survey (GHS) on an annual basis to collect data, in a brief form, on a number of socio-economic and population-related issues. Various ministries and agencies, through their Department of Planning, Research and Statistics also collect data, mainly secondary ones, on their area of activities. The establishment of the National Data Bank (NDB), as an agency under the National Planning Commission, in 1989, provides an opportunity to develop a comprehensive and truly national databank and a mechanism to link all major data sets in the country. So far the NDB has been able to code about 54,000 variables across 30 sectors and has an Internet site to facilitate some degree of access.

**Research and Technologies:** Reliable time-series demographic data are relatively lacking in Nigeria, and efforts to collect such data have generally been unsatisfactory. There is need for more research and application of modern technologies such as computers in dealing with key issues particularly in the area of population and development strategies, including development of data systems and use of population data in development planning.

**Financing:** The federal and state governments provide funds for many population projects. Other international organizations such as the World Bank, WHO and UNICEF have provided some support. Some donor agencies such as USAID have also provided some assistance.

**Cooperation:** The government has collaborated with some international organizations in various population projects.

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## CHAPTER 6: PROTECTING AND PROMOTING HUMAN HEALTH

**Decision-Making:** The institution primarily responsible for promoting and protecting human health is the Federal Ministry of Health (FMOH). The Federal Ministry of Environment complements the efforts of the FMOH in the area of environmental health.

**Programmes and Projects:** Government's efforts to improve the performance of the health sector within the last ten-years include a series of policy thrusts aimed at increasing access to health care. The Public Health Care (PHC) system, re-launched in 1987, has been a major initiative in increasing access to health care particularly for the rural people and the poor. To this end, the national health policy has since specified the PHC as the cornerstone of Nigeria's health system. To improve upon the quality of health delivery in the public sector, Government has revitalized the essential drug scheme and Bamako Initiative. The training activities of various Schools of Health Technologies and other relevant health institutions have been reinvigorated. In addition, the National Primary Health Care Development Agency has just been constituted to improve on the quality of delivery of the PHC. One of the foremost Nigerian experts on PHC and a former minister of health are at the helms of affairs. Efforts to address the poor performance in the area of immunization has led to the establishment of a National Immunization Agency, as a separate parastatal of the Federal Ministry of Health (FMOH). The late 1990s have particularly witnessed increased activities and financial allocation to the national immunization programme by the government and supported by a number of UN agencies and other development partners. The federal government has particularly strived to improve access to specialist and tertiary health facilities in the last five years by upgrading a secondary health facility each, in states where no tertiary facility was existing, to a Federal Medical Centre. As part of the effort to improve the efficiency and effectiveness of the health system, the process of health reform has also been initiated by the Federal Ministry of Health, and is currently on-going. A major issue in this regard is that of the National Health Insurance Scheme which has taken off on a limited pilot basis. Specifically, the achievements of national efforts in health management can be captured in the following programme areas:

- Meeting Basic Primary Health Care Needs, including the provision of basic health infrastructure; capacity building; support to intersectoral collaboration; assessment surveys; awareness creation; and fine tuning and establishing a structure in the NPHCDA that allows rapid devolvement of information/programme from Federal level to the grassroots;
- Control of Communicable diseases, and reducing Health Risk from Environmental Factors, including national workshops on retrieval and processing of EPI data; establishment of NPI and routine immunization; implementation of the Roll-Back Malaria Programme; integration of HIV/AIDS management into the health care delivery system; and training;
- Protection of vulnerable groups and enhancing community participation, including training of Health workers on maternal and child survival strategies; enlightenment and advocacy on female genital mutilation and teenage marriage; propagation of modern family planning methods; promotion of school health service; and establishment of village/ward development committees; and support to women group.
- Ensuring political commitment to PHC and sustainable development, including establishing community integration and co-ownership of PHC; restructuring of the health district to ensure the alignment of health issues with political aspiration; implementation of the various health policies; conduction of advocacy to secure an Executive Committee for PHC; and involvement of partners and relevant stakeholders in all its activities.
- Establishment of a Disease Surveillance and Notification System (DSN) and the development of a localized computer software called EPID; and
- Development of National Environmental Health Action Plan (NEHAP)

**Status:** Health related environmental problems in Nigeria vary with the social and economic development achieved by different States, and even different towns and villages within individual states. They are linked to poverty, absence of adequate water supplies, lack of sanitation services and poor housing conditions. With increasing industrialization, the risk of respiratory illness and cancer-related deaths also rises. Extensive and rapid development in all industrial and many agricultural sectors has sharply increased the exposure of industrial workers

and large segments of the population to these risks. The major public health problems associated with poor environmental sanitation, exposure to communicable diseases, and poor personal hygiene predominate and are often compounded by malnutrition which reduces resistance to diseases especially among vulnerable groups such as children, pregnant and lactating mothers, and the aged. Malaria, cholera, schistosomiasis, diarrhoea, and other diseases transmitted by mosquitoes and other vectors such as filariasis and parasitic infestations like guinea worm and onchocerciasis are still major public health problems. Many other diseases such as tetanus, whooping cough, and tuberculosis are becoming more prevalent in urban areas as a direct result of overcrowding and poor sanitary conditions. Other public health problems are associated with exposure to hazardous chemicals and heavy metals.

**Capacity-Building, Education, Training and Awareness-Raising:** Inadequate modern equipment and facilities, and insufficient specialized manpower

**Information:** The National Health Information Management System (NHMIS) has been established with a view to improve data collection in the health sector. New forms and other relevant instruments have been developed, and some health workers trained in the use of the forms. Furthermore, the 'Health Information for Action' package, user-friendly software, has been developed to improve data analysis and use of information for management at various levels.

**Research and Technologies:** Development of new drugs using local raw materials, and adapted technologies.

**Financing:** Federal and state governments provide funds for health and health related projects, with assistance from some international organizations and donor agencies.

**Cooperation:** Through bilateral and multilateral activities, the federal government has cooperated with the international community including some specialized agencies of the United Nations such as WHO and UNICEF.

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## CHAPTER 7: PROMOTING SUSTAINABLE HUMAN SETTLEMENT DEVELOPMENT

**Decision-Making:** The Federal Ministry of Works and Housing, has carried out programmes in promoting human settlement development such as providing adequate shelter for all; improving human settlement management; promoting sustainable land use planning and management; promoting the integrated provision of environmental infrastructure such as water, sanitation, drainage and solid waste management; and promoting sustainable construction industry activities. The Government's decision to implement these programmes was based on the resolution adopted at the First United Nations Conference on Human Settlement (Habitat) in 1976. A major action in this direction is the on-going review of the 1978 Land Use Act and a new statute will be put in place after the review. The Nigerian Urban and Regional Planning Law were also promulgated in 1992 to regulate and guide spatial planning at all levels of government. The Federal statute has been adopted and is being implemented nationwide as a model for other levels of government. The Federal Land Registry has been established to facilitate the registration of all titles to Federal Government land throughout the country. Some national policies that have been carried out include the National Housing Policy to provide decent housing for all by the year 2000. In recognition of the rapid rate of urbanization in the past two decades, the National Rolling Plans since 1990 have factored in National Housing Policy instruments for implementing the National Housing Programme.

Furthermore, the National Housing Fund and an Infrastructure Development Fund have also been put in place to facilitate the attainment of the goals of sustainable human settlement in the country. The National Urban Development Policy was formulated in 1992 to provide guidelines for urban development and management. An Urban Development Bank and an enabling law for the establishment of physical planning units at all levels of government have been achieved under the policy. To enable the construction sector to meet human settlement development goals while avoiding harmful side effects on human health, the Federal Government of Nigeria has established and commenced the enforcement of National Building Codes and Standards. In addition, a National Construction Policy was promulgated in 1994 to ensure and enhance the following: the use of indigenous building materials and industries; adoption of standards and regulatory measures for increased use of energy-efficient designs; and use of labor intensive construction and maintenance technologies for the generation of employment. The strategies to strengthen the emergency preparedness to reduce peoples' vulnerability and cushion the impact of disasters on settlements, the economy, and the environment are such as:

- Prepare comprehensive hazard maps and vulnerability analysis for the country through compiling historical data of disaster occurrence, analysis of meteorological, seismological, agricultural, and environmental records, and employing satellite imagery and geographic information systems (GIS) to prepare the hazard maps; and
- Establish very effective early warning systems for meteorological, geological, biological, social, and industrial hazards by enhancing meteorological services, effectively monitoring pests and disease epidemics, resuscitation of seismographic stations and the existing seismological centres, development of reliable biological indicators, and building a viable network for early warning information dissemination.

**Programmes and Projects:** The Federal Government, through the Federal Housing Authority (FHA) started the National Housing Programme in 1994 to produce 121,000 housing units for low, medium, and high-income earners. So far, only about 5% of the target has been achieved. Further efforts on direct construction of houses continue to be made through the National Prototype Housing Programme aimed at demonstrating the feasibility of constructing functional, cost effective and affordable housing units. So far, 600 housing units in various stages of completion are being constructed in Lagos, Kaduna, Port-Harcourt, Jos, Kano, and Lafia. The Urban renewal programme is directed at improving existing neighbourhoods in core areas. It has been implemented in 18 cities across the nation. Further to the achievement of the goal of improving urban management, the country is participating in the Sustainable Cities Programme (SCP) under the urban management programme (UMP) of the United Nations Centre for Human Settlement (UNCHS)/World Bank/United Nations Development Programme (UNDP). Under the programme, the Sustainable Ibadan Project (SIP) is being implemented. In addition to efforts of the Government toward the achievement of the objectives of programmes under the Infrastructure Development Fund Programme, the Urban Basic Services Programme (UBS) is being undertaken in the country to promote the integrated provision of environmental infrastructure, water, sanitation, drainage, and solid waste management. The project involves the identification of core areas in some Nigerian cities and the packaging of improvement programmes targeted at

women and children. Nigeria's efforts towards sustainable development since policy formulation and the establishment of agencies for implementation mark 1986. As a measure towards mitigating the negative impact of natural and man made disasters, the Federal Government has also adopted a pre-disaster approach to action. The Nigerian Government is also currently working at developing future programmes aimed at improving the human settlement development and management sector. These include: poverty alleviation programmes in collaboration with the World Bank and UNDP; a programme support document for Governance in collaboration with UNDP; a National strategy for the replication of the Sustainable City Programme in other Nigerian cities; and replication of the UBS Programme in collaboration with UNICEF.

**Status:** Over the years, Nigeria has been experiencing a rapid rate of urbanization. In 1952, 10% of the population lived in urban centres with population of 20,000 people and above. This increased to 20% and 38% in 1970 and 1993 respectively. The problems and challenges posed by rapid urbanization in the country are immense. Among these are inadequate shelter resulting in over crowding, inadequate and inefficient transportation systems, poor infrastructure facilities and services, development of slum areas in cities, and generally poor environmental conditions. In the Government's various efforts at attaining sustainable human settlement development, several constraints to planning and implementation of physical development have been experienced. These constraints include: rapid rate of urbanization; declining socio-economic standards; fund limitations; human resource deficiencies; fluctuating political will; unintegrated policy focus; dearth of base maps; inadequate database for planning and monitoring; and insufficient foreign technical assistance. Future planning for emergency preparedness and management aims to mitigate promptly the negative impacts of natural and man-made disasters on human settlements, the National economy, and the environment. Nigeria has had a number of emergency situations arising from natural and man-made disasters. The natural phenomena include tropical storms, land erosion, windstorms, floods, drought, desertification, human diseases, coastal erosion, livestock diseases, crop pests and diseases, wildfire, landslides and etc. Other potential hazards include earthquakes and volcanoes. The major man-made hazards include civil strife; road, water and air traffic accidents; and technological episodes such as oil spills, hazardous wastes dumping, and industrial accidents. All of these hazards call for urgent action to strengthening the emergency preparedness to reduce peoples' vulnerability and cushion the impact of disasters on settlements, the economy, and the environment.

**Capacity-Building, Education, Training and Awareness-Raising:** See under **Cooperation**.

**Information:** To enhance the availability of baseline data as well as other information on key indicators of urban/rural and regional development, a National Index of Building Starts (NIBS) was established in 1994 to collect data on building starts and other housing indicators. The Nigerian Institute is undertaking the project for Social and Economic Research (NISER) in collaboration with the Federal Ministry of Works and Housing. Regional Workshops have been held on the use and implementation of NIBS.

**Research and Technologies:** Promotion of research on the development of local raw materials for the building industry, and the adaptation of imported technologies to suit local needs.

**Financing:** The Urban Basic Services Programme (UBS) is being financed with a \$3 million grant from the United Nations Children's Fund (UNICEF) with matching grants from the Federal Government. Target communities to benefit from the programme have been identified in the cities of Lagos and Ibadan. Through financial assistance from the World Bank (US\$ 180 million), the Infrastructure Development Fund has financed urban development projects in 15 States of the Federation. The loan from the World Bank was matched with local funds (25%). The projects cover storm drainage, sanitation, urban road rehabilitation, water and solid waste management, market development, water rehabilitation, motor part development, river training/channelization, and street lighting.

**Cooperation:** Under the various programmes for the promotion of human resource development, the Government in collaboration with such agencies as the World Bank, UNDP, the United Nations Environment Programme (UNEP), the International Labor Organization (ILO), UNICEF, and UNCHS have sponsored foreign and local training programmes to acquaint operators of this sector with contemporary ideas, strategies, and tools for human resources development. Technical assistance for human resource development has been received to contribute to

enhancing the management capacity of agencies responsible for urban development. Under the World Bank Infrastructure Development Fund Programme, Officers of State and Federal agencies have been trained in various aspects of urban management and computer literacy. Supply and installation of computer hardware and software have also been sponsored. Other international agencies that have offered training assistance include the UNDP, UNEP, UNCHS, and UNICEF.

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## CHAPTER 8: INTEGRATING ENVIRONMENT AND DEVELOPMENT IN DECISION-MAKING

**Decision-Making:** Nigeria through its Federal Ministry of Environment had achieved the following major milestones in environmental protection and conservation of natural resources: development of the National Policy on the Environment; establishment of a National Council on Environment (NCE); establishment of a National Advisory Committee (NAC) on Agenda 21; review of National Environmental Policy Guidelines and Standards; enactment of the Environmental Impact Assessment (EIA) Law; establishment of a National Energy Policy; and enactment of Nuclear Safety and Radiation Protection Legislation; implementation of the National Agenda 21; and the initial development of the VISION 2010 strategy. The National Council on Environment, established in 1990, provides a forum for consultation and harmonization of environmental management matters throughout the Federation. Some of the achievements include the harmonization of environmental protection institutions throughout the Federation and the creation of State Environmental Protection Agencies in all the States of the Federation. The Federal Government established a National Advisory Committee on the Implementation of Agenda 21 in 1993.

The Committee is made up of professionals from relevant private sector and government organizations, the academic community, Non-Governmental Organizations (NGOs), and Community Based Organizations (CBOs). The Committee advises the Federal Government of Nigeria on sustainable development issues and strategies for implementing the provision of Agenda 21. As part of Government efforts towards integrating environmental concerns into development, the guidelines and standards approved prior to the United Nations Conference on Environment and Development (UNCED) were reviewed through Decree 59 in 1992. Apart from expanding the mandates of FEPA, the Decree legalized the proposed Guidelines and Standards for Environmental Pollution Control, the Regulations on Effluent Limitations, Pollution Abatement in Industries, and the Regulations for the Management of Solid and Hazardous Wastes. The Federal Government enacted the EIA Law in 1992 as a tool for integrating environmental concerns into all major activities throughout the country. Procedural and Sectoral Guidelines for Agriculture and Rural Development, Oil and Gas, Infrastructural Manufacturing, and Mining activities in the country have also been put in place. The Nuclear Safety and Radiation Protection Legislation was enacted in 1995, which sets standards and procedures for the safe use of nuclear radiation.

The Government on 27 November 1989 launched the National Policy on the Environment. It contains specific guidelines for achieving sustainable development in fourteen vital sectors of the nation's economy, namely: Human Population; Land Use and Soil Conservation; Water Resources Management; Forestry, Wildlife and Protected Natural Areas; Marine and Coastal Area Resources. The Government in line with the challenges of the Vision 2010 and Agenda 21 programmes is currently reviewing the Policy. The Government through the Ministry of Science and Technology, has prepared a National Energy Policy that places emphasis on the exploitation of Nigeria's renewable and alternative energy sources (wind, solar, and biomass), and provides guidelines for environmental protection in the exploitation of Nigeria's fossil energy sources. It will soon be enacted into law. Although the main thrust of Nigeria's petroleum policy is to increase the hydrocarbon reserve base through vigorous exploration, spurred by flexible and competitive fiscal incentives, environmental issues have been accorded considerable prominence in policy design. The Ministry of Petroleum Resources, through various Petroleum Acts and subsidiary legislation ensures that the petroleum industry carries out its activities safely and in an environmentally sound manner.

Consequently, the Ministry has, within the past two decades, established measures to address the environmental problems associated with oil exploration, production, processing, transportation, storage, and marketing in the country. These measures include; 1) Promotion of environmental awareness and consciousness not only amongst the oil operators but also in the general public through the organization of the Biennial Seminar on the Petroleum Industry and the Nigerian Environment. The oil companies are also encouraged to organize annual Safety, Health and Environment Weeks in their operational areas to sensitize their work force; 2) Ensuring that all companies should have effective contingency plans to combat minor to medium oil spills and coordinating the establishment of a National oil spill contingency plan for major or disastrous oil spills. It is mandatory to report all oil spills promptly to the Ministry. During the preliminary appraisal of the implementation of the National Agenda 21, several gaps were identified. These gaps have been incorporated into the laudable programmes of VISION 2010. The Federal Government of Nigeria recently mapped out plans and strategies toward the implementation of Agenda 21. The plans and strategies will be given in the detailed final report of the VISION 2010 committee recently

inaugurated by the Government. It is a broad programme of actions aimed at rapid development of the country in terms of economic prosperity, political stability, and social harmonization. One important Sub-committee of VISION 2010 focuses on redressing these major existing environmental problems based on the goals of Agenda 21. Corrective action and new investment programmes are needed now to reduce and eventually prevent these losses. Future measures are being considered to redress the major environmental problems affecting Nigeria. These measures build on the gains so far achieved in environmental protection and ensure that environmental protection programmes are anchored on a solid foundation. The strategy includes the following aspects: a) integrating environment into development planning and decision-making; b) strengthening the legal basis for sustainable development; c) creating and improving the capacity for sustainable development. It is necessary to enhance the capacity of the FEPA and other responsible organizations to enforce environmentally friendly practices and move towards achieving sustainable development.

The strategy to accomplish this includes: a) expanding the fundamental objectives and state policy in the Constitution to include sustainable development as a National goal; b) the Government adopting the Polluter Pays Principle as an instrument of environmental protection policy and management; and c) speedy translation of international agreement protocols and conventions on environment and application into National laws and regulations, and their enforcement. The strategy to integrate environment into economic and sectoral policies, planning and decision making processes includes: a) improving the provisions of the EIA Decree 86 of 1992, and ensuring its proper implementation; b) in parallel with current practice at the Federal level, establishing Sustainable Development Units (SDUs) in State Budget and Economic Offices with the same responsibility and function as the SDUs. In the National Planning Commission and the Urban and Regional Planning Department of the Ministry of Works and Housing to enable sustainable land use management; and c) adopting the System of National Accounting to adequately reflect the extent to which economic development activities have increased or decreased environmental pollution and natural resources on which future economic and social development depends. Future plans to harmonize federal and state responsibilities for environmental management should ensure the optimum use of the limited technical and financial resources available to meet National goals and guidelines for environmental protection and sustainable development.

The Federal responsibilities and functions should include: a) the establishment of environmental quality standards, and regulatory guidelines and procedures for implementing, enforcing, and evaluating such standards; b) the establishment of guidelines and procedures for project and policy environmental assessment screening and EIA as well as the necessary capacity to initiate and review them; c) the establishment of Federal Environmental Action Plans for execution by Federal Institutions; and etc. The strategy to achieve participation and cooperation of other groups includes: a) the installation of very effective machinery to enhance environmental awareness through public enlightenment and environmental education at all levels of society; b) establishment of environmental data banks and information networks; c) creation of fora for building consensus and for the exchange of information among all stakeholders and interest groups on sustainable development decisions; and d) the strengthening of mutually beneficial relationships with bilateral and multilateral environmental bodies, including regional and international NGOs.

**Programmes and Projects:** Establishing a due process for continuous monitoring and on-going review of existing policies

**Status:** The major constraint to the implementation of Agenda 21 remains the financial provisions for implementation. Accordingly, implementation of Agenda 21 in Nigeria will require the assistance of relevant international, multilateral, and bilateral agencies, such as the UN, the World Bank/International Development Association (IDA), and The IMF. The constraints to the effective implementation of Agenda 21 are such as a) uncoordinated policy and legal instruments in environmental and natural resources conservation in Nigeria; b) the existence of a large number of disparate legislation and policy documents directed at individual environmental or resources issues or problems; c) weak databases and inadequate/inaccurate data adversely affecting policy formulation, project planning, and implementation of environment and natural resources conservation; d) the enforcement of existing environmental rules and regulations and the inadequacy of monitoring and enforcement mechanisms; and e) inadequate institutional capacity, and inter-sectoral communication and co-ordination to manage the environmental and resource management network throughout the country.

**Capacity-Building, Education, Training and Awareness-Raising:** There is still an insufficient popular participation in project design and implementation. In term of awareness raising, even people who have to make informed decisions still seem to have insufficient access to all relevant information on environment and development issues, not to mention the general populations.

**Information:** The government is involved in the development and improvement of databases in all relevant institutions and creation of effective linkages and network amongst the institution to ensure easy storage and retrieval of information and data, and to minimize duplication of efforts.

**Research and Technologies:** Promotion of research and adaptation of technologies in the application of expert decision-support systems such as the Geographic Information System (GIS), and remote sensing techniques

**Financing:** Government provides funds for the implementation of programmes and projects in this area with assistance from the international community. The World Bank financed the Environmental Management Project of the former Federal Environmental Protection Agency (FEPA).

**Cooperation:** Through bilateral and multilateral activities, the government has been cooperating with the international community including UN agencies and other donor agencies.

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## CHAPTER 9: PROTECTION OF THE ATMOSPHERE

**Decision-Making:** The Nigerian Government's strategy to single out the sources of gaseous emissions and maintain them at the level of full compliance by the year 2010 includes: a) review of existing National guidelines and standards to include vehicles, generating sets, aircraft etc.; b) intensify public enlightenment campaigns at all levels on the benefits of adequate maintenance, retrofitting, adopting effective technology, ensuring efficient energy use, and increased cost benefit; c) maintain effective databases on industries and their compliance status; d) maintain a register of technologies, vehicles, generating sets, and aircraft for approval for manufacturing and importation; e) introduce and enforce emission control certificates for vehicles, generating sets, and aircraft by 1999; f) eliminate ODS consuming processes; g) enforce laws relating to the siting of new industries; h) install a minimum of primary treatment for all new industries; i) build secondary central treatment facilities in all major industrial estates in cities such as Lagos, Kano, Kaduna, Port-Harcourt, Warri, Ibadan, and Enugu by 2005; j) invoke the polluter pays principle immediately; k) ensure 100% waste segregation, recycling and re-use by 1999; l) promote research in Best Available Technology Effective for Local Adoption (BATELA); m) make eco-labelling compulsory for all products by the year 2000; n) promote commercialization of sanitary landfill and incineration as appropriate; o) encourage citizen empowerment in pollution control; p) introduce green technologies and promote Environmental Management Systems (EMS) in all industrial facilities; q) create an environment fund for soft loans as economic incentives for environmentally friendly industries; and r) promote tax rebates for industries installing pollution abatement facilities.

The future strategy for the oil and gas sector is to: a) develop and implement environmental assessment methodology, taking into account the economic, socio-cultural and conservation values of the environment; b) develop a comprehensive set of measures to mitigate any negative impact; c) ensure strict compliance with Environmental Impact Assessment Laws; d) implement Health, Safety and Environmental Management Systems and Quality Assurance Control; e) establish comprehensive waste management programmes; f) implement and continually update fully operational oil spill prevention programmes; g) enforce environmental risk assessment, to predict eventual consequences of accidents and take appropriate mitigation measures; h) design an appropriate facility and operational procedures; i) implement and continually update the National oil spill contingency plan for control, containment, and cleanup; j) review and implement procedures to adequately address in a timely manner the damage to the third parties; k) encourage the general public to report emergency incidents to regulatory bodies; l) ensure an internal and external market for gas; m) stop gas flaring; m) put in place a continuous public awareness programme; n) ensure full compliance with legislation, regulations, and standards of the FEPA and Department of Petroleum Resources; and o) plan long term rational exploitation of both oil and gas reserves and draw up investment strategies.

**Programmes and Projects:** In compliance with the requirements of the Montreal Protocol and the provision of Agenda 21, the phasing out of ODS in Nigeria has been given priority among the programmes being implemented by the Federal Environmental Protection Agency (FEPA). In 1993, the Federal Government of Nigeria established a Regional Environmental Monitoring Station at Oshogbo under the auspices of the Global Atmospheric Watch (GAW) programme of the World Meteorological Organization (WMO). The station monitors background atmospheric pollution. GEMS/Air Nigeria is a component of the Global Environment Monitoring System whose specific goal is to monitor and assess urban air quality. The programme commenced in 1995 with FEPA as the focal point.

**Status:** Since the United Nations Conference on Environment and Development (UNCED), the activities of the Nigerian government in the area of protecting the atmosphere include: phasing out the consumption of ozone depleting substances (ODS); monitoring background atmospheric pollution and the total column ozone; data bank automation; a greenhouse gas inventory; climate change research and training; promotion of environmentally friendly energy practice; and participation in the Global Environment Monitoring Systems (GEMS). The unpleasant side effect of industrialization is the waste generated from industrial processes. Another source of pollution is gaseous emission especially from fossil fuel burning processes and processes using gas. Since the oil and gas sector has continued to be the backbone of the Nigerian economy, contributing over 90% of the nation's foreign exchange earnings and at least 80% of the GDP. This situation is likely to continue unchallenged into the future. The

pollution is a major health hazard with the levels of the gases emitted around highways and runways sometimes 10 times higher than permissible levels in Nigeria, Ghana, Europe, and many other countries. In order to reduce the levels of these gases to tolerable ambient limits, it is important to single out the sources of gaseous emissions and maintain them at the level of full compliance by the year 2010.

**Capacity-Building, Education, Training and Awareness-Raising:** A proposal on capacity building for the development of a National Strategy and Implementation of the Country's Obligation to the United Nations Framework Convention on Climate Change (UNFCCC) has been approved for funding by the Global Environmental Facility (GEF). The programmes will cover greenhouse gases, public awareness, impact assessment, adaptation options, integrating climate concerns into planning processes, and identification of abatement practices.

**Information:** Preparation of the national communication document provides information on relevant issues relating to climate change in Nigeria. A database on all air pollutants of concern to Nigeria will be developed.

**Research and Technologies:** The Department of Meteorological Services is monitoring total column ozone with the Dobson Spectro Photometer since March 1993 at Oshodi, Lagos. This is the only such measurement taking place in Sub-Saharan Africa. The average value (about 240-280 Dobson Units) conforms to the expected value for the equatorial belt. The Department is in the process of computerizing its data bank. The Ministry of Science and Technology through its Energy Centres has supported research on the use of solar and wind energy. It is envisaged that by the year 2010 the following would have been produced and distributed: 15,000 solar water heaters; 450 solar stills; 225 solar dryers; 10 village wind energy electrification projects; 11,000 photo-voltaic water pumping stations; 2,000 village solar energy electrification project; and 20,000 solar power refrigerators for rural health centres. The FEPA-University of Technology, Minna, Niger State Linkage Centre undertakes training and research in the areas of climate change and water resources. Specific activities are associated with: a climate science data bank; assessment of the impact of climate change on water resources development; environmental monitoring of hydro-climatic elements for special locations, such as dams and reservoirs for power generation; early warning systems and vulnerability assessment of climate change impacts; and conservation of the ecological systems of water bodies.

**Financing:** Since 1993, the inventory of greenhouse gases and the determination of their concentration in the atmospheric has been funded by the United Nations Environmental Programme (UNEP). It involved the determination of the concentration of carbon dioxide, oxides of nitrogen and sulphur, and other CFC gases in the country. Due to delays at the implementation phase, funding for the project has been terminated. Nigeria also received grants and funds from the US and IMF.

**Cooperation:** Nigeria ratified The Montreal Protocol in 1988 and The United Nations Framework Convention on Climate Change (UNFCCC) in 1994.

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## CHAPTER 10: INTEGRATED APPROACH TO THE PLANNING AND MANAGEMENT OF LAND RESOURCES

**Decision-Making:** Coordination of Land resources management is handled by a number of national councils and committees. The Federal Ministry of Agriculture and Rural Development has a key role to play in the implementation of land management programmes through the departments that it controls. These are departments of Agricultural Land Resources, Agriculture, livestock, and Rural Development. Other ministries such as Water Resources, Works and Housing; Environment, Industries, Solid Minerals Development; Women Affairs; Aviation; small-scale food producers; indigenous people; youth and non-government organizations are also involved in national decision making related to land management. States and Local Government Institutions and the assisted Agricultural Development Projects are also involved in the land Management. Land resources planning are the National Agricultural Land Resources Development Committee has coordinated the sectoral level for agricultural production. All technical institutions responsible for forest and agricultural land use are members of the committee. The Department of Agricultural Land Resources is largely responsible for the selection of suitable lands for the production of specific crops. Each of the land use agencies at Federal and State level is responsible for carrying out soil and land use capability surveys designed for sectoral land use planning which are often carried out as part of feasibility surveys of land based projects. Forestland management is co-coordinated by the Federal Department of Forestry. Because all forestlands are owned by the State Governments, the State Forest Services are being co-coordinated through National Forestry Development Committee and the National Wildlife Development Committee.

The Ministry of Water resources coordinated the survey of Flood Plain Of River Nigers and Benue for agricultural production. The survey brought into focus the enormous groundwater resources potential available for dry season farming. The Federal ministry of Solid Minerals Development coordinates activities related to exploration and mining of all minerals in the country. Land Resources Management requires an integrated approach for maximum benefits. At present, many organizations and institutions in Nigeria independently pursue various land management activities in accordance with their individual policies and mandates. Some of the on going land resources management activities include; a) Soil Survey and Land evaluation; b) Land Use and Conservation; c) Integrated forest land management; and, d) Desertification control. These activities are aimed at conserving bio-diversity, producing food and fiber, conserving water resources, and protecting soil and natural ecosystems. However, presently Nigeria has no National strategy or Policy on integrated land management. The land use practices are mainly based on ad hoc administrative plans for projects execution. The various local land use practice do not give effective protection of the land from degradation. The only major document presently in place on national use is the Land Use Act of 1978. The Act dwells more on demarcation of the Nation's land into urban and rural areas. There were no provisions in the 1978 Act to ensure that the lands opened up fitted well for particular uses and will be protected and sustained. The following strategies toward integrated land resources management have been put in place; a) compilation of detailed land capability inventories and comprehensive land classification; b) assessment of the current land use practices and causes and extent of land degradation; c) adoption of soil conservation principles in all agricultural lands; and d) improving management of soil and water resources. The additional strategies for the attainment of integrated land management that should be adopted include; a) Establishment and strengthening of guidelines on the regulatory framework for sustainable land use; and, b) Coordination of the activities of the various agencies dealing with land and land resources management.

**Programmes and Projects:** Currently there is no programme on ground for the integration of the activities of all the stakeholders for sustainable land resources management. The Forest Resources Study Project assisted 36 states Forest Services to develop forest management plan. Land management was also coordinated through the Environmental management Project (EMP). The data on vegetation and land use map for the whole country were used to develop a GIS database for Nigeria. The data were meant to plan forest and agricultural land management for the country. The on-going activities in this area include: the Soil Survey and Land Evaluation Programme; the National Soil and Fertilizer Testing Programme; Soil Fertility Management and Fertilizer Development Programme; and the Soil Conservation Programme. Various soil fertility management and fertilizer development projects have been completed in different parts of the country. Efforts are now being made to ameliorate the special problems of acid soil with low pH value, which exists in the south eastern zone of the country.

**Status:** Government policies had been geared towards food security, rural development and poverty alleviation among vulnerable groups, women and children. The food security programme had greatly conflicted with the sustained yield principle of forest management as well as natural regeneration of the forests. The food security programme has been pursued through extensive cultivation of the natural forests. This eventually reduces the total land area under forest cover. Agricultural expansion has remained the main cause of deforestation in the country. Most of the agricultural production has encroached onto the forest estate. The implementation strategy should be based on innovative field programmes to introduce improve land and land resources management practices using appropriate gender-friendly technologies. However, past experience shows that to be successful, programmes must be based on community involvement in the planning and implementation of improved land resources management practices. Soil and hazardous wastes are generated through human settlement, domestic, commercial and industrial activities including the exploitation of petroleum resources and solid materials. Unfortunately, the wastes so generated usually impact adversely on land use in Nigeria because mechanism on management and ultimate disposal are inadequate. Also the inappropriate use of pesticides, fertilizers and other chemicals in agricultural practices has contributed in degrading the land. The Federal ministry of Environment has set up strategies for effective solid and hazardous waste management in Nigeria which include; a) Relevant laws for pollution abatement and waste management; b) Development of an integrated solid waste management system for waste minimization through segregation/sorting and recycling; c) Development of final waste disposal sites like incinerators, sanitary land fills, etc.

**Capacity-Building, Education, Training and Awareness-Raising:** Procurement of GIS equipment and training of officers on the use of such equipment. Organisation of various workshops, seminars and conferences for relevant stakeholders.

**Information:** Data on land management available in Nigeria are in analogue format and were converted into digital format before insertion in the database. Presently, satellite image processing/aerial photograph surveys and geographic positioning systems in monitoring land use changes, soil degradation, early warning systems is being used. Nigeria has data on meteorology, soils, land cover, geology, elevation, cultivation practices, grazing, hydrology, drainage pattern, population density, census data, migration pattern, agricultural production of major crops, cultural practices, cartography and satellite imaginaries. The Department of Agricultural Land Resources has the functional role to ensure that a continuous inventory and assessment of land resources are carried out. Dissemination to all sectors of the population, especially to the local communities and women is done on community-based system through extension agents and cooperative societies, there are gap in data on land inventorization. These gaps exist because of lack of field and laboratory equipment and material, trained manpower and adequate logistics. Nigeria is yet to develop indicators on integrated land management. Currently there is no information on integrated land management and sustainable use of land resources. However, sectoral information to potential users is through sales of publications.

**Research and Technologies:** The existing regional soil laboratories located in Kaduna, Ibadan, and Umudike are to monitor soil fertility and quality levels. The objectives of these laboratories are to: a) offer routine services in soil, plant and fertilizer analyses to farmers and other land users; b) provide back-up services to National agriculture, land use, and environmental programmes; c) monitor soil degradation due to nutrient depletion; and d) water quality testing (expected when the laboratories are fully operational). Apart from the special problems of soil acidity, there is a need to conserve these soils from degradation. The degradation can be in the form of soil and wind erosion or the intensive activities of man from uncontrolled deforestation. One of the technologies being used to monitor this problem is a sheet erosion control trail, aimed at monitoring the occurrence, intensity, and mode of sheet erosion on farmlands. In the course of implementing these projects, natural waterways would be enhanced and drainage channels improved. Grass bund, wicker works, use of votive grass, and other agronomic measures like crop rotation would be introduced in an effort to create a viable environment for profitable food production. Also, medium level technology, that is the application of lime, organic matter, and industrial waste, is being adopted to improve this condition to enable profitable crop growing.

**Financing:** the federal government provides Funds. Some projects are financed with the support of some international organizations such as the World Bank and FAO. The World Bank financed the Environmental Management Project (EMP).

**Cooperation:** Through bilateral and multilateral activities, the government has been cooperating with the international community including UN agencies such as UNDP and FAO, financial institutions such as the World Bank, and other donor agencies.

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## CHAPTER 11: COMBATING DEFORESTATION

**Decision-Making:** Forest Management in Nigeria today is mostly limited to government programmes. All the forest reserves, which form the bulk of the nation's productive forest, are under the management of the States or Local Governments. The forest outside forest reserves (free areas), where most of the wood products in the market comes from, are not put under any form of systematic management. The annual rate of deforestation in Nigeria is of concern and a viable option to mitigating this is through the implementation and enforcement of sound Forest Policy. Toward this, the National Forest Policy is being reviewed under the auspices of the recently created Ministry of Environment. Also, The Federal Department of Agricultural Land Resources (FDALR) is currently, on behalf of the Federal Ministry of Agriculture and Rural Development (FMARD), articulating Agricultural Land Use and Practices Policy for the country. In recognition of the changing strategy for natural resources management, the national forest and wildlife policy is also being reviewed to make its implementation more participatory, while a national wildlife forest law is being developed with involvement of all stakeholders. Furthermore, States are being encouraged to derive their legislation from the national framework. Nigeria has participated in the Panel on Forest Process (IPF) through formulating a plan that would be acceptable and implementable at all levels (i.e. government, NGOs, communities and private sector etc.). Series of broad consultants and workshops were held by involving all stakeholders.

The relevance of IPF proposal is that it is participatory, interdisciplinary and multidimensional. This approach to sustainable management of resources facilitates conflict resolution among all relevant stakeholders. Major point and concrete steps in implementing the IPF proposals for action in the country include the review of National Forest and Wildlife Policy and Legislation, enlightenment and awareness campaign on the state of the environment, incorporation of participatory approach at every level of the forest management decisions making process and institution strengthening and capacity building especially at the Local Government and communal levels. There is no Land Use Policy in the country. There is however, a Land Use Act. There is no forest certification practice in the country. However, public involvement on forest certification is being articulated in the proposed revised policy, which will encourage private sector and NGO participation. It is being proposed that a National Working Group (NWG) on Sustainable Forest Management (SFM) and certification be set up to finalize the criteria or indicators for Sustainable Forest Management in the country.

**Programmes and Projects:** The National Forestry Programmes (NFP) is geared towards sustainable forest management. The Programme is part of the national sustainable development strategy. Some components of the NFP include Development of Non Timber Forest Products (NTFP), Environmental protection, Amelioration and monitoring of deforested lands, Production of domestic fuel wood energy, Promotion of efficiency in wood conversion and utilization, Development of alternative sources of energy other than fuel wood and etc. Before the Forestry II Programme of 1987, a World Bank Forestry I Programme was earlier concluded in 1986. The Tropical Forestry Action Programme (TFAP) was initiated in 1985 by the Food and Agriculture Organization (FAO), the World Resources Institute (WRI), and the United Nations Development Programme (UNDP) as a framework for halting deforestation and the associated destructive impact in tropical countries. The Forestry Component of the Environmental Management Project (EMP) has the following objectives: a) updating the Land Use and Vegetation Maps of the country; b) establishing the mechanism for environmental monitoring; c) creating environmental awareness; and d) strengthening institutional and manpower capacities. Most of the objectives have been achieved. The Energy Programme of the Ministry of Science and Technology aims to promote cheaper and smaller units of energy production in rural and remote areas of the country thereby, providing alternative energy to the use of forest resources. The National Forest Resources project was initiated in 1996 because of the serious dearth of data and very weak resource planning base.

**Status:** Nigeria was once covered by extensive vegetation varying from humid tropical forests in the south to savannah grasslands in the north. A great percentage of this luxurious vegetation has been removed in the course of various human activities. Presently, forest reserves cover about 10% of the National territory, mostly of the savannah woodland type. The southern rain forest, the source of the country's timber resources, covers only 2% of the total land area of Nigeria. It is being depleted at an annual rate of 3.5% per year. Nigeria has the objective to increase the forest reserve from the present 10% to 25% of the total land area by the 2010. Worldwide forest

reserves are intended to secure and retain land under forest. This is a prerequisite for effective and prudent forest estate development. The degradation and depletion of the forest reserve base has major effects on other sectors of the economy. The disappearance of forest cover leads to erosion, soil degradation, and unfavourable hydrological changes. The forest reserves have for sometime been seriously neglected and have received little or no improvement in terms of investment and management. However, after the UNCED, a number of positive developments have taken place to help the country achieve sustainable forest management. In addition to the re-delineation and survey of the boundary and updating of maps in a number of forest reserves, inventory has recently (1999) been concluded which provides estimates of the wood products supply situation in 28 States of the country. Also, reforestation has been carried out in most of the reserves. Majority of the population depends on fuel wood for cooking energy. In addition, forestlands are seen as potential farmlands, which encourage shifting cultivation.

The economic status of the population has direct bearing on the exploitation of forests for fuel wood and agricultural expansions. Poverty leads to almost a total dependence of over 90% of the rural population on the forest for livelihood and economic survival. The economic base and well-being of the citizens therefore have direct bearing on the exploitation of forests for fuel wood, arrays of food and fodder, medicinal plants, expansion of shifting cultivation. Of all the activities of the rural people, the ones that have most serious impact on the forest are fuel wood extraction, shifting agriculture and nomadic cattle rearing. Shifting cultivation has resulted in the encroachment of forest estates and occasionally to out-right deforestation to pave way to agricultural activities. The high level of poverty in the country, especially among women, could be said to have a negative effect on sustainable forest management. Nigeria currently recycles some forest products like paper (pulp and paper). This has just begun and the level is very low. Major challenges militating against sustainable management of forest resources in the country include lack of political commitment and poor funding of the forestry sub-sector. The States usually regard the forest reserves as sources for generating revenue without reinvestment for sustained production. In addition, adequate manpower, equipment and funds are not provided for proper implementation of sustainable forest management.

**Capacity-Building, Education, Training and Awareness-Raising:** Forestry training at the professional level was available at one of the universities until the late 1970s. The number of universities offering single honours and postgraduate degree programmes, including those offering forestry electives, has continued to increase. At the technical level, the number of Colleges of Forestry offering diplomas has increased from one to three. Colleges of Agriculture also offer electives in forestry and forestry related courses. The number of vocational training institutions has also continued to increase for sub-technical manpower development. Because of the serious dearth of manpower in quantitative and qualitative terms, some training facilities, institutions, and programmes have been put in place. Formal training can either be at the professional, technical, or vocational level. In order to upgrade the skills of serving officers and enhance their efficiency, some other in-service short training courses have been introduced. These courses have enhanced, in particular, the executive capacity of serving officers. Under capacity building, the World Bank loan for the Forestry II Programme provided international and local training to 219 and 116 staff respectively in 1996. In addition, about 35,000 individuals and farmers benefited from in-house courses. Forestry Extension and Advisory Services are actively pursued through enlightenment programmes and activities to break down the serious public apathy towards environmental conservation ethics and practices. This ensures better reception and pursuit of sustainable development principles by everyone including at the grass roots. The inclusion of environment and forestry conservation issues in secondary school curricular has been actively encouraged. Young Foresters' Clubs have been established and promoted through the provision of inputs, incentives, and technical support. On a more august scale, the measures have received a boost through the Federal Government's Annual Tree Planting Campaigns, which are personally launched by the Head of State and Commander-in-Chief at the National level, and by the Military Administrators and Local Government Chairmen at the State and local government levels. The National Tree Planting Campaign has been admitted as a regular line project in the Annual Capital Budgets of the Federal and State Governments.

**Information:** The international initiatives on criteria and indicators for Sustainable Forest Management (SFM) in which Nigeria participates is the ATO initiative which was developed from many initiations including the ITTO Guidelines to address Sustainable Forest Management and culminate in forest products certification. The criteria and indicators as identified still have to be subjected to field test to validate their application to conditions in

Nigerian forest. The application of criteria and indicators is not yet practiced in the country. Information on sustainable management of forest is made available to potential users in digital and hard copy form. In the future, this information can be assessed through the Internet. Through some of the projects under the National Forestry Programmes, equipment and infrastructures such as computer and Forest Information System (FIS) have been put in place to improve projects planning and monitoring, and other information management systems on sustainable forest management.

**Research and Technologies:** Development of new variety of seedlings for afforestation programmes and the application of remote sensing technology to assess extent of deforestation.

**Financing:** Some of the projects under the National Forestry Programmes are directly financed by the Federal Government, or being jointly executed by the Federal Government and State Governments while others are either grant-aided or loan financed. In the latter category, the African Development Bank (ADB) and the World Bank are the main funding agencies. In very limited circumstances, the FAO and Non-Governmental Organizations like the Ford Foundation and the Nigeria National Conservation Foundation (NCF) have assisted.

**Cooperation:** Nigeria has participated in the IPF process. In this contest, Nigeria has formulated a plan that would be acceptable and implementable at all levels (i.e. government, NGOs, communities and private sector etc.). A national focal point for the FAO programme has been chosen, and some assistance has been provided for data generation. In addition, the country participated in a Workshop held organized by the FAO in December 1999 in Cote d'Ivoire in this regard.

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## CHAPTER 12: MANAGING FRAGILE ECOSYSTEMS: COMBATING DESERTIFICATION AND DROUGHT

**Decision-Making:** The strategy to combat desertification and drought is: a) implement the UN Convention to Combat Desertification; b) strengthen the political and financial commitment of governments towards drought and desertification control programmes in the country's National development plans; c) intensify public awareness and education on causes and dangers associated with drought and desertification, as well as the contents of the Convention; d) develop National Action Programmes (NAPs) in accordance with the spirit and aspiration of the Convention; e) strengthen National and state institutions involved in drought and desertification control programmes; f) promote sustainable agricultural practices and management of water resources; g) encourage the development and adoption of efficient wood stoves and alternative sources of fuel wood; h) establish drought early warning systems; i) involve local people in the design, implementation, and management of natural resource conservation programmes aimed at combating desertification and ameliorating the effects of drought; j) encourage viable afforestation and reforestation programmes using tested drought resistant and/or economic tree species; k) encourage international cooperation and partnership arrangements in the areas of training, research, development, and transfer of affordable and acceptable environmentally sound technology, and provision of new and additional technical and financial resources; l) carry out surveys of degraded lands, and implement preventive measures for lands that are slightly or not yet degraded; m) adopt an integrated approach addressing physical, biological, and socio-economic aspects of desertification and drought; n) cooperate with relevant Inter- and Non-governmental Organizations in combating desertification and mitigating the effects of drought; o) strengthen the nation's food security system; and p) establish, review, and enforce cattle routes and grazing reserves.

**Programmes and Projects:** In view of the serious ecological and socio-economic implications of desertification and drought, programmes and activities have been conceptualized in concert with Agenda 21. These include Establishment of Shelterbelts and Ecological Disaster Relief Programmes. The shelterbelt programmes are either directly financed through the regular funding of government or implemented jointly by the Federal Government and State governments in collaboration with bilateral or multilateral aid organizations. The Forestry II Programme included the Environmental Forestry and Forest Management components. The objective of the Ecological Disaster Relief Programme is to assist disaster prone areas to ameliorate various forms of ecological problems ranging from soil erosion, flooding, desertification, oil spillage, and general pollution. This programme is financed by the National Ecological Fund instituted in 1989. The Linkage Programme, a joint Federal Environmental Protection Agency (EPA) and University of Maiduguri initiative, generates credible data and trains manpower for planning purposes in environmental management of natural resources. The focus is to develop practical measures for combating desertification and mitigating the effects of drought in the semi-arid and arid areas of the country.

**Status:** Nigeria wants to arrest desert-like conditions, rehabilitate affected areas, and institutionalize drought amelioration measures. The Government sometimes in collaboration with donor countries, and international organizations and institutions, has done a lot to combat desertification and mitigate the effects of drought since the beginning of the 1970s. Efforts have been directed at more efficient utilization and alternative sources of fuel wood, promulgation of State edicts, and afforestation and reforestation programmes. Despite these efforts, desertification has continued its southerly movement, which currently renders areas north of latitude 15 either as desert or prone to desertification. Drought and desertification are the most important environmental problems affecting the 15 northern states of the country. Population pressure, over grazing, and the continuous exploitation of marginal lands have aggravated drought and desertification. The intensification of the use of fragile and marginal ecosystems has led to progressive degradation and continued desertification of marginal agricultural lands even in years of normal rainfall. It is feared that the damage by drought and population pressure may have resulted in the genetic loss of a vast array of valuable plant species. Pressure on the dwindling resources in arid prone areas has contributed to a number of devastating socio-political and sectarian conflicts in the country with concomitant death, injury, and heavy economic losses. Nigeria is presently losing about 351,000 square km<sup>2</sup> of its land mass to the desert, which is advancing southward at the rate of 0.6 km per year. The outward and visible sign of the desertification process is the gradual shift in vegetation from grasses, bushes, and occasional trees to grass and bush, and in the final stages,

extensive areas of desert-like sand. Entire villages and major access roads have been buried under sand dunes in the northern portions of Katsina, Sokoto, Jigawa, and Borno States. With about 55% of its land under siege from desert encroachment, Borno State, which suffered from a protracted drought in 1972-1978, is one of the most threatened land areas of Nigeria. Perhaps more spectacular, and of grave consequence, are the persistent droughts which have resulted in famine a number of times in the northern part of the country. During the drought of 1972-1973 for instance, about 300,000 animals died and farm yields dropped by up to 60%.

**Capacity-Building, Education, Training and Awareness-Raising:** Various programmes have been undertaken to enlighten, educate, raise public awareness and entertain the public at large through media (print and electronic) campaigns, exhibitions, drama sketches, radio jingles, etc., on environmental issues, including the need to protect and conserve natural resources. In addition, the establishment of Environmental Conservation Clubs in secondary schools, have been undertaken. Realizing the value of indigenous knowledge and community participation, a pilot project on flora conservation has been initiated, through the creation of Community Heritage Centres. Also some active NGOs are promoting Green Clubs.

**Information:** Information and database on various aspects of drought and desertification are being developed.

**Research and Technologies:** Development of drought-resistant seedlings, and application of remote sensing technology to monitor and assess extent of desert encroachment.

**Financing:** See under **Cooperation**.

**Cooperation:** In regard to shelterbelt programmes the Federal Government has enjoyed the support of the European Economic Community (EEC) and the World Bank. In term of the Ecological Disaster Relief Programme, the Fund is administered by the National Committee on Ecological Problems under the Presidency. And The Linkage Programme is a joint program between the Federal Environmental Protection Agency (EPA) and the University of Maiduguri.

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## **CHAPTER 13: MANAGING FRAGILE ECOSYSTEMS: SUSTAINABLE MOUNTAIN DEVELOPMENT**

See **Chapter 11** on Combating Deforestation **and Chapter 12** on Managing Fragile Ecosystem: Combating Desertification and Drought.

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## CHAPTER 14: PROMOTING SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT

**Decision-Making:** The main body responsible for this area is the Federal Government of Nigeria. Currently there are several measures being taken by the Nigeria government to promote sustainable agriculture and rural development. These include: a National Policy on Agriculture which is going through the process of reviewing; a National Policy on Integrated Rural development; streamlining/rationalization of rural development/poverty alleviation institutions; domiciling the Department responsible for rural development under the Federal Ministry of Agriculture and Rural Development; institutional strengthening of the Department of Rural Development, promotion of collaborative efforts among all the relevant stakeholders and empowerment of rural communities through the promotion of the formation of the rural communities through the promotion of formation and strengthening of Community-Based Rural Development organizations (CBRDOs). Other major on-going measures for changing the sector towards sustainability include: 1) optimizing the use of the diminishing cultivable land; 2) expansion of markets for products; and, 3) providing new technologies. Furthermore, land and ownership and tenure rights in Nigeria under the Land Use Act, Cap 202, Laws of the Federation or Nigeria 1990 vested land ownership in the urban centres in the hands of the State Governments, while local Government Councils (LGC's) control land ownership within the country is controlled by individuals.

**Programmes and Projects:** In pursuance of agricultural enhancement, government has reached an agreement with the FAO in coming up with a Universal Trust Fund (UTF) for national food security programme. Similarly, irrigation Projects for sustainable agriculture and rural development indicate that 173 units of irrigation projects have been develop by the 12 no River Basin Development Authorities (RBDAs) and the State irrigation developments (SIDs). Meanwhile, several programmes have been articulated for nationwide actualization of the objectives and aspirations of the National Policy on Integrated Rural Development. They include a) promotion of resource-based productive activities and grass root industrialization aimed at creating wealth and generating employment in the rural area, b) provision and enhancement of rural infrastructure namely rural feeder roads, stock routes and jetties, rural water supply, sanitation and hygiene, rural transport and travel services, rural energy (electrification, biogas, solar and other alternative energy sources) and organized rural communities, and etc. Other on-going initiatives related to food Security in South Africa include a) IFAD-assisted Root and Tuber Expansion Programme, National Fadama Development Programme I &II and Agriculture and Community Development Programme. An elaborate forestry land use planning was aimed at under the National Forestry Action Programme (NFAP) which addresses the fundamental challenges facing forestry sub-sector such as devastation of forest resources through fire, wood cutting, overgrazing, mechanical land clearing and bush burning. The integrated plant nutrition programme is being carried out through the application of organic and inorganic fertilizer, folial spraying, application or micronutrients (cybernetics) to boost crop productivity. Furthermore, the country has a rural-based energy programme, which emphasizes alternative sources of energy e.g. solar power and biomas. The are also new programmes which are being developed in the agricultural sector to encourage rural dwellers in particular to engage in production/food product processing preservation.

**Status:** The Federal government of Nigeria is currently according priority attention to agriculture and integrated rural development. Agriculture still remains a key sector of the Nigerian economy. It provides employment for 60-70% of the population; it constitutes a substantial portion of the total non-oil export earnings and gainfully engages about 90% of the rural dwellers, of which women constitute the majority. The current growth rate of the agricultural sector is about 4.3%. Although over 70% of the nation's population resides in the rural areas, development policies before now have tended to be urban-biases. Consequently, the rural areas have remained generally disadvantaged relative to the urban areas in term of resources allocation, economic opportunities and infrastructures. Currently, gaps and challenges to the development or enhancement of sustainable agriculture and rural development in Nigeria include: a) unexploited new policies vis-à-vis ever-changing institutional structures; inconsistency in government policies; inadequate funding of policy programmes; b) lack of incentives and support services where necessary, and inadequate agricultural input; c) lack of adequate irrigation and appropriate measures to ensure full and qualitative use of land where necessary; d) new technologies have not been fully exploited to add much enhances value to farming and its products. Presently the country is still at the level of plant genetic resources conservation, ordinary fisheries biology, food technology and tissue culture. The major challenges towards

sustainable agriculture and rural development remain matching government's avowed commitment to rural transformation with the concomitant appropriate funding, and increasing the capacity of the rural dwellers especially women for national decision making on integrated rural development

**Capacity-Building, Education, Training and Awareness-Raising:** In her efforts at strengthening capacity-building, Nigeria currently has agricultural-oriented training institutions which include three Universities and thirteen Federal College of agriculture, three colleges of Soil Conservation/ Forestry, three Co-operative Colleges, Virtually all States have Colleges of Agriculture or vocational Schools, polytechnics teaching agricultural related subjects, one National Co-operative Development Centre. The Agricultural Development Projects (ADPs) serving as agricultural extension service organs in the States of Federation adopted the Training & Visit (T&V) System, Fortnightly Training (FNT) and Monthly technology Review Meeting (MTRM) as extension tools to train farmers and import to them proven technologies. The Kachia Livestock Training Centre, which was conceived under the School Livestock Development Project, is aimed at addressing the training needs of lower and middle cadre manpower in the livestock sub-sector. Furthermore, urgent measures are currently being taken to promote public awareness and participation in the programmes of integrated rural development and agriculture.

The country is supporting capacity building programmes at Federal, State, and Local governments and Community levels to enhance group organizations and project management capacities of CBRDO leaders and other project implementation agents at the State, local Government and Community levels. Other capacity-building efforts include expansion of co-operative Colleges, training workshops, seminars etc in agriculture, health and industry, continued training of extension workers to form a good farmer/rural area industry-end user link, extending to the farmer the good values of research accruing from new techniques especially biotechnology in three areas of agriculture, health and industry, intensifying current research on land, water and air which jointly constitute the natural resource bases of the country's environment. Similarly, the Government of Nigeria by a resolution of the National Council on Water Resources adopted Participatory Irrigation Management (PIM) Policy with farmer groups sharing the Operation & Management (O & M) responsibilities for the smaller schemes to villages and communities hosting the schemes. PIM is the concept whereby the farming communities actively participate in the day-to-day management of irrigation schemes at certain specific levels. Moreover, the government has further initiated programmes to increase public awareness for promoting Sustainable Agriculture and Rural Development (SARD) practices. These includes programmes such as a) small-scale irrigation using M & W hydraflow pump; community-based integrated irrigation in twelve models; and, rain water harvesting for user managed small scale irrigation schemes. The Federal Government of Nigeria is also a signatory to the Prior Informed Consent (PIC) Programme of the FAO and this programme ensures that obsolete and banned pesticide are not dumped or imported into the country.

**Information:** Nigeria has an Agricultural Data Bank managed by the Federal Ministry of Agriculture and Rural Development. There are e-mail and web site connections, which are available for decision-making. Other government agencies such as the Central Bank of Nigeria and the Federal Offices of Statistics also collect agricultural data. The State ADPs also generate and collect a lot of on-farm and off-farm information and carry out various appraisals, surveys and impact assessment studies. The country is in the process of articulating information management systems.

**Research and Technologies:** Food storage is being provided for the storage and preservation of farm products. In the same way, new seeds/better varieties, yam and other tuber root mini-sets as well as germ Plasma collection are being provided to enhance improved crop yields. Integrated Pest Management and other friendly agronomic practices, including tissue culturing of plant fisheries and livestock transformation have also been embarked upon for increase sustainability in agriculture and rural development. In line with the Rome declaration on Food Security and World Food Summit Plan for Action (1996) to achieve a minimum target of halving the number of undernourished people in the world by 2015, the Nigerian government has adopted aggressive research programme which ensures a) production of essential complimentary drugs; b) food supplements and other additive if value; c) training of women in agriculture/food processing and acquainting them with improved research derived methods or new technologies and etc.

**Financing:** Funds are provided by the federal government. Some projects are financed with the support of some international organizations such as the World Bank and FAO.

**Cooperation:** In pursuance of agricultural enhancement, government has reached an agreement with the FAO in coming up with a Universal Trust Fund (UTF) for national food security programme.

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## CHAPTER 15: CONSERVATION OF BIOLOGICAL DIVERSITY

**Decision-Making:** The Federal Government's policy goal on the conservation of biodiversity is to ensure sustainable use of forest resources and preservation of the many benefits accruing from soil, water, and wildlife conservation for economic development. Among the current priority programmes in Nigeria are the extension of National Parks and Reserves and the compilation of the flora and fauna of Nigeria. The Nigerian Biodiversity Strategy and Action Plan (NBSAP) reviews the status of biodiversity conservation in Nigeria in an attempt to fill the gaps identified in the country study programme, and develops strategies and action plans to bridge the gaps in the conservation effort. Nigeria will continue to be active in the international arena while at the local level infra-structural, human, and institutional capabilities will be developed to ensure equitable sharing of biodiversity benefits over time. To achieve this goal, the Nigerian strategy will be based on: a) the inventory, identification, and rehabilitation of all threatened and endangered species of fauna and flora; b) increasing the network of protected areas to include all ecosystem types consistent with internationally accepted classification; c) promotion and enhancement measures for both in-situ and ex-situ conservation through identification, inventories, evaluation, monitoring, research, education, public awareness, and training; d) increasing the nation's biodiversity management capability (human, infrastructural, institutional, and technological); e) the development of economically and culturally sound strategies to combat biodiversity loss; f) protection and promotion of policy guidance for bio-prospecting and indigenous knowledge (intellectual property right); and g) the rehabilitation of degraded ecosystems.

**Programmes and Projects:** The Protected Area Programme identifies areas and sites of conservation interest and classifies the identified areas using IOCW criteria. Only four states (Delta, Edo, Kogi, and Kwara) have been inventoried so far. Besides the CBD, Nigeria is also implementing other relevant Conventions, which address the conservation of biological resources. These conventions include Convention on Migratory Species (CMS), Convention on Wetlands (RAMSAR), and Convention on International Trade in Endangered Species (CITES), geared towards the promotion of rehabilitation of damaged ecosystems and endangered species under in-situ conservation of the ecosystems and threatened species. Apart from the implementation of the above Conventions, there are programmes aimed at conserving biological diversity or reducing threats posed by biodiversity depletion and habitat loss. These programmes include: (i) Control of water Hyacinth and other Invasive plant species; (ii) Protected Areas/ Ecosystem Management; (iii) Management of Watersheds; and (iv) Wetland Management

**Status:** Resulting from the Government's efforts in biodiversity conservation, the following achievements have been made: a) there are 32 game reserves/sanctuaries and six National Parks in place covering a total of about 4,293,800 ha scattered in different areas of the country; b) there are 12 strict Nature Reserves; and c) there are 13 proposed Game Reserves/National Parks covering about 372,000 ha located across the country. The continual depletion of plant and animal species and the degradation of ecosystem stemming primarily from economic motives have become an important issue of growing global concern. Despite the unbridled rate of increase in the exploitation of biodiversity globally, the rate of replacement has not been commensurate with use. Thus, the number of threatened and endangered species is increasing. Biodiversity as the economic and socio-cultural base of human systems, providing unquantifiable benefits to man and the environment including shelter, food, clothing, medicine, recreation, and resources for industry, needs to be conserved and managed sustainably for present and future generations. Uncontrolled logging and tree felling are the order of the day in many parts of the southern states of Nigeria. This carries with it loss of precious biological diversity. Nigeria's wildlife is rapidly declining due to habitat loss and increased pressure from hunters, poachers, and bush burning. Animals that have recently disappeared from Nigeria include the cheetah, the pygmy hippopotamus, the giraffe, the black rhinoceros, and the giant eland. About 10-12 species of primates, including the white throated guenon species of primates and sclater's guenon, are under threat. Also an estimated 484 plant species from 112 families are threatened with extinction because of habitat destruction and deforestation.

**Capacity-Building, Education, Training and Awareness-Raising:** Under the University Linkage Programme, the Federal Ministry of Environment has established an association with the University of Agriculture, Abeokuta to undertake further training and research activities on biodiversity conservation.

**Information:** A Country Study on Biological Diversity in Nigeria was carried out in 1991-1992. It produced a report titled: Biological Diversity in Nigeria. The study addressed the full range of biological diversity conservation problems. Most of the recommendations of the study are currently being implemented by the Government. The outcome of the Botanical Survey (Flora of Nigeria) is the production of the checklist of Nigeria's flora. A survey of biodiversity hotspots to identify new species has also been completed. The objective of the Zoological Survey (Fauna of Nigeria) is to produce a list of Nigeria's fauna. To date, only the aquatic fauna has been documented. The Government has established a gene-bank for the collection and preservation of Nigeria's plant species. It has the following objectives: establishment of a database on National bio-resources; development and adoption of a comprehensive biodiversity and conservation strategy; and the training of personnel as the essential catalysts for better understanding of environmental issues and commitment to sustainable use of resources.

**Research and Technologies:** Identification and development of biodiversity resources of medicinal value and those for other useful applications.

**Financing:** Federal government provides funds. Other international organizations provide some assistance for specific projects.

**Cooperation:** In Nigeria, the Convention on Biological Diversity was ratified in 1994. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was ratified in 1974.

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## **CHAPTERS 16 AND 34: ENVIRONMENTALLY SOUND MANAGEMENT OF BIOTECHNOLOGY AND TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGY, COOPERATION AND CAPACITY-BUILDING**

### **Decision-Making:**

*Technologies:* In this programme area, the Nigerian Ministry of Science and Technology has established a new Department for Technology Assessment and Acquisition whose function is to ensure that all technologies acquired for industrial and commercial uses are environmentally friendly. Such acquisition should also be made at fair and competitive prices with non-restrictive clauses with regard to adaptations based on research and development in the use of local raw materials and existing technologies. The future strategy to promote research and development of environmentally sound technologies is to: a) ensure access to scientific and technological information, including information on state-of-the-art technologies; b) promote, facilitate, and finance as appropriate, the access to and the acquisition of environmentally sound technologies and corresponding know-how; c) facilitate the maintenance and promotion of environmentally sound indigenous technologies that may have been neglected or displaced, paying particular attention to their priority needs and taking into account the complementary roles of men and women; and d) support local capacity-building so as to assess, adopt, manage, and apply environmentally sound technologies. Local capacity building can be supported through human resource development; strengthening institutional capacities for research and development, and programme implementation; integrated sector assessments of technology needs, in accordance with National plans, objectives, and priorities; and promoting long-term technological partnerships between holders of environmentally sound technologies and potential users.

*Biotechnologies:* A National Genetic Engineering and Biotechnology Programme (NGEBP) has been established with the following objectives: Enhancing Nigeria's capacity to undertake priority genetic engineering and biotechnology development work as well as regulate the bio-safety, bio-resources and bio-ethical issues always associated with genetic engineering and biotechnology; Co-ordinating Research and Development (R&D) activities for priority biotechnology applications in Nigeria; Enhancing Nigeria's capacity for training of scientists and technologists for genetic engineering and biotechnological activities in both Nigeria and at least the ECOWAS sub-region; Commercialisation of biotechnological products so as to ensure a sustainable food security, job and wealth creation, efficient and cheap healthcare delivery as well as safer environment; Development of strategic partnerships with both local and foreign partners in both local and cheap healthcare delivery as well as safer environment; Development of strategic partnerships with local and foreign partners in both R & D and biotech entrepreneurship; and Enhancing national capacity to undertake serious genetic engineering and biotechnology work at both the Private and Public Sector domains.

### **Programmes and Projects:**

*Technologies:* To address the problem of poor engineering infrastructure, the Federal Government established the National Agency for Science and Engineering Infrastructure (NASENI) and charged it with the responsibility of executing a Science and Engineering Infrastructure Development Programme (SEIDP). The government has established the National Office for Technology Acquisition and Promotion (NOTAP) to among others, identify sources of indigenous technology and map out strategies for their development. A National Centre for Technology Management (NACETEM) has also been established.

*Biotechnologies:* There has been substantial progress in strengthening of national genetic resources Programmes. The National Centre for Genetic Resources and Biotechnology (NACGRAB) of the Federal Ministry of Science and Technology has been established. It is planned that six (6) laboratories will be established, one in each of the 6 ecological zones, under the Bio-resources Development Centre Programme. The 6 zones are (i) Mangrove/Swamp (University of Port Harcourt, Port Harcourt); (ii) Rain Forest (Nnamdi Azikiwe University, Awka); (iii) Derived Savanna (NACGRAB, Ibadan); (iv) Montanne/Plateau (University of Jos, Jos); (v) Savannah (Federal University of Technology, Minna) and (vi) The Sahel Zone (University of Maiduguri, Maiduguri). Projects in the following areas shall be implemented: (i) Research and Development; (ii) Human Resources Development; (iii) Biotech entrepreneurship; (iv) Bio-resources Development; (v) Regional (African) and Sub-regional (ECOWAS) Biotech Development; and (vi) Strategic Biotechnology. Centres of excellence for Genetic Engineering and Biotechnology Training shall be developed in three Nigerian Universities: (i) Ahmed Bello University, Zaria; (ii) University of Nigeria, Nsukka; and (iii) University of Ibadan. The Advanced Genetic Engineering Biotechnology Laboratory in

Shedda will be strengthened to lead in high-tech R&D as well human resources development especially at the post doctoral level for Nigeria to remain relevant in the biotechnological era, and acquire capability to independently assess materials being brought into Nigeria and thus ensure our environmental safety.

**Status:**

*Technologies:* Environmentally sound technologies protect the environment by being less polluting, using all resources in a more sustainable manner, recycling more wastes and bi-products, and handling residual wastes in a more acceptable manner than the technologies for which they are substitutes. Environmentally sound technologies are not just individual technologies, but total systems, which include know-how, procedures, goods and services, equipment, and organizational and managerial procedures. This implies that Nigeria's technology acquisition initiative should address human resource development, and local and indigenous capacity-building aspects of technology options.

*Biotechnologies:* In recognition of the importance of biotechnology for biodiversity conservation and regeneration, Nigeria, through the Federal Ministry of Science and Technology and in collaboration with the Commonwealth Science Council, participated in two international meetings on the "Multistake Holder Meeting on Bioprospecting Access and Benefit Sharing Arrangements for the West African Commonwealth Countries". This has resulted in the development of a National Genetic Engineering and Biotechnology Programme (NGEBP), with the following objectives:

- Enhancing Nigeria's capacity to undertake priority genetic engineering and biotechnology development work as well as regulate the bio-safety, bio-resources and bio-ethical issues always associated with genetic engineering and biotechnology;
- Co-ordinating Research and Development (R&D) activities for priority biotechnology applications in Nigeria;
- Enhancing Nigeria's capacity for training of scientists and technologists for genetic engineering and biotechnological activities in both Nigeria and at least the ECOWAS sub-region;
- Commercialisation of biotechnological products so as to ensure a sustainable food security, job and wealth creation, efficient and cheap healthcare delivery as well as safer environment;
- Development of strategic partnerships with both local and foreign partners in both local and cheap healthcare delivery as well as safer environment;
- Development of strategic partnerships with local and foreign partners in both R&D and biotech entrepreneurship; and
- Enhancing national capacity to undertake serious genetic engineering and biotechnology work at both the Private and Public Sector domains.

**Capacity-Building, Education, Training and Awareness-Raising:**

*Technologies:* The government, through its various agencies, conducts training courses, seminars, workshops, conferences and exhibitions on technology and technology related issues. As part public awareness campaign, government organizes National Technology Forum and Techmart, and celebrates African Day for Technology.

*Biotechnologies:* Capacity building and human resources development and promotion of biotechnology infrastructure are among the objectives of the government's new biotechnology programme. The following workshops and training seminars have been held for the purpose of capacity building: National Workshop on the National Programme on Biotechnology; Training workshop for scientists on fermentation technology and enzyme production; National Training Workshop on Cell and Plant Tissue Culture for 20 scientists; and, International Training Course on Biotechnology, Cell and Tissue Culture Techniques held at the International Institute of Tropical Agriculture (IITA), Ibadan. Establishment and strengthening of Biotechnology research centres in selected research institutions. Training of trainers (both local and overseas) in biotechnology research.

**Information:**

*Technologies:* A National Information Technology Development Agency (NITDA) has been established as the implementing agency for the National Information Technology Policy. Information Technology Resource Centre has also been established. NITDA headquarters is equipped with VSAT Satellite full internet connectivity; and 140ft Radio mast as part of the Public Service Information Network (PSIN) programme, establishing broadband wireless internet access for the public sector.

*Biotechnologies:* NACGRAB has a total collection of about 11,000 plant species maintained either as seeds or in storage. With the establishment of Biotechnology/ Tissue Culture Laboratory at the Centre, the conservation activities of field genebanks on various plant species are being complemented and enhanced through tissue culture techniques.

**Research and Technologies:**

*Technologies:* Various agencies of the government ( e.g. NOTAB and NACETEM) are involved in research and development of technologies that would be suitable for Nigeria.

*Biotechnologies:* Through the NGEBP, research will be intensified to derive maximum benefit from biotechnology. Example is the collection and conservation of germplasm of quality protein maize and development of varieties suitable to the various agro-ecological zones of the country.

**Financing:**

*Technologies:* The federal government is funding many programmes and projects, with some support from international organizations such as UNDP, UNIDO and ILO.

*Biotechnologies:* The federal government is funding many programmes and projects, with some support from international organizations such as UNDP, UNIDO, UNESCO, UNEP, and WHO.

**Cooperation:**

*Technologies:* The federal government has been cooperating with the international community through bilateral and multilateral activities.

*Biotechnologies:* There is a growing cooperation between Nigeria and the international community.

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## **CHAPTER 17: PROTECTION OF THE OCEANS, ALL KINDS OF SEAS, INCLUDING ENCLOSED AND SEMI-ENCLOSED SEAS, AND COASTAL AREAS AND THE PROTECTION, RATIONAL USE AND DEVELOPMENT OF THEIR LIVING RESOURCES.**

**Decision-Making:** In the areas of oceans and seas, there are many governmental and non-governmental agencies that have responsibility in this sector. These include: the Federal Ministry of Environment, Department of Petroleum Resources (DPR), Federal Ministry of Transport, the Nigerian Navy, and the Federal Department of Fisheries (Federal Ministry of Agriculture), Federal Ministry of Works and Housing, and other organizations who have responsibilities to protect the Nigerian marine environment at the federal, state and local government levels. Various major groups are also involved in programmes and activities relating to integrated coastal zone management, marine environmental protection and sustainable use and conservation of marine living resources. These groups include Women, Children and Youth, Ethnic Groups, Non-Governmental Organizations, Local Authorities, Workers and Unions, Business and Industry, Scientific and Technological Community and Farmers. Nigeria has recently instituted an Integrated Coastal Area Management (ICAM) approach to address the various environmental problems and to promote sustainable utilization of coastal resources.

Integrated coastal area management and Sustainable Development, including environmental impacts of activities affecting the coastal and marine areas are being handled by the following Ministries/Agencies and Organizations in Nigeria: Federal Ministry of Works and Housing, Federal Ministry of Water Resources and Rural Development, Federal Ministry of Transport, Federal Ministry of Environment, Nigerian Institute of Oceanography and Marine Research (NIOMR), Niger Delta Environmental Survey, and Nigerian Conservation Foundation. Marine environmental protection, both from land-based activities and from sea-based activities (e.g. coastal sewage, agricultural waste and industrial effluents, discharges of ballast from shipping, oil spills, etc) is being handled by Federal Ministry of Environment, DPR, Meteorological Services Department/Marine Meteorology Unit, and the Ministries / Organizations mentioned above. Under water resources Sector, the responsible organization is the Federal Ministry of Water Resources and Rural Development under its various Departments. The Nigerian Navy and the Marine Police in collaboration with relevant government agencies have responsibilities to protect the marine environment. Marine environmental protection both from land-based activities and from Sea-based activities is also handled by organisations under the Federal Ministry of Transport.

Sustainable use and conservation of marine living resources (both of the high seas and under national jurisdiction) are handled by the Federal Ministry of Agriculture, Federal Department of Fisheries, and the Nigerian Institute of Oceanography and Marine Research. In Nigeria, the UN Convention on the Law of the Sea was ratified in 1986. The Federal Government, through the Ministry of Transport, has initiated the ratification of the Oil Spill Convention. Over the years, various legislation, regulations and policy instruments have been developed, and being modified from time to time as new scientific evidence emerges.

Some of the existing legislation, regulations, and policy instruments that have direct bearing on integrated zone management, marine environmental protection, and sustainable use and conservation of marine living resources include: Agricultural (Control of Importation) 12 Cap. LFN 1990, The Decree 10 of 1987, the Shipping Policy of Nigeria, Sea Fisheries Decree 1971 as amended in 1992, Sea Fisheries Decree (Licencing Regulation) of 1971 as amended in 1992, Sea Fisheries Decree (Fishing Inspection and Quality Assurance) Regulations 1995, Sea Fisheries Decree (Fishing) Regulations of 1992, Inland Fisheries Decree No. 108 of 1992, Inland Fisheries Decree (Fish Quality Assurance) Regulations 1995, and etc. Other instruments of intervention developed so far that have much bearing on integrated coastal zone management, and which are mandatory and they include:

- National Guidelines and Standards for Environmental Pollution Control in Nigeria (March 1991);
- National Effluent Limitation Regulations, S.I.8 of 1991;
- Pollution Abatement in Industries and Facilities Generating Wastes Regulations S.I.9 of 1991;
- Waste Management Regulation S.I.15 of 1991; and
- Sectoral Guidelines for Environmental Impact Assessment.

There are also the Mandatory World Meteorological Organization's Regulations, codes of practice standards and guidelines. Efforts are being made to review the Shipping Policy of Nigeria to bring it in line with global requirements and to update the 1962 Merchant Shipping Act by the International Maritime Organisation (IMO).

Nigeria has a National Policy on Environment launched in 1989, and revised in 1999. There is also the Green Agenda of the Vision 2010. The National Policy on Environment and the Vision 2010 cover all major sectoral issues identified in the Agenda 21, including issues relating to oceans and seas. There are also specific strategies/plans developed to address particular issues. The National strategy or Policy that will cover the relevant aspects of integrated coastal zone management and sustainable development, including environmental impacts of activities affecting the coastal and marine areas are provided for under the following: The National Water Resources Master Plan, The Rural Water Supply and Sanitation Sector Strategy and Action Plan, National Oil Spill Contingency Plan, Niger Delta Action Plan, The Vision 2010 Plan on Water Resources and etc. Policies and Plans that have been developed specifically to address the preservation and sustainable use of fragile ecosystem (mangroves) include: Creation of mangrove forest reserves; Planting of mangroves in areas of mangrove deforestation; Akassa declaration; Development of Niger Delta Action Plan; the Niger Delta Environmental Survey; etc.

**Programmes and Projects:** There are some specific programmes that address one or more of the three issues: Integrated coastal area management and sustainable development; Marine environmental protection; and Sustainable use and conservation of marine living resources. These programmes include: Coastal Erosion and Flood Control Projects (including the Bar Beach Erosion Project); Coastal Saline Water Intrusion Study Project; Rural Water and Sanitation Projects in Coastal Areas; Compliance Monitoring; Dump Watch; Chemical Tracking; EIA Process; Gulf of Guinea Large Marine Ecosystem Projects; Marine Observatories; Storm Surges Forecasting for Coastal Erosion Monitoring. Gulf of Guinea Large Marine Ecosystem Project: The project is on going. It was formulated on the realisation of the need to control water pollution and conserve biodiversity in the Gulf of Guinea. Participating Agencies in Nigeria include the Federal Environmental Protection Agency (FEPA), the Nigerian Institute for Oceanography and Marine Research (NIOMR), and the Federal Department of Fisheries. The project is being funded by Global Environmental Facility (GEF) with UNIDO as the executing Agency. Marine Observatories: The Department of Meteorological Services operates two marine stations in Lagos and Eket. Regular measurements of Sea Surface Temperature (SST), Wave Height, Sea Level Rise and other conventional meteorological elements are being undertaken. Storm Surges Forecasting for Coastal Erosion Monitoring: Specific Marine Meteorological Programmes include the Storm Surges Forecasting for Coastal Erosion Monitoring. Installation of Meteorological Information Technology, Remote Sensing and Geographic Information Systems: The ADM-Infotech will support Climate Studies through Organized Data Collection and Archiving. Climate Studies including change detection require consistent and digitally available Meteorological Data. Climate Information and Prediction Services and El Nino Monitoring: The project is aimed at meeting increasing needs for methods and techniques to apply information on past and present climate as well as climate predictions in various socio-economic sectors using computerized climate data management systems already developed by many Departments climate information includes climate statistics produced on past date, completed for many operations by recent weather data. The Meteorological Information System will provide a number of hazard warning and monitoring products. These products can be used to prepare for and mitigate the consequences of sever weather and fires.

**Status:** Nigeria has a coastline of about 853km with Niger Delta covering about 80% of the entire coastline. Much of Nigeria's population and economic activities are located along the coast. According to the 1991 census, approximately 20% of the population inhabit the coastal area. Increased economic activities, rapid population growth and conflicting uses of the coastal zone have resulted in several environmental problems. Some of these problems include; land degradation, erosion and flooding, fisheries depletion, deforestation, biodiversity loss, introduction of exotic species, oil pollution, gas flaring and solid waste pollution. Methods in place to encourage sustainable use and conservation of marine living resources include the implementation of an Integrated Coastal Area Management (ICAM) Action Plan, introduction of closed areas, delimitation of fishing zones for artisanal and industrial zones, and introduction of Turtle Excluder Device (TED). Major projects and activities underway or planned to address the relevant issues cited above are contained in the Nigeria's National Agenda 21. Activities designed specifically to address the problems related to fragile ecosystems, such as mangroves include: Integration of Coastal Area Management (ICAM) approach into the planning process; Establishment of an environmental data bank; and Creating public awareness and stakeholders participation in all aspects of ICAM activities. Some constraints to implementing effective programmes to address the issues raised in the programme areas (Integrated coastal zone management; Marine environmental protection; and sustainable use and conservation of marine living

resources) include: Inadequate Financial Provisions to enable projects execution; Inadequate Institutional Framework; Insufficient Capacity-Building; Inadequate community participation in project planning, execution and management; Limited diffusion of technologies most appropriate for rural settings; Economic and policy distortions and market forces which fail to reflect the true costs of resource depletion; Lack of coordination among Governmental Agencies; Poor environmental data base and significant gaps in existing data; High rural-urban migration; and Socio-economic conflicts.

**Capacity-Building, Education, Training and Awareness-Raising:** Programmes to educate policy makers in the concept and policy design of sustainable coastal management include organization of conferences, seminars, workshops, training, and direct consultations. There is also production of various journals, bulletins, magazines, handbills and literature, radio and TV programmes. With regard to marine meteorological services, there is the MET Awareness Conference on adjustment strategies/measures to combat sea level rise and the issues of climate change and global warming. Local and overseas training programmes are available from time to time for the officials of the relevant Ministries/Agencies and organizations. Also, relevant industries are involved through conferences, seminars, workshops, and special staff training programmes. There are various efforts in place to raise awareness on issues related to sustainable use of marine resources. There are the Marine Meteorology and Oceanographic publications; recruitment of voluntary observing ships for information; conferences; workshops, seminars; Annual World Environment Day and Annual World Meteorological Day Celebration Campaigns.

**Information:** Various kinds of national information are available to assist both decision-makers and planners working in coastal areas. These include the Nigerian National Policy on Environment, the Vision 2010, the Nigeria's National Agenda 21, various sectoral guidelines, standards and Regulations. In addition, there is specific national information on the Sustainable Management of Fishery Resources such as Fisheries data bank (NIOMR) with scientific information on important marine and brackish water fishes of Nigeria; Data on Annual potentials of; inshore pelagic fishes, offshore pelagic fishes, inshore demersal fishes, offshore demersal fishes, shrimps and prawns, various editions of Fisheries Statistics of Nigeria produced by the Federal Department of Fisheries, etc. There is also specific information on Marine Pollution: Oceanographic/Meteorological information systems, including tidal information, primary water level, wind speed, gust, salinity, SST, methods and techniques on climate predictions and marine meteorology forecasting, etc.

The national information available from the water resources sector that assist both decision-makers and planners working in the coastal areas includes: Hydrological data, especially on sea level fluctuation and discharge of the river systems into the delta and the coastal regions; Hydrogeological data of the underlying aquifer systems of the coastal regions; Water quality data of the discharging river systems, especially in terms of sediment loads and their composition, etc. Information on Mineral Resources can be obtained from relevant government publications such as: Minerals Policy of Nigeria which spells out the intention of the government to encourage private sector participation in the economy as well as foreign investors on both medium and large scale mining; Publications of: the Nigerian Mining Corporation; the Federal Ministry of Solid Minerals Development; and the Raw Materials Research and Development Council. There is information on some Living Resources other than Fish: Shellfish - shrimps, crabs, lobster, molluscs, etc. In the near future Geographic Information Systems will be applied to monitor the implementation of the relevant laws and regulations. Relevant information is made available to potential users through publications and advisory services. The Federal Ministry of Agriculture and Natural Resources has E-mail address and a website: - E-mail: [fmin.agric@hyperia.com](mailto:fmin.agric@hyperia.com) ; Web site.

**Research and Technologies:** While specific issues related to the development, transfer and use of environmentally sound technologies have not yet been addressed in the programme areas of oceans and seas by the water resources sector, in the inland water areas, a programme for setting up water quality monitoring network, coupled with the setting of a network of Regional and National Reference Water Quality Laboratories has reached an advanced stage of implementation. The equipment for effective monitoring of Nigeria's territorial waters includes Pollution Control Boats, Oil Recovery Boats, SAR Boat and SAR/Patrol Boats. There is also plan to acquire Surveillance Aircrafts and Helicopters with their associated Surveillance equipment for both marine pollution and other safety equipment. Development of the Turtle Excluder Device: Sea turtles, an endangered species, are associated with shrimping and trawling in Nigerian water. To prevent the depletion of this important marine resource, an excluder device, designed in the U.S.A , was modified by NIOMR for Nigerian condition to exclude juvenile sea turtles from

shrimping nets, thus enabling the conservation of the sea turtles. There are also other on-going projects on gas re-injection technology; cleaner production technology; clean-up and rehabilitation techniques; etc.

**Financing:** The oceans and sea sector is financed through national budgetary allocations, government/private sector partnership, and external assistance arising from bilateral and multilateral cooperation

**Cooperation:** Nigeria is involved in many bilateral, multilateral and international activities and cooperation with the United Nations systems and the international community. Some of these include: GOOS (Global Ocean Observing System) A project funded by IOC/WMO/UNEP; SEAS III (ship board environment acquisition system); Technical Cooperation with NOAA (National Oceanic and Atmospheric Administration of U. S. A.); UNEP/WHO Assisted GEMS/Water Programme; World Bank Assisted Environmental Management Project (EMP); UNDP Assisted Environment and Natural Resources Management Programme; UNESCO International Hydrological Programme; and WMO Hydrology and Water Resources Programme. Nigeria is actively involved, along with some other African countries and international organizations, in the promotion of the African Process for the development and protection of the marine and coastal environment, particularly in Sub-Saharan Africa. The initiative enables African stakeholders to define priorities in the coastal and marine environment on the basis of comprehensive assessments, followed by project proposals.

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## **CHAPTER 18: PROTECTION OF THE QUALITY AND SUPPLY OF FRESHWATER RESOURCES: APPLICATION OF INTEGRATED APPROACHES TO THE DEVELOPMENT, MANAGEMENT AND USE OF WATER RESOURCES.**

**Decision-Making:** Nigeria has given high priority to its freshwater resources due to the growing concern at the increasing stress on water supplies caused by poor use patterns, affecting both water quality and quantity. Consequently, the Government through the Ministry of Water Resources and Rural Development is undertaking a number of programmes designed to protect the quality and supply of freshwater resources in the country. The twin problems of soil erosion and flood control are addressed through the Department of Soil Erosion and Flood Control. The Federal Ministry of Water Resources and Rural Development handles inland erosion and flooding, while the Federal Ministry of Works and Housing is responsible for marine flood control and erosion. In the Integrated Water Resources Development and Management programme area, the Ministry has prepared the Water Resources Decree 101 of 1993 to give the legal framework for the development of the water resources of the country. The Decree places ultimate responsibility for the proper development of the nation's water resources on the Ministry of Water Resources and Rural Development.

In the Integrated Water Resources Development and Management programme area, the Ministry has prepared the Nation's Water Resources Master Plan for the 1995-2020 period, which was completed with the technical assistance of the Japanese International Cooperation Agency (JICA) between 1992 and 1995. The National Water Supply Policy was completed and approved at the National Council on Water Resources and Rural Development meeting at Kaduna in November 1995. It provides the guidelines for water supply development up to the year 2015. Flooding in one form or other affects at least 20% of the nation's population, both urban residents and rural dwellers. Thus, the future plans of Nigeria to achieve effective management of urban, river, and coastal flooding include: a) enforce compliance with town planning/urban laws/edicts; b) build embankments and levies along rivers and coastlines prone to flooding; c) establish a rainstorm early warning system; d) establish and monitor weather stations, and river and tidal gauges; e) ensure appropriate management and maintenance of dams; f) ensure proper maintenance of existing drainage channels; and g) enforce environmental sanitation laws in towns and cities. Simultaneously, water hyacinth and other invasive weeds currently hamper normal economic activities in riverine areas where the spread of the weeds has been established. Therefore, Nigeria's future plans and strategy to eliminate the water hyacinth and other invasive plants in all water systems is to: a) inventory the spread of water hyacinth and other invasive weeds in all the river systems; b) develop an infestation index map to determine control options; c) adopt an appropriate integrated control option to ensure that the weeds are no longer a menace; and d) encourage sub-regional cooperation.

**Programmes and Projects:** In the Drinking Water Supply and Sanitation programme area, the Ministry has made significant progress through five local and two international activities. These activities include activities such as the production of the National Rural Water Supply and Sanitation Sector Strategy and Action Plan, the Nation-wide Rural Water Supply Programme, the Hand pump Development and etc. In order to assist the States to attain at least 50% National coverage for rural water supply by the year 2000, the Ministry has provided funds to States that have set up their Rural Water Supply and Sanitation Agencies as the sole agents for coordinating rural water and sanitation projects. Due to the maintenance problems presented by the proliferation of assorted hand pumps in the country, the Ministry commissioned a hand pump study programme in 1987 in Missau Local Government Area (LGA), then of Bauchi State. The Joint Rural Water Supply and Sanitation Programme, supported by the Federal Government of Nigeria and the United Nations Children's Fund (UNICEF), uses the provisions of the National Rural Water Supply and Sanitation Sector Strategy and Action Plan to fashion out rapid intervention in water supply and sanitation in rural areas, with the States, Local Governments, and the Communities contributing financially to the capital cost of the systems provided. In the Water and Sustainable Urban Development programme area, the Ministry has been involved in basically two activities. These are the National Water Rehabilitation Project, and the Peri-Urban Water Supply and Sanitation Programme. The National Water Rehabilitation Project originated when it was realized that most of the operating water systems hardly produce 40% of their installed capacity. The Peri-Urban Water Supply and Sanitation Programme provides drinking water and sanitation facilities to the marginalized inhabitants of urban areas. It is still a very important programme that would

help diminish the suffering of the urban poor through poverty alleviation and improvement in health. In the Water Resource Assessment Sector, an inventory of water resources facilities has been completed as the initial activity for the preparation of the National Water Resources Master Plan in 1992/93. A Hydrological Network is being established based on World Meteorological Organization's (WMO) standards for a network of primary hydrological stations. In the Protection of Water Resources, Water Quality, and Aquatic Ecosystem programme area the Ministry has carried out five activities: Nigeria Register of Dams; rehabilitation of dams; rehabilitation of soil erosion sites; flood control; and establishment of Water Quality Laboratories. Faced with the dangers of dam breaks as was epitomized by the failure of the Bagauda Dam in 1988 and the attendant destruction of lives, property, and downstream ecology, the Government decided to complete an inventory and register of dams. The project was successfully completed in 1995 with the production of the first edition of the Nigeria Register of Dams, followed by the rehabilitation works on the most critical dams. Furthermore, The Ministry has a programme for arresting the massive ecological problems of soil erosion in rural areas resulted from heavy rainfall and restoring the land as much as possible.

**Status:** Nigeria is endowed with abundant surface and groundwater resources whose availability varies with rainfall, location, and geological formations. The highest annual precipitation of about 3,000 mm occurs in the Niger Delta and Mangrove Swamp belt of the southeast where rainfall lasts for almost 10 months of the year. Rainfall decreases in amount progressively towards the north. The variation in rainfall also determines the drainage regime in the country. While various human activities draw on the surface resources, the groundwater resource potential in the country has not been fully tapped. This is partly due to the fact that it is comparatively more expensive to harness groundwater than surface water resources. Also, it is technologically more demanding to exploit the crystalline rock aquifers for water.

**Capacity-Building, Education, Training and Awareness-Raising:** Various levels of capacity building exist. There are provisions for education and training of staff at both diploma and degree levels. The government organizes training courses, workshops, seminars and conferences for relevant stakeholders. There are public campaign programmes, particularly on the protection and conservation of water resources

**Information:** A national water resources master plan has been produced. Inventory of water resources facility in the country is in progress. Hydrological map of Nigeria has been produced. A national water resources data bank is being developed.

**Research and Technologies:** In order to ensure that water supplied to the Nigerian population is clean, the Ministry established the Regional Water Quality Laboratories in 1986. In addition, some Reference Laboratories were established to serve as centres of excellence and training facilities for water quality personnel.

**Financing:** In 1991, African Development Bank (ADB) funding was sought for equipment purchase and expert training for the Regional Laboratories and two Reference Laboratories located at Dadin Kowa, Minna, Akure, Enugu, Lagos, and Kaduna, respectively. The ADB loan was approved and signed in July 1994, but could not be drawn on because of a Presidential directive to source the funds internally.

**Cooperation:** Nigeria participated actively in both the Steering Committee and the Ministerial Conference on Drinking Water and Environmental Sanitation held in Noordwijk, Holland in March 1994. The Ministry of Water Resources was also active in the subsequent meeting on "Forward Looking Assessment on the Implementation of the Action Programme on Drinking Water and Sanitation" held in The Hague. The Ministry took active part in the work of the UN Water Supply and Sanitation Collaborative Council and actively participated in the Working Groups that produced the Country Level Collaboration, and the Information, Education and Communication documents that were presented and accepted at the Council's second biennial meeting held in Rabbat, Morocco in 1993.

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## **CHAPTER 19: ENVIRONMENTALLY SOUND MANAGEMENT OF TOXIC CHEMICALS, INCLUDING PREVENTION OF ILLEGAL INTERNATIONAL TRAFFIC IN TOXIC AND DANGEROUS PRODUCTS.**

**Decision-Making:** Nigeria has National regulations on toxic chemicals and hazardous wastes and is also involved in the implementation of some of the International Convention, Procedures and Protocols on Hazardous/Toxic Wastes and Chemicals, and Radioactive Waste Management. Nigeria is developing National regulations on the Basel Convention on Transboundary Movement of Toxic Wastes; and procedures and protocols on the "Prior Informed Consent" concept for hazardous chemicals in international trade, etc. The strategies for the management of toxic chemicals include: a) the control of chemical hazards through pollution prevention, emission inventories, product labelling, use limitation procedures for safe handling, and exposure regulations; b) the phase out or ban of high risk chemicals that are persistent and bioaccumulative, and whose use cannot be adequately controlled or monitored; c) the development of policies based on principles of producer/polluter liability; d) emphasis on the use of biological control methods for pest-control; e) provision of information on chemical hazard in local languages; f) establishment of emergency-response centres including poison-control centres; g) the control of the importation of banned or restricted chemicals/pesticides; and the adoption of community right-to-know programmes that provide information on accidental releases and annual routine emissions of toxic chemicals.

**Programmes and Projects:** In Nigeria, the Hazardous Chemicals and Toxic Wastes Dump Waste Programme was put in place in 1992 following the provisions of the Waste Management Regulations S.I. 15 of 1991. In addition, a total ban on importation, transit, transportation, deposit, and storage of harmful wastes has existed since 1988. Under this programme, Federal Environmental Protection Agency (FEPA) officials operating at the sea ports in the country can take samples of any suspicious consignment camouflaged as industrial materials for analysis at the Reference Laboratory of the Agency. In a similar development, the Ministry of Science and Technology has initiated a programme for: the identification of major pollutants; monitoring and controlling the effect of pollutants on the environment; developing process technologies for combating industrial pollutants; establishing model treatment plants for demonstration and skill acquisition; and converting solid wastes into energy and other useful purposes. It is envisaged that by the year 2010, the programme will have achieved the provision of a clean and healthy environment; and a reduction in the extent of natural ecological damage. In addition, the following activities have been carried out: expanding and accelerating international assessment of chemical risks; harmonising of classification and labelling of chemicals; information exchange on toxic chemicals and chemical risks; establishment of risk reduction programmes; strengthening of national capabilities for the management of chemicals; and prevention of illegal international traffic in toxic dangerous products. In order to implement the provisions of these Conventions nationally, the Ministry developed the Chemical Tracking and Hazardous Waste Dump Watch programme which aims at monitoring and controlling the importation of toxic and hazardous chemicals, including the detection of illegal imports of toxic substances including wastes. In addition, the Federal Ministry of Science and Technology has initiated a programme for the identification of major pollutants, the development process technologies for combating industrial pollutants and establishing model treatment plants for demonstration and skill acquisition.

**Status:** The need for sound management of toxic chemicals and hazardous wastes in Nigeria was brought to public attention in 1988 when it was discovered that tonnes of toxic wastes of Italian origin were dumped in Koko by unscrupulous traffickers who exploited certain loopholes on the existing chemical management system in Nigeria. In a bold move to prevent a reoccurrence and ensure sound chemicals and waste management at all levels, the Federal Government of Nigeria established the Federal Ministry Protection Agency (now incorporated into the Federal Ministry of Environment ) for the protection of Nigerian environment including matters relating to the control of toxic and hazardous chemicals and wastes. Further to establishing the Agency, the Government promulgated the Harmful Wastes(Special Criminal Provisions etc) Decree 42 of 1988 which declares unlawful all activities relating to the purchase, sale, importation, transit, transportation, deposition or storage of harmful wastes.

The Government also signed and/or ratified the underlisted international conventions and protocols:

- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposals;
- The Montrea; Protocol on substances that deplete the ozone layer;
- The Rotterdam Convention on the Prion Informed Consent Procedure for certain chemicals and pesticide in international Trade; (PIC); and
- The Stockholm Convention on the Perisitent Organic Pollutants (POPs).

**Capacity-Building, Education, Training and Awareness-Raising:** Government has embarked on various activities aimed at: training target groups utilizing, handling and storing chemicals and pesticides on product stewardship; establishing hazardous waste streams and development of hazardous waste treatment facilities in cooperation with industries; strengthening the existing collaborative mechanisms among various national regulatory ministries/agencies to monitor hazardous/toxic chemicals in the country; and strengthening the appropriate training and information dissemination organs on the risks associated with hazardous substance use and handling.

**Information:** Implementation of pesticides and other chemicals statutory registration programmes in the country are being carried out. National chemicals information system and documentation are being strengthened.

**Research and Technologies:** In concert with some of the provisions of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Federal Government has approved a FEPA-University of Ibadan Centre of Excellence for training and research in the areas of; industrial, domestic and hazardous wastes management; development or adaptation of cleaner production technology for Nigeria; reduction of gaseous emissions; and incorporation of "waste to wealth" strategies into waste management practices; updating of the techniques and technology available for enforcement of National legislative mechanisms.

**Financing:** The federal government provides funds for implementation of programmes and projects in this area. Some financial and technical support is provided by some international organisations such as UNIDO, UNEP, UNDP, and the World Bank.

**Cooperation:** The federal government cooperates with the international community on issues relating to management of toxic chemicals. This cooperation exists through bilateral and multilateral activities.

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## CHAPTERS 20 TO 22: ENVIRONMENTALLY SOUND MANAGEMENT OF HAZARDOUS, SOLID AND RADIOACTIVE WASTES.

### Decision-Making:

*Hazardous wastes:* Nigeria has National regulations on toxic chemicals and hazardous wastes and is also involved in the implementation of some of the International Convention, Procedures and Protocols on Hazardous/Toxic Wastes and Chemicals, and Radioactive Waste Management. By the year 1998, Nigeria will develop National regulations on the Basel Convention on Transboundary Movement of Toxic Wastes; procedures and protocols on the "Prior Informed Consent" concept for hazardous chemicals in international trade, etc. The strategies for the management of hazardous wastes include: a) requiring and assisting industries to change to cleaner production methods and adopting preventive and recycling technologies; b) encouraging the phasing out of processes that produce high risks due to hazardous waste generation; c) environmental audits of existing industries to improve hazardous waste management; d) making producers responsible for the environmentally sound disposal of the hazardous wastes they generate; e) establishing public awareness and training programmes for industries and government workers on hazardous waste issues, especially waste minimization, etc.

*Solid wastes:* The strategy to meet these needs is to: a) promote education and awareness on waste prevention, separation of waste at source, and other environmentally sound municipal waste management approaches; b) develop and implement, through the collaborative approach, national guidelines and blue prints for integrated management of municipal solid waste; c) encourage markets for recovered waste products and ensure that those who generate wastes pay the full cost of environmentally safe disposal; d) promote strict compliance with anti-litter laws and regulations supported by the provision of waste collection facilities; e) promote the development and adoption of appropriate technologies for the conversion of organic municipal solid waste to compost and encourage markets for its use as a soil conditioner; f) review and strengthen existing laws and regulations for environmentally sound management of municipal solid waste; l) encourage active participation of Non-Governmental Organizations (NGOs) and Community Based Organizations (CBOs) as well as private sector in promoting sound management of municipal solid waste; m) promote environmentally sound collection, handling, transportation, and disposal of other non-hazardous water, etc.

*Radioactive wastes:* Nigeria has National regulations on toxic chemicals and hazardous wastes and is also involved in the implementation of some of the International Convention, Procedures and Protocols on Hazardous/Toxic Wastes and Chemicals, and Radioactive Waste Management. Nigeria is developing national regulations on the Basel Convention on Transboundary Movement of Toxic Wastes; procedures and protocols on the "Prior Informed Consent" concept for hazardous chemicals in international trade, etc. The strategies for the management of radioactive waste include: a) the promotion of ways to minimize and limit the generation of radioactive wastes; b) the development or acquisition of technology for the safe handling of radioactive waste; c) policy development which will make it mandatory to return used radioactive materials to suppliers; and d) banning unauthorized storage or disposal of radioactive wastes.

### Programmes and Projects:

*Hazardous wastes:* In Nigeria, the Hazardous Chemicals and Toxic Wastes Dump Waste Programme was put in place in 1992 following the provisions of the Waste Management Regulations S.I. 15 of 1991. In addition, a total ban on importation, transit, transportation, deposit, and storage of harmful wastes has existed since 1988. In concert with some of the provisions of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Federal Government has approved a FEPA-University of Ibadan Centre of Excellence for training and research in the areas of: industrial, domestic and hazardous wastes management; development or adoption of cleaner production technology for Nigeria; reduction of gaseous emissions; and incorporation of "waste to wealth" strategies into waste management practices. In a similar development, the Ministry of Science and Technology has initiated a programme for: the identification of major pollutants; monitoring and controlling the effect of pollutants on the environment; developing process technologies for combating industrial pollutants; establishing model treatment plants for demonstration and skill acquisition; and converting solid wastes into energy and other useful purposes.

*Solid wastes:* See under **Hazardous wastes**

*Radioactive wastes:* In Nigeria, the Hazardous Chemicals and Toxic Wastes Dump Waste Programme were put in place in 1992 following the provisions of the Waste Management Regulations S.I. 15 of 1991. In addition, a total ban on importation, transit, transportation, deposit, and storage of harmful wastes has existed since 1988. Under this programme, Federal Environmental Protection Agency (FEPA) officials operating at the seaports in the country can take samples of any suspicious consignment camouflaged as industrial materials for analysis at the Reference Laboratory of the Agency. In addition, FEPA has embarked on chemical tracking by monitoring warehouses and outlets for the safe handling, storage, and disposal of imported chemicals. The effort has succeeded in intercepting a host of banned and expired chemicals as well as toxic wastes camouflaged as raw materials and products.

**Status:**

*Hazardous wastes:* Over the past decade, unscrupulous foreign businessmen, acting in collaboration with local people, have found a new way of making money through the illegal trade of hazardous wastes from the developed countries to the poor, helpless, and largely illiterate developing countries. In total, 94% of all hazardous waste trade originates from member countries of the Organisation for Economic Co-operation and Development (OECD). The sole aim is to avoid the strict environmental and health safety regulations and public opposition of the host country, which is deeply rooted in economic calculations.

*Solid wastes:* Municipal solid waste heaps dot several parts of major Nigerian cities blocking roads, alleys, and pavements. Municipal waste and sewage disposal problems are particularly serious in Lagos, Ibadan, Enugu, Kaduna, Aba, Port Harcourt, Owerri, and Warri. In the future, Nigeria wants to achieve not less than an 80% reduction in the volume of municipal solid waste generated at all levels and ensures environmentally sound management. With an increasing population and rising land values, Nigeria needs to minimize wastes generated to reduce the volume of wastes destined for disposal. The country also needs to promote basic sanitation; ensure the environmentally sound waste management of municipal solid waste; eliminate litter on Nigerian streets; promote responsible care; and secure a quality of environment for all Nigerians adequate for their health and well being.

*Radioactive wastes:* With increasing industrial activities in Nigeria and the utilization of radioactive materials, there is growing concern for radioactive waste.

**Capacity-Building, Education, Training and Awareness-Raising:**

*Hazardous wastes:* Government has embarked on various activities aimed at: training target groups utilizing, handling and storing chemicals and pesticides on product stewardship; establishing hazardous waste streams and development of hazardous waste treatment facilities in cooperation with industries; strengthening the existing collaborative mechanisms among various national regulatory ministries/agencies to monitor hazardous/toxic chemicals in the country; and strengthening the appropriate training and information dissemination organs on the risks associated with chemical use and handling.

*Solid wastes:* Government is encouraging better waste management practices through public awareness campaigns, focusing on changing values and attitude of the entire public.

*Radioactive wastes:* Organisations generating radioactive active wastes are required to train their staff on safe handling and disposal of such wastes.

**Information:**

*Hazardous wastes:* Implementation of pesticides and other chemicals statutory registration programmes in the country are being carried out. National chemicals information system and documentation are being strengthened.

*Solid wastes:* The Federal Government has prepared a draft Blueprint on Municipal Waste Management. It is hoped that when the final blueprint is produced, practicing waste managers both institutional and private will be able to have a document to guide their operations.

*Radioactive wastes:* Government has established an agency, part of whose responsibility will include development of database on nature and sources of radioactive wastes within the country.

**Research and Technologies:**

*Hazardous wastes:* In concert with some of the provisions of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Federal Government has approved a FEPA-University of Ibadan Centre of Excellence for training and research in the areas of; industrial, domestic and hazardous wastes management; development or adaptation of cleaner production technology for Nigeria; and incorporation of "waste to wealth" strategies into waste management practices; Government is updating techniques and technology available for enforcement of national legislative mechanisms regarding solid waste management.

*Solid wastes:* The government is carrying out a study of the best practices for managing solid wastes in 14 Nigerian cities.

*Radioactive wastes:* Some agencies and research institutes are carrying out research in this area.

**Financing:**

*Hazardous wastes:* Government is providing funds for programmes and projects hazardous wastes management.

*Solid wastes:* The federal, state and local governments are financing programmes and projects solid waste management.

*Radioactive wastes:* Government is providing funds.

**Cooperation:**

*Hazardous wastes:* The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was ratified by Nigeria in 1991. Government is cooperating with the international community, including some agencies of the United Nations such as UNEP, UNIDO and WHO.

*Solid wastes:* Government is cooperating with the international community, including some agencies of the United Nations such as UNEP, UNIDO, WHO and UNDP.

*Radioactive wastes:* Government is cooperating with the international community, including some agencies of the United Nations such as UNEP, UNIDO, WHO, UNDP and the International Atomic Energy Agency.

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## CHAPTERS 24 TO 32: STRENGTHENING THE ROLE OF MAJOR GROUPS

**Women:** Decision-making: As a demonstration of Government's recognition of gender initiatives in sustainable development, the National Commission for Women has been upgraded to the Ministry of Women's Affairs. In order to tap women's knowledge on issues related to the environment, the Federal Ministry of Environment has strengthened the Women Environment Desk within its structure. The government was very active in the National Preparatory Committee set up by the National Commission for Women to prepare the Nigerian position at the Fourth World Conference on Women held in Beijing, China in 1995. Status: Several of the activities embarked on have continued to yield positive results. As a result of an increased level of awareness, for example, women have been mobilized to undertake various projects on resources conservation especially in the area of waste recycling. Capacity-Building, Education, Training and Awareness-Raising: The new Ministry organized a post-Beijing National Workshop held in April 1996 in Maiduguri. Nigeria observes the annual International Women's Day celebration on March 9. The government has embarked on establishment and management of cooperative societies for women in rural areas. Information: The government has produced workbooks and manuals on twelve critical areas. Financing: Government provides funds for women development programmes. Technical and financial assistance were given by the for Federal Environment Protection Agency (FEPA) to demonstrate its support for Women's efforts in raising the level of environmental awareness in Nigeria. Cooperation: The Convention on the Elimination of All Forms of Discrimination Against Women was ratified in Nigeria in 1985. Government is cooperating with the international community, including some agencies of the United Nations such as UNIFEM, UNICEF, WHO, and UNDP.

**Children and youth:** Programmes and Projects: The federal government is committed to programmes aimed at attaining 100 % child survival rate and the total re-orientation of the youth against violence, criminal tendencies, and preparing them for responsible adulthood. The implementing agencies of the federal government's Women and Youth Development programmes are the Federal Ministry of Women Affairs and Youth Development and its three parastatals, namely, National Youth Service Corps, Citizenship and Leadership Training Centre, and National Centre for Women Development. Having ratified the United Nations Conventions on the Rights of the Child, Nigeria is obligated to prepare and submit periodic reports to the UN on the state of implementation of children's right in the country. Nigeria participates in bilateral and multilateral youth exchange programmes. Nigeria observes annually National Children's Day on May 27; the Day of the African Child on June 16; and the Day of the Family on May 15.

**Indigenous people:** Each of the culturally distinct groups in Nigeria is an ethnic group. Ethnic groups are categories of people characterized by cultural criteria of symbols including language, value systems and normative behaviour, and whose members are anchored in a particular part of the state territory. All the distinct ethnic groups form inextricable parts of Nigeria. Each is encapsulated in wider network of social relations provided by the new state. Within this framework, each group develops and manipulates its own mythology of descent, ritual beliefs and moral practices, while its members share an exclusive culture and normative behaviour. Members of each group share an identity, which they use as a means of forging relationship within the political and economic spheres and in accessing resources in the new state. Thus, each group devices means of consolidating its boundaries sustained by myths and symbolism. Since each group co-exists with others in the new state, its social and cultural boundaries are frequently broken through interactions.

**Non-governmental organizations:** Status: Government collaborative efforts with NGOs has been a most valued instrument for information and a catalyst for grassroots participation in activities aimed at implementing Agenda 21. There has been a steady increase in the number of NGOs concerned with environment over the past two decades. The principal ones include the Forestry Association of Nigeria (FAN), the Nigerian Conservation Foundation (NCF), the Nigerian Environmental Society (NES), the Nigerian Environmental Study/Action Team (NEST), the Foundation for Environmental Development and Education in Nigeria (FEDEN), the Country Women Association of Nigeria (COWAN), the Ecological Society of Nigeria (ECOSON), the Friends of the Environment (FOTE), the Centre for African Settlement Studies and Development (CASSAD), EANET Africa, the Media Practitioners Environment Group, the Fisheries Society of Nigeria (FISON), and the Nigeria Regional Group of the

International Bar Association of Nigeria (NRG/IBA). A number of key NGOs located in different parts of the country have been consistently implementing different aspects of Agenda 21 in different communities working in collaboration with Community Based Organizations.

**Local authorities: Decision-Making:** The Government has stipulated that all States of the Federation that have established their Environmental Protection Agencies should implement the National Policy on Environment and enforce environmental standards and regulations within their area of jurisdiction. Virtually all States have almost completed the preparation of their long-term State Environmental Action Plans (SEAP) under the World Bank assisted Environmental Management Project for Nigeria. The overall goal of SEAP is to strengthen the capacity of State Environmental Protection Agencies to identify and prioritize environmental problems in their domains and formulate projects to mitigate the identified problems. Apart from the State Environmental Protection Agencies, line ministries/agencies at local levels are responsible for compliance monitoring of environment guidelines and standards. These include Urban Planning and Development Departments, Environmental Sanitation Task Forces, and Forestry Guards.

**Workers and trade unions:** In December 1975, the government published its National Labour Policy, which represented a fundamental shift in the mode of state interventions in labour relations in Nigeria. The principal objectives of the policy are: the need to give a new sense of direction and new image to the trade union movement; the need to rationalize the structure and organization of trade unions and to ensure that they are self-sufficient financially; the need to provide facilities for trade union education; and the need to strengthen the labour administrative system through the provision of adequate material and human resources for the Ministry of Labour for the enforcement of labour laws and regulations. In pursuance of these objectives, Decree No. 21 and 22 of 1978 re-organised the then existing more than 1,000 unions into 42 industrial unions and provided for the formation of 15 senior staff associations. The industrial unions were to be affiliated to only one Central Labour Organisation, the Nigeria Labour Congress, itself a creation of the government.

**Business and industry: Decision-Making:** The Government is actively encouraging the establishment of environmental desks by some organized private sectors such as the Manufacturers Association of Nigeria (MAN), the National Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA), the Oil Producers Trade Sector (OPTS), the Clean Nigerian Associates (CNA), etc. Environment Units have been established by most oil companies and manufacturing industries for more effective monitoring and protection of the environment, and for health and safety matters.

**Scientific and technological community:** In the scientific and technical community, the Government through the Ministry of Science and Technology is carrying out, on a continuous basis, training of manpower in such areas like leather production, foundry, and equipment fabrication; and organizing workshops and seminars for personnel from industries in the areas of assessment and management of technology.

**Farmers:** There are different categories of farmers-the small scale medium scale and large farmers. The Nigeria Agricultural and Cooperative Bank (NACB) now known as the Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB) has continued to serve as an on-lending financial institution to farmers nationwide.

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## CHAPTER 33: FINANCIAL RESOURCES AND MECHANISMS

**Decision-Making:** The Nigerian Investment Promotion Commission (NIPC) registers all companies with foreign interest up to 100 per cent or in partnership with Nigerians. However, before a registration certificate is granted, the NIPC ensures that the company meets the stipulated guidelines including those that will ensure environmental friendliness. Hence companies involved in specialised practice or manufacture of special products are required to produce additional license certifying them competent to engage in that line of business. These additional certificates are issued by appropriate government agencies such as Ministries of Environment, Petroleum Resources, Science and Technology, Solid Minerals Development, Health and the National Agency for Food and Drug Administration and Control. Priority is also given to environmentally friendly projects under the Debt Conversion Programme of the Central Bank of Nigeria. There are examples of other measures such as a) enforcement measures have been stepped up in respect of the Endangered Species Act governing international trade and traffic in endangered species of fauna and flora, b) the grant of logging concessions for large forest estates are now being subjected to the provisions of the Environmental Impact Assessment Decree 86 of 1992 in order to avoid deforestation as a negative impact of trade in timber and etc.

The reforms and abolition of the Exchange Control Act of 1962 and the consequent liberalization of capital transfers were designed to make foreign direct investment more attractive in general. This is supported by the participation of the Central Bank in the activities of the newly established Nigerian Investment Promotion Commission (NIPC), which is a one-stop window for assisting foreign investors with regulatory, bureaucratic and institutional support for investment in Nigeria. In the bid to phase out environmentally unsustainable subsidies, the government has recently reviewed its policies in this regard and is currently implementing the policy of privatization and commercialization of some of these services as a way of removing the subsidies. The Committee on Privatization and Commercialization has been set up to ensure the effective implementation of these policies while the private sector is being encouraged to imbibe the culture of bearing the environmental cost of using natural resources in terms of mitigation, restitution and restoration measures.

In Nigeria, the future strategy for internalizing environmental costs through the use of economic instruments for the management of natural resources is based on things such as a) incorporating environmental costs in the decisions of producers and consumers so as to reverse the tendency to treat the environment as "free goods" and to stop passing these costs on to other parts of society or to future generations and b) moving more fully towards integration of social and environmental costs into economic activities so that prices will appropriately reflect the true value of resources and contribute towards the prevention of environmental degradation (study and campaign 1998 - 1999, phased implementation 2000 - 2005, full reflection of cost by 2010) and etc. The future strategy to meet the financial requirements of environmental protection and natural resource conservation is such as a) to ensure adequate annual budgetary provision for policy formulation and implementation of the National Policy on the Environment, b) to include in particular the amelioration of key environmental problems, c) to create a fund for the Federal Ministry of Environment to administer for rapid response to industrial accidents with significant adverse environmental impact and etc.

**Programmes and Projects:** The approach of huge expenditure by government on environmental pollution control without adequate implementation of user fees or polluter pays principle amounts to subsidy in the following areas: Solid waste management; Production and distribution of fertilizer; Refining of petroleum products; Provision of portable water to industries; and Supply of energy. The financial mechanisms used to combat poverty in Nigeria focus mainly on the establishment of credit schemes targeted at the poor especially small-scale farmers and cottage industries. Among these are such as micro-credit schemes targeted at farmers and small-scale enterprises. These include direct lending schemes from formal credit institutions at concessionary terms as well as from specialized lending agencies; Job creation through special grants and other measures under the newly established National Poverty Alleviation Programme of the Federal Government; Establishment of specialised lending and credit institutions such as the Nigerian Agricultural Credit Bank, Family Economic Advancement Programme, etc.; Execution of rural development programmes; Commission of direct labour schemes; Establishment of specialised institutions on self employment schemes (e.g. National Directorate of Employment); and Establishment and operation of Cooperative Societies.

**Status:** While appreciating government, non-governmental, international, and individual efforts at providing the financial requirements for environmental protection and natural resource conservation, there is the need to streamline current funding mechanisms to make them more efficient and responsive. Also, in view of the magnitude of environmental problems and the rising cost of amelioration, there is need to provide new and additional financial resources that are both adequate and predictable. This is an essential requirement to halt and reverse the current menace of environment and natural resources degradation. Huge financial investments are needed to implement the various programmes and activities for environmental protection and natural resource conservation. A World Bank Report in 1990 estimated the cost of ameliorating only six of the numerous environmental problems in Nigeria at about US \$5 billion annually, which is the equivalent to the National budget. Currently, this estimated cost has more than doubled. With increasing pressure on the environment and natural resources, the cost of inaction will rise exponentially and manifest itself in the expansion of desert areas, loss of agriculture and natural resources, decline in agricultural productivity, impaired health of the citizenry, polluted surface and underground waters, coastline encroachment onto prime property and agricultural areas, etc. The major constraint to the implementation of Agenda 21 remains the financial provisions for implementation. The implementation of Agenda 21 in Nigeria will require the assistance of international, multilateral, and bilateral agencies, such as the United Nations, the World Bank/International Development Association (IDA), the International Monetary Fund (IMF), and the GEF. A possible assistance option that may be considered by the IMF and the World Bank/IDA is the conversion of the country's debt service flows into investments in environmental management and protection programmes and projects.

**Capacity-Building, Education, Training and Awareness-Raising:** There is need for institutional strengthening and human resources development particularly in the areas of environmental economics and resource accounting.

**Information:** In general, Nigeria submits reports to many multilateral agencies on different aspects of financial matters. These include data on basic macro-economic indicators such as Gross Domestic Product, Balance of Payments, as well as other reports to the World Bank, IMF, and World Trade Organization etc. These reports include components on environment. The country is also involved in Global Environmental Facility (GEF) activities and submits reports and project proposals to the GEF Secretariat. These reports are available in hard copies and in electronic format. Information on sustainable development is currently being made available through reports and hard copy of various publications. Apart from the Internet facility in the Nigerian Investment Promotion Council, information through the Internet systems is still rudimentary and still being developed. South Africa's national budget, which includes a comprehensive survey of the expenditure and service priorities of all government departments, is available from the department's web page at [www.finance.gov.za](http://www.finance.gov.za).

**Research and Technologies:** Studies are being carried out on new and innovative ways of financing sustainable development programmes and projects.

**Cooperation:** See under **Status**.

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## CHAPTER 35: SCIENCE FOR SUSTAINABLE DEVELOPMENT

**Decision-Making:** The Federal Government, through the Ministry of Science and Technology, is currently undertaking a review of the National Policy on Science and Technology, enacted in 1986. The Government views this policy as a key instrument for sustainable development. Nigeria's first science and technology policy was promulgated by Decree No. 83 of 1966, one of the mandates being to "encourage, support and coordinate scientific and industrial research of all kinds for Nigeria". The Nigerian Council amended this Decree for Science and Technology (NCST) Decree No. 6 of 1970, with specific charge to "ensure the application of the results of scientific activities to the development of agriculture, industry and social welfare in the federation. Several other Decrees were promulgated between 1970 and 1977, establishing various research councils mandated to establish appropriate research institutes. By 1977, twenty-two research institutes had been established in the country. The National Science and Technology Development Agency (NSTD) Decree No. 5 of 1977 replaced the NCST Decree, and all the research institutes were brought under the direct supervision of the NSTD

**Programmes and Projects:** The government has embarked on many programmes and projects to use science as a vehicle for sustainable development. Some of these include:

- Establishment of many research institutes with specific mandates and objectives;
- Establishment of many agencies and parastatals with specific objectives and mandates such as the National Biotechnology Development Agency (NABDA); Scientific Equipment Development Centre (SEDC); Nigerian National Network of Seismic Stations (NNNSS); National Centre for Remote Sensing (NCRS); Nigeria Natural Medicine Development Agency; and National Information Technology Development Agency (NITDA).
- Provision of research grants to Nigerian scientists;
- Ensuring the translation of science and technology results into actual goals and services: through adaptation and production; and
- Identification of areas of cooperation and establishing working relations between national research institutes and their counterparts in other countries.

**Status:** Not making science implicit has been identified as a major short-coming in the National Science and Technology Policy (now under review). The distinction between science and technology was not clearly stated. Operating the policy in that form could mean promoting just the utilization of technology without developing the base, which is science. The new policy is aimed at creating and maintaining national capacity in the major domains of science, so as to understand, contribute to and benefit from international advancement in the frontier of scientific knowledge. The government has inaugurated the Honorary Presidential Advisory Council on Science and Technology to reinforce the new policy.

**Capacity-Building, Education, Training and Awareness-Raising:** Upgrading laboratory facilities in Research Institutes and Universities as a means of enhancing the capabilities of the institutions.

**Information:** the government hosted An African Regional Workshop on Sustainability Science. The government promotes the teaching of science subjects in the primary, secondary and tertiary institutions.

a computer wide area network (wan) has been established by the ministry of science and technology. 9 research institutes and 34 liaison offices are linked to the network. identification and documentation of raw materials available locally for the industrial sector. Publication of documents on medicinal plants in some parts of the country

**Research and Technologies:** The government has established many research institutes with specific objectives. Several catalytic models have been established through joint venture partnership. Examples include: Kaolin, Processing Plant, Fertilizer Blending Plants, Granulated Limestone Processing Plant, Integrated Solid Minerals Processing Plant, and Castor Oil Pilot Plant.

**Financing:** The federal government provides funds for implementation of programmes and projects in this area. Some financial and technical support is provided by some international organisations such as UNESCO, UNIDO, UNEP, UNDP, and the World Bank.

**Cooperation:** The federal government cooperates with the international community. This cooperation exists through bilateral and multilateral activities.

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## CHAPTER 36: PROMOTING EDUCATION, PUBLIC AWARENESS AND TRAINING

**Decision-Making:** The future strategy and plans of the Nigerian Government for creating and improving capacity for sustainable development are to: a) develop a blueprint for environmental education and public awareness by 1998; b) ensure that environmental education is a core ingredient of the educational system at the primary, secondary and tertiary levels of education by 1999; c) make environment and development education available to people of all ages; involve school children in local studies on environmental health, including safe drinking water, sanitation, food and the environmental and economic impacts of resource use; d) encourage all sectors of society, including industries, universities, governments, non-governmental organizations, and community organizations to train people in environmental management; e) work with the media, theatre groups, entertainment and advertising industries to promote a more active public debate on the environment; f) train decision-makers on the basic tenets of environment and sustainable programmes for different strata of the environment on a continuing basis; g) develop and implement tailor-made environmental education and awareness programmes for different strata of the environment on a continuing basis; and h) institutionalize environmental responsibility through regular competitions and awards such as cleanest village in each local government, cleanest local government in each State and cleanest State in the Federation, as well as the most environmentally-friendly industries on a sectoral basis.

**Programmes and Projects:** The Nigerian Government, through the Federal Ministry of Environment (FME) and other relevant agencies, has undertaken programmes to enlighten, educate, and raise awareness of the Nigerian population through media (both print and electronic) campaigns on environmental issues. Identification, education, and training of officials that would form the core of the Environmental Education Network nationwide are being undertaken. Furthermore, FME has always engaged in social activities aimed at raising the level of public environmental awareness. For instance, the Agency has consistently joined the world in the commemoration of World Environment Day (WED) during which the attention of the public, children and youths are drawn to the importance of a safe and sound environment. In addition, FME has encouraged the establishment of Environmental Conservation Clubs in Secondary Schools. It has also collaborated with the Federal Ministry of Education through the National Educational Research and Development Council (NERDC) on the development of an Environmental Educational Master plan and Curricula for both the formal and informal educational system in Nigeria. In 1993, the UNDP offered to support the National Programme on Environmental and Natural Resources Management for Nigeria. The support focused essentially on capacity building in all programme areas identified. This is to enable the environmental agencies of the Government of Nigeria at both Federal and State level, NGOs, and local communities design, formulate, manage, implement, and sustain their own environmental protection programmes. Specifically, the four target objectives of the programme include strengthening National capacity for the formulation of environmental policies, legislation, and enforcement; increased awareness and conservation of the environment; preparing the National Agenda 21 and an action plan for its implementation; training of staff of FEPA, State Environmental Protection Agencies, and other National bodies to enable them to carry out their work programmes on a self-sustaining basis.

**Status:** Staff members of State Environmental Protection Agencies benefited from overseas training programmes under the Technical Assistance Training Programme and the World Bank Assisted Environmental Management Project for Nigeria. Training of staff from other line ministries and the private sector in specialized areas such as environmental law and EIA is already in progress. An Environmental Enforcement Training Centre (EETC) is being established in FME to train environmental officers at federal and state levels, and those in the private sector. The ability to develop more sustainably depends on the capacity of Nigerian citizens and institutions to understand the complex environment and development issues so that they can make the right development choices. Citizens need to have the expertise to understand the potential and the limits of the environment. This will require scientific, technological, organizational, institutional, and other skills. There is also the need to increase the sensitivity of the Nigerian populace to, and involvement in, finding solutions for environmental and ethical awareness, values and attitudes, skills and behavior needed for sustainable development.

**Information:** The government has produced a number of publications on key environmental issues in Nigeria. Some of these publications include: a) The making of the Nigerian Environment Policy, FEPA Monograph 1: 1992; b) Industrial Pollution Abatement in Nigeria, FEPA Monograph 2: 1993; c) Environmental Consciousness for National Development, FEPA Monograph 3: 1993; d) Industry and Ozone Layer Protection in Nigeria, FEPA Monograph 4; e) The Federal Environmental Protection Agency (FEPA) Corporate Profile; f) The Green Book; g) Guidelines on Environmental Impact Assessment; h) Guidelines on Environmental Management System; and i) Guidelines on Environmental Auditing.

**Research and Technologies:** New and innovative ideas are being developed on public awareness and mass mobilization.

**Financing:** Government provides funds. Some financial support is also received from the international community.

**Cooperation:** In the area of training, the Government has cooperated with international organizations, such as the World Bank, the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), the United Nations Industrial Development Organization (UNIDO) on capacity building and institutional strengthening. This is to ensure manpower development for environmental protection and natural resources conservation. The World Bank Assisted Environmental Management Project (EMP) for Nigeria has assisted the country in its efforts toward human development. Officers from both Federal and State Environmental Protection Agencies have benefited from some training programmes in environmental impact assessment (EIA), environmental management, environmental education and awareness, and media education.

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**CHAPTER 37: NATIONAL MECHANISMS AND INTERNATIONAL COOPERATION FOR  
CAPACITY-BUILDING IN DEVELOPING COUNTRIES.**

This issue has been covered under the heading **Capacity-Building, Education, Training and Awareness-Raising** in the various chapters of this profile.

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## **CHAPTER 38: INTERNATIONAL INSTITUTIONAL ARRANGEMENTS**

This issue deals mainly with activities undertaken by the UN system

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## **CHAPTER 39: INTERNATIONAL LEGAL INSTRUMENTS AND MECHANISMS**

This chapter has been covered under **Cooperation** in the various chapters of this Profile.

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## CHAPTER 40: INFORMATION FOR DECISION-MAKING

**Decision-Making:** Sustainable development requires intelligent environmental decisions. Sound environmental decisions can only be made with the help of timely, relevant, and reliable information. With this in mind, the Federal Ministry of Environment (FME), as the coordinating agency for environmental issues in Nigeria, has taken concrete steps to facilitate the acquisition and exchange of environmental information both before and after the United Nations Conference on Environment and Development (UNCED). These steps are consistent with recommendation 101 of the 1972 Stockholm Conference on the Human Environment as well as the concerns expressed at UNCED in 1992.

The steps include: a) the establishment of a Data Management and Information Unit; b) the establishment of an environmental reference library; c) Nigeria's active participation in the International Environmental Information Network (INFOTERRA) of the United Nations Environment Program (UNEP). The strategy to improve information for decision making includes: a) establishment of a functional data management and information system capable of managing environmental trends over time by 1998; b) developing a baseline database on the state of urban air, freshwater, forests and rangelands, desertification, soil degradation, biodiversity, industrial pollution, and oil pollution by 1999; c) monitoring the state of the Nigerian environment on a continuous basis and publishing regular bulletins to guide policy formulation and decision-making processes; d) acquiring and/or seeking necessary assistance for direct access to information systems such as data from satellites; e) creating greater harmonization among different environmental data gathering organizations; f) developing an inter-sectoral framework and infrastructure for sharing of data, expertise and resources on environmental information; g) promoting standardization of data formats, and minimizing and/or eliminating duplication of efforts in environmental information management; h) developing an information access and use policy, including the resolution of copyright issues on environmental information; and i) developing a core of indigenous professionals for the efficient management of Geographical Information Systems and other spatial information technologies.

**Programmes and Projects:** The Data Management and Information Unit were established as one of the major components of the World Bank assisted Environmental Management Project in Nigeria. The Unit is a network in which FEPA as the central node is connected to other sectoral nodes dealing with forestry, natural resources, land, and water resources conservation. FME has established an environmental reference Library at its headquarters in Abuja to provide the public with excellent and up-to-date reading materials on environmental issue. This is in addition to the existing library at the Lagos Office. The Headquarters Library is stocked mainly with the publications of the Agency, UNEP, the United Nations Education, Scientific and Cultural Organization (UNESCO), and other global donors. The Library is currently being expanded and computerized under the World Bank Assisted Environmental Management Project in Nigeria. INFOTERRA is the global environmental information exchange network with National Focal Points in 174 Countries coordinated by UNEP. Nigeria joined the network in 1974. To date, the Agency has forwarded 25 local sources of environmental information for inclusion in the International Directory of Sources. In addition, 35 sources have been identified for registration while a National directory of sources is being compiled for publication. Plans are underway to establish sub-focal points in the Environmental Protection Agencies of the 36 States of the Federation and the Federal Capital Territory. FME is consulting with UNEP on the possibility of establishing an INFOTERRA Regional Service Centre in Nigeria for the Anglophone West African countries. As part of this program, the Ministry of Science and Technology has established a three-tier linkage (Federal, State, Local Government) for disseminating timely technical data for decision-making applications related to the establishment of cottage, small, and medium scale industries. In addition, the Ministry has established a wide area network to link all research institutes for information exchange and to facilitate institutional linkages.

**Status:** A wealth of information that could be used for the management of sustainable development is available within various organizations and individuals in Nigeria. However, many people, including decision-makers, have difficulties in finding the information they need, when they need it, and in useful formats. The existing environmental information is yet to be adequately managed due to shortages of needed technology and trained specialists, lack of awareness of its value and availability, and the narrow demands of data collecting individuals

and organizations. There is also a need for different types of information. Commonly used indicators such as GNP and measurements of individual resource or pollution flows do not provide enough information about sustainability.

**Capacity-Building, Education, Training and Awareness-Raising:** Government has embarked on various programmes and projects aimed at strengthening institutions and human resources development, particularly in the areas of modern information science and technology.

**Research and Technologies:** Government is supporting and encourage research in information science and technology.

**Financing:** The federal government provides funds. There are financial assistance from the international community such as the World Bank, UNEP, and UNDP.

**Cooperation:** World Bank, UNEP and 36 States of the African Federation and the Federal Capital Territory.

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## CHAPTER: INDUSTRY

**Decision-Making:** The unpleasant side effect of industrialization is the waste generated from industrial processes. These include liquid, gaseous, noise, heat, and solid wastes. Several reports confirm the non-inclusion of waste management provisions in industries sited in Nigeria. However, since the inception of the defunct FEPA and the creation of Federal Ministry of Environment, progress has been made in enacting laws and creating awareness of the need to install waste handling facilities in industries. These efforts have yielded fruit and the compliance level of industries with National industrial waste management requirements now stands at about 20%. This is good progress in two years since the expiration of the moratorium for compliance. The progress should continue and mechanisms to achieve 80% compliance are being proposed.

The strategy to single out the sources of gaseous emissions and maintain them at the level of full compliance by the year 2010 includes: a) review of existing National guidelines and standards; b) intensify public enlightenment campaigns at all levels on the benefits of adequate maintenance, retrofitting, adopting effective technology, ensuring efficient energy use, and increased cost benefit; c) maintain effective databases on industries and their compliance status; d) maintain a register of technologies, vehicles, generating sets, and aircraft for approval for manufacturing and importation; e) eliminate ODS consuming processes; f) enforce laws relating to the siting of new industries; g) install a minimum of primary treatment for all new industries; h) build secondary central treatment facilities in all major industrial estates in cities such as Lagos, Kano, Kaduna, Port-Harcourt, Warri, Ibadan, and Enugu by 2005; i) invoke the polluter pays principle immediately; j) ensure 100% waste segregation, recycling, and re-use by 1999; k) promote research in Best Available Technology Effective for Local Adoption (BATELA); l) make eco-labelling compulsory for all products by the year 2000; m) promote commercialization of sanitary landfill and incineration as appropriate; n) encourage citizen empowerment in pollution control; o) introduce green technologies and promote Environmental Management Systems (EMS) in all industrial facilities; p) create an environment fund for soft loans as economic incentives for environmentally friendly industries; and q) promote tax rebates for industries installing pollution abatement facilities.

**Programmes and Projects:** Government has participated in a number of activities and developed many initiatives to promote sustainable industrial development. The following are the major ones:

- With support from WMO's Global Atmospheric Watch (GAW) Programme, the Federal Government established in 1993 a Regional Environmental Monitoring Station at Osogbo. The station monitors 15 elements involving surface ozone, dry and wet depositions, dust loading solar radiation and other conventional meteorological elements to provide relevant information that could contribute to the protection of the atmosphere;
- Nigeria ratified the UN Framework Convention on Climate Change (UNFCCC) in 1994 and has since proposed a National Communication with support from UNDP-GEF. Also, with assistance from UNIDO and UNEP, the country has carried out identification and inventorization of emission sources of Green House Gases. UNIDO has also assisted in training and institutional strengthening for the implementation of energy efficiency projects;
- Assisted by UNDP and UNIDO, Nigeria developed a Country Programme for the implementation of the Montreal Protocol (MP) and received financial support from the Multilateral Fund (MEMF) for the phase out of ozone depleting substances; and
- Sustainable partnerships were built with donors (UNIDO, UNDP, UNEP) and private sector operators to develop and implement programmes that would promote clean environment and sustainable industrial development. A Country Service Framework (CSF) for technical assistance for industrial development in the country over the next 5 years was developed with UNIDO. The CSF includes the Programme "Environment and Energy" that inter alia covers energy management in industry and mobilizing capacity to enable industrial projects under the CDM. Many private companies benefited from the retrofitting of their factories for refrigerant manufacture, human resources development and funding of CFC phase out programme under the MFMP, while others benefited from support to retrofit foam manufacture.

**Status:** Although environmental problems resulting from industrial pollution vary considerably in pattern and depend on the type of industrial problems involved, the top major polluting industries in Nigeria are steel works, metal fabrication, food processing, tanneries, textiles, pharmaceutical, petroleum refineries and paints. Mining and its associated activities are also a source of considerable environmental damage as indeed are the problems of pollution arising from the oil sector. For example, the flaring of gas by oil companies in Nigeria accounts for as much as 28 per cent of the total gas flared in the world. Thus while Nigeria does not have an international binding commitment vis-à-vis the Climate Convention, the country does contribute to global warming from gas flaring in the oil and gas sector. Nigeria's long-term economic blueprint anticipates an annual growth rate of 10%. With its currently large population and expected economic growth, it is expected that about 20,000 MW of energy would be added to the present national electricity generating capacity. This may also be associated with high growth rate in carbon emission, unless appropriate policies and projects are put in place to curb the rate of carbon emission. An important source of pollution is gaseous emissions, especially from fossil fuel burning processes and processes using gas. The obnoxious gases include carbon, nitrous, and sulphur oxides (CO, NO<sub>x</sub>, SO<sub>x</sub>), volatile organic compounds (VOC), HC, ozone depleting substances (ODS), smoke, and particulate originating from vehicle exhausts, generators, aircraft, boilers, etc. The pollution is a major health hazard. In order to reduce the levels of these gases to tolerable ambient limits, it is important to single out the sources of gaseous emissions and maintain them at the level of full compliance by the year 2010.

**Capacity-Building, Education, Training and Awareness-Raising:** The government has reorganized and strengthened the National Office for Technology Acquisition and Promotion (NOTAP) to turn it into a viable African Regional Focal Point for technology acquisition and promotion for sustainable industrial development.

**Information:** Documents published by government relating to industry and environment include: Guidelines on Environmental Management System; Guidelines on Environmental Auditing; Guidelines on Eco-labeling; and Guidelines on Environmental Impact Assessment

**Research and Technologies:** A Clean Development Mechanism (CDM) Centre has been set up at the University of Ibadan. A study on the effectiveness of the Industrial Policy and the national Environmental Policy in the textile and leather industries has been carried out.

**Financing:** Activities in this area are financed mainly from the national budget. Other sources of funding include private sector partnership and external support.

**Cooperation:** Government is cooperating with the international community through various bilateral and multilateral programmes. UNIDO, UNEP, UNDP and the World Bank have been working closely with the government.

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## CHAPTER: SUSTAINABLE TOURISM

**Decision-Making:** Government adopts the participatory approach in its decision making process on sustainable tourism. It therefore, involves the nine major groups identified in Agenda 21 in various stages of the process. The bodies responsible for sustainable tourism at the national level are: the Federal Ministry of Commerce and Tourism; the Nigerian Tourism Development Corporation (NTDC) - in line with the World Tourism Organization Charter; and, the National Parks Board Federal Environmental Protection Agency. The administrative bodies responsible for tourism at the local level are: the State Tourism Boards (State government level) and the Local Government Tourism Committees (Local government level). There are laws and other regulatory mechanisms which seek to ensure sustainable tourism and that set aside specific areas or preserves for eco-tourism and nature-based tourism.

Existing codes of practice, standards and guidelines for the activities of industry in sustainable tourism are such as Hospitality for Tourism Establishments Regulations (1997) and Code of Conduct for Tour Operators and Travel Agencies. There is also a Tourism Plan/Policy prepared by the TPL Associates. Other existing policies, strategies and plans are such as the National Policy on the Environment (1989) Nigeria's National Agenda 21(1999), the Forestry Policy Trade and Tourism Policy (1990), and the National Housing Policy. The National Commission on Museums and Monuments Policy, the National Policy on Information (Tourism section), The National Endangered Species Decree No.11 (1985) Vision 2010: the Environment Agenda (1998) and the National Biodiversity Strategy and Action Plan (1998). Eco-tourism and nature-based tourism are integral parts of the National Strategies and Policies identified above. There are also established procedures to continuously monitor the progress of tourism development in order to make the necessary corrections or revisions to ensure sustainability. There are deterrents in these strategies, as well, in form of fines and penalties to check, control or penalize damaging environmental practices on the part of business and visitors.

**Programmes and Projects:** Major programmes in effect to promote sustainable tourism include the following: hotel development, hotel classification, establishment of hotels and tourism schools, establishment of national parks, game reserves, game sanctuaries, botanical gardens, etc, establishment of Tourists Associations, establishment of National Union of Road Transport Workers (NURTW), establishment of guides/hospitality associations for tourists and promotional activities using local and international media including the internet development of beaches as marine and coastal tourists centres.

**Status:** The growth of tourism over the past 10 years (1988 to 1999) has not been very encouraging. This growth is however, likely to be more within the next decade. The current impact of tourism on other issues related to sustainable development, including the preservation of cultural heritage and its current impacts on the environment have not been established to be adverse and effort is being intensified in this regard to ensure that the environment faces no significant adverse impact. A few illustrative activities geared both to sustainable tourism, eco-tourism and nature-based tourism include the following: environmental awareness promotion amongst tourists and the general populace, adoption of guided tour approach in National Parks and nature-based resorts, establishment of relevant institutional mechanism to implement government policy, monitoring of progress being made and review of strategies. Major constraints to pursuing sustainable tourism include: lack of adequate awareness, economic constraints for effective monitoring and enforcement, inadequate finance and banking services, and development of infrastructure.

**Capacity-Building, Education, Training and Awareness-Raising:** Available training facilities for employees in the tourism industry geared towards assisting them in understanding, applying and promoting sustainable tourism include: establishment of schools to train tourism officers and those in hotels and hospitality industry; introduction of departments of tourism in Colleges of Technology, inclusion of tourism in the education curriculum at tertiary and university levels, establishment of Conservation Schools. There are specific programmes to educate policy makers in the concept and policy design of sustainable tourism. These include national and international workshops, conferences and seminars organized by relevant establishments including the following: the Centre for Management Development (CMD), the Nigerian Institute for Policy and Strategic Studies (NIPSS), the Administrative Staff College of Nigeria (ASCON), the National Institute for Hotels and Tourism Studies and the

Nigerian Hotels and Catering Institute. Various types of programmes/awareness campaigns on sustainable tourism are being carried out in the country through print and electronic media as well as youth tourism clubs established for secondary school students among others. The parties involved in this effort are both public and private tourism and conservation agencies at the federal, state and local government levels. Various tourist centres such as the National Parks, Sanctuaries, and Beaches among others are being used for the promotion of sustainable tourism. These are in addition to publications produced for the creation of awareness and the promotion of the concept among the populace.

**Information:** Kinds of available information to assist both decision makers and the tourism industry in promoting sustainable tourism include: Publications including tourism guides, maps and brochures, Advertisements on print and electronic media, bill boards, communication facilities including the internet. Mapping and inventorying of natural resources and ecosystem characteristics has been done in tourist areas of the country. Relevant information is made available to potential users through electronic and print media nationally, regionally and internationally as well as provision of information brochures particularly at the nation's foreign offices (overseas desks). Activities are underway in Nigeria to develop sustainable development indicators related to sustainable tourism, eco-tourism and nature-based tourism including the establishment of an Advisory Expert Group on Sustainable Tourism Indicators which will work with communities to identify the indicators and submit a report for consideration through the participatory approach at a National Workshop on Sustainable Tourism, Eco-tourism and Nature-based Tourism.

**Research and Technologies:** Technology related issues that need to be addressed include the following: development of road networks; construction of dams in environmentally friendly manner; provision and maintenance of water borne pipes; provision of sewage and sewage treatment plants; provision of refuse bins, vehicles and sanitary landfills; improved solid waste management; and, telecommunications. Environmental management systems are applied in most hotels and other tourist's establishments.

**Financing:** Activities in this area are financed from the national budget and state allocation. Other sources of funding include private sector partnership and external support.

**Cooperation:** The nature of cooperation with Local Authorities in promoting sustainable tourism comprise the following: National Councils on Trade and Tourism, Seminars, Meetings and Workshops (local and international), Government financial support from state to local governments. Cooperation by the private sector comprises essentially provision of facilities and funding for tourism, partnership with Non-Governmental Organizations for establishment of such facilities and for relevant activities geared towards awareness and promotion of sustainable tourism. Bilateral, multilateral and international cooperation frameworks/agreements in which the country participates in order to further activities related to sustainable tourism, eco-tourism, and nature-based tourism include the following: Bilateral relations between Nigeria and other countries of the Economic Community of West African States (ECOWAS). Nigeria is signatory to the World Tourism Organization (WTO) and the African Tourism Promotion (ATP) Organization, Addis Ababa.

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