

The Challenge of Sustainable Development in Nigeria



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NEST
Nigerian Environmental Study/Action Team

THE CHALLENGE OF SUSTAINABLE DEVELOPMENT IN NIGERIA

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Editors

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DEDICATION

To the Memory of
the Late Chief Anthony M. Oseni, M.O.N., F.A.S.
(1927 to 1991)
Nationalist, Pioneer Environmentalist,
'Forester Emeritus', and Founding Member NEST

ACKNOWLEDGEMENTS

This book and the Report from which it derives owe an inestimable debt to many individuals, groups, organizations, community groups and communities too numerous to mention by name. NEST hereby gratefully acknowledges their contributions. Some of these who made direct contributions we have listed at the end of this volume. There are several others too numerous to mention here who cooperated, and gave of their time to the researchers who worked on this project. It is hoped that the debates, increased consciousness and actions that might arise from this book will contribute in some way to making their lives and those of their children better.

Our thanks and appreciation also go to all those who have contributed immensely to the production efforts. In particular, we gratefully acknowledge the efforts of Tunde Howson - Wright, Kole Ade-Odutola and Ian Stein.

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Last but not the least NEST acknowledges the support and the fundraising activities of the International Institute for Environment and Development (IIED), London for being at the forefront of the initiative for producing the Non-Governmental Report and organizing the funding and the forum it generated. We take this opportunity to thank in particular Richard Sandbrook, O.B.E., the Executive Director, and Johan Holmberg the Coordinator, and hope that the experience has contributed in some meaningful way to the beginning of an equal and mutually respectful partnership between North and South NGOs.

Finally, NEST will like to gratefully acknowledge here the sources of many of our boxes either from daily newspapers such as *The Guardian*, *The Daily Times*, and the *National Concord* or extracts from scholarly journals and professional magazines.

PREFACE

This book is a revised and enlarged version of a Report prepared by the Nigerian Environmental Study/Action Team (NEST) in partnership with the International Institute for Environment and Development (IIED), London, along with Non-Governmental groups and organizations in Zimbabwe, Argentina, Pakistan and Indonesia, to produce a cross-national Non-Governmental Report as an input into the preparation and debates that are part of the process of the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil, 1992.

The process that the Report production engendered, involved the utilization of the conventional approaches of the scientific method and a political strategy of consultative and participatory methodology. The second element which was no less important than the emphasis on the scientific method was borne out of the realization that a central element of the advocacy for sustainable development is the generation of awareness, and involvement in debates. The process of preparing the Report provided that opportunity. However it is the fervent belief of NEST that the challenges of sustainable development go beyond the UNCED Brazil 1992 meeting. It is in fact an essential element of the global natural, cultural and political heritage that our children will take over and have to deal with long after 1992. There is therefore the need to ensure that the process of engagement, debates, awareness-generation, commitment and transformation set into motion remains on going and enduring.

It is for this reason that NEST decided to publish the *Report* in this book form so as to make it available for use and as part of the contribution to the debate on what the challenges of sustainable development is for Nigeria.

Before we describe how the materials here are produced, it is necessary to point out that this publication is complementary to a set of other publications that NEST has produced in recent times. These include *Nigeria's Threatened Environment: A National Profile*, *Sustainable Development in Nigeria's Dry Belt: Problems and Prospects*, and *The Nigerian Environment: Non-Governmental Action*.

This publication is therefore not and cannot be comprehensive and all

inclusive of the major themes and issues central to the environment - development problematic.

The concern here has been to select some important and hitherto neglected themes and issues such as: Gender and the environment, the Environment and Economics, Environmental Awareness and Environmental Education, the Environment and indigenous peoples and the Environment and Institutional Framework.

While there is no explicit adherence to a theoretical framework or currents of theories, the text situates itself within what might be called the emergent broad sustainable development paradigm. Analysis and overall methodological perspective are essentially integrative and holistic. The multi-disciplinary and inter-sectoral findings and questions are all placed within a loose framework that integrates the ecology - political economy - development questions as one systematic and structural problem dependent to a great extent on the organization and expression of human needs, actions and vested interests.

The dynamic nature of these and their essential changeability are emphasized through a historical perspective which shows the everchanging nature of their development. However all sectors, issues and questions remain integrated within the perspective as related to one another and to the question of how and the extent to which humans interact with nature and with themselves in an equitable, just, ecologically-rational and collectively productive manner.

As noted above, the Project which produced the Report from which this book is derived consisted of two main elements:

- (a) The scientific data gathering and analysis process;
- (b) The consultative and participatory process.

These two elements were organized by NEST which set up a seven person Sectoral Coordinating Committee in November 1990 made up of David Okali, Kingsley Ologe, Uzo Igbozurike, Emmanuel Oladipo, Lahadi Tseayo, Ademola T. Salau and Tade Akin Aina. This committee was responsible for organizing a team of about 55 researchers nation-wide who worked on eight sectoral themes and issues.

The themes are:

1. Environment and Natural Resources Inventory.
2. Environment and Economics.
3. Environmental Education and Public Awareness
4. Land Tenure and Land Degradation.
5. Environment and Institutional Framework.
6. Environment and Gender.
7. Environment and Population.
8. Sustainable development and Nigerian Priorities

Organizing the process involved conducting six national coordinating meetings, a writing workshop, and a National NGO and Community-based groups Consultative Forum. The outline of the strategies utilized are as follows:

The Scientific Methodology:

This involved a multi-method, multi-instrumental, interdisciplinary ap-

proach which included: Documentary analysis, Interviews, Social Surveys, Field Trips, Rapid Assessment Techniques and other forms of unobtrusive measures such as Remote sensing and other technologies available to the environmental and social sciences.

The Consultative Methodology:

This combined scientific goals that are part of qualitative research methods with the socio-political goals of participation and the generation of awareness. The very mode of constituting the sectoral studies and the large number of researchers utilized ensured representativeness across gender and disciplines as well as regions, ecological, geographical and cultural zones in Nigeria.

Consultation and discussions were ensured through several meetings, workshops and conferences that NEST either initiated or participated in both in Nigeria and outside.

But perhaps a major outcome of this consultative and participatory process is the confirmation of NEST's position that Government alone cannot and should not be held responsible for maintaining and transforming our great nation. The challenge of building a greater and sustainable Nigeria is our common challenge. It is a challenge that we can meet by being totally committed and involved whatever our calling, creed, socio-economic status, ethnic origin, race and gender might be. Our responses and initiatives can take many directions. Through policy and legislative inputs, community and household earth watches, work place action and green-squads, grassroots advocacy and conscientization, professional and scientific involvement and generally through the possession of a consciousness and awareness of sustainable development objectives and outcomes for Nigeria.

It is to all of these that we hope this book which contains eight chapters and two case-studies will contribute. Again, we do not hold the position that its contents contain the answers to all or most of our problems. We only hope that through it we are challenged to greater awareness, concern, and action about building a sustainable earth.

Tade Akin Aina,
Ademola T. Salau

Lagos,
March, 1992

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NIGERIA: THE CHALLENGE OF SUSTAINABLE DEVELOPMENT

1

INTRODUCTION

After several decades of emphasis on rapid economic growth, there is now a growing awareness in Nigeria that development is not just higher and higher growth of national income. Rather there is a shift which sees economic successes as a means of achieving basic human needs and development, particularly those related to collective and individual well being. The recently published national profile on the Nigerian environment by the Nigerian Environmental Study / Action Team (NEST), Nigeria's Threatened Environment, states the extent of this problem as it relates to many sectors of Nigeria's life.

Indeed, the vast scale and rapid growth of the Nigerian economy within her thirty years of nationhood need be saluted as a major achievement. However, rapid economic growth has also increased the pace of population growth, social dislocation, moral decay, and environmental deterioration in the country. In parts of the country, environmental threats and other social and human problems are beginning to act as constraints to some economic activities as well as the well-being of the people.

In spite of the expanded economic output and the high hopes for a better economic future expressed daily in public pronouncements by influential and powerful Nigerians, studies of the state of the Nigerian environment tend to indicate that the environmental conditions are worsening.

These trends are rooted in the structure and pattern of our national development process and the development models which we have adopted up till now. They are also embedded in our collective perception and utilization of development as separate from, or antagonistic to the environment.

So far, there has been lodged within the choice of our national development strategies vested interests that, either through ignorance or because of a misperception of more fundamental goals and ultimate development objectives, often work against environmental protection and sustainable development.

The dominant philosophy and ideology of "progress" that have guided economic development in Nigeria's recent history have often seen "development" in terms of the conquest or exploitation of nature and natural forces. Environmental protection and conservation which define a different relationship with nature and natural forces are often seen as not being in harmony with "progress" and economic growth as perceived by these interests.

However, some events in our recent history along with world-wide trends have brought out the need for a strategy of sustainable development which involves the articulation of environmental and other elements of human needs and rights with the economic growth and development objectives. On sustainable development, NEST in its 1991 National Profile had this to say:

"Sustainable development is a notion, a movement, and an approach which has developed into a global wave of concerns, study, political mobilization, and organization around the twin issues of environmental protection and economic development. Perhaps the most recent popularization of the notion of "sustainable development" can be found in the report of the World Commission on Environment and Development (WCED) titled *Our Common Future*. The report elevated the notion of sustainable development to the level of an operational concept which embodies the principles, ideals, and values seen as desirable and necessary if the world is to deal effectively with current global problems of the environment and the development process. The approach embodies the notion and ideal of a development process that is equitable and socially responsive, recognizing the extensive nature of poverty, deprivation, and inequality between and within nations, classes, and communities. It also seriously advocates that the world be seen as one ecosystem and advocates that the economic development process should include ecological and environmental issues as an essential component. According to the report,

"Sustainable development seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future... It is a process in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspiration." (Nigeria's Threatened Environment, 1991, pp.282-283).

Today the environment and development literature is full of definitions of the notion of "sustainable development." Some have counted over seventy so far. It is not NEST's intention to contribute to the proliferation of definitions. Our position is that the movement constitutes a paradigm and it is in the nature of paradigms to contain different currents while sharing a broadly similar platform on methodology, philosophy, epistemology, ideology, politics and practice.

For our purposes, certain key elements of sustainable development are important. These are:

- (a) ecological integrity and sustainability
- (b) equity and distributive justice at all levels (global, national, community, household and intergenerational)
- (c) socially-relevant economic productivity and technological development
- (d) popular participation and collective autonomy
- (e) prevalence and institutionalization of human and democratic rights.

Proceeding from these elements, it is clear that Nigeria's development history does not totally lack a recognition of some of these. Although, implementation might have failed, there is some evidence of a recognition of this direction as can be found in the Five National Objectives of Nigeria as declared in The Second National Development Plan, 1970-74. These objectives are to establish Nigeria as:

- (a) a united, strong and self-reliant nation
- (b) a great and dynamic economy
- (c) a just and egalitarian society
- (d) a land of bright and full opportunities for all
- (e) a free and democratic society for all.

If these objectives still hold today, and we believe they do, their realization from the point of view of the key elements of sustainable development listed above constitutes the core of our contemporary development challenge. Attaining these objectives within the context of a changing world that emphasizes ecological integrity and sustainability, distributive justice and equity, popular participation, socially-relevant economic productivity and the institutionalization of human rights will in essence open the door to the transformation of Nigeria, something that has remained an elusive but worthy dream of all our patriotic and committed citizens since we attained Independence in 1960.

The task here is to meet this challenge by providing an analysis of the development trends and achievements in this country so far, and questioning the way forward. The analysis presents a balance sheet from the point of view of the core elements of what we understand sustainable development to be from an essentially Nigerian point of view. From this analysis and the debates and concern which it generates amongst Nigerian

peoples, it is our hope that a path to sustainable development can be blazed.

The challenge of building a greater and sustainable Nigeria is a challenge common to all of us - governments, business, voluntary organizations, communities, households and individuals. It is a challenge that we can meet by being totally committed and involved whatever our calling, creed, ethnic group and gender might be. Our responses and initiatives can take many directions. Through policy and legislative inputs, community and household earthwatches, grassroots advocacy and mobilization, professional and scientific involvement and generally through the possession of a consciousness and awareness of sustainable development objectives and outcomes for our great nation. To appreciate the extent of this challenge, it is necessary to review in this chapter, the highlights of what can be considered Nigeria's environment and development inventory.

ENVIRONMENT AND DEVELOPMENT INVENTORY

The Physical Environment

Location

The Federal Republic of Nigeria extends between the latitudes $4^{\circ} 16' N$ (at the top of the Delta) and $13^{\circ} 52' N$, and between longitudes $2^{\circ} 49' E$ (on the Okpara River) and $14^{\circ} 37' E$ (on the El Beid River). It has maximum dimensions of 1200 km (750 miles) from east to west and also from north to south.

Relief Characteristics

Nigeria's most noteworthy physical features are the Niger-Benue River systems, the highland plateaux of northern and western Nigeria, the mountains bordering Cameroun Republic, and the lowlands. Based on common land-form assemblages, seven relief regions are identifiable, namely: the creeks and lagoons; the Niger Delta; the coastal plains lowlands, the river basin troughs; the inselberg landscapes of western and northern Nigeria; the Chad basin, and the eastern highlands comprising a chain of hills (Bamenda and Mandara Hills with altitudes ranging from 600m-2000m).

Drainage Systems

Nigeria's hydrographic network is made up of three distinct drainage systems, namely:

- (1) the long Plateau rivers made up of the Niger-Benue system which occupies 65% of the country.
- (2) the inland drainage system of the Chad basin consisting of the Yobe and its tributaries which take their waters from the Jos Plateau to Lake Chad, and the Ngadda and Mbuli rivers from Biu Plateau, and

- (3) the swift-flowing coastal rivers, for example: the Ogun, Benin, Urasi, Imo, Cross River, Taylor, Forcados and many others which branch from these and empty into the Atlantic Ocean.

Climate

Lying wholly within the tropics, the climate of Nigeria is mainly tropical with distinct wet and dry seasons. Temperatures everywhere are high, ranging from 21 degrees C (70 degrees F) to 35 degrees C (95 degrees F). On the coast, humidity often reaches 100 percent. While temperature conditions and relative humidity remain fairly constant throughout the year in the south, the north experiences considerable seasonal variations together with wide diurnal ranges. For Lagos and Port Harcourt, the mean monthly maximum temperature remains steady throughout the year at 35 degrees (95 degrees F) and 30 degrees C (86 degrees F), respectively. The mean monthly minimum, however, fluctuates between 21 degrees C (70 degrees F) for Lagos and 22 degrees C (72 degrees F) for Port Harcourt. For Maiduguri, located in the far north east, the mean monthly maximum temperature sometimes exceeds 38 degrees C (100 degrees F), while the mean monthly minimum at times drops below 22 degrees (72 degrees F).

Mean annual rainfall decreases progressively from the coast to the interior, in both duration and intensity. On the coast, the annual total rainfall ranges from 4295 mm in Bonny in the east to only 1775 mm at Lagos in the west. At Forcados, the annual rainfall is 3800 mm with an average of 180 days of rain a year. In the interior at Maiduguri the rainfall decreases to just 625 mm per year. It reaches 700 mm in the Chad basin.

In duration, the wet season is 10-11 months long in the Niger delta, with a short dry period in December/January. On the west coast, near Lagos, the three months of December, January and February are dry and there is often a secondary dry period in August. Inland, the dry season increases in length and severity, with up to 8-9 months (Sept-May) without rainfall at Lake Chad.

Soils

Most parts of the country are covered by ferruginous tropical soils derived from Basement Complex and old sedimentary rocks. In the northern high plains, the soils have developed on drift deposits covering the Basement Complex rocks. These soils support the production of most of the important cash and food crops in the country.

Ferrallitic soils of clayey and sandy variety occur in the Derived and Guinea savanna region of the country. In central Borno and northern parts of Kano, Kaduna and Sokoto states, regosols, a group of weakly developed (immature) soils are found. Where these soils contain fairly high amount of weatherable minerals and montmorillonite clay which has high water and nutrient-holding capacity, they support the production of groundnuts in commercial quantity.

Along the Niger Valley and the Niger delta in southern Nigeria, hydromorphic soils are common. In the coastal lagoons of the Niger delta, they are covered by mangrove swamps.

Vegetation

The main operative factors affecting the distribution of vegetation in the country are the duration and severity of the dry season. The influence of rainfall in Nigeria is such that the vegetation tends to thin out as one moves northward from the rain forest of the south. In general the vegetation falls within five broad biogeographic units or phytochoria which correspond to climate zones with some adjustments for edaphic conditions (particularly drainage) and biotic factors (White, 1983)

The biogeographic units and their associated major vegetation formations are illustrated in Table 1.1 below

Table 1.1: Broad Biogeographical Units and Vegetation Formations in Nigeria

Biogeographical Unit	Major Vegetation Formations
1. Guinea-Congolian regional centre endemism	*Lowland rain forest, a mosaic of lowland mangroves
2. Guinea-Congolian/ regional transition zone	*Herbaceous, swamp and aquatic vegetation
3. Sudanian regional centre of endemism	*Woodland, secondary grassland, and Sudanian woodlands
4. Sahel regional transition zone	*Sahel vegetation
5. Afromontane archipelago like regional centre of endemism	*Plateau and montane vegetation

Diversity of Nigerian Flora and Fauna

The physical environment of Nigeria has a wide diversity of habitats, from arid areas to swamps, through many types of forests. Associated with the varied vegetation zones is an array of plants and animal species. Available data indicate there are about 4614 plant species in Nigeria, ranking it eleventh in Africa in diversity. Of these 205 are endemic, the ninth highest number among 42 African countries. Those 205 endemic plants are distributed as follows: 39 in northern region, 38 in western and central region, and 128 in the eastern region. The eastern region is particularly rich around Oban Hills in present Cross River State.

The Nigerian moist forests are especially rich in epiphytic ferns and orchids and contain over 560 species of trees which attain heights of at least 12m and a girth of 60 cm. Threatened species of the Nigerian flora number about 496 which represents about 10% of the total plant species.

There are about 274 species of mammals in Nigeria, over 830 species of birds, 56 species of forest snakes, 59 savanna snake species, 19 recorded species of amphibians, and a very rich invertebrate fauna.

The forests along the Nigeria/Cameroun border harbour a total of 60 endemic species of amphibians. It is important to observe that of the 274 species of mammals in the country, two are endemic while the white-throated guenon and Sclater's guenon are endangered. Also, Nigeria ranks eighth in the world for primate diversity, with 23 species and 13 genera. The chimpanzee, gorilla, elephant and manatee are examples of species which today survive in small threatened populations.

Physical Development and Land Use

The main land use types in the country are shown in Table 1.2. Grasslands and wooded grassland occupy about 50% of the land, and forests about 10%, while about 40% is farmland.

Forest reserves account for 10.4% of the total land area while wilderness areas (defined as land left in its natural state without any transformation by human action which may include forests, pastures and other lands) account for 2.0% of the total land.

About 81.2 million hectares of arable land exist in Nigeria. Thirty-four million hectares out of this (about 42%) are under cultivation. In 1987, 34% of the available land was under crops. Based on a farming population of sixty three million (55% of the total) the per capita available land per agricultural job is 1.2 ha. Expressed in terms of 1987 estimates of rural population, this is 0.29 ha. According to McNamara, at the present rate of population growth, available land per capita will decline to 0.19 ha by the year 2000 bringing the Nigeria situation to the same level of scarcity as in Rwanda and Somalia (0.2 ha) at present.

TABLE 1.2: LAND USE TYPES IN NIGERIA

Land Use Type	Total Area (ha)	% of Nigeria's Land
Grassland/wooded grassland	44,818,575	49.31
Forests	8,715,121	9.59
Farmland	36,060,829	39.67
Plantation	277,059	0.30
Rivers & Creeks	730,480	0.81
Built up area	293,439	0.32
Total	90,895,503	100.00

Note: The total area of Nigeria, including the lakes, is approximately 92,400.00 hectares.

Source: Nigeria: Department of Forestry, 1981.

HUMAN RESOURCE ENDOWMENTS

A country's potential for economic growth is greatly influenced by its physical resource endowment (its land, mineral resources, etc) and the numbers of its people, their level of skills, attitude to work and desire for self improvement.

Nigeria is by far the largest country in Africa and ranks among the fifteen largest nations in the world in terms of human population. Among the major oil exporting countries only Indonesia exceeds it in size. Discussions of the population growth, structure, and distribution and their implications for environment and development are pursued further in great depth in subsequent parts of this book.

The human resources endowment of Nigeria are however, affected by certain important and interrelated processes, namely those of economic development, modernization and urbanization. All these development processes possess their historical roots and related directions in the colonial experience and our contacts with the outside world. They also of course possess tremendous implications for how the relationship between environment and development has occurred and what its future prospects are. This book is concerned with exploring the more minute details and the greater global implications of that relationship.

Urbanization is one of the most visible processes of change which has been taking place in Nigeria since the past two decades. The rate of urbanization in the country has been declared as one of the most rapid in Africa and in the world. According to various estimates, which include the United Nations, the World Bank, and the National Population Commission, the number of urban centres with population of 100,000 was eight in 1963. By 1982, the number of urban centres with population of 500,000 and over had increased to nine.

In 1987, however, the World Bank estimated that the urban population represented 33% of the total population and was growing at 6.3% per year. This figure was comparable to 6.9% growth rates for Togo and Cote d'Ivoire, but greater than Zaire's 4.6%. It was however, exceeded by Kenya's 8.9%

According to the National Population Commission, Lagos alone had an estimated population of 5.84 million in 1985, rising by 10% a year. By this rate, the population of Lagos can be said to stand at 7.5 million as of now (1991) with the high probability of reaching 12 million by the year 2000 and 24 million by 2020

A large proportion of the Nigerian population is rural. In 1963, the percentage of the population not classified as urban was 81.9%, a decrease of 9.2% from the 1953 census data. However, in 1985, out of the population estimated at 99.7 million, about 70% comprised rural population. This figure has decreased further to about 62.6% in 1990 and is expected to drop further to 34% by the year 2000 if the current trends in the exponential per annum growth rate of the urban population continue, while the rural population growth rate oscillates between 3.0% and 3.4% per year.

The historically unprecedented population changes going on in Nigeria today are attributed to a combination of factors: natural increase and

BOX 1.1: PORT HARCOURT'S SQUATTER SETTLEMENTS

According to the Rivers States Ministry of Lands and Housing, there were thirteen squatter settlements with 4334 dwelling units in Port Harcourt, harbouring about 50,000 residents. Many of these dwelling units were makeshift wooden walls or mud walls with galvanized metal or asbestos roofs and a substantial number of them have no basic facilities, such as kitchen, toilet, or bathroom.

Squatter Settlements in Port Harcourt, 1985

Names of Settlements	No. of Dwelling Units
1. Bundu	241
2. Creek Road	207
3. Nembe	191
4. Prison	340
5. Marine Base	382
6. Abonema	200
7. Aggrey	136
8. Okrika	311
9. Enugu	600
10. Ndoki	417
11. Bishop Johnson	407
12. Ibadan	202
13. Morehouse	500
TOTAL.....	4,334

Source: NEST 1991 Profile

intense rural to urban migration. Although the rate of natural increase in Nigeria is high (about 3.38%) the main cause of urban population growth is rural-urban migration, estimated at 7-9% per year in the mid eighties.

In 1985, the rural-urban migration ratio in the country was estimated at 5.2% of the urban growth rate. Since the seventies, Lagos, Port Harcourt and Kaduna have grown at rates of 10.0% and above while Aba, Enugu, Kano and Onitsha have rates of over 7.0%. Small and medium urban centres such as Ado Ekiti, Owo, Ila and Shaki recorded growth rates varying between 190% and 532% (Adewuyi, 1983:3.) In general about 60% to 75% of the increase in urban population in cities such as Lagos and Port Harcourt, to mention a few, is attributed to migration especially from the rural areas.

As the relevant parts of this book show, this growth has important implications for the provision and maintenance of basic urban services and the effective management of environmental problems. An ever-expanding outcome of this problem is the growth of urban blight and squalor, resulting in the majority of urban dwellers residing under subhuman conditions in slums and squatter settlements. Box 1.1 describes the situation for Port Harcourt in Rivers State. However, the answer to urban blight and squalor is not in government's demolition of settlements and eviction of residents, but rather more in the imaginative programmes of urban upgrading embodying popular participation and containing economic and livelihood renewal components.

It is pertinent to observe that the spatial distribution of rural population varies greatly in the country just like that of the urban population. On the average, the rural population varies from 10% in Lagos State and 38% in Oyo State to about 90.3% in Niger State. The rural population of the north (about 78% of the total population) is scattered and only achieves high densities in Kano State. The south-east of the country presents a different demographic picture with about 76% of the population being rural.

The rural population density is relatively high in parts of Imo and Akwa Ibom States. The figures for the western states is 51%, since apart from Lagos, the largest number of large and secondary urban centres in the country are found in the area.

It is this human resource base located in both the rural and urban areas of the nation that constitute the core element of the socioeconomic development process. How it is provided for, maintained and reproduced constitute the dominant questions of our socioeconomic development process. As the Sustainable Development Balance Sheet in this book shows, there are still fundamental questions of distributive equity to be resolved. These are related to issues of allocation of resources and the access to them of vulnerable and disadvantaged groups. Important resources that are under contest include land, education, water, energy, health services, livelihood opportunities, and political issues such as human and democratic rights.

In the Nigerian context, the vast majority of the poor, particularly those in the rural areas, women, children, and other marginalized groups such as nomadic pastoralists, are alienated by the mechanisms of formal administration and not effectively integrated into the policy and political process.

To free up the vast energies locked up in the mass of human resources available to Nigeria, enabling and empowering strategies that will facilitate the overcoming of the limitations imposed by poverty, underdevelopment and political marginalization are in order. A more detailed discussion of these is provided in the rest of this book.

THE NATURAL RESOURCE BASE AND SOCIOECONOMIC DEVELOPMENT

Natural resources and the physical environment are productive assets which support economic development and sustain human populations. Nigeria exploits and utilizes the resources of her environment to achieve the present levels of social and economic development which are reflected in the key indicators of social, economic and environmental conditions in the country.

Livestock

Northern Nigeria has substantial livestock production. In 1986, there was a 3.7% increase in production followed by an increase of 2.1% in 1987 and 2.4% in 1988. In specific terms, beef production in 1988 stood at 260,000 tonnes, about 12.1% higher than the 1987 level. Also, goat meat production stood at 209,000 tonnes. (Nigeria-Country Profile: 1990-91)

Fishing

Fishing is a major occupation of people in many parts of Nigeria, especially the riverine and coastal areas. As a sub-sector of the agricultural sector, it absorbs a significant proportion of the labour force.

In the south which is unsuitable for cattle rearing, fish is a popular source of protein and it is supplemented by "bush meat" which constitutes about 20% of the mean annual consumption of animal protein of the rural population. Small scale (artisanal) marine and freshwater fishing contributes over 90% of the 800,000 tonnes of local fish production. Although still far short of the 370,000 tonnes reached in 1983, the artisanal coastal fish catch rose from 137,000 tonnes in 1986 to 143,000 tonnes in 1987 and further to 172,000 tonnes in 1988. The production of fish hit its lowest level in ten years in 1988, falling from over 756,728 tonnes in 1967 to 483,000 tonnes. Distant water fishing and in-shore shrimping boosted output of fishing activity by 38% in 1987. But this was largely reversed in 1988 by a 26% decline.

The decline in fish production has been attributed to escalating costs of outboard engines and spare parts as well as to pollution of inland lakes and rivers as a result of oil exploration activities in the Niger delta areas. This has resulted in rising fish prices in spite of the encouragement given to fish farming by public and private agencies.

Forestry

Output of the forestry sub sector consists of wood for fuel and timber stock used for the manufacture of wood-based materials and paper. Nigeria was a major producer of timber for export from its vast forest resources from the 1880s till the early 1960s. Unrestrained exploitation of timber over the years resulted in an output which stood at 99.0 million cubic metres in 1988.

Large-scale extraction of timber from the forest has depleted a large proportion of timber stocks in the country. The FAO estimated that an area of 285,000 ha was deforested annually between 1976 and 1980. Also between 1981 and 1985, Nigeria's closed forests were deforested at an average of 4.0% per year (about 300,000 ha annually) through removals of round wood, industrial wood and fuelwood/charcoal. Nigeria's import of forest products in 1981-83 was valued at US \$223.4 million, an increase of 300.1% over the value of such imports in 1972-74.

In the 1980s reforestation was at the rate of 14,000 ha per year representing only 4.7% of the rate of deforestation. At present, it is estimated that the total standing volume in the Nigerian tropical forest zone is 180 million cubic metres based on the assumption that mangrove and fresh water swamps outside the forest reserves represent an under-exploited source of timber occupying roughly 1.5 million ha and containing wood volume of about 25 million cubic metres.

Mining

Nigeria's principal mineral resources are oil and gas, coal, iron ore, tin, phosphates, limestones, marble and uranium (the latter being yet

unexploited). Coal mining which is concentrated in the Enugu area began in 1916 and output reached a peak of around 900,000 tonnes in 1959. In 1986, however, production amounted to 144,000 tonnes - a decline of 84% over the 1959 output. Problems of inadequate financing, frequent power failures and obsolete equipment have continued to limit activities. As a result, total coal output declined by 21% to 115,000 tonnes in 1987 and by a further 28% in 1988 to only 82,500 tonnes. Production of tin ore which is mined in Plateau State in the Jos region declined to 193 tonnes in 1986, less than 25% of its 1972 level, but recovered to 214 tons in 1987 and 238 tonnes in 1988 in response to incentives to miners under the Federal Government's Structural Adjustment Programme (SAP).

As a member of the Association of Tin Producing Countries, Nigeria has an export quota of 1,000 tonnes of tin metal for 1989/90 (March-February). But the smelting industry has been suffering from acute shortages due to the high incidence of smuggling. At present, production is put at around 1200 tonnes a year although it could be as high as 1,600 tonnes/year.

Petroleum Resources

The oil sub sector emerged as the leading mineral resources sector and also as the foremost sector of the Nigerian economy from the mid-sixties. From 1958 when oil was first drilled in commercial quantity in the delta area of Nigeria till date, there has been a rapid increase in output, from 100,000 - 200,000 barrels per day (b/d) in the early 1960s to a peak of 2.3 million barrels per day in 1979. Since 1981 however, with the loss of markets of the Organization of Petroleum Exporting Countries (OPEC) and North Sea competition for Nigerian oil in particular, both production and earnings have fallen drastically.

Nigeria's oil fields are scattered about the Niger delta, on-shore and off-shore. In association with the pools of oil are tremendous reservoirs of natural gas. Proven gas reserves, both associated and non-associated, total 2.4 trillion m³ and additional reserves of 1.84 trillion m³ are estimated. About 60% of the verified reserves lie to the east of the Niger delta. Most of the gas produced is flared at the well head. Production in 1988 rose by 19% to 20.25 billion m³ of which 2.9 billion m³ was sold to local industry, 2.6 billion m³ utilized by oil companies, and the remaining 73% was flared.

Studies of the ecological impacts of the petroleum industry abound in the literature (e.g. Izeogu, 1986). Between 1970 and 1982, Nigeria recorded 1,581 incidents of oil spillage which caused considerable ecological and physical damage to environmental resources: land/soil, water, and vegetation. For example, in August 1980, a buried crude oil pipeline from the Obagi Oil field which connects Erema 1 to Rumuekpe oil fields in Rivers State burst spreading crude oil over an area of 25.14 ha. As a result, water resources in the area were badly polluted. Also, on 17th January, 1980, a blow out occurred at North Apoi 20 crude oil well of a famous multinational oil prospecting company. This was followed by an outbreak of fire later. By February 19, about 1,862 sq.km of land and water had been polluted including 362 sq.km of coastal beaches, 70 sq.km of estuary, and

163 towns and villages. About a quarter of a million people were affected by the oil spillage.

Crude petroleum is toxic to most species of flora and fauna, and when it spills and contaminates the environment, it affects the health and general living condition of affected communities. The Obagi oil spillage resulted in the destruction of farms and farmlands. It also polluted community water resources and destroyed fish in nearby ponds. In the worst affected areas, the oil penetrated the soil up to 0.65 m. thus destroying farm crops and interfering with plant growth.

In the Brass area where the oil spillage of 1980 affected Akassa and Sangana towns, some plants and fruit trees were covered or impregnated with crude oil which affected normal photosynthesis and transpiratory processes leading to chlorophyll deficiency and quick death. The spillage also polluted creeks, swamps, and rivers as well as drinking water drawn from wells. The sample of water from a drinking well at Koluama 1 was found unsatisfactory by international standards after the spillage due to high values of acidity, chemical oxygen demand, carbon chloroform extract and odour.

Manufacturing

Until recent decades, emphasis in the manufacturing sector of the Nigerian economy was on import substitution, final assembly and secondary processing of raw materials. Its contribution to the GDP was small (about 4% in 1958), but the figure rose to 5.6% in 1963, 8.7% in 1967, and 12% in 1974.

Textiles, beverages, cigarettes, soap and detergents together accounted for about 60% of the local manufacturing output. The other main manufacturing activities are production of feeds, vegetable oil processing, shoes, cement, flour milling, paper and packaging, glass making, steel rolling and manufacturing, and pharmaceuticals.

Today, the manufacturing sub-sectors have increased to include heavy industries such as steel and petrochemicals, fertilizer plants, construction, transport and communications, and energy. Highlights of these subsectors are the direct steel reduction plants built in 1981 at Aladja, Delta State, the complex steel plant being built at Ajaokuta, Kogi State, the 400,000 ton/year urea and 300,000 tonnes/year Nitrogenous Fertilizer Plant at Onne, Rivers State, which became operational in 1987, and the Petrochemicals industry at Kaduna, Warri and Eleme (near Port Harcourt). Opinions differ as to the economic viability of some of these investments, but definitely there is the consensus that most of these possess tremendous environmental implications in terms of land use, pollution, industrial safety, occupational health, etc.

Energy

Petroleum products are the major source of commercial primary energy accounting for 60% of consumption in 1988, while gas made up 25% of all use. In 1983 and 1984 there was a substantial decline in commercial primary energy consumption due to the recession in economic activity.

Although in 1985 and 1986 energy consumption rose by 5.6% and 2.3%, respectively, following 16 and 18 percent rises in the use of hydroelectric power, consumption from all sources except coal and natural gas fell sharply in 1987 and 1988. Energy supply production from various sources is illustrated in Table 1.3.

Labour Force

There are no reliable data available on the size of the labour force in Nigeria. Given various factors such as the estimated age structure, the male and female labour participation rates, and the number of people in higher education, the labour force was estimated at roughly 30 million in 1980. This represents an increase of 64% over the labour force recorded in the 1963 census. The Federal Office of Statistics, however, estimated the 1986 labour force at 37 million, about 37% of the total population.

There has been a gradual decline in the growth of the labour force since

TABLE 1.3: PRIMARY ENERGY BALANCE, 1989 (MILLION TONNES AT EQUIVALENT)

Primary Supply	Oil	Gas	Coal	Elec- tricity	Others	Total
Production	82.3	3.5	0.1	0.8a	21.2	107.9
Imports	2.5	-	-	-	-	2.5
Exports	75.0	-	-	-	-	75.0
Stock Exchange	0.0	-	-	-	-	0.0
Total	159.8	3.5	0.1	0.8a	21.2	185.4
Processing & Transformation						
Losses and Transfers	1	2.7	-	0.3b	-	4.0
Transformation Output-	-	-	-	0.7	-	0.7
Total	1	2.7	-	1.0	-	4.7
Final Consumption						
Transport Fuels	5.4	-	-	-	-	5.4
Industrial Fuels	1.4	0.3	0.1	0.2b	0.1	2.1
Residential, etc.	1.7	-	-	0.5b	21.1	23.3
Non-Energy Uses	0.3	0.5	-	-	-	0.8
Total	8.8	0.8	0.1	0.7b	21.2	31.6

a -Input basis

b -Output basis

Source: Nigeria: Country Profile-1990/91

the eighties. In the 1965-80 period, the average annual growth of the labour force was 3.0%. In the 1980-85 period, it dropped to 2.6%, a decrease of 0.4%. It only picked up to 2.9% after 1985. The size of the labour force in the year 2000 is estimated to rise to 62.1 million representing 38% of the population.

The percentage distribution of the labour force in agriculture, industry, and services shows different trends within the period. Percentage of the labour force in agriculture declined from 72% in 1965 to 68% in (1985-97), it increased from 10% in industry in 1965 to 18% in (1985-87) and from 18% in services in 1965 to 20% in (1985-87).

Between 1965 and 1985, the percentage of the working age population declined from 51% to 49% in general indicating growing rates of unemployment in the country. In 1986, unemployment rates stood at 10% and 4% for the urban and rural areas respectively. These rates rose to 12.2% and 6.5% in 1987 and declined in 1988 to 10.0% and 3.8%, respectively.

Overall, unemployment among the 15-19 years age group reached 31% while that of those in the 20-24 age group was estimated at 40% in the urban areas in 1985.

Present unemployment figures are not available, but what is clear is that job opportunities in the formal sector have contracted sharply since the onset of the recession in 1981.

LINKAGES BETWEEN UNEMPLOYMENT, POVERTY, AND INCOME DISTRIBUTION

There is a close relationship between high levels of unemployment and underemployment, widespread poverty, and unequal distribution of income. Those with unstable and irregular employment are often among the very poor. Given the linkages between poverty and income distribution on the one hand and human development on the other, the situation of income distribution in the country requires specific discussion.

The number of people falling within the category of absolute poverty has been estimated for several countries based on the concept of the international poverty line. This represents a specific minimum level of income needed to satisfy the basic physical needs of food, clothing, and shelter in order to assure continued survival (Todaro, 1989).

Based on this concept, it was estimated that 27 million people in Nigeria were in poverty in 1975 (Todaro, 1989). This figure represented 27% of the population then, with the number of people in poverty projected for the year 2000 being 30%. About 31.86 million Nigerians could be considered to be in poverty in 1990.

As evident in most developing countries, GNP per capita and household income are generally lower in Nigeria than in industrial countries. The minimum wage in the public sector from 1982 to 1990 was 1,800 naira per year. However, since January 1991, it has been raised to 3,000 naira per annum.

But, more significant than the level of household income is the distribution of income in the country. In general, the pattern of income distribution in urban areas reflects what obtains throughout the country. A

small proportion of the population is getting a large part of the income as shown by the data on the average income shares of various percentile groups within the population. In specific terms, the bottom 40 percentage group of households receive 11.6% share of household incomes, while the top 20 receive 49.9%. Expressed in terms of the highest 20% to the lowest 40%, the figures are 12.5 and 4.2 respectively. The evidence therefore at the national level is that of clear inequality in income distribution. Other features of these have to do with unstable incomes and employment accompanied by poor nutritional status particularly for women and children. However, these issues are clearly discussed both in terms of their national and international dimensions in Box 1.2.

**BOX 1.2: POVERTY AND ENVIRONMENTAL
DEGRADATION:
WHAT IS THE CONNECTION?**

Poverty is the single most appropriate word with which to describe the human condition in Nigeria today. And as the World Commission on Environment and Development states in *Our Common Future*, otherwise known as the Brundtland Report, "poverty pollutes the environment, creating environmental stress in a different way. Those who are poor and hungry will often destroy their immediate environment in order to survive. They will cut down forests; their livestock will overgraze grasslands; they will overuse marginal land; and, in growing numbers, they will crowd into congested cities. The cumulative effect of these changes is so far-reaching as to make poverty itself a major global scourge."

Poverty is such a predominant and all-pervasive phenomenon in the societies of the Third World that it would be worthless to attempt a discussion of either the environment or the relationship between culture and the environment without confronting the factor of poverty either as it concerns the society in its totality or as it concerns specific social groups, classes, and individuals. Poverty refers to a situation and process of serious deprivation or lack of resources and materials necessary for living within a minimum standard conducive to human dignity and well-being. This kind of deprivation may apply to whole societies, even though pockets of extreme affluence may exist in such societies.

Poverty may also affect certain sectors of society, such as the rural areas; or groups, such as some particular ethnic or religious group; or classes, such as peasants and workers. Whoever the victims of poverty may be, the point remains that it is detrimental to collective social progress.

Poverty may be created by negative and unjust social conditions, such as structural inequality. Also it reproduces and feeds on other

negative conditions and processes, such as ill-health, poor nutrition, low morale and motivation, ignorance, and the inadequacy or non-availability of basic needs which make life a bit more livable, such as clean water, schools, health care, and labour-saving technology. Thus poverty is self-perpetuating in that it creates several limitations that make the collective transcending of poverty extremely difficult.

Pre-colonial Nigerian society was relatively poor when compared with the resources available today. But it is also true that it was relatively limited in its needs and in its demands on the environment. Modernization has brought with it the commercialization of natural resources and the participation of people in a formal monetized economy. It has also brought about mass impoverishment. Further, the modern state expects certain obligations from its people, such as the payment of taxes and participation in modern structures and processes. This participation includes the acquisition of modern consumption patterns, life-styles, and aspirations. In a situation, such as ours, in which modern demands for increased productivity and consumption are not matched by modern conservationist technology and orientation, there are bound to be pollution and other forms of environmental degradation. In this context of uneven and incomplete modernization, pre-colonial traditional conservation beliefs in terms of natural resource management and consumption are often neglected or disregarded. For example, sacred groves, which represent traditional forms of forest reservation are fast disappearing. The same applies to some other conservationist practices in various parts of the country. Also population pressure, changing land tenure, and other new pressures, particularly those related to commercial activities, forge new habits that would have been disastrous for the urban and rural poor in traditional times. The indiscriminate felling of trees, over-cultivation, overgrazing, and the use of poisons for fishing are all responses to these pressures. The inability of government to provide many modern services and infrastructures in modern contexts, such as cities and towns, produces additional pressures. Areas of large concentrations of people often lack good drainage, pipeborne water, electricity, waste disposal facilities, health care services, etc. Sometimes where these exist, they are badly maintained or not provided with the personnel to man them effectively. People respond to these inadequacies by falling back on traditional means and practices. Because they are inappropriate to the tremendously changed conditions of living, these lead to further environmental degradation. However, it should be noted that poverty and the poor are not uniquely connected with the environmental degradation syndrome. The affluent and the powerful have perhaps an even stronger connection with the problem. The difference is essentially in the modes of activities and associated

continued overleaf

BOX 1.2 (continued)

products through which the environment is degraded. For instance, nobody seems to see the direct link between the shareholding of the powerful and rich and the pollution caused by manufacturing industries. But everybody notices the overgrazing of range-lands by the cattle of the poor herdsmen.

The Internationalization of Poverty and Environmental Degradation:

Apart from its local and national elements, the poverty of people in Third World countries, such as Nigeria, also has an international dimension. It is related to the unequal manner in which the world economy is structured and the disadvantaged position in which the production of agricultural exports has put most of these countries. Coupled with internal economic mismanagement and other problems, most of these nations are currently the victims of a major debt crisis. As a result of this, they have been obliged to set into motion programmes of economic restructuring with the main target of drastic reductions in public spending and subsidies. Those who have suffered most from attempts at coping with the debt crisis through these programmes have been the most vulnerable - the very poor, women, and children. They have suffered the greatest impact of reduction in subsidies on food and fertilizer and the curtailment or deliberate neglect of basic services and infrastructures.

They are the ones who lose out in the areas of education, health, employment, shelter, nutrition, etc. Yet they are the ones who, in their attempts to pursue their honest livelihoods, are criticized and molested in the various public campaigns for environmental sanitation, war against street trading, etc.

The international dimension of poverty also affects the environment and people through the new and callous practice of dumping of toxic wastes and other products in the country. This phenomenon, which Nigeria's Nobel Prize winner, Professor Wole Soyinka, has called "the poisoning of a continent," is an expression of the global inequality.

Under pressure from their environmentally more aware citizens, European and North American countries have taken to dumping their garbage and toxic wastes in underdeveloped nations for token fees. The former take advantage of loopholes in the laws and a general lack of awareness of the dangers involved amongst the people of the latter. At another level, food and other products, such as medicines, that cannot meet the rigorous standards set by the food and drug quality control organizations in the West are also dumped very cheaply in Third World countries.

Within the past few years, the Nigerian press has reported cases of toxic beef, toxic canned fish, and toxic mosquito coils (insect

repellants) imported into the country. This systematic dumping of toxic products, which is tantamount to the poisoning of the nation, only expresses the condition of poverty and deprivation in which Nigeria exists.

Our collective poverty, it seems, make us vulnerable to various forces of pollution and poisoning, from both within and without.

Source: NEST 1991 Profile pp.261-264.

HUMAN DEVELOPMENT INDICATORS

The notion of human development as utilized by the United Nations Development Programme (UNDP), (1990) has two sides: the formation of human capabilities such as improved health, knowledge and skills, and the use people make of their acquired capabilities for work, leisure or active participation in cultural, political and social affairs.

In measuring human development, three key elements of human life have been found worthy of emphasis as principal indicators of human well-being. These are: longevity, knowledge and decent living standards. The first element longevity is indicated by life expectancy at birth, and is closely associated with adequate nutrition and good health. Longevity also has an intrinsic value in helping people pursue various social, economic and political goals, and so life expectancy is a proxy measure for several important variables in human development. The second key component is indicated by literacy figures which are a crude reflection of access to education especially good quality education necessary for productive life. The third key component-command over resources needed for a decent living is measured by an income indicator-per capita income, in the absence of data on other variables such as access to land, credit and other resources. The three indicators-life expectancy at birth, adult literacy and per capita income are put together as a composite index the Human Development Index (HDI) to give an overall sense of people's well-being in the country.

Table 1.4 illustrates human development trends in Nigeria over the past three decades. Significant progress has been made towards increased life expectancy at birth, from 41 years in 1965 to 51 years in 1990. The mortality rates for infants and children under five have dropped by 42% and 40% respectively from their 1965 figures. These improvements reflect progress made in child immunization, maternal care, nutrition and access to health services.

However, there have been major gains particularly in the area of welfare. For example, population per physician has dropped from almost thirty thousand in 1965 to eight thousand in 1985.

The progress in education for both males and females has been equally impressive. Adult literacy rate rose from 25% in 1970 to 58% in 1985, male literacy from 35% to 54% and female literacy from 14% to 31% within the period.

TABLE 1.4: NIGERIA-HUMAN DEVELOPMENT TRENDS (1965-1990)

	1965	1970	1980	1985	1990
Life Expectancy (at birth)	41.0	-	-	50.0	51.0
Mortality					
- Under age five	290.0	-	-	-	174.0
- Infant	177.0	-	-	109.0	103.0
Adult Literacy (Total)	-	25.0	-	43.0	58.0
Male	-	35.0	-	54.0	-
Female	-	14.0	-	31.0	-
Primary School enrolment					
- female as % of male	59.0	59.0	-	92.0	-
- female as % of age group	32.0	-	-	77.0	-
Secondary School enrolment (female as % of male)	-	49.0	-	-	-
Education expenditure					
- as % of GDP	1.5	-	-	1.4	-
- as % of total exp.	-	4.5	-	-	2.8
Daily calorie supply/capita	2185.0	-	-	-	2038.0
- as % of requirement	95.0	-	-	90.0	-
daily consumption/capita	-	-	-	2149.0	-
Population per physician (000)	29.5	-	9.4	8.0	-
Population with access to health services %	-	-	-	40.0	40.0
Population with access to safe water%	-	-	-	46.0	46.0
Population with access to sanitation %	-	-	-	-	-
Maternal mortality rate (per 100000 live birth)	-	-	1500.0	800.0	800.0
Health expenditure					
- as % GNP	0.3	-	-	0.4	-
- as % total expenditure	-	3.6	-	-	0.8
Human Development Index (HDI)-	-	-	0.332	0.33	-
Physical Quality of Life Index	-	-	-	38.0	-

Sources: UNDP: *Human Development Report*, 1990 and The World Bank: *World Development Report*, 1990.

Based on the composite index of human development, the Human Development Index (HDI) developed for the international comparison of level of human development, Nigeria has not made substantial progress in this sphere. As evident in table 1.4 our HDI is put at 0.332. The low figure gives us 20th position out of 44 countries such as Ghana, Tanzania, Cote d'Ivoire, and Kenya which do not have as much natural resources as we do.

In terms of Physical Quality of Life Index (PQLI) Nigeria scores 38% also trailing behind Kenya (55%) Ghana (41%) Tanzania (58%) and Cote

d'Ivoire (41%) even though only Cote d'Ivoire's GNP per capita of \$1080 exceeded our own which was put at \$860 in 1982. Whatever the criticisms of the construction of these indices might be, the fact that when our circumstances are confronted with them and we do not do as well relative to some other African countries who are also poor, should be enough cause for concern.

Despite rapid growth in the seventies, the expansion of the economy in the eighties which is reflected in current GDP, and substantial government spending in the social sector, human development has remained poor in Nigeria. The reasons for this are many. One is that the fruits of rapid growth have not been distributed equitably. The other is inefficient targeting of public resources.

Although evidence on income distribution in the country is fragmentary, there is general agreement that the distribution is getting more unequal since the seventies with the Gini co-efficient estimated at 0.60. The strong bias towards urban centers in allocation of public resources for development, the neglect of agriculture and the failure of the structure of government spending in education and health to reflect the needs of the rural populations and the urban poor have intensified disparities in levels of human development in the country.

The rural-urban differences in the provision of and access to basic services such as water, health and sanitation, as well as income in Nigeria are greater than the average for Tanzania and even Sub-Saharan Africa. For example, 72% of rural population in Tanzania have access to health services, 42% to safe water and 58% to sanitation, while in Nigeria the figures are 30%, 20% and 17%.

The analysis of rural-urban gaps in Nigeria indicates a higher degree of deprivation suffered by rural people. Given the growth in the nation's economy during the period, one is led to conclude that the country's case has been that of human development bypassing vast majorities of her citizens in the past decades.

DEVELOPMENT POLICIES AND MODELS ACCOUNTING FOR PATTERN OF DEVELOPMENT IN NIGERIA

The structure and pattern of development as pursued in Nigeria over the past years can be explained through an examination of government policies and the development models adopted to guide economic growth. Perhaps the initial conclusion that can be drawn and which other parts of this book discuss more extensively is that, until quite recently, not much had occurred in the evolution of environment-development policies in Nigeria. Also it needs to be restated that although specifically progressive environmental policies are being put in place, these are still within the context of development models that essentially contradict them. This context of course has been the pattern since colonization.

Right from the colonial period, Nigeria's economic policy has emphasized the development and exploitation of the natural resources of the land. Beginning from this time, the economy was built on primary production: agriculture, forestry, and mining. Based on the geographical

conditions of various parts of the country, government agricultural policies encouraged production of cash/export crops which was in response to external demands mostly from Europe, for raw materials from the tropics. Thus, cocoa emerged as the major export crop in the west, palm oil and palm kernel in the east, timber and rubber in the mid-west, and cotton and groundnut in the north.

By the early fifties, these six cash crops had become dominant export crops, stimulating economic development in the areas of their production. Other export commodities which boosted economic development in the country during this time were coal in the Enugu area, tin and columbite on the Jos Plateau.

The colonial period marked the beginning of formal attempts at fostering economic growth in the country through national economic planning. This followed the World Bank's Economic mission to the country in 1953 and the publication of its report in 1955.

The first of these national development plans was the 1955-1960 Economic Development Programme which was revised in 1958 and extended to 1962, with the aim of achieving a growth rate of at least 4.0% of the GDP for the economy. There was of course, the 1962-68 First National Development Plan which was the first post-independence plan. This was followed by the Second National Development Plan (1970-74), the Third (1975-80) National Development Plan, the 1981-85 Fourth National Development Plan and the three-yearly rolling plans of the Babangida administration. All the national development plans were based on some more-or-less formalized macro-economic model, particularly aggregate growth models which involve macro-economic estimates of required or planned changes in the principal economic variables deemed most critical to the determination of levels and growth rates of national outputs, savings, investments, exports and imports, etc. They have emphasized sectoral growth and involved some detailed selection of specific investment projects within each sector through some form of project appraisal and social benefit costs analysis.

Based on the provisions of the First National Development Plan, the principal development objective of the country at independence in 1960 was to ensure the rapid social and economic growth and transformation of the country. The development of the country was seen mainly in terms of economic growth and a rise in the GNP.

The Second National Development Plan (1970-74) which was the Post-Civil War Reconstruction Plan introduced a concern with social development and national welfare. Since it was produced at the beginning of Nigeria's "oil boom," it was a confident plan which set out clearly the five national objectives for Nigeria. Although these are laudable and highly desirable objectives which, if followed, would have led Nigeria in the direction of sustainable development, very little serious and concrete attempts were made to attain these great national objectives. The dominant concern in that period remained with economic growth. The Third National Development Plan (1975-1980), which can be called the "oil boom" proper plan, while accepting the national objectives, moved headlong into massive public spending and concern with grandiose

infrastructural and public sector development. The recession in the global economy of the 1970s finally slowed down the attainment of the objectives of the Third and Fourth Plans. As a response to the recession and the attendant economic crisis of the late 1970s and early 1980s, the Nigerian economy was run on a particular variant of free-market economy which was embodied most clearly in the Structural Adjustment Programme of 1986. Since then the emphasis has been on privatization, deregulation and the imposition of market principles. This of course contradicts in many important details the demands of a sustainable development model which includes such factors as: (a) ecological integrity and sustainability (b) equity and distributive justice at all levels (global, national and intergenerational), (c) socially relevant economic productivity and appropriate technological development (d) popular participation (e) access to human and democratic rights.

An interesting element of the history of economic development in Nigeria is the continuity of the imports-exports economic structure which has been in place from 1946. The emphasis in the model has been primary production for export and importation of capital and a wide range of consumer goods. The model and structure has not changed much except for slight modifications through internal attempts at producing some consumer goods and a few capital goods. The current emphasis in the late 1980s for export production for foreign exchange, and a very liberal imports structure reminds one clearly of Peter Kilby's description of the economy of Nigeria in the 1950s and 1960s as an open economy.

THE WAY FORWARD

The need for a sustainable development model that integrates the basic components highlighted in the introductory parts of this discussion has become urgent.

The path towards this can only be through committed political action that involves policy and grassroots advocacy, legislative reforms, popular mobilization and conscientization, and the expansion and strengthening of the capacity of civil and voluntary associations. The processes that it involves are those engendered in an "empowerment" paradigm which different civil and voluntary associations have to work out for themselves through debate, dialogues and other forms of exchange and action.

POPULATION AND THE ENVIRONMENT IN NIGERIA

INTRODUCTION

Before February 1988, there was no separate and clearly defined population policy in Nigeria. Government policy and attitude toward population matters were issued as incidental components of either economic or political programmes. Consequently, there was very little public and private concern with population and population-related problems. The view expressed by government was that although the population of the country is large and growing very rapidly, this does not constitute any danger because Nigeria is blessed with a large land area and abundant natural resources. Coming in the period of "oil boom" for the country, such an official position created a general sense of satisfaction and complacency which delayed proper assessment and understanding of the country's population situation and its socio-economic as well as environmental implications.

Indeed, many Nigerians regard their "large population size" as a symbol of greatness, power and prestige and tend to resist attempts to reduce it drastically. Population planning, therefore, has little or no appeal to some leading politicians, administrators, and even, intellectuals.

But how large, indeed, is the Nigerian population and at what rate is this population growing? There is not a single Nigerian who can answer

this question with any sense of confidence and accuracy. This is because all previous censuses have either been contested or contain inherent problems of reliability. However, based on official and independent estimates and sample surveys (such as World Fertility Surveys, the Nigeria Fertility Survey, 1981 - 82) it is generally believed that the population of the country is very large and growing very rapidly, so rapidly that a new Nigeria is created in less than twenty five years.

The problem is that increasing human demands on the resources of the country and the linkage between this pressure and poverty as well as the linkage with environmental quality deterioration are only just beginning to receive serious attention. It is only just becoming clear that high fertility and rapid population growth are forcing traditional societies to abandon age old production systems and resource management techniques that allowed them to produce enough food for themselves at minimal impact on the environment. The uneven distribution of the population is also a major cause of environmental stress. The group most affected in these relationships are the poor - those who are least influential politically in the society - which is why the matter has not received as much attention as it deserves until now.

POPULATION, SIZE AND GROWTH

The "latest" reliable census that Nigeria has is the census of 1963 which put the total national population at 55,670,055. Reliable not in the sense of the accuracy of the figures but because of the less controversy and acrimony its acceptance generated compared to subsequent attempts. The provisional result of the 1973 census exercise indicated a total national population of

BOX 2.1: GOVERNMENT'S VIEW ON POPULATION, 1975

Although Nigeria has (by world standard) a large and rapidly growing population, these demographic factors do not appear as yet to constitute a significant or serious obstacle to domestic economic progress. The country is fortunate in possessing a large land area well-endowed with natural resources, which if carefully exploited should provide a basis for building a viable economy which would ensure a steadily rising standard of living for the population within the foreseeable future and especially during the current phase of the country's demographic transition which is characterised by rapid growth. Emphasis of policy is therefore being deliberately placed on accelerating the rate of growth of the economy rather than on direct action to achieve a drastic or immediate reduction in the overall birth-rate. It is believed that the high tempo of social and economic development will itself help to accentuate the forces, already at work, which will tend to bring down the birth-rate in the long run.

79.8 million but this is not an official figure since it was rejected and cancelled by government.

The World Fertility Survey (WFS) of the International Statistical Institute estimated the Nigerian population to be 93.7 million in 1984. In 1990, the United Nations Population Fund's State of the World's Report estimated the Nigerian population at 113 million and projected this to 301 million by the first quarter of the next century. It also estimated an annual growth rate of 3.5 percent for the country which is the fourth highest in Africa after Kenya (4.1), Cote d'Ivoire (3.9) and Libya (3.6) - the fastest growth rates in human history for an entire region.

However, the problem of determining the actual size and growth rate of the Nigerian population remains for the students of the phenomenon. This is because, although government officially accepted 2.5 percent as the growth rates, others, particularly international agencies, have disputed this. For instance, the United Nations Population Fund uses the rate of 3.5 percent per annum as its estimated growth rate, while the new population policy 1988 now uses a rate of 3.3 percent.

Since the 1963 figure of 55,593,000 is the only official population base for Nigeria, we can project this figure based on a low growth rate of 2.5 percent, a medium growth rate of 3 percent and a high growth rate of 3.5 percent as in Table 2.1

TABLE 2.1: PROJECTIONS OF POPULATION OF NIGERIA

Year	Low rate (2.5%)	Medium rate (3.0%)	High rate (3.5%)
1965	58,406,345	58,977,552	59,551,540
1970	66,881,418	68,371,147	70,728,548
1975	74,765,059	79,260,899	84,003,328
1980	84,589,802	91,885,105	99,769,603
1985	95,705,597	106,520,020	118,494,991
1990	108,282,098	123,485,897	140,734,877
1995	112,511,255	143,153,999	167,148,886
2000	138,610,239	165,954,730	198,520,443

The doubling time of any population is important in any consideration of its implications for the well being of the citizens. If the population was growing at an annual rate of 2.5 percent, it means that it will take just less than 30 years (29 years in fact) to add another Nigeria in 1992. The current estimated growth rate of 3.5 percent implies that the population would double in less than 21 years. At present, about 5 million people are being added to the population every year. In view of this, Nigeria can no longer refuse to pay adequate attention to population as a development and environment issue.

Another important aspect of the dynamics of the population is the age and sex structure. The predominance of young people in Nigeria is

another reason for future increase because of the in-built momentum in the population. Estimating age and sex ratios of the Nigerian population is even more problematic than estimating the size and growth rate of that population. Researchers have, however, applied Coale and Demeny's Regional Model Life Tables and Stable Population to estimate model age distribution for Nigeria. The result shows that about 43.1 percent of the population is between the ages of 0 to 14. About 74.9 percent of the population is less than 30 years and only 3.5 percent is 60 years and above. This agrees almost with the result of the Nigeria Fertility Survey 1981-82 (of WFS) of 47.7 percent under 15 years and 2.3 percent above 65 years. The survey also shows only a slight excess of females over males.

The Nigeria Fertility Survey also shows that women in Nigeria generally marry very early. The average age at first marriage is 15 for ever-married women, although the average for the southeastern and southwestern regions of the country is 19.4. Total fertility rate (TFR) for ever-married women is 7.48 and all parts of the country reach a TFR of 7 per woman. All these are indicators of more rapid rate of population growth, especially from 109.7 per 1000 live births in 1965 to 84.8 in 1979.

Data on international migrants as they affect Nigeria's population are poorly kept and hardly available. Yet the last two decades have witnessed streams of migrants - economic migrants from the neighbouring countries of West Africa into Nigeria which have brought about additional pressure on the resources and environment of Nigeria. Frequent droughts in the Sahel region have sent hundreds of thousands of refugees into Nigerian cities and rural settlements. The economic collapse of Nigeria's western neighbouring countries, especially Ghana, Togo and Benin Republic, drove thousands of migrant workers into Nigeria. Political upheaval in the Chad Republic have also resulted in large influx of refugees to Nigeria. The cities most affected by the influx are those of the Sudan-Sahel and those in the South-West of the country. It is noteworthy that many of these West African immigrants were implicated in the religious disturbances which rocked Kano, Maiduguri, Jimeta-Yola and a few other cities in the 1980's. The most important thing about these immigrants is not the size of their number but the fact that they swell the population of the squatter settlements of the cities and their aggressive land use practices.

POPULATION DISTRIBUTION AND DENSITY

A close look at the patterns of population distribution and density point to the location of economic opportunities or resources needed for survival. However, in some cases, the population is poorly adjusted to the distribution of resources, and excessively high densities in such countryside generate diminishing returns in agricultural production as a result of over-farming, fragmentation of holdings, reduced fallow period, and general ecological deterioration. Over concentration of population in some urban areas also creates a different set of problems. Buchanan and Pugh in 1955 described the population distribution as immature because it lacked "the close adjustments of densities to environmental conditions, which is typical of long-settled areas, and settlement is incomplete over much of the Terri-

tory." It is this notion of incomplete settlement of the territory which has created the land surplus impression of the Nigerian agriculture and has led many to question the rationale for population planning.

Two other pertinent features of population distribution and density in Nigeria were identified by the authors using the officially estimated population of 23,130,000 for the country during 1948-9 as a base. The first is that great areas were almost devoid of population, while elsewhere rural densities approach those of the Monsoon Lands or Egypt. Second, it is observed that the settlement forms in Nigeria show a diversity rare in tropical Africa. The village represents the characteristic form of settlement, but in parts of central southern Nigeria this is replaced by more or less completely dispersed pattern of settlement, while the population of the southwest shows a high degree of urbanisation rare in Black Africa.

Although the 1963 census returned a total population that is much larger than the 1948-49 estimate, the pattern of distribution and density remained much the same, suggesting that areas that were already highly populated by 1948-49 became even more dense in 1963, aggravated by high natural increase and net immigration. Table 2.2 shows the distribution of the Nigerian population in the four regions making up Nigeria in 1963. It is clear from the Table that the pattern of density distribution has not changed.

The average density for the regions conceals a lot of variations in the spatial distribution of population. The distributional pattern can be summarized into three categories. The first consists of areas of heavy population concentration where densities are over 200 persons per square kilometre. They include the Igbo-Ibibio heartland regions of Anambra, Imo and Akwa Ibom States as well as parts of Kano, Katsina, and Sokoto. Around Orlu, Okigwe, and Owerri in Imo State, densities exceed 400 persons per square kilometre.

TABLE 2.2: DENSITY OF POPULATION OF NIGERIA (1948-49 & 1963)

Region	1948 - 49(a) Population	Area (Km ²)	Density (P/Km ²)	1963 Population	Area (Km ²)	Density (P/Km ²)
Northern	13,500,000	729,815.4	18	29,808,658	729,815.4	19
Western	4,000,000	117,523.8	34	10,265,848	78,857.9	130
Eastern	5,200,000	29,484.0	68	12,394,464	76,363.6	162
Midwestern	-	-	-	535,839	38,640.0	65
Colony/Fed. Territory	430,000	-	310	665,246	88.0	7,559
Federation	23,130,000	356,669.0	25	55,670,055	923,773.0	60

(a) Based on 1948-49 population estimate

(b) Based on 1963 census.

Sources: Buchanan, K.M. & J.C.Pugh, *Land and People in Nigeria*, Univ. of London Press, 1955, p.58, and Federal Republic of Nigeria, *Population Census of Nigeria, 1963*, Vol. III, p. 57.

The second category consists of areas of medium density ranging from 50 to 200 persons per square kilometre. They include much of the rest of Anambra, Imo and Akwa Ibom States, various pockets in Bendel, Benue, Kwara, Lagos, Ogun, Ondo, and Oyo states, most of Kano and Katsina states, and much of Sokoto. Smaller pockets occur on the Jos Plateau and elsewhere in Borno and Gongola.

The rest of the country, notably the vast area between the forest belt and the drier savannas called the Middle Belt, is sparsely populated with densities being generally less than 50 persons per square kilometre. This area of sparse population density includes parts of Sokoto, Kaduna, Niger, Plateau, Benue, Gongola and Kwara States.

The Niger Delta and the coastal areas of the country east of Lagos are also lightly populated. The distribution pattern is associated with conditions of natural resources endowment and exploitation, historical factors and environmental conditions of the past.

The rapid population growth of the country since 1963 has greatly increased the concentration ratios in all three categories to the extent that large-scale internal migration has occurred from the heavily concentrated regions into the relatively sparsely populated areas. The development of new resources in the Middle Belt, such as the new Capital Territory at Abuja and the Iron and Steel complex at Ajaokuta has been a major factor in the recent redistribution of population. But the old density pattern still remains true, although at much increased concentration.

The population is also unevenly distributed between urban and rural areas. According to the 1963 census, 81 percent of the population reside in rural areas. But there are differences in this average ratio between the three regions. About 50.9 percent of the population live in urban centres in the former Western Region. The corresponding figures for the North and East are 9.9 and 11.2 percent, respectively. The proportion of urban residents has been increasing since 1963 mainly as a result of rural-urban migration at a rate yet to be determined.

POPULATION-RESOURCE RELATIONSHIPS

There are not too many Nigerians who believe that the population of the country is large and getting larger, and that this process cannot go on indefinitely. Surely, there are certain limits to the resources, such as food, needed to maintain the population at a comfortable level. There is evidence everywhere of rapid declines in the quality of human living conditions and the environment which are associated with rapid increase in human numbers.

One of the basic indicators of the condition of well-being of any nation is food supply or the level of nourishment of the population. Nigeria, which was self-sufficient in food production some two decades ago, is today a food-deficit region and hunger is evident and wide spread. The population of the country is said to be growing exponentially at between 3.3 and 3.5 percent whereas the agricultural sector has been growing at an arithmetic rate of 1 percent only since 1970 (some authorities rather think it is declining at the same rate). It was possible in the 1970 decade to make

up for the deficit by importation of food which reached the highest point of N2.3 billion in 1989 or 7.6 percent of total imports for the year. Under the current Structural Adjustment Programme (SAP) it is no longer possible to import food so massively to close the gap between the rate of domestic food production and population growth, hence the shortfall in some basic food items has assumed crisis proportions. It is not helpful to blame the hunger situation solely on the failure of the domestic agricultural system, nor on drought and other natural disasters, the fact must be accepted that the shortage is the result of the population growing much faster than food can be produced.

It is estimated that 71.2 million hectares of the country's total land area of 98.3 million hectares is cultivable land. Land actually under cultivation was estimated at 34 million hectares in 1975 or roughly 48 percent of total cultivable land. The proportion of land not yet under cultivation (52 percent) creates the apparent impression of a land surplus agricultural system. But because of land tenure problems as well as technological and organizational constraints, this so-called surplus land is not likely to increase the country's capacity to produce food in the right quantity to match 3.5 percent annual population growth. Besides, it is within this potential cultivable land that urbanization and other non-agricultural developments now take place and compete for land.

The Gross Domestic Product of the country and the real income of many Nigerians have been declining in recent years relative to population growth, leading to the lowering of the standard of living. The various issues of concern are discussed in greater depth in the chapter that deals with Economics and the Environment. With the present rate of population growth, the level of living as measured by GDP per capita is likely to decline more in the immediate future.

BOX 2.2: FOOD AND HEALTH

All available evidence shows that hunger and malnutrition are on the increase in Nigeria. Average calorie consumption level is now below the level needed for health, growth, and productive work. One of the basic reasons for this situation is the serious gap between the rate of population growth and the demand for food on the one hand, and the rate of growth of food production on the other. While the rate of growth of the demand for food is estimated at more than 3% per annum, the annual growth rate of food production is estimated at between 1% and 1.5%. A recent World Bank report indicates that 17 million Nigerians are undernourished.

All available data point to a very poor state of health in the country. Communicable, but largely preventable diseases, like guinea worm, measles, tuberculosis, schistosomiasis, typhoid, cholera, and dysentery are still prevalent in Nigeria.

One of the best single indicators of a nation's health is the life

continued overleaf

BOX 2.2: FOOD AND HEALTH (Continued)

expectancy at birth. The fact that in Nigeria this is still under 50 in 1989 is very serious, especially when it is realized that the figure for some countries with comparable income is 60. The crude death rate and infant mortality rate are also still much too high. This is perhaps not surprising if the ratio of physicians to the population is borne in mind. A World Bank study estimated the number of people per physician in 1960 as 73,711. This had improved to 24,667 by 1970, when some Latin American and Caribbean countries had a figure of 1,728.4. In 1987, there were 8,333 people per physician in Nigeria, and by 1990 the number might have fallen to 8,000.

Among the disturbing shortcomings of health care services in Nigeria is the emphasis on curative, rather than preventive, medicine. It is only of recent that a reorientation is being attempted and more attention paid to primary health care.

Source: NEST 1991 Profile, pp.243-44.

Population Growth and Basic Services

The condition of extreme poverty of many millions of Nigerians is revealed also, and perhaps more strikingly, by the poor quality and unequal access to the basic needs of the society. This includes the quality of such basic needs as drinking water, shelter, medical facilities, education, good roads, life expectancy, calorie intake, safety, freedom, etc. The result of sharing a scarce commodity among a multitude, as implied in the "lifeboat ethic", is that there would not be enough to go round to everyone's satisfaction, and any attempt to carry everyone along would lead to catastrophe.

The ability and the resources of government to provide social services for the well-being of the people is limited and further incapacitated by rapid growth in population. Take urban water supply, for example. Average per capita water consumption in Nigerian cities is estimated at 81 litres per day as against average consumption rate of 114 litres considered appropriate for urban dwellers at Nigeria's stage of development, which is about 30 percent short of the required average. Even then, the average masks critical shortages in some rapidly growing cities like Enugu and Onitsha, where the average supply was only about 11.55 litres per day in 1977 and 12.6 litres in 1976. The decline in average daily supply between 1976 and 1977 was due to the rapid rate of urbanization of the cities, resulting mainly from rural-urban migration which was not matched by the rate of development of urban infrastructures. The result is that most city dwellers, especially the slum residents, still rely on unhygienic sources of water supply such as wells and rivers as indicated in Table 2.3.

Other social services are also declining in quality as a result of overcrowding. In spite of massive expenditures in education and health sectors over the past two decades of development planning, the level of services in these sectors are declining fast partly as a result of too many people

TABLE 2.3: TYPES OF WATER SUPPLY AVAILABLE IN DWELLING UNITS OF SELECTED SLUM AREAS (PERCENTAGE OF TOTAL)

Water Supply	Lagos	Ibadan	Benin	Enugu
Pipe-borne				
Water connected				
to dwelling	10.5	6.3	12.9	13.0
Public taps	14.5	65.8	55.5	18.9
Wells	55.3	6.0	21.6	13.0
Rivers	4.0	15.9	5.0/42.1 →	
Others	15.7	6.0	5.0/13.0 →	
Total:	100.0	100.0	100.0	100.0

Source: Onokerhoraye, A.G. (1988), 'Case Studies of Urban Slums And Environmental Problems In Nigerian Cities'; Sada, P.O. & Odemerho, F.O. (eds) *Environmental Issues and Management In Nigerian Development*, P.127.

competing for limited services. In the critical area of health, the ratio of hospital bed to the population is in the order of 1 to 1,400; and for every group of about 22,228 of the population there is only 1 doctor. In some States of the federation, the deviation from the national average ranges from -4.4 percent in Ogun State to -208.3 percent in Sokoto State. The average population per health centre is about 202,000 according to the 1979 study above. Increasing population has also put serious pressure on existing educational facilities while at the same time inhibiting the expansion of educational services. Unemployment has become worse as a result not only of the effect of diverting most of the capital meant for social services, which create fewer new job opportunities but also because of the rapid maturity and entry into the job market of the younger elements of the population.

POPULATION, RESOURCES, AND ENVIRONMENTAL LINKAGES

In 1985, Professor A.L. Mabogunje, one of Nigeria's best known social scientists and environmentalists, reasoned that because of the economic emergency that was declared in the country, the next few years were going to witness tremendous efforts at increased production and enhanced productivity in the country. Under such stressful situation he went on, "it will be so easy for people to become so exigent, worrying only about what to get out of the environment for their own immediate needs and uses, without caring very much for the consequences, especially for succeeding generations" (Mabogunje: 1985). The National Policy on Population for Development (1988) also made the observation that "the present high rate of our population growth is already contributing substantially to the degradation of the ecology of the country". It observed that land fragmentation, over-farming, and overgrazing have led to soil erosion and

BOX 2.3: MEASURING DEVELOPMENT

In the past, there was a tendency to measure economic performance in terms of such aggregates as the gross domestic product, capital formation, etc. and in terms of financial expenditures incurred in the implementation of plan projects. Though it is easy and convenient to do so it is clear that such indices do not tell the whole story. The common man is more interested in such things as the availability of drinking water, housing units, medical facilities, good roads, life expectancy, caloric intake, etc. From this point of view it is significant to know how far these facilities have improved during the Plan period. Such information provides a good criterion for measuring development. During the next Plan period, therefore, in addition to the conventional measures of performance in terms of macro-economic aggregates, economic and social indicators will be increasingly employed to measure development. In preparing programmes for the plan, therefore, executing agencies will be required to establish physical targets against which their subsequent performance will be measured.

Source: Federal Ministry of National Planning, *Guidelines for the Fourth National Development Plan, 1981-85*

desertification and that overcrowding has led to the spread of shanty towns and to urban blight, all of which would worsen if the present population growth continues.

This relationship between population and environmental degradation is already apparent in a number of specific areas of resource consumption and are examined below:

Energy Consumption

Energy consumption pattern and level in Nigeria have produced a serious exploitative and disruptive environmental stress. The exploitative stress is most obvious in the amount of fuelwood harvested daily to support the energy needs of both rural and urban poor populations.

It is estimated that total woodfuel consumption in the country in 1987 was about 80 million cubic metres annually and that about 95% of the 6.0×10^9 megajoules of energy released from it go to waste due to the absence of improved woodfuel stoves to conserve energy. Typical urban consumption per capita has been calculated at 360kg/person or the equivalent of 0.5m^3 of solid wood. The corresponding average level of consumption for rural areas is calculated at 511.2kg/person or 0.71m^3 of solid wood.

This high rate of consumption is met almost entirely from supplies from communal bushes and private farmlands. Forest regeneration in the communal bushes is by natural means, and rapid urbanization and population pressure in rural areas continue to diminish the supply of these

sources. With prime and readily accessible sources being fast depleted, harvesting has been carried into distant and marginal lands, hill slopes, and watersheds which are being laid bare and at increasing rates.

The energy crisis in the Nigerian context should be conceived more in terms of the economic and environmental costs of fuelwood utilization by the poor rural and urban masses rather than in terms of shortages and constraints in the production and distribution of electricity and petroleum products. The rate at which the natural vegetation has been exploited to meet the exponential human demand for fuelwood energy has become highly disruptive of the ecological system. However, the Government has awoken to the problem by setting up a National Committee on Alternatives to Fuelwood (on August 12, 1991).

Energy exploitation has also produced extensive disruption of the ecology of the oil producing areas. About 2 million barrels of crude petroleum per day is produced to support the economic and social programmes of the burgeoning Nigerian population. Even under the best of circumstances, oil pollution of the environment is inevitable either during production or transport or both, but the severity and the effects can be minimized if legal and institutional arrangements are made to anticipate and deal with such problems. This is often not the case in Nigeria. Oil pollution of the Niger Delta and the littoral zone has, therefore, become a serious environmental problem in the country. It is a problem which has all the potential to increase in magnitude as increasing pressure is put on the oil sector as the mainstay of the economy.

Agricultural Production and Consumption

Government's determination to revitalize the stagnating agricultural sector to cope with a faster growth of population entails intensification of agricultural practices involving increased inputs of fertilizer, other agrochemicals, and mechanization. It also entails extending the agricultural frontier into marginal lands and ecological zones. The environmental consequences of these are enormous.

The growth rate of demand for food in the country has been estimated at 3.5% per annum while the growth rate of production is only 1%. Thus the 2.6 million tonnes of grain equivalent of food import in 1980 was expected to reach 5.5 million tonnes or more. Small-scale producers who form the bulk of the nation's farming population, produce almost all of the agricultural production. Because these farmers are unable to meet the food and agricultural raw material need of the country, efforts have been shifting to large-scale, capital-intensive production schemes. These programmes, which are being developed by mainly retired public officers, industrialists and public liability companies, invariably often involve the displacement of traditional farmers from their lands. The latter are either forced to clear and cultivate marginal lands, become landless labourers or migrate to the cities. In the meantime, there has been a gradual disappearance of the traditional fallow system and a complete breakdown of traditional land management systems. The process, which started in the densely settled parts of Ibo land and Kano, has now become a common feature in nearly all parts of rural Nigeria.

The new programmes of increased agricultural production also lay great emphasis on increased application of chemical fertilizers and agro-chemicals, such as herbicides and insecticides. The environmental effects of these applications, and the exact levels of application are still being studied, although the efforts are hampered by the haphazard nature of the production, importation and distribution arrangements. However, there is increasing evidence of the adverse effects of heavy doses of inorganic nitrates, phosphates and sulphates. Such evidence includes the eutrophication of inland waters. Experience from other countries indicates that the ecological problems associated with intensive application of chemicals in agriculture must be taken seriously. The effects of long-term use or misuse of persistent chemicals in Nigeria cannot be different from what they have been in other parts of the world where proper investigations have been carried out.

Forestry

Increasing population and affluence (if only among a tiny minority), and the consequent increase in demand for food, shelter, furniture and energy have brought additional pressures on the nation's forest resources. Current evaluations of the nation's forest resources indicate a fast-declining resource base.

As has been pointed out, Nigeria has a total land area of 983,213 sq. kilometres of which 773,783 sq. kilometres are in Savanna zone, 75,707 sq. kilometres are in the Derived Savanna zone and 133,717 sq. kilometres are in the Forest zone. In 1975, the total area of forest of all types in the country was estimated at about 360,000 sq. kilometres or about 1/3 of the country's total land area. It was also estimated that the annual harvest of sawn timber from the high forest was 1.5 million cubic metres which would take between 25 to 30 years to denude the forests of mature timber. With rapid rise in domestic consumption of timber due to increased rate of building construction resulting from the rise in population and income it would take less than 15 years to exhaust the high forest timber resources. Other sources of pressure on the high forest timber include rising demand for fuelwood, pulpwood and poles. The southern high forest states are also characterized by high population densities which makes it increasingly difficult to expand substantially their forest areas to cope with the high demand for forest produce. As a matter of fact land formerly set aside as Forest Reserves is being de-reserved increasingly in these areas (Table 2.4). The rate of deforestation is faster than the rate of re-afforestation. Besides, forests have long gestation periods and forestry does not attract private investment which means that much of the demand for forest produce must be met from the natural forests. The Savanna forests too are facing tremendous pressure from incursions for agricultural purposes, fuelwood harvesting and the export and domestic use of products such as gum Arabic, shea butter and tannin materials.

Some serious consequences of increasing exploitation of the forests are wildlife extinction and loss of genetic diversity. There is the mistaken impression that the tropical ecosystem is so prolific that it can maintain itself at any time in spite of the pressures of population growth and

TABLE 2.4: FOREST DERESERVATION IN SOUTHERN NIGERIA

Forest Reserve and State	Gazetted Area (ha)	Dereserve Area (ha)	Alternative land use
Anambra State	12098	1500	Food crop farming
Osomari	450	100	Food crop farming
Akpaka	14575	500	Food crop farming by enclave dwellers
Bendel State			
Okomu	123802	15000	Federal oil palm project
Orle River	40633	a) 60	Petroleum
		b) 19166	Food crop farming
Iguobazuwa	26936	1810	Cocoa Board Project
Ologholo-Emu	14996	145	Cattle Ranch
Urho			
Ivi-Ada-Obi	18002	580	Cattle Ranch
Ogba	5517	a) 720	Urban development: airport; Federal sawmill; forest research plot
		b) 1010	Food crop farming
Obaretin	10800	2849	Bendel oil palm project
Ehor	29583	8	Cocoa project
Ologbo	19425	1280	Oil palm plantation project
Ebue	9176	140	Food crop farming
Sakpoba	49210	35	Oil exploration
Gilli-Gilli	36260	26	Oil exploration
Akwa Ibom and Cross River State			
Stubbs Creek	31080	11	Food crop farming
Ekinta	10878	10878	Food crop farming
Imo State			
Ubibia	755	106	Food crop farming
Achara-Ihe	794	300	Oil palm project
Rivers State			
Upper Imo River	9696	10	Food crop farming

Source: G.J.Osemeobo, 1988: "The Human Causes of Forest Depletion in Nigeria", *Environmental Conservation*, 15(1); 18-28

commercialization. Under this erroneous impression, not much effort has been made to set aside certain distinct land areas as Forest Reserves within which genetic resources might be preserved. As indicated above, these Forest Reserves are increasingly being released for other uses. Even at the present stage of development in the country, many species of plants and animals have become increasingly scarce to find due mainly to the effects of over-exploitation.

Deforestation in general - for agricultural development, urban growth, industrial expansion and general pressures from an increasing population - has reduced the extent, diversity and stability of the Nigerian forest. The Food and Agricultural Organization (FAO) estimates that Nigeria de-

stroys about 600,000 hectares of her forest every year through careless exploitation and husbandry (Okafor, 1988, p.50). Such careless exploitation of the forests has been implicated in a number of worsening environmental problems in the country, including soil erosion and infertility, desertification and flooding.

BOX 2.4: DEFORESTATION IN NIGERIA

Forest clearance on a massive scale for agricultural development, urban growth, industrial expansion and general pressures from an increasing population have reduced the extent, diversity and stability of the Nigerian forest. According to the estimates by the Food and Agricultural Organization, Nigeria, through careless exploitation and husbandry destroys about 600,000 hectares of her forest every year, whereas the reforestation efforts of about 25,000 hectares a year replenishes only about 4 per cent of the loss. For instance, since 1935 when the African Timber and Plywood (ATP) in Sapele started a yearly extraction of 75,000 cubic metres of wood, by cutting some 750,000 trees or more than 2,000 trees every day, it was only in 1980 that the company deemed it wise to start tree planting to replenish the loss. Apart from ATP, there are some 1,500 other saw millers and wood-based industries in Nigeria which exploit without serious attempts at replenishing. With the paper and pulp industries joining the users of forest resources the depletion of Nigeria's forest resources has worsened. In fact, the fear, according to Oseni (a retired Director of forestry), is that at the current rate of exploitation the country's timber resource would suffice for only an additional twenty-five years.

The general effect of timber exploitation, mostly from the high forests which cover only about 12.41 million hectares of the country's 91.1 million hectares of land space (that is about 13.5 per cent), is that the forest stability is disrupted and its ecosystem has been seriously disturbed. The disturbance is not only in terms of its inability to regenerate through the natural process, but some species of trees and fauna are being endangered. The records of the Forestry Research Institute show that at least sixty-two species, which constitute about 7 per cent of the total number of species in Nigeria, are endangered. The seriousness of this development is that the timber species which form the base of the country's timber economy may soon be extinct thus necessitating importation and loss of hard currency. Similar danger of extinction is faced by wildlife for which the forest provides natural habitat. Probably the clearest indication of the danger wildlife faces is that even the savanna environment which has given them some cover is disappearing and giving way to desert or near desert condition.

To the rural inhabitants in Nigeria, the crux of the problem associated with deforestation lies with the shortage of firewood

upon which they have relied for centuries. Judging from the size of the rural population in Nigeria, the FAO has projected that for 1985 the consumption figures of firewood would amount to 54 million cubic metres as against 42 million cubic metres in 1975. The forest resources of Nigeria are not capable of meeting this firewood demand. But considering the fact that alternative fuel sources such as electricity, gas and kerosene are not easily available, and the initial investment in procuring stoves and cookers is prohibitive, the firewood crisis is going to stay with the rural population for a long time to come. As Igbozurike has suggested, it is only positive policy measures such as legal protection from continued devegetation of the forest areas of Nigeria and the establishment of fuelwood plantations that will save Nigeria from an imminent firewood crisis.

In addition to the risk of shortage of fuelwood as a result of over-exploitation of our forests, the disruption of forest density has other implications. One of such implications, which is causing Nigeria great concern, is the amount and rate of desertification. It is estimated the currently about 326,000 sq. kilometres or one third of the country is affected by desertification. The magnitude of the problem which is not often highlighted is that the desertified environment may take two and half centuries to revert to their original appearance and fertility with the proviso that it is left undisturbed. Desertification has often been blamed on droughts but a recent study by the United Nations Environment Programme has shown that droughts do not create deserts. They only speed up their formation. It is such human activities as deforestation that turn once productive lands into barren rocky sceneries and triggers off the desertification process.

On the whole, the declining state of forest wealth and heritage in Nigeria constitutes a threat to soil fertility, agricultural productivity and, in fact, to the quality of life generally. The humid tropical soil which covers most of Nigeria is not as resilient as the luxuriant vegetation tends to indicate. The plants are only able to maintain fast growth by recycling nutrients rapidly through the vegetation. But once the vegetation is disturbed the productive equilibrium is never attained. The consequence of this process of soil destruction is evident in many parts of Nigeria and it is only through careful husbandry that the nutrient status of the tropical soil can continue to retain its productivity.

Source: A.L. Mabogunje, 'The Debt to Posterity: Reflections on a National Policy on Environmental Management' in P. O. Sada and F. O. Odemerho (eds) Environmental Issues and Management in Nigerian Development, Evans Brothers, 1988.

Mineral Production

Apart from oil drilling, other important minerals are being vigorously exploited by open cast, hydraulic and other environmentally-disruptive methods.

Rural Nigeria in particular has witnessed severe environmental degradation in recent times resulting from oil drilling, surface mining and quarrying. Frequent oil spills in the Niger Delta and coastal parts of the country have caused serious damage to marine and aquatic life as well as to the traditional economies of the region. In the worst affected areas, the fishing and agricultural practices of the local inhabitants have either been destroyed or seriously incapacitated. For example, a total of 784 oil spill involving about 1.3 million barrels of oil was reported between 1976 and 1980 alone with Rivers and Bendel States experiencing 416 and 292 of the spills respectively (Table 2.5). These spills, together with gas flares from the oil wells, have devastated vast stretches of vegetation and rivers and now constitute what has been described as "a curse on the immediate surrounding". The entire operation of oil drilling is said to constitute hazards which are detrimental to agriculture and other traditional activities of the area, such as fishing and game hunting. This is serious indeed considering the fact that the delta region of Nigeria is short of good agricultural land because of its ecological conditions. Recent studies of communities of the oil mining areas of Edo

and Delta States, for example, show that the peasant farmers have experienced a continuous decline in the size of their farm plots which is not compensated by increasing fertility of the soil.

Outside the Niger Delta oil mining region, surface mining activities have produced equally devastating effects on the environment. In many parts of the country open cast mining of such minerals as tin, marble, lead, zinc and limestone goes on with little or no regard for the environmental effects. On the Jos Plateau, where tin mining operations have dominated the landscape for nearly a century, vast areas of dumps and large open pits have not only claimed extensive areas of prime agricultural land but also constitute serious environmental hazards to the health and ecology of the local population. The skyline at Nkalagu in Anambra State and Okpella in Bendel State is constantly polluted by limestone quarrying. Equally devastating is the practice of quarrying building materials such as sand, clay, gravel and red earth on the fringes of our cities. This encroaches on agricultural land and the open ditches produced constitute unplanned and unsupervised dumping sites for urban-generated refuse.

TABLE 2.5: STATE DISTRIBUTION OF OIL SPILLS (1976-1980)

State	Number of Spills	Net Volume (barrels)
Rivers	416	622,987
Bendel	292	605,913
Cross River	37	6,170
Imo	36	1,789
Ondo	3	100,016
Total	784	1,336,875

Source: Omuta, 1983

Raw Material Production

The present government emphasis on local sourcing of raw materials for industries has serious environmental implications. Rural lands are fast passing into the hands of corporate and individuals large-scale farmers. The social and ecological implications of this process are serious. Often it is the best agricultural lands that have been so appropriated for the production of industrial raw materials to the detriment of the production of food crops. The peasants are therefore forced to cultivate marginal lands for their food. Unfortunately, it is the so-called land-surplus states in the Middle Belt that have been the worst affected. For example, it is calculated that as of 1989, large-scale public and private agro-industrial projects, most of them yet speculative, have already occupied 3,154,248.74 sq. kilometres or 42.4 per cent of Niger State's total land area of 7,422,400 sq. kilometres (Ogbonna, 1990). This scale of land alienation has forced people to cultivate hill slopes and other marginal lands that would otherwise not have been cultivated.

In other parts of the country, such as in Plateau, Borno, Gongola, Kaduna, Benue and Sokoto States, and even in land-hungry areas of Imo and Anambra States, large-scale acquisition and occupation of land is going on ostensibly for the production of agricultural raw materials for industries. The tendency has assumed extra-ordinary proportions since 1983 when a foreign exchange crisis forced the government to place a strict ban on the importation of raw materials, especially agricultural raw materials, which could be locally produced. This second episode of commercialization of agriculture is tending to produce a more devastating effect than the first one which was based on the production of agricultural produce for export. It is leading to the large-scale alienation of peasant farmers who now do more damage to the ecology by cultivating and exploiting marginal areas. Even in the so-called land-surplus areas of the country, the scale of the alienation has been such that villagers complain in open revolt against those who grab their land.

Local sourcing of industrial raw materials has also brought increased pressure on the forests and other ecosystems. For instance, the African Timber and Plywood Company (ATP) in Sapele extracts about 75,000 cubic metres of wood annually by cutting some 750,000 trees or more than 2,000 trees every day. Apart from ATP, there are some other 1,500 saw millers and wood-based industries in Nigeria which exploit the natural forests with only very minimal attempts at replenishing. With the more recent addition of paper and pulp industries as users of forest resources, the depletion of the natural forest resources has worsened. The Forest Research Institute of Nigeria (FRIN) has warned that at least sixty-two tree species, which constitute about 7 per cent of the total number of species in Nigeria, are endangered. (FRIN, 1984)

Urbanization

Fuelled by rapid population growth and rural-urban drift, urbanization in Nigeria is characterized by city slums with serious environmental consequences. The problem has been described as acute and exemplifies the

inability of development measures to keep pace with the rate of population growth. The problem of the disposal of sewage and refuse in particular, has been shown by studies to be quite serious because of the rapid rate of generation of non-biodegradable materials, such as plastics.

Nigeria is currently experiencing a significant amount of urban growth. Predictions for the late 1990s and beyond are that the urban expansion will continue at an accelerated rate on account of the increasing poverty of rural people and the deterioration of the rural economy which triggers off accelerated drift of the rural poor into the cities. The conversion of rural land into urban sprawls around Lagos, all the State capitals and many second-order towns, such as Onitsha and Aba, adds increased pressure on the ecology of remaining rural land resources.

Environmental conditions in the cities themselves have greatly deteriorated due to the rapid growth of the cities and the attendant inability of social services and infrastructures to keep pace with the rate of growth. Inadequate storm drains, dumping of refuse in drainage lines and construction of houses close to and even in natural water channels have been shown to be responsible in that order for the increasing cases of flood in such cities as Lagos, Ibadan, and Ilorin. The phenomenal increase in solid waste generation in the cities, and the problems of its management and disposal have been linked to population explosion (Omuta, 1988). Environmental problems associated with the increasing growth of urban slums have also been widely studied and they include overcrowding in squalid housing conditions, poor quality or unavailability of basic infrastructures and social services, such as water and sewage facilities, and even lack of access routes. The dominance of primitive and out-dated sewage disposal facilities in slum areas of the cities of Nigeria helps to illustrate this point (Table 2.6).

TABLE 2.6: TYPES OF SEWAGE DISPOSAL FACILITIES IN DWELLING UNITS OF SELECTED SLUM AREAS (PERCENTAGE OF TOTAL)

Sewage Disposal Facilities	Lagos	Ibadan	Benin	Enugu
Septic Tank	10.0	5.2	8.2	12.0
Pit Latrine	55.5	72.2	68.2	71.7
Pail Collection	32.5	15.6	10.3	9.3
Others	2.0	7.0	13.3	17.0
Total	100.0	100.0	100.0	100.0

Source: Onokerhoraye, 1988.

Desertification

Desertification is an environmental problem which illustrates in a dramatic way the manner in which pastoral and agricultural land use in an ecologically fragile environment, and under conditions of rapidly increasing

human and animal numbers, can pose a real threat to the very capacity of the environment to continue to support human and animals. Desertification is the formation of desert-like conditions in areas outside the desert proper. The vegetation cover on the land becomes scanty and sheet, gully and wind erosion is both widespread and severe.

Overpopulation of both human beings and livestock, accompanied by a breakdown of traditional land management practices, has been suggested as primarily responsible for the collapse of ecological relationships in the Nigerian Sahel, a collapse which is often expressed in the form of desertification. In particular, the introduction of the cash economy during the colonial period has combined with rapid population growth to cause overcultivation and overgrazing which, in turn, have triggered off the process of desertification.

The introduction of the Structural Adjustment Programme (SAP) since 1986 has marginalized many families, thereby sending many of them back to the land to swell further the ranks of the slash and burn cultivators. With increasing poverty and destitution evident everywhere, people are being forced into land use practices that put great strains on their environment. For example, in the rain forest areas of Iboland, many of the riverine raffia palm groves that had stood intact as climax vegetation types and as the source of local palm wine are now being cleared to create tiny pockets of rice paddy. This is obviously a reaction to the cost of rice and the greater need of families to have rice to eat rather than palm wine to drink. In this, as in so many other ways, the forests and woodlands of Nigeria are disappearing.

Resource Depletion

This is a serious environmental problem that is rarely given sufficient consideration. It ranges from loss of soil fertility to mineral resources depletion and the complete loss or extinction of plant and animal species, brought about by the pressure of human numbers and the demands of the rising standards of living.

Many Nigerians are still under the illusion that the stocks of both our renewable and non-renewable resources are limitless and that we can therefore go on for ever exploiting them with reckless abandon. This is like the frontier mentality which guided early exploitation of the resources of North America by European settlers and which led to the creation of major environmental problems for that continent. Under this kind of illusion, we often make decisions about resource exploitation that irreversibly impoverish or destroy the ecological base, thus rendering futile any subsequent reassessment of priorities. This is especially true where information is so incomplete that many undertakings may properly be considered to be ecological gambles.

The ecological effects of the depletion of the rain forest flora and fauna (especially genetic loss) has already been mentioned. The depletion of natural soil fertility due to overcultivation and large-scale reservation and alienation of prime agricultural land has also been discussed. Mineral resources, such as petroleum, are being exploited at very fast rates which are not only reducing the reserve stock but also increasing the cost of

exploitation. The burden of meeting the demands of our exploding population will obviously bring more pressure to bear, especially on the non-renewable resources, which will endanger the chances of a stable or sustainable development in future.

POPULATION POLICY

Like most other African countries, Nigeria has been quite slow in adopting a clear and affirmative policy on population. Between the attainment of independence in 1960 up to 1974, government interest in population did not go beyond its use as a variable for revenue allocation and delimitation of constituencies for political representation which in turn brought about an extreme politicization and inflation of population figures by various ethnic groups and regions in order to justify contending claims to available resources and political opportunities. Since the overriding concern revolved around the political and economic benefits conferred by a large population, little or no attention was paid to the adverse consequences of population size and its growth rate on socio-economic development and the environment.

In 1975, the country's *Third National Development Plan 1975-80* (pp 293.2) contained a short section which for the first time, attempted to link population with development. It argued that the country's "large and rapidly growing population" was not yet a problem, given the country's abundant natural resources which, if carefully exploited..., would ensure a steadily rising standard of living for the population within the foreseeable future...". Accordingly, policy emphasis was placed on "accelerating the rate of growth of the economy rather than on direct action to achieve a drastic or immediate reduction in the overall birth rate." There was, however, an expression of tacit support for the provision of family planning education and services to people on a voluntary basis. This principle was also carried forward into the *Fourth National Development Plan 1981-85* but in each case with very little political or resource back-up.

The 1988 National Policy on Population for Development, Progress and Self-Reliance marked a major turning point in government attitude towards population. Not only was this the first comprehensive population policy in the country, it also represented the first official commitment to a policy of fertility reduction based on a clearly articulated recognition of the "adverse consequences" of rapid population growth on the country's socio-economic development, resources and environment. Given the general atmosphere of extreme resistance to a programme of fertility control, the content and promotional style of the policy has had to be slanted heavily in favour of the immense health benefits or advantages which people stand to derive from the policy rather than demographic, economic, and environmental implications of uncontrolled population growth. Consequently, the four broad goals of the policy are: (1) to improve the living standards and quality of life of the population; (2) to promote the health of the population particularly through the reduction of death and diseases among high-risk mothers and children; (3) to achieve lower population growth rates through the reduction of birth rates by

voluntary fertility regulation; and (4) to achieve a more even distribution of population between urban and rural areas.

However, it was against a background of a worsening economic crisis, lean budgets, declining living standards, worsening environmental stress, and intense international pressure that Nigeria's population policy was adopted in February 1988. To what extent is this policy likely to succeed in stabilizing the country's rapid population growth rate thereby reducing the pressure of this unchecked population growth on the country's resources, environment, and development process?

Objectives and Targets of the Population Policy

The objectives and specific targets of the policy have been set against certain identified demographic facts. First, Nigeria is the most populous country in Africa and is among the ten most populous countries in the world. The country's population may shoot up to the world's fourth largest by the year 2025 if present trends continue unabated. Second, the rate of natural population increase has risen from an estimated 2.5 percent per annum in the 1960s to about 3.3 percent per annum in the 1980s as a result of persistently high levels of fertility accompanied by declining mortality. Even though the mortality rate has been declining it is still one of the highest in the world thereby contributing to the pressure to have more children as insurance against high childhood mortality. Consequently, the average woman tends to have between six and seven children by the end of her reproductive life, while the doubling period for the population has dropped from 28 years in the 1960s to only 22 years in the 1980s. Third, this combination of high fertility and declining mortality has given rise to a predominantly youthful population with 47% of the population being under 15 years of age. The resulting high dependency ratio coupled with high rural-urban migration into the country's already overcrowded cities has imposed tremendous pressure on existing resources, services, facilities, and employment opportunities.

In order to minimize the pressure of adverse effects of these demographic realities on the country's environment, resources, and living standards, the population policy spells out the following specific objectives:

- (1) the promotion of general awareness and education about the effects of rapid population growth and uncontrolled fertility behaviour on the country's development, the living standards and health of the people, the resources of the family, and the welfare of future generations;
- (2) the provision of family planning services and other means for fertility regulation to all couples and individuals at affordable cost especially before and during the critical child-bearing ages;
- (3) the improvement of the machinery for the collection and analysis of demographic data on a regular basis so as to enhance social and economic planning;
- (4) the pursuit of an integrated strategy of rural and urban develop-

ment in order to improve rural living conditions so as to slow down the rate of rural-urban migration.

The following targets are earmarked as specific sign-posts that would guide or set the parameters for policy implementation and performance achievement:

- (a) the protection of the health of teenage mothers through a drastic reduction of the proportion of women getting *married* or *pregnant* before the age of 18 years by 80-90 percent by the year 2000;
- (b) a drastic reduction of pregnancy of mothers above 35 years of age, or who are bearing more than four children, or who have previous cases of complicated pregnancies and childbirth, or who have chronic illnesses which increase the health risk of pregnancy;
- (c) the extension of family planning education and services to *all adult males* by the year 2000, and to 50% of women of child-bearing age by 1995 and 80% by the year 2000;
- (d) the reduction of the number of children per woman from the present six or seven to *only four* by the year 2000;
- (e) the reduction of the present rate of population growth which stands at 3.3% per annum to 2.5% by 1995 and 2% by the year 2000;
- (f) the reduction of the infant mortality rate to 50 per 1,000 births by the year 1990 and 30 per 1,000 live births by the year 2000; and the crude death rate to 10 per 1,000 by 1990 and 8 per 1,000 by the year 2000; and
- (g) the provision of basic social amenities to 50% of all rural communities by 1990 and 75% by the year 2000.

All these targets are to be achieved through voluntary fertility regulation without infringing in any way the rights and freedom of couples to decide on the number and spacing of their children.

Measures and Strategies for Achieving Policy Objectives

The central building plank for this policy of voluntary fertility regulations lies in the pursuit of "a vigorous, broadly-based national programme of information, education and communication, focussed on specific target groups, such as men or children and youth". This broad-based programme will revolve around family planning information and services, maternal and child health care, and the improvement of the status of women. In addition, special mobilization efforts will be targetted at men, children, and the youth, as well as leaders at various levels who will be expected to lead by example.

Apart from this aggressive package of population information and education which will be targetted at all segments of society, plus some nebulous commitment to an improvement of educational facilities and rural conditions, the policy has two main components - family planning and primary health care. As the policy document spells out, "one of the most important strategies for the implementation... of the population

policy is to make family planning services easily affordable, safe, and culturally acceptable". Consequently efforts would be made to ensure "maximum success of the family planning programme" through the mobilization and strengthening of all relevant public and private agencies for the effective delivery of family planning services to all individuals and couples in all parts of the country particularly in the rural areas.

Closely related to this is the improvement of the health status of women and children through the vigorous pursuit of primary health care as well as the integration of family planning into the primary health programme. Within the context of this primary health care programme "special attention" would be paid to the encouragement of breastfeeding; the provision of adequate nutrition, clean water and basic sanitation; and the expansion of immunization, oral rehydration therapy, birth spacing, and fertility regulation.

It is hoped that resistance to fertility regulation would be minimized and the health benefits of family planning optimized if the objectives of population planning are embedded in the primary health care programmes. Similarly the fight against certain cultural practices which run counter to the policy's objective of enhancing the status of women (such as the giving away of daughters in marriage before the age of 18, discriminatory practices against female education, etc) seem to be couched in terms of the health advantages of the alternative recommended practices. This method of circumventing difficult cultural factors through giving recommended measures an acceptable "health" face runs through most of the other strategies adopted for this policy.

Public reaction to the Policy

Given the voluntary nature of the measures and the recommended practices contained in the policy, its success or effectiveness hinges largely on the acceptability of its goals and objectives to the general population. Unfortunately, the public uproar which greeted the policy following its ratification and announcement in February 1988 was such that the government was initially forced to adopt the play-safe strategy of putting the policy in the cooler. For a period of fifteen months between this initial announcement and the official launching of the policy on 15th April, 1989, there was a general atmosphere of uncertainty as to whether the policy had been withdrawn or was still in operation. Government was undoubtedly aware of its difficult and sensitive nature. This explains why the policy took quite some time before it was announced. As a matter of fact the policy was drawn up three years before its official ratification in 1988 but had gone through a prolonged process of consultation, discussion, and approval by the Federal Executive Council, the National Council of Health, the Council of States, and, finally, the Armed Forces Ruling Council.

Even though the policy's underlying principle of regulating the country's population was generally accepted, most commentators and experts have roundly condemned certain aspects of the policy. These include the four-children-per-woman principle, the policy's lack of legal teeth, and its relatively narrow focus on family planning objectives, which

have been surreptitiously incorporated into the primary health care programme.

THE WAY FORWARD: INTEGRATING POPULATION AND DEVELOPMENT

It is now generally recognized that one of the greatest challenges facing Africa today is the need to reverse the rapid decline in the living standards of African people which has occurred in the 1980s. This requires a long-term, integrated strategy that combines policies of accelerated development with programmes to conserve the environment and its resources, and to slow down population growth. The increased appreciation of the complex articulation of development, population, and environment is one of the significant breakthroughs in current development thinking. It is heartening that most African governments have come to recognize this complex but very close interrelationship and are increasingly committing themselves to the integrated approach of incorporating population and environmental issues into their development policies.

Development itself is only meaningful if seen as a strengthening of the capacity of individuals, communities, organizations and governments to enlarge and harness available resources for the improvement of human well-being. This requires two fundamental elements: the development and improvement of the quality of human resources (in terms of health, education, social welfare, etc); and the enlightened regulation of the numbers and consumption patterns of the population so as to reduce the pressure on resources and environment in the interest of future generations.

In applying this approach to Nigeria we have been faced with the lack of statistics and basic data on development indices, patterns of resource use, consumption levels, population levels and trends, and social welfare indicators from which better-informed judgments can be made concerning the impact of current development activities and population variables on the environment.

Nevertheless, we have been able to extrapolate from existing information the kind of trends in development activities, population growth, and resource use which justify an increased concern with fundamental changes in policy in order to achieve better harmony between development, population, and resources. Environmental impact assessment and, especially, the computation of per capita current and estimated future consumption levels should become important considerations in the formulation of policies in Nigeria. In line with our emphasis on human development as the most essential ingredient for long-term development as well as the responsible use and management of resources, these policies must be very broad, focussing on expanded health care, preventive medicine, improved nutrition and housing, expanded educational opportunities especially for women, poverty-reduction programmes, and increased social welfare provisions.

CASE STUDY: POPULATION, MODERNIZATION AND ENVIRONMENT IN THE FEDERAL CAPITAL TERRITORY

INTRODUCTION

In 1976 the then Federal Military Government accepted the findings of a Panel of experts that Lagos was no longer suitable as the capital of Nigeria and its recommendation that a new Federal Capital City (subsequently named Abuja) be built within an 8,000 square kilometre Federal Capital Territory (FCT) located in the geographical centre of the country. This is arguably the boldest regional planning decision that the government of Nigeria has formulated since independence in 1960. It has also given birth, since 1980, to probably the largest single construction project in the developing world. The implementation of this ambitious regional plan has entailed rapid population movements, massive construction work, the resettlement of large numbers of people and widespread commercialization of the local economy, all of which have put considerable pressure on both the indigenous populations and on the environment. In no other part of the country has the relationship between population, development and environment been brought into such sharp focus within the decades of the 1980s.

THE FEDERAL CAPITAL TERRITORY

The Federal Capital Territory is located within what is generally known as the Middle Belt, a geographical zone of low population densities which runs east-west across West Africa between latitudes 8 degrees and 12 degrees North. The indigenous population of Gwari (87%); Koro (7%); Gwandara (4%); and other ethnic groups (2%) were estimated to number about 133,000 in 1976. The population density had apparently increased from about 9 persons per square kilometre in 1963 to about 14.5 persons per square kilometre in 1977, a figure which was still low by comparison with the national average.

The population was organized into a large number of sleepy villages, all small and compact. The population size of the settlements varied from two (2) to about 4,000. Only five villages had a population of more than 2,000.

More than half of the population belonged to the non-productive economic strata, namely children (43%) and the over 56 year-olds (10%). About 84% of the working population were farmers, the other 16% being traders, civil servants and handicrafts makers, etc.

The area of the F.C.T. produced no exportable crops and was therefore in the backwater of the colonial and post-colonial economy of the country, by-passed by the main north-south transport arteries, especially the railway lines to the east and west. Thus the area attracted a very low level of social infrastructure, such as roads, potable water supplies, health facilities and schools. The level of commercial activity was very low, most economic production being subsistence.

The bush fallowing system of agriculture was practised in the production of the traditional staples, namely, yams, guinea corn and rice; and a host of secondary crops. The low population density permitted long fallows, making it unnecessary to use manure or chemical fertilizers.

Away from the settlements, the Territory was well wooded, with savanna woodland covering most of the areas of plain terrain and dry, tropical rain forest covering much of the hilly and dissected terrain and many of the valley floors.

In 1977 there was strong evidence that animals which no longer existed or were very rare in some other parts of the country still existed in the more remote areas. These animals include leopard, kob, buffalo, roan antelope, western hartebeest, elephant, warthog, red-flanked duicker, grey duicker, baboon, patas monkey, green monkey and bush buck. These and other game were regularly hunted and they supplied the bulk of the animal protein intake of the people.

The Coming of the FCT: "A Punishment From God or a Blessing From the Devil?"

There is no way the indigenous peoples of this area could have imagined the impact which the coming of the Federal Capital Territory was going to have on their lives. This impact has had the force of a social earthquake leading one of the traditional rulers in the Territory to ask the above unanswerable question. The question summarizes the perception and

experience of the indigenous population of what has been going on within the Territory over the last ten years. Both the direction and pace of modernization have become a major threat to the the lives and livelihoods of these people.

The Regional Plan and Resettlement

Initially the government, grossly under-estimating the number of people involved since there were no accurate population data, had planned to resettle the entire indigenous population in locations outside the Territory in order to have a 'carte blanche' on which to plan the development of the Territory and implement the plan. However, it soon became obvious in the course of a comprehensive socio-economic survey, that there were many more people in the territory than had been thought and that the government would not be able to afford wholesale resettlement. There was also a powerful ecological argument against wholesale resettlement, the fear being that the increased woodland regeneration which would follow would lead to increased tse-tse fly infestation and associated sleeping sickness. In the end the Masterplan for the Territory envisaged the outright relocation of only settlements falling within any of the following categories:

1. Settlements within the Federal Capital City (FCC) and within 5km of it (about 40 villages (or 11,000 people) initially, and another 85 villages (or between 8,500 and 17,000 people) as the city expands to accommodate 3.1 million people);
2. The Game Reserve area (about 55 settlements or 5,500 to 11,000 people);
3. Areas earmarked for watershed protection (2,400 to 4,800 people in 24 settlements);
4. Settlements within 5km radius of the intersection of the two major road corridors (12 settlements or 1,200 to 2,400 people); and
5. Institutional and Service Land Use areas (28 settlements with a total of between 2,800 and 5,600 residents).

Thus the Master-Plan envisaged the relocation of about 264 settlements or approximately 50,000 people, a figure that must now be revised substantially upwards to take account of population growth since the plan was drawn up.

In the best of circumstances population resettlement is a very sensitive issue. In the case of the Federal Capital Territory (FCT), it got off to an inauspicious start. In 1979, a Presidential Ad-Hoc committee was set up to examine the attitude of the indigenes to the issue. Seventy-eight per cent of a sample of 26,328 households indicated that they were unwilling to move. The government felt uncomfortable about this. But it had gone ahead to compulsorily move out the people who had been living in the priority area of Federal Capital City (FCC) construction, relocating them either within or outside the Federal Capital Territory. The settlements so far relocated include Wuse, Asokoro, Maitama, Karu, Payi, Jigo and Kubwa.

The people who have been resettled as well as those earmarked for resettlement remain unhappy, even bitter, about various aspects of the exercise. The former complain of unfair rates of compensation for the loss of buildings, farmlands, economic crops, wells etc., of their culturally unacceptable new living accommodation and of inadequate and poor quality farmland. The latter are worried about the unpredictable time table of the Federal Capital Development Authority (FCDA) and their own uncertain future.

One major aspect of the problem of resettlement is the issue of compensation for physical structures, personal effects and (the loss of the right to use) farmlands. In order to reduce loss on the side of the indigenous population the Federal Government decided to compensate them for mainly their immovables.

The compensatable items included houses, granaries, wells, economic trees and farmlands.

In the FCT resettlement exercises, only households that were in the Territory by 1976 were due for compensation. Thus, any household that came into the Territory after the FCT was created in 1976 was not eligible for compensation. This is because anybody acquiring land for physical structures in the FCT after 1976 could do so legitimately only with the express permission of the Federal Government of Nigeria.

Before a household head is moved for resettlement, officials from the Planning Division of the FCDA would properly verify his assets and document them. After the verification, the assets are converted into Naira compensation values.

Unfortunately, the conversion rates were approved by the Presidential Ad-Hoc Committee on Resettlement way back in 1981. Despite the fact of galloping inflation, especially since 1986, these rates have not been re-

TABLE 2.7: RECOMMENDED COMPENSATION RATES APPLICABLE IN THE FEDERAL CAPITAL TERRITORY, 1981.

Items	Recommended Rates
<u>Building and Structure</u>	
Mud hut with thatch roof	19.33 /m ²
Mud brick with thatch roof iron sheet	20.70 /m ²
Mud brick hut with C/iron sheet	42.78 /m ²
Cement plastered mud hut with C/iron sheets	53.82 /m ²
Concrete building with C/iron sheet	104.88 /m ²
<u>Household Amenities:</u>	
Wells	132.62 /well
<u>Granaries:</u>	
Mud walled granary	34.50 /m ²
Gross-walled granary	11.04 /m ²
<u>Community Structures:</u>	
Primary School	N4,500.00 /m ²
Mosque	4,500.00 /m ²
Church	4,500.00 /m ²
Court	4,500.00 /m ²
Dispensary	4,500.00 /m ²
Village Hall	4,500.00 /m ²
<u>Economic Trees</u>	
Mango	100.00
Citrus/Orange	100.00
Guava	25.00
Cashew	40.00
Avocado pear	200.00

TABLE 2.7: RECOMMENDED COMPENSATION RATES APPLICABLE IN THE FEDERAL CAPITAL TERRITORY, 1981. (CONTINUED)

Pawpaw	20.00
Coconut	40.00
Oil palm	35.00
Lucust bean Tree	70.00
Banana	25.00
Sisal	5.00
Castor Bean	20.00
Kapok	18.00
Coffee	40.00
Cassia	18.00
Kanya	6.00
Eucalyptus	30.00
Cactus	0.50
Acili	85.00
Baobab (kuka)	24.00
Bamboos (Gora)	7.00
Sheanut Tree	24.00
Pine apple	2.00
Silk cotton	12.00
Dinya	12.00
Tsamiya	30.00
Date Palm	20.00
Line Tree	60.00
Cocoa	50.00
Ginginya	12.00
Kolanut Tree	100.00
Plantain	25.00
Neem	20.00
<u>Land:</u>	
Farm land	650.00 /hectre (To cover land preparation and labour.)

viewed. They are now hopelessly unrealistic with respect to the current prices of building materials in particular and of goods and services in general. Table 2.7 shows the rates as approved in 1981.

The current (1991) attitude of the indigenous peoples to these rates of compensation is that they are punitive. These peoples feel victimized and are frustrated and bewildered. One gentleman interviewed at Kubwa, one of the resettlement villages, sums it all up by saying:

"Look at what the coming of FCT has cost us? You know, the rates paid us for these economic trees are not even equal to one year's sale of produce gathered from them. Yet we have lost them for life, for a token rate. See what they pay us for our building structures? Today a bundle of zinc (corrugated iron sheets) costs not less than N550. Who will dig

a well for you for one hundred and thirty-six Naira, sixty-two kobo? Where do you think we will get money to build village halls, churches, mosques etc, again? We are not even sure we would be left in peace here. So why should we start spending money settling down. I think we are the most hated people in the world. Sometimes we think of going back and waiting for what the government will do for us. Life for most of us has become meaningless."

Another source of pain and anger about resettlement and the payment of compensation is their unpredictable timing. One of the indigenes

laments the fact that they are never told in good time where they would be resettled, neither do they know the date of movement. In most cases, he says, the government takes them unawares:

"The government does not tell us when they would move us. They (government officials) come one morning and ask us to move. Had we known the date in advance, we would have packed our belongings in readiness. The very day they want you to move, they would come and threaten you with bulldozers and police action. Worst of all they do not resettle us near our traditional farmlands. This brings about land disputes with the people on whose farmlands we are resettled"

Some of the traditional rulers in the FCT expressed similar disgust with the way and manner their subjects are treated. We tried to find out if government agencies such as MAMSER (The Directorate for Social Mobilization), the Social Welfare Department etc, have played a useful role. We were told:

"MAMSER and government people are the same. At first we trusted MAMSER people. But most of what they say to us turns out to be false. Development is supposed to bring happiness to the people, but here in the FCT it has brought a curse...I think they want to wipe us out. They drove us away from Kaduna, they drove us from Minna and now they are driving us away from not just one town but all of the Abuja area. We have committed our future to God."

More People on the Land, Less Land for the People

The Regional Development Plan for the FCT envisages a population growth from about 171,000 in 1981 to about 825,000 in 1991, representing a 482 percent increase in ten years or a rate of increase of 4.82 percent per year. Although there are no actual figures to compare with this projection, there is no doubt at all that the FCT has experienced a massive increase in population within the last ten years. A substantial proportion of this has come about through natural increase of the indigenous population, especially as improved social services have almost certainly led to a decrease in mortality. However, the greater proportion of the population increase is to be accounted for by the influx of people from all over the country and from other countries. Several of the Federal Government Ministries have already moved from Lagos to Abuja as part of the government's drive to move to the new Federal Capital City. A presidential proclamation formally moving Nigeria's capital from Lagos to Abuja has been made at the end of 1991.

Construction activity has attracted thousands of both skilled workers and labourers. The education industry has brought in a large number of people. Before the creation of the FCT, there were only ten primary schools and no secondary school in the Territory. Today, there are 152 primary schools, 20 secondary schools, one teacher training college, a school of nursing and a university which admitted its first batch of students in

February, 1991. Many of the primary schools and most of the other institutions are staffed by recent immigrants and have virtually the whole country as their catchment area.

A great number of people have come in to take advantage of the increasing volume of economic opportunities so that there is a large and growing informal sector of traders, artisans, caterers, road transport workers and so on.

The rapid increase of population in the FCT has put tremendous pressure on all social services, but especially on housing, water supply, transport and waste disposal. The high levels of overcrowding, especially in Abuja, Nyanyan and Gwagwalada; the widespread use of unimproved sources of water and of water tankers in large settlements such as Gwagwalada; the development of slums around Abuja; the scramble for buses at the motor parks and the mountains of solid waste in the larger settlements outside Abuja are an expression of this growing pressure.

The massive increase in the immigrant population has focused on the FCC itself, the more accessible villages, and villages close to major socio-economic activity, such as construction sites. Of particular importance as receiving centres are settlements for which a special role has been prescribed within the Federal Capital Territory Masterplan, such as the satellite towns (Gwagwalada, Karu and Zuba) and the headquarters of Area Councils and Development Areas (Abaji, Kwali and Karshi).

Of course more people crowding into the FCT and increasing conversion of rural land to urban uses has meant less land for the indigenous population. Except in the areas already affected by construction activity and resettlement, there is no crisis of land scarcity as yet. But the handwriting is clearly on the wall. As population continues to increase and more and more land is converted into some form of urban use, as more and more of the immigrant population take to farming, either as a part-time or full-time occupation, the traditional bush fallowing system of agriculture will become unviable and farmers will have to intensify their use of the land through the application of modern inputs, such as fertilizers. As a matter of fact, chemical fertilizers have now been introduced to farmers but most of those who use them do so on crops which they do not intend to eat themselves but to sell.

The FCT was formerly an important dry season grazing area for the nomadic Fulani. But things are bound to change as the sedentary population increases. Already the Fulani are being kept out of the Phase 1 area of the Federal Capital City while infrastructural development elsewhere, such as the Abuja International Airport and the Lower Usuma Dam, is increasingly disrupting their movements. As competition for the use of rural land within the Territory intensifies, there is bound to be some friction between these people and the indigenous population.

New Lifestyles and New Tastes

The influx of people - both Nigerians and foreigners - is creating a complex set of problems for the indigenous population in the form of new lifestyles, new products and new tastes. The urban way of life, with its bright lights and loud sounds, its heavy traffic, its concrete and tar, its five-star hotels

and its slums, its businessmen and, of course, its hoodlums, is now very well established in the Federal Capital City. It has gained a foothold in places such as Gwagwalada, Karu and Abaji and is sending advance signals into the smaller settlements.

The local economy has been commercialized to an extent unimaginable ten years ago. Firewood, local corn beer, palm kernels, bush meat, mangoes - local products which used to be obtained free from nature or made purely for personal use - have all become commodities which are regularly bought and sold. On the other hand, factory goods have penetrated into the remotest areas. People are changing their tastes, adopting factory goods, such as coca-cola and plastic utensils, in place of traditional products such as corn beer and calabashes.

Reference has already been made to the phenomenal rise of western education within the Federal Capital Territory. Thus the people are becoming more exposed to alien cultures and the process of acculturation is clearly on the upswing.

When these and other changes are examined together we see the traditional societies within the FCT clearly under threat. Many of the people themselves foresee their various cultures giving way to the newly -introduced one which is a combination of the various cultures of Nigeria together with the so-called western culture. An informant summarizes their thinking as follows:

"We are finished as a culture. Our children will soon begin to behave like the Ibos, Yorubas, Hausas and "Turawa" (white people). They will soon take to prostitution and begin to drink bottled beer and to smoke all forms of cigarettes, including the prohibited ones. They will no longer dress like Gwari or Gwandara. I think they will also stop identifying themselves with any of the local tribes because they will also stop looking like us. It will be sad, but what can we do when a stronger culture has overrun us - a weaker nation being overrun by a stronger. But I foresee hunger because no one will farm for them. After all, if government takes over all fertile land for housing, industry, etc, where will they get land to farm? They will be too many for the small patches of land that may be left and remember that they will be competing with all the incoming population. We cannot survive."

On a rather different note, another informant says:

We are likely to be forced to leave this territory entirely. We are farmers. We have to move to where we can find land to farm. The only thing that will stop us from moving into Plateau, Kwara, Kaduna, Benue or Niger States is if the indigenes of these states do not allow us to move in. I do not foresee us melting into and becoming one with the immigrant population. The Gwari person likes to preserve his identity. But for this fact, we would have melted into the population of Kaduna town when, during the colonial period, the land on which the town was built was taken away from us and made the capital of Northern Nigeria. I do not foresee us making good use of the infrastructures provided in this

Territory because the people competing with us for these facilities are more aggressive. We hate fighting or conflict with other people over anything. We shy away from conflict, not because we are weak but because we dislike it. Probably if the FCDA deliberately establishes schools, hospitals, employment positions, and other facilities for us then we will benefit more. Even the tarred roads you have seen, do we have the vehicles to ply them? We are only on them when we join the commercial buses and taxis. I am sure that these resettlement camps will, in the future, be inhabited by the more aggressive incoming population. Even if we can afford to maintain them, we cannot stand any fighting over them. We are a conservative people, you know."

One of them suggests that the government should consider building the capital on uninhabited land and avoid settling them. Alternatively, if their houses are too inferior to be seen in the FCT, they should be given money to upgrade them. To him, it is the only way to enable the indigenous population benefit from the developmental infrastructures being built by the government. He also suggested that the government may have to come up with a land tenure policy in which land outside development areas will be shared or allocated to the indigenous population as land which they can call their own. On the whole most of them foresee a very bleak future for themselves and for their children.

It will not be inappropriate to picture the modern society which has come to stay in the FCT as a kind of army of occupation and the traditional societies as being sucked willy nilly into a kind of parasitic relationship with it. The days of Gwari culture, Koro culture, Gwandara culture, and other cultures as known within the FCT are numbered. The question is when these cultures are gone, what happens to the indigenous population?

Reshaping the Environment: New Pressures, New Adjustments

Modernization and population increase in the FCT have meant both planned and unplanned human intervention in the environment and these have brought new pressures and produced new adjustments many of which are not desirable in the natural ecology.

The most fundamental of the environmental changes has been the rapid conversion of large areas of rural land, much of which was savanna woodland and forest, into some form of urban use. Deforestation has been the harbinger of a profound reshaping of the environment. The main activities responsible for deforestation include the construction of the capital city itself; the expansion of settlements, such as Gwagwalada, Abaji, Nyanyan, Karu, Kwali, Kuje, Bwari, Karshi and Rubochi, the construction of dams, such as the Jabi Dam and the Lower Usuma Dam; the construction of many roads and of the International Airport; and vastly - increased farming activity and commercial fuelwood extraction. Deforestation has been most extensive in the north-east where Abuja is located and along the main transport arteries. The hilly area between Abuja and Nyanyan is in real danger of land degradation because, not only have the forests and woodlands been removed, but steep slopes are also being cultivated without the use of terraces.

Deforestation and construction activity have led to increased soil erosion. This is what is responsible for the dark brown colour of the waters of the Usuma River at Gwagwalada, this river being the one that drains the whole of the capital city sites.

One aspect of deforestation which deserves to be highlighted is the removal of the gallery forests along many of the rivers of the FCT to make way for the cultivation of bananas and plantains. These are forest crops which are being grown increasingly because of the high demand for them among the immigrant population who have come from Lagos and the forest belt in general. Ironically plantains and bananas are now cheaper in the rural markets of the FCT than in many areas of southern Nigeria.

The FCT is in reality a marginal area as far as the cultivation of these forest crops is concerned. Without the heavy application of manure, there is no way this newly - found source of income can be sustained. Thus it is most likely that the production of the forest crops will decline leaving the environment impoverished.

Deforestation in the FCT should not be looked upon as a wholly negative thing. One of the reasons adduced for the low population density of the area before the coming of the FCT is the prevalence of tsetse flies and associated sleeping sickness. Now the ideal habitat for tsetse flies is savanna woodland with gallery forests into which the flies can retreat during the widespread bush burning of the dry season. Deforestation in the FCT is bound to free the area once and for all from the stranglehold of the tsetse fly scourge.

One aspect of the pressure which humans have brought to bear on the environment of the FCT which is not readily perceived is the overexploitation of the wildlife population. By 1976, the original wildlife resources of the area had been severely depleted through hunting and habitat changes. Several animals which were once common in the area are now either extinct or restricted to a few inaccessible areas. They include elephant, lion, cheetah, hippo, chimpanzee and rhinoceros.

Since 1981 when construction work in the FCT started in earnest, the exploitation of the wildlife population of the area has intensified. Habitat changes probably account for most of the depletion, especially in the northern and western parts of the Territory. When an ecological survey of the Territory was being carried out in 1977 it was very common in the morning to see tell-tale signs of the presence of warthog in the Garki area of Abuja. All of that is now history.

People have always hunted game in the FCT but it was only or mainly for their own consumption. Now there is a large demand for bush meat by the immigrant population such that it has become a commercial commodity. In many parts of Nigeria, the professional hunter has become extinct, having run himself out of business through overhunting. In the FCT, however, professional hunting has only just become a profitable occupation. The number of dane guns and carbide headlamps has increased phenomenally within the past ten years or so.

Because of the pressure of habitat changes and hunting, the remaining wildlife population which cannot coexist with humans has probably been migrating into the more remote parts of the Territory, especially the south

east, or of neighbouring states. Only a bold conservation policy can save what remains of the Territory's wildlife resources.

The Regional Development Plan has set aside a large area in the southern part of the Territory as a National Park/Game Reserve, partly to satisfy the tourist demands of the capital city. This is a step in the right direction. The only problem is that the implementation of the plan does not seem to be a priority to the government.

Another area where human impact is going to increase in magnitude is that of waste disposal. The Regional Development Plan envisages the provision of modern sewage and solid waste disposal facilities for settlements within the FCT. But in the meantime such facilities exist only for Abuja itself. For the rest of the Territory, waste disposal is primitive and inadequate. This is quite incompatible with the widespread practice of obtaining water supplies from rivers and shallow wells which is the norm in most of the settlements. People who drink water from these sources run the risk of contacting water borne diseases, especially typhoid.

The Future

In the face of the above developments and pressures, what does the future hold for the indigenous populations of the FCT and the environment? The answer to this question depends on three main factors:

1. the ability and willingness of government to translate the good intentions of the Regional Development Plan into reality;
2. the political status of the FCT itself and the rights of the indigenous people within it; and
3. the ability and willingness of these people to avail themselves of whatever opportunities exist within the modern sectors of the economy.

Between 1981 and 1983, political considerations threatened to twist and bend the Abuja Masterplan out of all recognition at the very inception of its implementation. Not only were aspects of the land use zoning being violated to the chagrin of the experts charged with the responsibility of implementing the Plan but shanty - towns sprang up along the new Suleja - Kaduna highway, along the old Suleja - Keffi road and around the foot-print site of Abuja itself.

The return of the military to power in December, 1983 halted these developments and reversed some of them. One may not endorse some of the methods used (for example, the bull-dozing of shanty-towns), but the military succeeded in restoring some sort of order into the development of Abuja. This is likely to go down as one of their enduring achievements.

The government is being returned to civilians in 1992 and the question is whether present reasonably orderly trends will continue or whether there will be a return to the free-for-all ethic of the early 1980s to the detriment of both people and the environment.

In conclusion, the indigenous population and the environment are under pressure from many angles. The people themselves are increasingly in a state of bewilderment, frustration and anger as they see them-

selves in a hopelessly unequal struggle with the Federal Government and, indeed, the rest of the country. Something needs to be done to "rescue" these people from state power and the power and relentlessness of uneven and unequal "modern development".

ENVIRONMENT AND ECONOMICS

3

INTRODUCTION

A number of current views now recognize the intricate interdependence between the environment and the economy: the economy makes a noticeable impact on the environment and environmental quality in turn affects the performance of the economy. This view contrasts with the debate of the early 1970s where concern for environmental quality was interpreted to mean less economic growth and vice versa (see Pearce *et al.*: 1989). Thus, whereas earlier positions perceived both environment and economic growth as things apart, the emerging conventional wisdom is that economic activities if pursued without environmental considerations will in the long run limit the scope for growth and overall economic development. Indeed, population growth, economic growth, and attempts at improving the quality of life constitute major factors which put pressure on natural and environmental resources. Although effective resource pricing and the adoption of the strategy of sustainable development have been suggested as a path towards more efficient resource use and the attainment of greater harmony and balance between environment and development throughout the globe, the integration of environmental considerations into economic activities is only just beginning.

ENVIRONMENT AND ECONOMICS: A CONTEXTUAL APPRAISAL

Environmental degradation is often linked to both production and consumption patterns of goods and services in society, as well as the misallocation of land, water, and other environmental resources amongst various uses and users. Traditionally, neo-classical welfare economists argue that one way to arrest degradation in the process of development is to make consumers and producers of culprit goods and services pay the full or part cost of the damage to the environment. One major problem, however, is the difficulty of assessing the value of environmental resources. For some people for example, the argument is that the real and potential value of tropical forests and plant species are inestimable. Although cost-benefit analysis has often been proposed to guide allocation of cost in order to reduce external diseconomy such as environmental pollution, it is often difficult to decide objectively on the scale of the social desirability of certain courses of action, since all costs imposed on culprit goods and services tend to affect social welfare. The problem of the cost-benefit approach is not only determining social welfare and translating social welfare indicators into monetary terms but also assigning value to environmental resources which traditionally are not "marketed" and thus given "market value". External diseconomies or economies are not normally valued in market terms. Where they are, many natural resources and environmental services are liable to "under-pricing" in the sense that prevailing market prices do not reflect their marginal opportunity cost to society (Aylward *et al.*: 1991, p. 1).

In spite of these problems, some element of weighting of damage is necessary and can indeed be attained. The major issue thus is to arrive at some ways to limit pollution, degradation, wasteful resource use, or the depletion of natural resources by adopting appropriate regulation and control measures/policies which, through taxes, ensure acceptable levels of pollution.

Most valuation techniques in environmental economics aim to assess the social cost of environmental damage to a community; the cost of abating environmental damage, as well as the cost of effecting corrective policies in the area; technology; project design; or creating substitutes. Once such costs are fairly and acceptably assessed, a more effective way of managing environment and resources for sustainable development can be achieved. Although the term "sustainable development" has over 70 definitions, it has been seen by many as "a set of minimum conditions for development" such that the "conditions being based on the requirement that the natural capital stock should not decrease over time." The emphasis clearly is on constancy of the natural capital stock. This implies that there should be a non-negative change in the stock of natural resources and environmental quality. Taxes, pollution charges, government subsidies on pollution abatement measures, incentives to industries adopting clean technologies, scientific specifications on pollution levels, legal limits on pollutants or total ban on some products, population-resource balance, social justice, equity, etc. are viable avenues of achieving optimal levels of environmental degradation and thus sustainable levels of resource exploitation and development.

ECONOMICS OF ENVIRONMENTAL MANAGEMENT IN NIGERIA

A range of environmental problems face Nigeria today. The crisis of environmental degradation may be traced to a number of factors which themselves deserve some firm policy directions. These factors include rapid population growth, oil exploitation, expansion of imports, consumption of a range of goods and services, growing levels of industrial and manufacturing activities, as well as the inefficient use of farmland, especially through bush fallowing, and other forms of uncontrolled exploitation of nature's resources.

So far, there are no clearly formulated policies in Nigeria aimed at coordinating and monitoring the relationship between environment and economic development. This is in spite of all the efforts of the young Federal Environmental Protection Agency (FEPA) and the Natural Resources Conservation Council (NRCC). Rather, there are a number of scattered and weakly articulated programmes and legal rules which, when reviewed and analyzed may help to reveal the directions as well as limitations of environmental and natural resources management strategies in Nigeria. It must be stated at the onset that this review is handicapped by the limited data available, the range, nature and diversity of information required as well as the scope of the work itself.

National Development Plans and Environmental Sector Budget

National Development Plans

National development planning in the colonial period was characterized by the allocation of money to key primary and processing economic sectors such as agriculture and mining. Although the environmental sector was hardly integrated into development planning, colonial authorities gave ample recognition to environmental sanitation and health, especially in cities. Certain colonial laws also aimed to create green belts separating the traditional cities from the more modern and colonial enclaves such as the Government Reservation Areas (GRAs).

Besides this, the first game reserve - Yankari - was created in 1956 and the second, Borgu, in 1962 to protect forest and wildlife resources. On the whole, colonial economic development policies and plans contained little or no stringent rules to conserve agricultural land, mineral and other natural resources or to limit industrial, water and air pollution. The major economic interest was to have cheap access to essential raw materials to service European industries. Thus resources were exploited and exported for profit without much regard to environmental impacts and consequences.

Nigeria's first two post-independence development plans, 1962 - 1968 and 1970 - 1974, made no specific reference to the environment, although there were provisions for sanitation and the development of more forest and game reserves in the agricultural sector, which were declared as protected areas. About 9 parks and game reserves were created by 1973 and 21 remained at proposal stage.

The Third National Development Plan - 1975 - 1980, was the first to

consider the environmental component of economic development. In the plan, government demonstrated its concern for environmental protection, pointing to the need to include environmental considerations into all facets of national development planning so that national economic growth and prosperity may be accompanied not only by improvement in the quality of life for the people but also an enhanced physical environment and reduced degradation and pollution levels. Environmental considerations and management objectives were further reinforced in the Fourth National Development Plan, 1981-1985 (Nigeria's last formal plan until the introduction of the Rolling Plans in 1990). The Plan called for the introduction of environmental considerations into all major economic, industrial and social activities, especially at the onset of projects in order that the environmental impacts of such activities can be anticipated and minimized. In addition, the plan contained a provision that all major industries procure infrastructure or facilities to monitor the environmental impacts of their activities and abate pollution, although, this remained purely at an advisory level. The Plan also made a general suggestion that appropriate research and documentation be made of the environmental characteristics of Nigeria. Through such studies, the aim was to establish minimum environmental quality and pollution standards which may be enforced using legal instruments and pollution charges.

But, perhaps, the most important environmental management novelty contained in the Fourth Plan was that an Environmental Impact Statement (EIS) should form part of the feasibility study of any major public and private sector project, so that adequate and acceptable project design could be attained to cushion or eliminate the environmental problems that may be associated with a particular project. The Plan contained a general provision for environmental education in order to heighten and sustain the level of environmental awareness and consciousness of the general public.

Sadly, none of these laudable provisions were enforced or implemented during the plan period. It was only with the creation of the Federal Environmental Protection Agency (FEPA) in 1988 that there are now efforts to establish a national guideline on pollution control which was recently signed into law.

Not only were specific programmes of environmental protection lacking in Nigeria, viable, integrated and coordinated institutional frameworks to handle aspects of environmental degradation in national economic development were absent, until the creation of FEPA.

Recently, Nigeria's first National Rolling Plan, 1990-92, made broad provisions for the development of the Petroleum sub-sector, with emphasis on increased exploitation and utilization of hydrocarbon resources as well as the commercialization of operations. Sadly, however, there was no specific provision for the sustainable development and utilization of these resources, although the plan affirms that "environmental protection and planning shall receive greater emphasis to minimize environmental pollution and ensure a cleaner and safer environment" (see Federal Ministry of Budget and Planning 1990, p. 137). One remarkable and positive aspect of this promise is that it is also envisaged that a comprehensive environ-

mental protection law will be enacted to provide the framework for environmental regulation, especially in the area of oil pollution (p. 132). There is also an increasing realization in government circles that the petroleum industry has for long been operated without adequate attention to the environment and the welfare of those who reside in oil producing and exploration areas. As the 1990-92 plan acknowledges, environmental pollution, oil spillages and other hazards have constituted a danger to the safety and security of life and property of the inhabitants of oil activity areas and have led to the disruption of economic life of the people among other things (Federal Ministry of Budget and Planning 1990, p.135).

Budgeting for the Environmental Sector - An Assessment

The weak attention to environmental management matters by government was also reflected in environmental sector budgeting. The 1981 - 1985 plan was the first to make specific allocations to environmental planning and protection. A small sum of N25 million was assigned to the sector, representing only 0.001% of the total budget when compared to a range of 4-5% allocated in some more developed countries (Defence alone took about 10% of Nigeria's budget over the last one decade). Apart from this budgetary allocation, however, Nigeria's National Revenue Allocation Act makes a provision of 1% of Federally-generated revenue to the Ecological Fund which is meant to tackle problems of erosion, desertification, flooding, pollution and other national environmental disasters. Although this allocation could still be viewed as grossly inadequate, it is doubtful whether the fund was ever actually fully utilized. Gross underfunding is evident in the fact that the first National Environmental Sector Plan studies, 1984 - 1995 projected N2.0 billion for solid waste, oil spillages and air pollution management for 1984 alone, and N3.5 billion for 1995. (This later figure must be considered a gross underestimation in view of the introduction of the Structural Adjustment Programme (SAP) in the mid 1980s and the devaluation that accompanied the naira over the period). The estimate from the Environmental Sector study for 1984 alone represented about 4% of the total public and private earnings at 1983, and 16.7% of public sector income. This implies that the environmental sector in Nigeria is far from being adequately funded. In 1988, the Federal Military Government through the President at the launching of the National Policy on Environment, promised to provide FEPA with N500 million annually for two years to facilitate the establishment of facilities and infrastructure to enable it to pursue and prosecute the national environmental policy goals, objectives and standards (see FEPA, 1989). It is not known how much of this promised sum was actually redeemed, but it is doubtful that a significant proportion was released, as FEPA in spite of its recency could have made more remarkable impact on managing Nigeria's environment.

The environmental sector budget shows no remarkable improvement in the 1990-92 First National Rolling Plan. This is in spite of the current emphasis on integrating the environmental component into national development. Table 3.1 shows the sectoral distribution of the public

capital programmes during the plan period. The economic sector dominates with about 42.23% share of the estimated N46.581 billion to be spent while the regional and environmental development sector has 21.49%. It is not clear what provision has been made for environmental protection here, since this sector embraces rural infrastructures (2.01%), water supply (8.13%), urban and regional planning (2.44%) and others (8.91%). However, it is expected that the concentration of capital programmes on the economic sector covering agriculture, manufacturing and transportation will intensify both the scale of resource exploitation and use, and consequently environmental degradation.

TABLE 3.1: SUMMARY OF SECTORAL DISTRIBUTION OF THE PUBLIC CAPITAL PROGRAMMES AT CURRENT PRICES

	N Billion	%Share
1.Economic Sector		
Agriculture (excluding rural Dev. DFFRI)	8.303	17.82
Manufacturing	1.995	4.28
Transport	5.886	12.64
Others	3.490	7.49
Sub-Total	9.674	42.23
2.Social Sector		
Education	4.448	9.55
Health	2.728	5.86
Others	2.167	4.65
Sub-Total	9.343	20.06
3.Regional & Environmental Development		
Directorate of Food, Road and Rural Infrastructure	0.936	2.01
Water Supply	3.786	8.13
Urban & Regional Planning	1.137	2.44
Others	4.150	8.91
Sub-Total	10.000	21.49
4.Administration		
Defence and Security	2.294	4.92
General Administration	5.261	11.30
Sub-Total	7.555	16.22
5.Grand Total	46.581	100.00

Source: Federal Ministry of Budget and Planning (1990, p.24).

A clearer picture of the environmental sector budget emerges from the summary of the financial position of all governments in Nigeria in the 1990-92 Plan Period. It is estimated that the total Federal Collectable Revenue will be N157,079.3 million out of which N148,764.3 million will be credited to the Federation Account. The amount to be set aside for the amelioration of ecological problems in the mineral producing areas will be

1.5% of the mineral revenue or N1,873.3 million while the amount to be set aside for the amelioration of ecological problems (Ecological Fund) will be 1% of the Federation Account or N1,487.7 million (see Federal Ministry of Budget and Planning 1990, p.33) Although the amount is small in proportional terms, some achievements could still be made in the environmental front if the money allocated is made available and judiciously utilised.

There is a National Committee on Ecological Problems set up in 1982 which draws on the Ecological Fund to tackle ecological problems. Its achievements cannot be described as remarkable from the viewpoints of the amount spent on projects, and the scientific and professional management of ecological problems. Some of the 'notable' programmes it has accomplished include coastal erosion control efforts at Jamestown in Akwa Ibom State and Queen's Town in Rivers State as well as the channelization of Ogunpa River in Oyo State at a total cost of N12.467 million while another N28.591 million was spent on soil erosion projects at Imo, Rivers, Cross River and Anambra States. The Ecological Fund has been used to develop nurseries to control desert encroachment while the sum of N21 million was used to combat water hyacinth problems in Nigerian waters (see Federal Ministry of Budget and Planning 1990, p. 303). This shows clearly that despite the underfunding of environmental programmes and the magnitude of the environmental problems facing the country, gross underutilization of budgetary allocation to the environmental sector is apparent. Box 3.1 illustrates clearly Federal Government's approach to spending on ecological problems.

BOX 3.1: NIGERIA SPENDS N1BILLION ON NATURAL DISASTERS IN 5 YEARS

In the past five years, at least N1 billion has been spent by the Federal Government to mitigate the effects of natural disasters. It is from the one per cent ecological problems fund.

Of this amount, coastal erosion and flood received N447.60 million; desertification and drought control (including sand dune fixation), N122 million; and pest control (including quella birds, locusts, and sigatoka disease), N67 million.

Others are earthquake, N5.10 million; assistance to neighbouring countries for pest control, N20 million; relief assistance to states through the National Emergency Relief Agency (NERA), N137 million.

Of the assistance to states, N52 million was spent on drought in 1984 and 1987. In 1988, N85 million was spent on flood.

The director/chief executive of the Federal Environmental Protection Agency (FEPA), Dr. Evans Aina, who spoke to reporters yesterday on the launching of the International Decade for Natural Disaster Reduction (IDNDR) in Lagos, said although the Federal Government's efforts in hazard mitigation had reduced the magnitude of natural disaster effects, Nigeria still had a long way to go.

continued overleaf

The technological base and the financial requirement for monitoring, establishing early warning systems and responding to natural disasters to eliminate loss of lives and properties are beyond the capacity of any developing nation.

Experts are worried because, according to Dr. Aina, recent events have shown that Nigeria can no longer rule out the possibility of earthquakes as tremors now occur periodically in the presumably stable basement complex.

Over 10 extinct volcanoes are known to have occurred in Borno, Gongola and Plateau states.

They were active up until about 15 to 18 million years ago, Dr. Aina said, adding that these volcanoes might become active craters in areas of crystal weakness.

The effects of reported natural disaster phenomena were listed. They include wind gusts associated with squally lines, which damaged homes at the beginning of the rainy season in virtually all areas of Nigeria.

Dam structures reportedly gave way due to flooding and there was erosion caused by heavy rains.

The Bagauda Dam in Kano caved in August 1988 when the volume of water in the reservoir increased from the designated 22 million cubic litres to 42 million cubic litres.

This Dr. Aina said, led to its collapse, which claimed 147 deaths and an estimated N650 million property.

States were urged to establish committees on IDNDR, which will collaborate with the IDNDR national secretariat to ensure international co-operation and assistance for disaster reduction.

In compliance with the resolution of the UN at its 44th General Assembly last year, the Federal Government established the national committee for IDNDR under the Presidency with FEPA as the secretariat and focal point.

Source: The Guardian Newspaper, October 18, 1990

Outside the Ecological Fund, a treasury component sum of N373.360 million is allocated to the petroleum sub-sector in the 1990-92 Plan, out of which only N3.88 million (or 1%) is allocated to anti-pollution programme embracing the installation of pollution monitoring facilities along Rido/Romi River at Kaduna Refinery area, the new Calabar - Bonny River amongst others. Thus the enormous earning from petroleum is not matched by any real financial commitment to environmental programmes even in the 1990s. This situation also contradicts the rather firm policy commitment to environmental pollution stated earlier. Further, specific provision for environmental planning and protection outside the Ecological fund by Federal and State governments is not encouraging. The total expenditure envisaged for this sector in the 1990-92 plan is N267.485 million in which state governments will spend N227.485 million and the Federal Govern-

ment N40 million which will be allocated to the Federal Environmental Protection Agency (see Table 3.2). Perhaps, even more disturbing is the fact that the Local Governments which are at the grassroots have made no provision for environmental planning and protection in the Plan.

Overall, environment and economic development planning in Nigeria is characterized by overemphasis on economic growth and gross underfunding of the environmental sector. Although, the environmental impacts of economic activities are increasingly being built into national

TABLE 3.2: SUMMARY OF ALLOCATION TO ENVIRONMENTAL PLANNING AND PROTECTION 1990-92 (N MILLION)

State	State Allocation	L.G.A. Allocation	Total Allocation
Akwa-Ibom	0.00	0.00	0.00
Anambra	0.00	0.00	0.00
Bauchi	5.000	0.00	5.000
Bendel	0.00	0.00	0.00
Benue	4.017	0.00	4.017
Borno	0.00	0.00	0.00
Cross River	0.00	0.00	0.00
Gongola	1.018	0.00	1.018
Imo	0.00	0.00	0.00
Kaduna	0.00	0.00	0.00
Kano	0.00	0.00	0.00
Katsina	0.00	0.00	0.00
Kwara	0.00	0.00	0.00
Lagos	203.00	0.00	203.00
Niger	0.00	0.00	0.00
Ogun	0.00	0.00	0.00
Ondo	1.050	0.00	1.050
Oyo	0.00	0.00	0.00
Plateau	11.00	0.00	11.00
Rivers	2.400	0.00	2.400
Sokoto	0.00	0.00	0.00
MFCT/FCDA	0.00	0.00	0.00
Total all States and MFCT/FCDA	227.485	0.00	227.485
Federal	40.000	0.00	40.00
Grand Total	267.485	0.00	267.485

Source: Federal Ministry of Budget and Planning (1990, p.306).

development planning, especially in the last one decade or so, and although there is now emerging emphasis on sustainable development that anticipates present requirements and the needs of future generations, there is still much to be done in Nigeria in terms of the initiation of programmes and the funding of such programmes to realise some of the laudable goals and objectives contained in national development plans. It is only hoped that the periodic rolling plans initiated in the 1990s will not only contain proposals for a more integrated view of environment and economic development but also specific and adequate provision for the funding of the environmental sector.

Natural Resources and Pricing Instrument

Nigeria is endowed with immense natural resources relative to other nations in Africa and even on a global level. The question is: What efforts have been made to conserve or protect these resources to ensure their judicious exploitation and use in the process of national economic and industrial development?

First, it must be said that, in general, not much has been done to establish the value of natural sceneries and their tourism potential, especially our mountain sceneries, valleys, rivers, wetlands, forest and game reserves. To do this entails introducing effective and correct pricing which must take into consideration the environmental impacts of resource use, the value of the resources to present and future generations, including, direct and indirect use value as well as bequest/recreational use value. It must also examine the Willingness To Pay (WTP) for their preservation on the part of the public through, for example, taxation, entry charges, and renewal or damage cost on the part of various users. Nigeria, however is yet to develop a comprehensive national system or technique of natural resource valuation.

The second major point pertains to the absence, in general of specific charges on damages to natural ecosystems such as fresh water swamps, air, water, soil vegetation etc. Especially, one that is commensurate with the degree of degradation that is caused and investing the proceeds of such resource damage into environmental renewal in order to ensure that the future generation inherit a similar if not better resource value from the present.

The efforts of Nigeria to date are concentrated on granting concessions on land needed for mining and other natural resource exploitation as well as the imposition of certain legal charges or fines on trespassers. A major feature of the policy is that the direct earnings and taxes arising from such concessions, for example, in the area of forestry and mineral resources are viewed essentially as nationally generated revenue or income and thus as contributions to the Gross National Product. Very little thus is ploughed back into environmental renewal and protection. A review of some of the legal provisions will provide some insights into how resources are valued and treated in Nigeria.

Forestry and Wildlife Protection Pricing and Regulatory Mechanisms

Government effort in forestry and wildlife protection is concentrated on declaring forest game reserves and the imposition of fines or terms of imprisonment on illegal loggers, poachers and other trespassers. There are over one hundred protected forest reserves in the country, about 32 game reserves/sanctuaries and four national parks including the premier Kainji Lake Park created in 1976 and Yankari upgraded only recently in 1991. There are no uniform forestry laws in the country, as each state has the mandate to declare reserves and regulate the use of forestry resources, while national parks are usually declared and managed by the Federal Government. Concessions for logging are usually granted and reviewed by state and local government forestry departments to sawmillers who are also encouraged to plant and establish tree farms. Trespassers are fined up to N100 or in the alternative six months imprisonment or both. In national parks, poachers are fined up to a total of N2,000 - N3,000 for illegal entry, possession of firearms and weapons and the killing of game, or in the alternative face up to three years imprisonment. While laws on parks may have been a little helpful, the forestry laws are rather liberal. Apart from the issue of corrupt practices on the part of forest guards and officers, the laws have not served to deter illegal logging. Further, concessions for logging are generous relative to the value of natural timber resources especially in monetary terms and the years needed for regeneration and relative to the profit made by sawmillers themselves.

Unsurprisingly, the rather generous climate created for legal and illegal logging, bush burning and fuel wood consumption have led to a rapid rate of deforestation in Nigeria causing considerable environmental damage (see Ayeni 1985). FAO reports show that Nigeria still destroys about 600,000 hectares of forest annually and replenishes only about 25,000 hectares (see Okafor, 1988). Nigeria's forest resources are indeed rapidly depleting.

The rate of consumption of forest products is on the increase and reforestation programmes cannot be said to match the rate of consumption to achieve sustainability. There are about 1,353 wood-based factories in the country today, made up of 1,330 sawmills, 8 plywood and veneer mills, 3 particle boards, 2 match splint factories, 7 wood treatment plants and 3 pulp and paper mills. Altogether they have a total log capacity of some 12.605 million cubic metres per annum (see Federal Ministry of Budget and Planning 1990, p.98)

The problems of the forestry subsector include poor environmental management, poor land use through shifting cultivation practices, deforestation, scarcity of inputs such as conservation, wildlife and natural habitat loss, problems of poaching, as well as shortage of skilled professional manpower in forest resources management. Government is trying to tackle some of the problems through increased forest regeneration and conservation particularly through the creation of forest reserves and national parks (Ibid, pp. 98 - 99).

The sum of N453.582 million was allocated to the forestry subsector in the 1990-92 Plan, in which the Federal Government will spend about

N60.274 million, the States and Local Governments N302.44 and N89.97 million respectively. The major programmes will be in the area of environmental forestry, plantation forestry, indigenous fruit trees development, forest resource survey, wildlife conservation and management as well as manpower development.

It is estimated that over N400 million would be required for reafforestation between 1989 and 1999, involving the planting of about 400,000 hectares of forest trees. For Nigeria to protect effectively her forestry and wildlife resources to serve the needs of the present and future generations, a more coordinated programme of regeneration at the grassroots, a more efficient resource pricing system as well as management and ecologically-sustainable strategies founded on participatory development principles are certainly required. The approach of financing forest regeneration through Agricultural Development Programme (ADP) and World Bank assisted loan facilities is not the best, as it is capital intensive and pays little attention to the issues of conservation, resource pricing, community participation and public environmental education which are the major factors affecting deforestation.

Pricing Petroleum Exportation, Production and Pollution

Petroleum, a non-renewable resource is another vital area to examine the implications of existing policies and legal rules on environmental protection and damage. Oil exploration activities are dominated by five major companies - Shell, Gulf, Elf, Mobil and Phillips which have joint ventures with The Nigerian National Petroleum Corporation (NNPC). Concession areas for exploitation and exploration cover virtually all of Bendel, Rivers, Imo, and Akwa Ibom States and large sections of Benue, Plateau, Niger, Sokoto States and the Chad Basin. The major areas in which the oil industry affect the environment include oil spill on land and water; gas flaring and atmospheric pollution; as well as land and air pollution associated with the refining and petrochemical industries.

In 1987 petroleum formed 92.19% of Nigeria's export of major commodities and 94.9% in 1989. In 1958, Nigeria exported only 3.957 million barrels of crude oil valued at N5.2 million. By 1969, this rose to 197.246 million barrels valued at N301.2 million; while by 1979, she exported 812.727 million barrels valued at N10,166 million. In 1989, the total export was 525.869 million barrels valued at N55,016.8 million. In 1989, petroleum revenue consisted of some N41,334.4 million or 82.2% of the total Federal Government revenue of N50,272.1 million (see Obadan 1991, pp.164, 191 and 192). However, in spite of the enormous revenue generated from the oil sector through taxes and concessions granted oil companies, very little attention is paid to the social, economic and ecological costs of oil exploration and environmental degradation arising over the years. Only 1% of Federal revenue is devoted in principle to the management of ecological problems and damages nationwide. This issue is taken up in the ensuing discussion.

The rent paid on land by oil companies in areas of operation is quite minimal and is neither commensurate with the impact of exploitation on the environment to the level of profit made by the companies and govern-

BOX 3.2: GROUND RENTS RECOMMENDED FOR THE OIL INDUSTRY

1. Dry land	N2,500 per hectare per annum
2. Inland swamps	N2,000 per hectare per annum
3. Marine Swamp	N1,500 per hectare per annum
4. Sand beaches	N1,000 per hectare per annum

Source: Gberesu 1988, p. 48

ment. For the purpose of the oil industry, the environment is classified into four major types with specific ground rents recommended. These are shown in Box 3.2.

This rent which is the recommended rate for land required for oil exploitation and production processes is subject to review every ten years and where there is permanent damage to land, the rent value as recommended is capitalized by making a one-time payment for the value of land based on the term or years stated in the certificate of occupancy. In addition, 10% of the annual rental value is to be paid as interest (see Gberesu 1988, p. 48). Gberesu (1988) reports that the rates used by the oil companies are far below the recommended rates.

Outside rent, the recommended compensation rates by the Technical Committee set up by government in 1979, on the application of the 1978 Land Use Act as it affects the oil industry also shows Nigeria's rather extremely liberal attitude towards agricultural, aquatic and land resources. The Federal constitution provides that compensation be paid for damage to buildings, economic trees and crops by any person who surveys, digs or lays pipes for the supply and distribution of energy (see Adewale 1988). Table 3.3 and 3.4 show the recommended compensation rates for annual economic crops and trees. The rate of compensation varies from about N63 per hectare of bitter leaf to N2,825 per hectare of yams for some food crops while for economic perennial trees and other plants, the rate varies from 15k per alligator pepper to N50 per hardwood tree such as mahogany, Iroko Tree, Obeche and Abura.

For fresh water fish species in rivers, creeks and fish farms, the rate varies from N2 per sq. meter in water for breams species to N20 per sq. meter in water for prawns. Compensation rate for wildlife species are divided into three schedules. The first schedule includes Chimpanzee, immature elephant, manatee and hippopotamus valued at N3,000 each. The second schedule includes monkeys, crowned crane and vultures valued at N300 each as well as mature elephant valued at N2,500. The third schedule includes bushbuck, duikers, N300 each; hartebeest, kob and waterbuck, N200 each; red fronted gazelle, N500; antelope, N400; hornbill, pelican etc., N100 each warthog, grass cutters, N150 each; bushcows, N1,000 and other animals N100. From these schedules of compensation for wildlife, agricultural and forest resources the pertinent questions to ask are: Whether they are compatible with the extent of ecological damages and disruptions? Whether they are adequate? And what specific efforts

**TABLE 3.3: COMPENSATION RATES FOR ANNUAL CROPS
IN OIL EXPLORATION AREAS**

Annual Economic Crops	1979	1979	1983
	Recommended Maximum Compensation Rate (Naira)	Rate per Stand of stem/ Bunch per Hectare (Naira)	Recommended Maximum Compensation Rate (Naira)
Millet	300.00	-	375.00
Guinea Corn	400.00	-	500.00
Soya Beans	110.00	-	137.50
Irish Potatoes	350.00	-	1,887.50
Acca	300.00	-	375.00
Baba	-	.50 per stem	62.00
Duma	400.00	-	500.00
Wheat	2,000.00	-	2,500.00
Risga	120.00	-	150.00
Beni Seed	200.00	-	250.00
Maize	500.00 or	.25 per stand	625.00
Rice	1,100.00	-	1,375.00
Beans(Creepers)	230.00 or	.15 per stem	290.00
Beans(Standing)	230.00 or	.15 per stand	290.00
Groundnuts	600.00 or	.10 per stem	750.00
Cotton	250.00 or	.15 per plant	310.00
Yams	2,500.00 or	.80 per stand	2,825.00
Coco Yam	500.00 or	.15 per stand	625.00
Cassava	800.00 or	.20 per stand	1,000.00
Sugar Cane	2,000.00 or	.10 per stem	2,500.00
Pepper	1,060.00 or	.40 per plant	1,250.00
Kenaf(Jute)	750.00	-	950.00
Tobacco	1,000.00 or	.45 per plant	1,250.00
Sweet Potatoes	500.00 or	.20 per stem	625.00
Other Vegetables eg. carrots, cabbages, lettuce, onions, pumpkins, okra	500.00 or	.20 per plant	625.00
Bitter Leaf	-	.50 per plant	63.00
Tomatoes	1,000.00 or	.45 per stem	1,250.00
Melon	750.00 or	.30 per stem	910.00
Gourd	-	.70 per stem	90.00

Source: Gberesu (1988, p.50)

are made to renew such resources in our environment? As it were the major focus seems to be economic.

Oil spill and pollution is another contentious issue in the Nigerian environment. Between 1976 and 1986, there were 2005 reported cases of oil spills made up of 2,038,210.5 barrels out of which only 534,994.6 barrels

TABLE 3.4: COMPENSATION RATES FOR ECONOMIC TREES AND PLANTS IN OIL EXPLORATION AREAS

Economic Tree Type	Rate Per Tree (N)	New Rate Per Tree (N)
1. Mango	20.00	25.00
2. Coconut	12.00	15.00
3. Guava	2.00	2.00
4. Pawpaw	2.00	2.00
5. Locust Bean Tree		
(a) Planted	30.00	37.50
(b) Other types	15.00	18.75
6. Sheanut Tree	10.00	12.50
7. Raphia	2.00	2.50
8. Cashew	5.00	6.25
9. Banana	2.00	2.50
10. Plantain	3.00	3.75
11. Pine apple	3.00	1.25
12. Bamboo	1.00	1.25
13. Oil Palm Tree	1.00	1.25
(a) Plantation types	15.00	18.75
(b) Other types	10.00	12.50
14. Orange/Tangerine	20.00	25.00
15. Coffee	3.00	3.75
16. Bagaruwa	1.00	1.25
17. Kola trees	15.00	18.75
18. Raphia Palm	10.00	12.50
19. Rubber	3.00	3.75
20. Ogbono	15.00	18.75
21. Star Apple	5.00	6.25
22. Oha	2.00	2.50
23. Nmimi Tree (Pepper Fruit)	3.00	3.75
24. Bitter kola	5.00	6.25
25. Grape fruit	20.00	25.00
26. Lemon	20.00	25.00
27. Lemon Grass	.20 /bunch	.25
28. Lime	20.00	25.00
29. Calabash Tree	2.00	2.50
30. Garden Eggs (Yalo)	.10	.15
31. Alligator pepper	.10	.15
32. Camwood	1.00	1.25
33. Ugiri	3.00	3.75
34. Hardwoods e.g. Mahogany, Iroko, Abura, Obeche, etc	40.00	50.00
35. Softwoods e.g. Chestnut	20.00	25.00

continued overleaf

were recovered and 1,513,715.9 barrels unrecovered and retained in the environment (see Ifeadi and Nwankwo 1988). Compensations are paid under the Land Use and Oil Pipelines Acts for damages caused by leakages. Often, the cost of spill is computed to exclude ecological damages and renewal. Spill costs are examined in terms of unrecoverable amount of spilled oil, cost of repairs/replacement of damaged pipes, cost of clean-up, personnel man-hours, cost of shut down in operations and compensation payable to individuals or communities. For example, the Abudu pipe oil spill of 1982 in Bendel was estimated at N1,3395,817.60 using such variables or criteria (see Orubime 1984, p. 121). This approach of estimating the impact of oil spill is not only inadequate since it excludes ecological and social/cultural considerations but

grossly unfair to the future of our environment. Furthermore, several communities and individuals are now unable to get fair compensation

because of inability to establish the extent of damage to physical structures, aquatic life, venerated objects and farmlands or loss of job. Most claims are viewed as ingenuine and a number of spills are attributed to sabotage (see Adewale 1988) inspite of the evident disruption to the occupational and socio-economic life of the people.

Rather surprisingly, while little effort is paid to assessing the ecological impacts of oil exploration and the cost of damage, and while no comprehensive legislation exists in Nigeria dealing with compensation as a result of oil spills (see Adewale 1988), the federal government has promulgated a number of stringent rules aimed at tack-

ling the problem of sabotage. For example, the Criminal Justice Act of 1975 provides for a fine of N2,000 or double the value of damage (whichever is higher) for any one who wilfully destroys or damages oil pipelines and installations. Lately, Decree 20 of 1984 provides for death penalty for persons tampering with oil installations. This was modified by the special Miscellaneous Offence Amendment Decree of 1986 to life imprisonment. It is necessary for government to take even more seriously the issue of the environmental cost of oil exploitation in the Niger Delta and areas bordering the coast in order to preserve and protect the value of our fresh swamps and wetlands for future generations.

Apart from ecological issues, and in terms of overall response to communities affected by oil spills, the situation cannot be described as satisfactory. The National Emergency Relief Agency set up by Decree 48 of 1976 collects both emergency relief supplies and funds from local and foreign sources for disbursement and distribution. Thus, as a result of the

TABLE 3.4: COMPENSATION RATES FOR ECONOMIC TREES AND PLANTS IN OIL EXPLORATION AREAS (Continued)

Economic Tree Type	Rate Per Tree (N)	New Rate Per Tree (N)
36. Baobab	5.00	6.25
37. Date Palm	5.00	6.25
38. Sisal	2.00	2.50
39. Atilitiber	2.00	2.50
40. Eucalyptus	2.00	2.50
41. Rimi (Silk cotton tree)	20.00	25.00
42. Goriba	5.00	6.25
43. Tsamiya	2.00	2.50
44. Gigiya	2.00	2.50
45. Pear	10.00	12.50
46. Avocado	12.00	15.00
47. Dinya (breadfruit)	3.00	3.75
48. Cactus	.05	.07
49. Neem (Dongo yaro)	2.00	2.50
50. Cocoa	6.00	7.50
51. Gmelina	2.00	2.50
52. Mangrove	50.00/ ha.	62.00
53. Gum Arabic	2.00	2.50
54. Plum (Native)	5.00	6.25
55. Oil bean	3.00	3.75
56. Mat plant	1.50/bunch	2.00
57. Castor oil tree	1.00	1.25
58. Walnut (Ukpa)	5.00	6.25
59. Breadfruit (Ukwa)	6.00	7.50
60. Indigo	1.50 /plant	2.50

Source: Gberesu (1988, p.51).

oil spill in Rivers State of 1980 and Bendel State of 1983, which released 200,000 barrels into the environment, the Federal Government through the Relief Agency allocated N1.2 million and N800,000 respectively to Rivers and Bendel States to aid the victims of the oil spill which also destroyed animal species as well as rendered water unfit for drinking; and heavily polluted the creeks, swamps and streams in the area. The spill also caused the mass exodus of people and made many homeless (see Carew 1991, pp. 3-4).

Pricing Water Resources

Water resources and quality regulation in Nigeria is vested in some 11 River Basin Development Authorities. The Federal Acts of 1968, 1971 and 1973 empower these authorities to control and monitor methods, and oil pollution on navigable waters while the prevention of pollution on water courses Act of 1969 also empowers the Petroleum Resources Minister and NNPC to monitor and control water and land pollution arising from oil spills. Although fishing on the sea coast especially by foreign vessels may require the issuance of licence and payment of certain fees in order to gain access to Nigeria's territorial water, in general, water resources pricing is yet to be developed in Nigeria in order to guide water resource allocation for irrigation, home and industrial consumption as well as policies to conserve water and aquatic resources. Similarly, the absence of protective laws/penalties on landscapes and physical sceneries has led to the creation of excavation surfaces, burrow pits in the process of mining for sand, stones and minerals such as tin and coal, leading to the damage of beautiful sceneries in Nigeria.

The above situation shows the desirability of evolving a more effective pricing of certain resources such as water, rural land, rock and scenic resources, grazing lands, forests, rivers, waterlands, marshlands, sand deposits and other natural habitats which until now are largely not considered as scarce goods or resources. As Aylward et al (1991, p. 5) point out a frequent cause of environmental degradation in developing countries is the failure of markets to reflect the full value of natural resources. Goods such as those listed above are often characterized by open public access. Even where certain restrictions are imposed, there is often the difficulty of policing or coordinating the range of multiple users, because of the locational remoteness of some of the resources, the wide expanse of spaces as well as the high cost of monitoring that may be involved. Under the circumstance of open access there is the tendency towards overconsumption of goods that are produced from these natural resources as well as excessive, sometimes, reckless exploitation of the resources. Further, conditions of seeming ubiquitous and abundance of resources; ill-defined property rights, economic and political uncertainties and imperfect information on market trends; public intervention in the market process, as well as monopolistic conditions and government subsidy of certain resources, all tend to exacerbate local resources consumption and cause environmental degradation and depletion of valuable natural resources.

Energy Use, Consumption and Environment in Nigeria

The issue of energy use, consumption and environment in Nigeria requires some closer scrutiny. At present, the level of domestic consumption of petrol is about 260,000 bpd (see Federal Ministry of Budget and Planning 1990, p. 134) and is expected to grow with increased population and the pace of developmental and economic activities. While government is attempting to reflect the full market value for petroleum products, there is no firm inclination towards integrated hydrocarbon resource conservation and energy policy for the nation. It would have been desirable, for example, to develop and subsidize mass transit systems across the country to reduce the quest for private car ownership and thus reduce levels of environmental pollution through increased burning of fossil fuel. It is already established that carbon dioxide from the burning of fossil fuels - coal, oil and natural gas together with deforestation contribute about 50% to 'green house effect' and global warming (see Conable 1989, p.3) Unfortunately, government policy is not moving towards reducing or regulating the consumption of fossil fuel. But as Conable points out, greater use of fossil fuel will determine the severity of the threat to the environment in most developing countries.

TABLE 3.5: ESTIMATED CONSUMPTION OF WOOD AND WOOD BASED PRODUCTS IN NIGERIA ('000M3)

Item	1985	1990	1995	2000
Roundwood	95,566	108,131	124,549	143,542
Fuel & Charcoal	87,587	100,638	116,321	134,502
Sawlogs & Veneer				
Logs	5,700	13,207	30,600	70,900
Other industrial				
round wood	2,279	5,280	12,235	28,348
Sawn wood	2,712	6,284	14,559	33,733
Veneer sheet	3,000	9,046	27,276	82,247
Plywood	151	455	1,373	4,140
Particle board	55	166	500	1,508

Source: Federal Ministry of Budget and Planning (1990, p.97).

Already, the consumption of fuel wood, timber and deforestation poses a major threat to the Nigerian environment. Table 3.5 shows that overall the consumption of wood and wood based products will continue to be on the increase to the year 2000, with fuel wood and charcoal forming a significant proportion of the consumption. The Rolling Plan, 1990-92 shows that although the actual production of forest products is difficult to determine, estimates indicated that there is an annual deficit in the supply of important forest products such as sawnwood, poles, veneer and plywood which are commercially exploited. Further, it is estimated that a deficit of 2.3 million cubic metres of industrial wood exist in southern Nigeria while there is a deficit of 5-8 million cubic metres of fuel wood and poles in the north (see Federal Ministry of Budget and Planning 1990, p. 97)

The increase in the consumption of fuelwood and charcoal from 87.587 million cubic metres in 1985 to 100.638 million cu.metres in 1990 as well as for other types of consumption particularly roundwood, sawnlogs, sawn wood and veneer sheet all of which will continue to grow remarkably to the year 2000 and beyond, implies, that greater efforts ought to be made to shift attention to alternative energy sources and product substitutes in order to save the Nigerian environment. A policy which could increase the use of gas for domestic cooking seems more appropriate to reducing fuel consumption particularly amongst rural communities which depend almost entirely on fuel firewood. The fact that petroleum products are now increasingly being priced along market lines may seem good for the future of the Nigerian environment but creates a conflict in the sense that the same policy may have encouraged recent increases in the use of fuelwood even amongst poorer urban communities and consequently the rate of deforestation. Thus in this respect, the price of cooking gas which for the standard cylinder has gone up from N5 to N25, representing about 400% increase under five years is bound to constitute a hindrance to the campaign to halt the consumption of fuelwood and deforestation. Such policies show clearly government's failure to articulate the linkage between resources pricing and environmental damage/degradation. Further, the damage to forest and wildlife resources, natural physical sceneries and Wetlands is bound to affect the potential of the tourism industry and the income derivable from that sector.

Natural gas is to be preferred to petrol because less carbon dioxide is emitted. The broad policy in the 1990-92 Rolling Plan has been to provide adequate encouragement to increase the consumption of gas for both domestic and industrial use (see Federal Ministry of Budget and Planning 1990, p. 137). However current increases in gas prices to both sectors which has received criticisms and complaints is bound to affect the realization of such a policy. Further, gas flaring is still common place and government acknowledges that not enough effort has been made to conserve the resource or encourage local use and export. "The implementation of the gas re-injection programme could not progress appreciably and gas flaring still continued unabated inspite of the penalty imposed for non-compliance" (Federal Ministry of Budget and Planning 1990, p. 135).

Today, the use of gas for cooking is concentrated in urban centres. Rural income is low and thus little able to afford the needed basic facilities such as gas cylinders and cookers. Indeed, a clear absence of an energy policy with focus on rural people who constitute 70% of the population and the bulk of environmental resource users is a major issue which poses a challenge to effective environmental protection and regulation in Nigeria. Without such a policy, there will continue to be further demand for fuelwood with wide implications for our environment. Recent efforts at the development of fuel efficient stove by the Nigerian Conservation Foundation and Bellerive Foundation for rural dwellers in Sokoto State to reduce fuelwood consumption may be seen as a step in the right direction.

However, the greater challenge perhaps lies in conducting research into and promoting the use of solar energy as some substitute for hydro-carbon products which cause pollution. Nigeria being a tropical country

enjoys abundant sunshine and sunlight for 12 hours a day which makes this form of energy attractive and solar energy is safe and clean. There should also be greater effort at the development of communication facilities such as telephones, post and telex, to reduce vehicle trips and thus the scale of pollution. By 1988, there were only 375,585 telephone lines to a population of about 100 million people and only 12,800 telex lines by 1985 (see Federal Ministry of Budget and Planning 1990, p. 179).

LAND VALUES

Land is an important environmental resource. Misallocation policies and inefficient use of land, especially for agriculture, are one of the major causes of environmental degradation in the Third World. Nigeria, however, in 1978 promulgated a Land Use Act which in principle transferred the administration of all urban land to state Governors and rural lands to local government chief executives. This was intended to create a more orderly and just distribution and more efficient use of land across the nation. The Act requested the issuance of certificate of occupancy (which could also be revoked by government) as a means of entitlement to land and its development and use. The payment of rent on occupied plots was to ensure more judicious use of land. However, due to poor enforcement, corruption and an unwieldy bureaucracy, land is still beyond the reach of ordinary people especially in major urban centres while speculation and liberal property rights has led to the emergence of absentee landlords, disorderly use, and degeneration of land. Large-scale acquisition of rural agricultural lands by multinationals, wealthy urban individuals and groups is also likely to contribute to degradation levels. In order to ensure more harmonious land use and achieve preservative values, it is not only necessary to reform aspects of the Land Use Act dealing with the scope or extent of land acquisition but also the adoption of a more imaginative style of enforcement and land administration. Moreover, with increasing population pressure, it is necessary to regulate shifting cultivation practices which is a major factor of land degradation in rural Nigeria, by ensuring that access to land is based on efficient use and some cost considerations which are also tied to equity and social justice.

THE IMPACT OF STRUCTURAL ADJUSTMENT PROGRAMME ON THE ENVIRONMENT

In 1986, the government embarked on a Structural Adjustment Programme (SAP), the impact of which may be difficult to assess at this stage in the context of the environment. However, there are certain socio-economic ramifications of the programme that deserve comments in the context of environmental quality. This includes the scale of agricultural development during the period as well as natural resources exploitation and local sourcing of raw materials for industries. Others are the local heightened rate of inflation, poverty and decrease in quality of life as well as increase in external debt and debt service obligation. We shall take each of these issues in turn in relation to real or potential environmental impact.

Some of the major components of SAP in Nigeria include overall deregulation, reduction in the levels of public subsidy of services and goods to obtain some market price, local self-reliance in production through foreign exchange deregulation and less dependence on imports.

There has been some considerable emphasis on local agricultural production through this policy, which may have meant an increased demand for land especially with rapid population growth over the years. The broad agricultural development programme of the 1990-92 plan has been to accelerate the production of various food items, increased supply of agricultural raw materials to local industries as well as projected increased earning of foreign exchange from certain cash crops. Certainly, the high rate of devaluation that accompanied SAP made agricultural cash crop production for export very attractive. The agricultural sector which grew at 1.8% in 1987, grew by 3.5% in 1988. Since 1986, the output of crops have increased. For example, rice output rose from 283,000 tons in 1986 to 297,000 tons in 1987 and is expected to reach 900,000 tons by 1992, while the total value of agricultural exports increased from N407.4 million in 1986 to N3,209.6 million in 1988 (see Federal Ministry of Budget and Planning 1990, p. 70 and p. 72). All these developments are expected to put further pressure on land and resource exploitation and thus affect environmental quality. Indeed, in recent years, the attraction of foreign exchange earnings has led to some remarkable expansion of the exploitation and export of rubber, cocoa, logs, hides and skin etc.

In the same vein, the local sourcing of raw materials which was anticipated under the programme because of the high cost of foreign exchange and imports, may also be creating some extra pressure on the environment in Nigeria. Table 3.6 shows that local sourcing of raw materials for various categories of industries increased overall during the period, especially for such industrial subsectors as textile and leather, chemicals and pharmaceuticals, domestic and industrial plastics and rubber, pulp, paper and paper products, all of which have more direct relationship to the physical environment, agriculture, land and pollution. The search for local substitutes implies greater demand for land and intensified large-scale cropping and monoculture which may increase land degradation.

Also, the higher rate of small-scale production and industrialization that is projected in an endeavour to reduce imports or create substitutes could imply indiscriminate industrialization and greater levels of environmental pollution. The activities of small-scale industries in the chemical and allied, textile, food processing, petro-chemical and polymer industries are less subject to monitoring for environmental pollution.

On the issue of heightened inflation, poverty, SAP and the environment, it is a well acknowledged fact that the 'gains' of SAP have been achieved at a social cost. High rate of inflation and general impoverishment of the masses through highly reduced purchasing power have accompanied SAP in Africa. Under this climate, the masses have strived to survive by adopting several strategies which affect and reduce environmental quality. As Aylward et al (1991 p. 9) and Pearce et al (1990) pointed out, under conditions of SAP and general impoverishment in the

TABLE 3.6: PERCENTAGE LOCAL SOURCING OF RAW MATERIALS BY VARIOUS INDUSTRIAL SUB-SECTORS

Sector	Jan-June 1987	June-July 1988	July-Dec 1988	Jan-June 1989
Food, Beverages & Tobacco	65.2	62.7	63.0	62.0
Wood & Wood Products (including Furniture)	77.6	N.A.	N.A.	N.A.
Non-Metallic Mineral Products	76.5	88.4	85.0	81.0
Textile Weaving Apparel & Leather	52.4	52.5	57.0	62.0
Chemicals & Pharmaceuticals	31.5	36.3	36.0	37.0
Domestic & Industrial Plastics & Rubber	20.6	53.0	48.0	45.0
Basic Metal Iron & Steel & Fabricated Metal Products	40.7	39.7	30.0	30.0
Motor Vehicles & Miscellaneous Assembly	21.8	N.A.	N.A.	37.0
Electrical & Electronics	10.3	N.A.	N.A.	10.0
Pulp, Paper & Paper Products, Publishing	13.7	15.3	42.0	46.0
Average	42.8	49.7	52.0	46.0

Source: Federal Ministry of Budget and Planning (1990, p.123).

developing world, poorer households often rely heavily on "non-marketed subsistence productions" for example, subsistence exploitation of natural resources in Nepal. In Nigeria, the survival strategy has embraced greater land fragmentation and small farm holdings, part-time farming especially amongst poorer and erstwhile richer households, petty small-scale trading, hawking, free-lance fishing, illegal logging activities, collection of forest leaves, fruits and other resources, small-scale production of toiletries and household goods, artisan works, crafts and art production, weaving, all which no doubt could lead to more varied, complex and

TABLE 3.7: SUMMARY OF EXTERNAL DEBT PROFILE 1990-92 (US\$ BILLION)

Category	1990	1991	1992
1. London Club	5.7	5.7	5.2
2. Paris Club	18.1	18.6	19.0
3. Multilateral IBRD	4.2 (3.9)	5.0 (4.6)	5.7 (5.2)
4. Others	7.8	8.2	8.3
Total	35.8	37.3	38.2

Source: Federal Ministry of Budget and Planning, 1990, p.37.

reckless exploitation of naturally occurring resources and increased land degradation and environmental pollution. Rural poverty has indeed meant more uncontrolled demand for land, water and forestry resources.

SAP may also have contributed to Nigeria's external debt. Table 3.7 shows the debt profile for the country. From an external debt of \$23.445 billion in 1987, \$27.289 billion in 1988 and \$32.1 billion in 1989, it rose to \$35.8 billion in 1990 and is projected at \$38.2 billion by 1992. This implies that greater pressure is being exerted on the nation in terms of debt service obligation which took 30.9%, 28.2% and 38.1% in 1988, 1989 and 1990 respectively, of the nation's foreign exchange earnings. Thus the nation may be exploiting more of her natural and environmental resources, particularly petroleum in order to meet such obligations.

EXTERNAL AID AND THE ENVIRONMENT

For over a decade and a half now, Nigeria has not been considered a poor nation because of her immense petroleum resources. As such, much of international assistance has come in the form of loans and grants, some targeted at specific programmes. Between 1976 and 1990, the European Economic Community (EEC) committed a total of 920 million European Currency Unit (ECU) or N8.834 billion on community assistance that included desertification control programmes in Northern Nigeria, rural production, human resource development, community health and infrastructural development, industrial development, SAP support programmes, pest control effort etc. (see Mordi 1991, p. 1). Specifically, N90 million was spent on afforestation in Katsina State, N336 million on the North East Arid Zone Development Programme in Borno State in 1988; N294 million in 1989, to abate drought in the Sokoto Environmental Programme, N2.7 million on feasibility study of the Oban Hills National Park in Cross River State etc. A major project that is still on under the European Development Fund and European Investment Bank is the Oil Palm Belt Rural Development Programme valued at N1.92 billion. Started in 1987, the programme entails the development of 25,000 hectares of palm trees in Yenagoa, Rivers State against the background of an estimated 200,000 tons deficit of crude palm oil in Nigeria. The programme also aims to improve the production efficiency of six oil palm estates (see Mordi 1991, p. 9). The programme though laudable in the context of national and overall rural development, may affect the local ecology because of its scale and the effects of monoculture. As Box 3.3 illustrates, a similarly wide range of assistance is being provided by the World Bank.

A major problem of this form of external assistance is that it increases the country's indebtedness. It is difficult to establish whether such programmes contribute to overall environmental quality given the fact that they are often capital-intensive, alien and fail to mobilise the people to be more environmentally conscious and to support conservation efforts. Also they do not adequately reflect the social and economic aspirations of the people, while as earlier argued indebtedness may increase resources exploitation. Nevertheless, there is need for the industrialised countries to support environmental programmes and economic policies that enhance

BOX 3.3: NIGERIA'S ENVIRONMENTAL PROTECTION PROGRAMME TO COST N5 BILLION

Environmental protection programme for Nigeria is to cost about \$500 million (N5 billion), Business Concord has learnt.

The World Bank representative in Nigeria, Mr. Tariq Husain, told Business Concord this while speaking on his bank's activity towards the development of an environmental protection facility for Nigeria.

According to him, the need to invest in environmental protection can not be ignored and the cost of such an investment actually depends on the number of projects in the programme.

The objective of the programme is to prepare environmental projects, promote environmental policy measures and strengthen the national institutions dealing with the environment.

In the case of Nigeria, he said the World Bank has gone further than the preparation of feasibility study on the environmental protection programme. The bank is also organising a workshop at which the report of the feasibility study would be discussed. The workshop is scheduled for this month.

The programme is being sponsored by the bank in conjunction with the Federal government and all the Agricultural Development Projects (ADPs) located in all the states of the Federation would be involved.

The ADPs' involvement stems from the fact that agriculture addresses a great number of projects under global environmental protection. Mr. Husain said such projects include afforestation to prevent desertification in the northern part of the country and also combating soil erosion in the south.

In addition, the programme would cover the prohibition of industrial pollution in industrialized areas, reduction of gas flares in the energy sector and general urban development.

Source: Business Concord Newspaper, April 2, 1991.

environmental quality in developing countries such as Nigeria, as well as reduce the debt burden which poses immense threat to economic and human survival and resource depletion, and thus overall environmental quality.

VALUATION TECHNIQUE AND COST OF ENVIRONMENTAL DAMAGE

There are no standard and established techniques for valuing the cost of environmental damage in Nigeria. Costing seem to be based more on mere estimates of damage to property and loss of agricultural products in cases of erosion, flooding, drought etc. Much of the estimates are prepared by estate surveyors, valuers, economists and agricultural economists. Under

TABLE 3.8: EFFECTS OF DROUGHT/FIRE IN BENDEL STATE 1982/83

Crops Destroyed	Area (ha)	Number of Trees	Estimated Total Value N
Cocoa	8,500	141,450,000	11,560,000
Oil Palm	2,500	375,000	948,000
Rubber	1,500	675,000	540,000
Cola-nut	100	15,000	45,000
Africa pear	10	1,500	6,735
Coffee	25	3,750	6,750
Plantain	10,000	10,000,000	3,000,000
Citrus	250	37,500	123,000
Duiker Nut	100	15,000	162,000
Estimated Total Value	22,965	152,572,750	18,579,735

Source: Co-ordinator's Report, November 1983 (see Igugu and Adebisi (1985).

this simple straight-forward value of costing, the direct use and intrinsic and extrinsic value of resources are often ignored. A typical example is the estimated cost value of crops lost to drought and fire in Bendel State in Table 3.8.

The table shows the nature of crops destroyed, the number of trees lost, the hectareage as well as the estimated monetary value of loss. In Table 3.9 showing the effects of fire on forestry resources the hectareage of total burnt area was simply converted to the monetary value of loss (Igugu and Adebisi 1988; Oseni 1985),

There is therefore the need to develop appropriate and viable national environmental damage valuation procedures that consider the social, economic and ecological costs of environmental damage, the cost of abating the damage and other costs related to corrective policies. The standardization of costing of environmental damage is vital to the formulation and implementation of appropriate abatement measures and the avoidance of spurious estimation.

However, recently, the World Bank's Environmental Action Plan (see World Bank 1990) has provided some current and detailed estimation of environmental damage costs in Nigeria, embracing different elements or components of environmental problems. The estimation shows in particular, the cost implications of inaction. In general, the report shows that if action is not taken to remedy Nigeria's major environmental problems of soil degradation, water contamination, deforestation, coastal erosion, gully erosion, fishery losses, water hyacinth and wildlife losses, the long-term impacts on Sustainable Net National Product (SNNP) will be in the range of \$5.1 billion per year or N51 billion per year. This estimation demonstrates the urgent need to consider a more concerted environmental control and conservation action plan as well as greater financial allocation to the environmental sector.

Erosion, particularly gully erosion, constitutes a serious problem in

TABLE 3.9: EFFECTS OF FIRE ON FORESTRY - FORESTRY RECORDS 1982/83

Location (State)	Total Area Burnt (ha)	Crop Losses	Estimated Value (N'000)
Anambra	1,108	Pulp wood and state plantation of Gmelina and pines	1,108
Bendel	1,156	Pulpwood plantations, opepe, poles plantations	1,156
Benue	800	Plantations	800
Kaduna	140	Forestry plantations	140
Ondo	2,571	Pulpwood plantations mostly Gmelina	2,571
Ogun	7,204	Pulpwood plantations mostly Gmelina	7,204
Oyo	276	-	276
Plateau	3,576	Nimbia Teak plantation, Gmelina and pines, Eucalyptus	3,576
Rivers	74	State plantations of pines, Naucler, Terminalic and Gmelina	74
ADF's			
Lafia	n.a.	Teak plantation	n.a.
Total	16,905 ha		16,905,000

Source: Compiled from Official Records, Federal Department of Forestry, 1983. (see Igugu and Adebisi, 1985).

south eastern Nigeria. Sadly, however only N22.50 million is allocated in the 1990-92 Plan to erosion and flood control programmes of the River Basin Development Authorities, largely to conduct studies.

A National Soil Conservation Committee was set up in 1978, and prepared a report in 1979. In 1980, N15 million was given to the control of gully erosion and reforestation in Alo, Nanka and Amucha in Anambra and Imo States while N10 million was spent on control structures on the Uyo gullies. In 1984 and 1985, about N28.99 million was spent by the Federal Government on soil erosion control across the states while by 1986, the sum of N18.407 million was spent from the 1% Ecological Fund for flood and erosion control. Interestingly, the sum of N373 million is expected to be spent on the control of erosion at the Victoria Island Beach, Lagos over some three years, from 1990 (see Ofomata 1991, p. 110). However, overall, it is apparent that soil degradation and erosion problems have received very little financially over the years relative to the magnitude of the problem and the projected cost to the nation annually, as contained in the World Bank Report. The same is perhaps true of other major sectors such as water, deforestation, wildlife and air pollution where Nigeria is currently witnessing some threat to resource integrity and environmental quality.

INDUSTRIAL POLLUTION, POLLUTION TAXES, INCENTIVES AND DISINCENTIVES TO ENVIRONMENTAL DEGRADATION IN NIGERIA

Nigeria's air and industrial pollution laws and policies are largely outdated and thus very inadequate. Except for the guidelines on pollution control worked out by FEPA recently, there are no specific regulations and penalties on the level of chemical and industrial pollution on land, water and air in Nigeria. The major laws on pollution include the Criminal Code of 1958 with section 246 aimed at controlling burial in houses; the Noxious Act of 1956 which makes it an offence to vitiate or produce noise and odour to the discomfort of others and the Public Health Act of 1958 which aims to control the spread of diseases, slaughtering of animals and disposal of night soil and refuse. The fines/penalties are liberal and the laws are quite often poorly enforced especially in the area of burial and noise, although some of the problems may be attributed to cultural norms and ignorance on the part of the affected public. The monthly National Environmental Sanitation Day is prosecuted largely on the public health and sanitation laws of the country. It is the compulsion and the restricted movement usually associated with the exercise rather than the fine of N100 imposed on defaulters in large cities and N50 in rural areas, that served as a deterrent. Nonetheless, the Sanitation Day has helped to bring some sanity and environmental health to Nigeria especially in cities which in the past were often filthy.

Industrial pollution remains a major problem in the Nigerian environment. Both industrialization and urbanization have contributed to the scale of pollution. The study by Egborge (1991) shows that in the Warri River which drains into the Atlantic, refinery effluents and industrial wastes from economic activities located on or close to the river have led to the significant presence of metal pollutants such as cadmium, copper and zinc while it was also observed that the level of concentration of iron, manganese, lead and chromium was beyond internationally acceptable levels.

Presently there are no incentives for the adoption of pollution abatement measures and very few disincentives, if any, for polluting the environment. Wastes are disposed of indiscriminately especially for small and medium scale industries but excluding major establishments like the refinery industry which is encouraged to adopt adequate waste disposal and good refining practices under the Petroleum Refining Regulation of 1974.

To date, only Lagos State with over 40% of Nigeria's manufacturing activities charges pollution levies. Although the measure is expected to serve as some disincentive to pollution generation and also for the alleviation of pollution problems in the state, it is better seen as a revenue generation effort on the part of the government. The state's Environmental Protection Department which imposed the levies had to effect a 40% cut in 1989 because of widespread disaffection amongst industrialists in the state, most especially small and medium scale industries which were most adversely affected by the policy. The Lagos State pollution levy therefore

remains essentially a revenue yielding effort and it is difficult to say whether the revenue so realized is actually reinvested into pollution abatement. Further, the policy provides no real incentives for industries to adopt pollution monitoring and reduction measures or clean technologies.

Fumes from combustion engines are another major source of air pollution in Nigeria, especially in urban areas. Although Nigeria is already evolving some road pricing policies by charging road users on major highways and bridges in the range N0.50 - N4 per crossing, and although premium petrol prices have risen by over 350% to N0.70 per litre within a period of five years, it is not known whether this pricing instrument or policy is meant to conserve resources and check the rate of air pollution. However, the fact that increases in petrol prices have in the past been tied to rural development and the provision of certain social infrastructures shows that the aim may be different.

NATIONAL RESOURCE ACCOUNTING

An effective system of national resource accounts is yet to be developed for the country. What exist are land use data and maps especially in the area of agriculture, forestry and wildlife. Although environmental accounting embraces both the monetary approach which describes the value and flow of resources and the physical approach in which land use accounts and resources are classified and presented in terms of percentages devoted to particular uses, if Nigeria is to adopt the physical approach there is still the need to evolve a comprehensive system of national resources accounts. In this case it is a "balance sheet" giving the profile of the stock resources available at a particular point in time, what uses are made of this stock of resources available at a particular point in time, and what sources they are derived from and how they are added to or transformed over time (see Pearce et al 1989, p. 93). Such a stock and flow account will provide a more valid picture for the planning and pricing of resources, their use and conservation.

ENVIRONMENT AND ECONOMIC DEVELOPMENT IN NIGERIA: THE CHALLENGE OF SUSTAINABLE DEVELOPMENT

This examination of environment and economics in Nigeria shows that the nation is only beginning to articulate the interconnections between environmental quality and economic development. In spite of the fact that we have now embraced the concept of sustainable development, Nigeria is far from pursuing the normal goals and objectives contained in sustainable efforts at development. The impediments are five-fold:

- (1) There is the absence of appropriate national guidelines and standards on environmental pollution and natural resources conservation, although, some progress was made in this direction recently by FEPA. This implies that pollution problems and the damage to the environment cannot be adequately monitored and enforced especially in the industrial sector. On the other hand, the develop-

ment of more environmentally sensitive development strategies is hampered.

- (2) There is the general absence of effective resource pricing instruments for resource conservation and nature protection. The major implication is that, resources are still being wantonly exploited by individuals, groups, communities, and corporate bodies without any concern for environmental damage. Compensation for environmental damage is either absent or inadequate especially in the petroleum industry.
- (3) Appropriate instruments and techniques for environmental damage costing especially one that takes into consideration damage to the value of natural sceneries and ecosystems is yet to be fully developed in Nigeria. Without this it would be difficult to speak of attaining both a balance and compatibility between resource conservation/use and economic growth. Further, programmes of environmental renewal and costing of renewal cannot be adequately developed or assessed. Indeed, a major failing of environmental management practices to date in Nigeria is that the country lacks programmes of environmental rehabilitation for damaged sceneries or sites, especially in mining and oil exploitation landscapes. There is, however, some emerging programmes of reafforestation.
- (4) There is the absence of economic incentives and disincentives for natural resources conservation and environmental management. Indeed in certain areas, government through subsidies of agricultural inputs such as fertilizers, pesticides herbicides and irrigation projects has tended to encourage excessive use or application of these, and other practices which inadvertently might cause damage to land and other environmental resources. Sometimes water and land pollution directly or indirectly affect human health. To deal with this environmental pollution, appropriate taxes and charges on generators of pollutants that is equal to or part of the environmental cost that their pollutants impose on the affected population or communities are yet to be worked out.
- (5) Last, but of great importance, is the absence of a system of national resources accounting and auditing especially one that takes reversible and irreversible damage to the environment into account.

Future policies aimed at addressing the issue of environment and economic development in Nigeria must take these five major issues into consideration. The issue of national guidelines on pollution control is expected to be settled by FEPA in 1991.

The cost of environmental damage and resource pricing are related. Resource pricing is a very controversial issue capable of causing intense conflict in society. This is because it affects social welfare and thus the overall well-being of the population. Three major elements are perhaps important and should be considered in achieving "correct" pricing of resources in Nigeria. First, environmental/ecological considerations are

important to the pricing of resources. Second, the ability or Willingness To Pay (WTP) for resources conservation and protection especially in relation to the different socio-economic classes is equally vital. Third, the degree to which resources are commonly needed by the broad spectrum of the population, and thus fulfil common good could help determine the social cost of resource pricing.

In addition, Nigeria may also identify different categories of resources in relation to pricing. Such a list may include:

- (1) rare/vanishing non-renewable resources in which case preservation/conservation together with high pricing are certainly desirable (e.g. diamond);
- (2) rare but renewable resources that face extinction e.g. elephant, hippopotamus;
- (3) common but vanishing renewable resources e.g tropical forests, and
- (4) non-renewable but common or abundant resources e.g. petroleum.

Although the Structural Adjustment Programme (SAP) has done a lot to deregulate the pricing system in Nigeria, what is now needed are policies to protect vulnerable groups - the poor and low income. Once such pricing policies are adopted a fair and just context of resource use that is also supportive of sustainable development could be located.

Incentive packages for environmental restoration and pollution abatement is also a necessary part of effective environmental management which Nigeria is currently lacking. Three types of policy reforms that are associated with incentives are identified by Panayotou (1990 p.9). First, those aimed at the reduction and eventual elimination of policies (for example, taxes, subsidies, quotas etc.) that distort well functioning markets or cause market failures, for example, the elimination of pesticide subsidies. Second, those that correct or mitigate market failures such as insecure or absent property rights; and third, those related to consideration and internalization of environmental, social and other side effects of public projects, sectoral and macrosectoral policies, for example, the inclusion of environmental consideration into SAP. A range of incentives could be identified in Nigeria, for example, tax concessions for reforestation, pollution reduction and adoption of clean industries; subsidies for tree planting as well as the introduction of licensing fees, pollution taxes, property rights and product charges to act as disincentives to polluters and mismanagement of resources. The introduction of a policy of polluters - must pay for damage is certainly desirable. The delivery and supply of certain important services and resources for example, electricity, water and housing could be made more efficient through greater decentralization, autonomy, and reduction in scale of central government involvement and control. For example, by 1987 the total amount collectable but not received by the National Electric Power Authority was N600 million as a result of poor billing and inefficiency. Communities should play greater role in service delivery (see Federal Ministry of Budget and Planning 1990, p.152).

In the area of resource accounting, there is the need for Nigeria to change the National Accounting System from one based on Gross National Product (GNP) which fails to consider environmental cost or cost of environmental renewal to a system in which expenditure on pollution abatement are added to GNP while those incurred as environmental damage are assessed and deducted from GNP. As has been argued by scholars the first crucial challenge for environmental economics in the developing world is to ensure that environmental assets and their functions are valued appropriately to reflect their full contributions to human welfare. This implies modifying the system of national accounts to indicate how changes in the environment are linked to changes in the economy, correcting market prices to reflect the full costs of using the environment, and accounting more fully for the economic value of environmental impacts in the appraisal of projects. A comprehensive resource accounting system must thus be developed for Nigeria.

There are a number of other things which are also desirable in the long run. The Ecological Fund/Environmental Sector Budget could be raised to 4 - 5% of public sector budget to finance environmental protection and rehabilitation programmes. This certainly could be achieved by reducing expenditure on defence as well as linking petroleum profit to the cost of environmental damage and deducting such a cost from the profit. For companies, industries and manufacturers, a share of the profit tax should go directly to the protection of the environment where production takes place. So just as many have in the past advocated that a share of company profit should go to the funding of education and welfare, so also should a significant proportion be tied to environmental renewal and protection.

Environment and economics is a relatively new field to Nigeria. Perhaps, to articulate the nature of the relationship between environment and development more fully and be able to integrate environmental considerations into programmes and policy of sustainable development in the country, it may be desirable to establish a centre or unit for environment and economics under the Nigerian Institute for Social and Economic Research, (NISER) or the University of Abuja which is expected to project the image of our "national university." Greater efforts will also need to be made in the area of environmental research and the development of, perhaps, a national environmental data bank. The creation of a separate Ministry of Environment is also advocated.

Finally, the requirement of an environmental impact assessment (EIA) and statements (EIS) on all major projects as contained in the National Policy on Environment must be fully embraced and pursued with vigour. The World Bank report (1990) and others show clearly that soil degradation and loss, ground and surface water contamination, deforestation, coastal erosion, soil erosion, gully erosion, fisheries losses, wild-life and biodiversity losses, air pollution, water hyacinth etc. are important indicators useful for environmental planning, protection and the establishment of management priorities. As Ene-Ita (1984, pp.195-6) argued in the Nigerian context, EIA is a useful tool for incorporating environmental considerations into decision making processes for sound development.

The absence of this basic tool developed in the 1970s has in her view,

contributed to the social, economic and environmental consequences and problems of large-scale projects in Nigeria, for example, those associated with on-shore and off-shore exploration and exploitation of resources in the Niger Delta. Interestingly, the current Rolling Plan, 1990-92, acknowledges that a major problem of the environmental planning and protection sector is the lack of effective mechanisms for the control of waste which pollute and degrade the environment. There is also the lack of environmental considerations of resource exploitation over the years which has led to the destruction of some irreplaceable resources, ecological imbalances, erosion problems, disappearance of wildlife habitats and water, air and land pollution (see Federal Ministry of Budget and Mining 1990, p.304). It is our position that if EIAs were carried out in all these important sectors of our national development activities, our natural resources would not only be better exploited and utilized for social and economic development but also the environment will be protected from rapid deterioration.

ENVIRONMENTAL EDUCATION AND PUBLIC AWARENESS

4

INTRODUCTION

It is well known that the better the understanding of the environment the more effectively it can be used to support development. Also, a general awareness of the environment and its associated problems is required among policy-makers for better integration of environmental concerns into development planning and policy. Such awareness among the general public also helps in creating the attitudes, motivation, and commitment to adopt environmentally-sound approaches in seeking their livelihoods. These positions underline the fact that environmental problems are essentially people-centred: the ideas, attitudes and behaviours of different sections of the population are critical variables in efforts to resolve or prevent such problems; hence the link between environment and human capital formation.

LEVEL OF ENVIRONMENTAL AWARENESS

Nigerians have interacted with their environment from time immemorial. It follows that they have been aware of it and have developed attitudes to, and relationships with, the environment in the process of adapting to it. The clearest evidence of this sense of awareness is to be found in traditional land use and human settlement practices, in folklores and rituals, and in various technologies that rely on environmental resources. Present day attitudes are an amalgam of this traditional interaction and relationships developed since contact with eastern and western cultures, before, during and after the colonial period. A historical perspective is a prerequisite to a better understanding of today's level of awareness and attitudes to the environment by Nigerians.

The Pre-Colonial period

Eking out a living through crop production, livestock rearing, hunting and fishing is perhaps the most fundamental way by which most Nigerians have related to their environment through ages. Nigerians have also relied directly on nature for the supply of water, energy, medicines, food supplements and a host of other materials for home-building, arts and crafts, and cultural artefacts. It is not surprising therefore that before the colonial period, certain patterns of relationships with the environment had evolved among Nigerian communities. Most of these relationships were in the direction of conservation, respect, good husbandry and efficient use of environmental resources. Thus, in many communities, land was allocated to various uses: farmland, forest land, hunting forests, religious forests and forests reserved as the abode of evil spirits for the disposal of people dying under mysterious circumstances. Individual plant and animal species were similarly protected, using folkloric taboos and rituals to secure adherence to the protection practices. The regulation of hunting, fishing and fuelwood collection, and the linking of these activities to festivals or some cultural rites were all devices for conserving environmental resources. So was the practice of restricting the collection of medicinal plants or wood for carving to particular guilds or societies. In the ancient Benin Kingdom only members of the royal guild of wood and ivory carvers were permitted to regulate the use of ebony (*Diospyros mespiliformis*) and elephant ivory.

Farming Practices and Environmental Awareness

In no other sphere of life is the intimate knowledge of the environment by traditional Nigerian societies exhibited as in the farming practices. Farming systems, largely of the bush-fallowing/land rotation type, and social systems are meshed together and both are tied to the rainfall-determined seasonality. Hunting and fishing are more extensively undertaken during the dry season. The products are readily dried in the sun or smoked in the open for storage and use during the subsequent rainy season. As detailed by Richards (1985) in his book, Indigenous Agricultural Revolution, critical awareness of the diversity and complexity of the agricultural environment is exhibited in fixing cultivation practices, in determining

crop mixtures and in matching crops to site and season. Both the choice of crops for intercropping and the spatial allocation of these are based on intimate knowledge of micro-environmental variations, gained from accumulated empirical experience. Even the very idea of soil fertility management by bush-fallowing and retention of trees in the farming landscape is an adaptation to the ecological realities of the tropical environment.

Pastoralism

Keen observation of the environment also underlies nomadic pastoralism, which is the predominant livestock production system. The very high dependence of the system on natural foliage for feeds, and on natural watering points, demands that the pastoralist be very familiar with the distribution of these factors, observing various features as indicators. Hence the constant movement of the herdsman from place to place is dictated by environmental factors, particularly the availability of pasture, water and freedom from disease agents (e.g. tse-tse flies). The effect of the extensive, open grazing practice is to avoid overgrazing and degradation of rangelands.

Settlement Practices

Awareness of the environment was reflected also in the settlement practices of the traditional Nigerian society. The siting of villages was based on the availability of a regular source of water and security from enemy attack. Many of the forest dwelling people, like the Igbos, the Ibibios, and the Anangs of south-eastern Nigeria lived, characteristically, in small, dispersed communities linked by paths for communication. Other forest-dwelling people (e.g. the Edos), but more especially people in more open country, tended to live in larger aggregated communities or cities. The distribution of farmland varied between these two dwelling patterns. Compound farming, around the houses, was more common with the dispersed than with the aggregated settlements. In both types of settlements, dwelling units were arranged to enclose a courtyard and often also leave a backyard. A town or community square, bearing such fruit trees as the African star apple (*chrysophyllum albidum*) or shade trees, and providing a meeting ground for the community and playground for the children was a common feature. There was also commonly some waste ground that absorbed the mostly organic-type waste generated by the community, so that garbage accumulation was not a problem. The generous availability of open spaces encouraged many activities to take place in the open, and engendered patterns of behaviour toward the open living space that relied on natural processes of ecosystem functioning to maintain a healthy environment.

Not only were materials for home-building taken largely from the immediate environment, but the building styles themselves were also adapted to the ecology of the locations. Thick, mud or wattle walls and roofs characterized traditional houses in the extreme dry north, where wood is scarce, and rainfall is low but insulation is needed from the widely fluctuating ambient temperatures. Farther south, but still in the savanna region, the abundant grass provides thatching materials, while in the

forested south, where wood is more available, wood becomes a major component of houses and raffia palm leaves are used for thatching. In the swamp forest, where the raffia palm is abundant and houses are often built on stilts to avoid the frequent flooding, houses are commonly built entirely with lightweight materials from the raffia palm.

In traditional societies individual and collective behaviours towards the environment were regulated by the community. The cleaning of individual homes and their surroundings was the responsibility of the household while communal grounds were maintained collectively often by appointing special days and defining the groups to participate in such activities. A non-conforming individual, household or community could find itself being excluded from participating in group activities, could be avoided in terms of trading exchanges and could generally find itself being ostracized, in addition to being required to make certain customary observances. For these reasons personal and collective environmental ethics were of a high standard in traditional Nigerian societies.

The Colonial Period

Exposure to other cultures, culminating in the colonial experience, initiated the process of modernization that has continued to this day. Colonization formalized the contacts with other cultures, and brought under the common political umbrella of Nigeria diverse cultural groups, now sharing the common experience of transition from pre-industrial, primordial societies, to a modernizing, industrializing, more complex society. With modernization, the traditional pattern of existing essentially in harmony with the environment, exacting from it only that which was required for subsistence, has largely given way to a more exploitative relationship. Colonization introduced the notion of development, the major thrust of which was the exploitation and transformation of natural and human resources, primarily for the benefit of the colonial rulers. There was a mental shift in the perception of the natural environment from being a factor to work with to secure sustenance, to being a factor that had to be conquered, overcome, subdued or transformed to promote human welfare. The natural environment thus came to be seen as an obstacle to development, and to this day, any area that still has a wide expanse of natural vegetation, for example, is described pejoratively as undeveloped, backward or 'bush'. Further, the introduction of a monetized economy weakened the effectiveness of communal approaches to using environmental resources, while new imported religious ideas undermined traditional beliefs and the bases for many protective practices towards the environment. The impact of the resulting aggressive materialism which replaced traditional attitudes to the environment was worsened by the increased populations due to improved health care.

With colonization, land use was perhaps the most affected aspect of traditional relationships with the environment. Firstly, the attachment of monetary value to land encouraged individual and private ownership, which diminished the availability of land for rotating in the farming practice, forcing many with few parcels of land to utilize shorter fallow periods and overcultivate their farms. Secondly, quite early in colonial

rule, the need to exploit natural resources, particularly forest resources, for overseas markets, combined with the undermining of indigenous belief systems by imported religions, largely dislocated traditional practices of land use and the protection of natural resources. A modern concept of forest reservation was introduced by the colonial rulers, initially to protect sources of such economic products as rubber and timber, but later also to protect vital watersheds. The immediate effect of forest reservation was to diminish the area available for operating the rotational farming systems. Alienation of the people from reserved forests, even though reserved forests were supposed to be held in trust for the people, also altered their regard for the forests, and engendered poaching behaviours. Added to this was the dedication of the most fertile land to such cash crops as cotton, groundnut, cocoa, kola and para rubber for overseas markets. The last three crops being trees and perennial meant that land under them was removed from cultivation for food crops for a long time. Land available for livestock grazing and food crop production was thus severely diminished, contributing to overcultivation and overgrazing, and the origins of present day land degradation.

Thirdly, colonization disrupted land use practices that were adapted to the environment. Fortunately, attempts to replace traditional bush-fallowing/land rotation practices, by imported, more intensive, sedentary techniques have so far been resisted by the ecological realities of the tropical environment. The majority of Nigerian farmers to this day retain the practice, even though, because of shortened fallows and prolonged cultivation, the practice is no longer sustainable. Other practices were less fortunate. For example, by the Forestry Ordinance of 1908 (Lowe 1986), the colonial administration introduced the concept of 'protected trees', by which 'economic trees' (trees that yielded products for overseas markets) could not be exploited, even outside forest reserves, without permit from the forestry service. Before the law, communal practices of harvesting gave community members a sense of ownership of such trees, which obliged them to make efforts to foster natural regeneration of the species. The law concentrated the powers over such trees in the forestry authorities, represented by the forest guards who policed forest resources. The farmers lost interest in encouraging natural regeneration of the species, which they saw as effectively no longer theirs. The permit system generated revenue for the local authority but exploitation could not be sustained for lack of regeneration of the trees.

Colonization also brought about changes in the human settlement patterns and practices. Increased urbanization accompanied modernization. The structure and conditions of the new urban centres differed from those of traditional towns. While the latter were agrarian and neither overpopulated nor spatially restricted, colonial urban centres tended to be spatially confined, and over-populated from rural-urban migration and natural increase resulting from improved medical facilities. Although improved materials were used for constructing the houses, the trade-offs were not always environmentally optimal. Replacement of traditional grass or palm-leaf thatching with corrugated iron-sheet roofing, for example, reduced the fire hazard and offered more durable roofs, but it

provided poor insulation from the tropical sun. Attempts to provide basic services like water, drainage, sewage and roads were rudimentary and quite inadequate for the crowded towns. The towns were also more heterogeneous than rural towns and interpersonal relationships were more formal. This meant that societal controls of environmentally unsound habits, some of which had been imported from the rural settings to which they were adapted, could not be effective. There was minimal individual or collective commitment to improvement of the towns, and because of the inadequate basic services, the poor sanitary conditions and the overcrowding, epidemics such as bubonic plague, typhoid fever and cholera were common.

The response of the colonial governments was to institute physical planning laws, policies and practices, mostly directed at environmental sanitation and mainly to protect themselves. By 1917, for example, a town planning ordinance was promulgated which classified settlements into first, second and third class townships and native towns. The classification was backed up by differential allocation of basic services and amenities. Indigenous people were separated from European settlements, known as Government Residential Areas (GRAs), by a building free zone, a *cordone sanitaire* about 440 yards wide, a distance "considered to be farther than malaria mosquitoes and 'the noises of drumming and other amusements which form the pleasure of native life' could travel" (Home 1976). The colonial rulers also introduced the practice of sanitary inspection and a range of sanitary-related penalties which, together with the imposition of the building free zone and slum clearance campaigns, were used also as a means of social control of the indigenes. Town garbage was readily dealt with by the practice of sanitary inspection which forced town dwellers regularly to deposit their wastes at the many incinerators located in the towns. Perhaps because the volumes of garbage were not large and they were mainly of household consumables, the garbage was readily dealt with by incineration. The incinerators were manned constantly by workers who not only maintained them but also saw to it that users deposited their garbage in the proper places. Public toilets and urinals were also provided and maintained in the colonial towns.

Meanwhile the colonial educational process initiated the process of stratification of Nigerians into classes, based on the degree of adoption of the environmental ethics of the rulers. At school, the subjects of Nature Study and Hygiene were taught, along with regular body inspection, in an attempt to impart formal knowledge about the environment and its influence on the general health of the people, and to inculcate high standards of personal hygiene. During this period also, the institution of 'Town Improvement Unions' developed in many of the native towns. The aims of the unions usually included improvement, often through self-help, in the provision of basic services and amenities and environmental sanitation in the towns. The educated youth wings of these unions sometimes constituted themselves into sanitary inspection agents and served to augment the efforts of government. The effect of this was to propagate more widely positive ideas about environmental sanitation.

Although during the colonial period the environment was conceptual-

ized in exploitative terms and environmental issues were treated only in sectoral terms (i.e sanitation, town planning etc), while much of the traditional ways of conserving environmental resources were being eroded. The foundations of environmental awareness, in modern terms, began to be laid during this period through the educational process. The rapid increase in population was also indicative of gains from improved health facilities part of which was due to improved environmental sanitation and education. However, the seeds of unsustainable use of the environment and of the problems of urban decay were sown during the period. The new attitudes towards the environment did not also altogether displace traditional attitudes.

The Post Colonial Period

Development trends during the colonial period continued at an accelerated pace after independence in 1960. Post-colonial governments simply inherited both the strategy and the ethos of development of the colonial administrators, with the result that development continued to be understood mainly in terms of exploiting and subjugating the environment. Exploitation and abuse of the environment reached unprecedented peaks after the Civil War (1969-1970) as petroleum production and export fuelled expanded economic development and industrialisation partly for the reconstruction of the country. The lack of conceptual clarity as to what constitutes the environment and environmental issues, and the inability to treat the environment integratively in conventional sectoral terms, meant that for a long time there was no articulate environmental policy in development plans. Policy-makers and planners failed to grasp the long-term complementarity between environmental integrity and economic development.

Contemporary Attitudes

As indicated earlier, Nigerians in the traditional context had little difficulty in coming to terms with the environment. Problems began with exposure to other cultures and the beginning of the modernization process which to this day remains unequal and uneven in its spread. Rural societies remain more traditional than urban societies, but everywhere the values, attitudes and practices of Nigerians can be said to be now partly traditional and partly modern. To a large extent Nigerians have acquired modern consumption patterns, life-styles and aspirations, but not with this an adequate level of environmental awareness to know the limitations of many of the artefacts that are part of modern living. No where does this lack of adequate knowledge expose Nigerians to greater danger than in the use of chemical products. For example agrochemicals are freely abused when pesticides are carelessly applied not only in situations for which they are made, but for killing of game and fish that are meant for human consumption. Nigerians are known to use petroleum products particularly kerosine, freely for lighting fires over which barbecues are prepared, while fraudulent practitioners often preserve grains that are later sold to the public by soaking in kerosine! The carelessness with which used petroleum products e.g. engine oil, are disposed of and the fact that

little concern is shown by the public about heavy and dirty vehicle emissions partly reflect the lack of awareness about the dangers in these practices.

The same degree of lack of awareness exhibited in the use of chemicals can be shown to apply to other situations in which Nigerians are confronted with materials and artefacts of modernization - in industry, in management of the urban environment, in so called modern agricultural practices and in the use of drugs. Perhaps because of the low level of awareness of environmental issues, the environment ranks low in the concerns of many Nigerian communities. In a study that ranked the needs of Abeokuta residents (Olokesusi 1985) environmental sanitation and protection placed ninth out of ten factors (Table 4.1).

Part of the low level of awareness of modern environmental concerns is no doubt due to the high level of illiteracy in the country. The estimate is that about 70% of the Nigerian population is illiterate. Many farmers who use agrochemicals or road-side mechanics who handle petroleum products cannot read the labels on the products and therefore cannot appreciate the dangers to health involved in improper use of these products. But illiteracy cannot explain the low level of environmental awareness among many highly educated Nigerians. Nigerians, in all groups, need to be sensitized to environmental issues and problems by fostering their awareness of these matters. Without public awareness at all levels of society, no national strategy for the environment can succeed.

An idea of the level of environmental awareness at the policy level may be gained from the discussions in the other parts of this book such as that of Economics and Environment and the examination of the Environmental and Institutional Framework. Also as the NEST's 1991 National Profile, *Nigeria's Threatened Environment*, has shown, perhaps the most significant element in the changes that occurred at the policy level is the conceptual shift from environmental sanitation to environmental protection in public policy orientation as expressed in 22 years of Post-Colonial planning from 1962 to 1984. (See: NEST 1991, pp - 287).

Despite these changes which reflect a clear indication of government commitment to sound environmental management, the country is still a long way from achieving such management. First, government commitment has to be reflected in the attitudes and actions of all government functionaries, in a way that shows a balanced understanding of the issues

TABLE 4.1: THE NEEDS OF THE RESIDENTS OF ABEOKUTA, NIGERIA IN ORDER OF PRIORITY, AS PERCEIVED BY THE RESIDENTS

Ranking	Issues
1 -	Money
2 -	Shelter
3 -	Food
4 -	Employment
5 -	Safety/Security (e.g. from criminals)
6 -	Welfare (Health)
7 -	Education
8 -	Planned land use
9 -	Environmental sanitation and protection
10 -	Others (e.g. recreation)

in the environment/development problematique; and this depends on education followed by a change in attitude among government decision-makers. Second, the general public has to be sufficiently aware of current environmental issues, not only to be able to respond appropriately to government actions, but also to have the appropriate orientations, the required skills, motivation and commitment to take the initiative, individually or collectively, towards solving existing environmental problems and preventing new ones.

STATUS OF ENVIRONMENTAL EDUCATION IN NIGERIA

Attention has already been drawn to the sense in which Nigerians in the traditional setting are aware of their environment. This traditional knowledge of the environment, and the skills needed to cope with the environment, are passed on from generation to generation through the informal systems of indigenous education, rooted in the cultural and social organization of rural communities. Nigerians growing up in rural communities unconsciously imbibe this education, while those reared in urban settings generally lack such awareness. In urban settings awareness of the environment has been mainly in terms of sanitation and hygiene, and is acquired mainly informally through government programmes. During the colonial period, programmes on sanitary inspection served to force awareness of the environment in urban centres. In recent times such programmes as the observance of the last Saturday in every month, and public enlightenment campaigns through jingles, advertisements, campaigns and articles in the information media, perform the same function.

The Evolution of Environmental Education In Nigeria

From the colonial period onwards, elements of environmental education (EE) were taught through the formal systems of education. These were in such subjects or courses as Nature Study and Hygiene at the primary level during the colonial period, but more recently as primary science, integrated science, alternative biology, agricultural science, geography, social studies and family living, at the primary and secondary schools level. The syllabus for Alternative Biology Ordinary level (O level) gives an example of the attempt made to cover EE themes in the formal education system prior to the adoption of the National Policy on Education in 1986. Besides covering traditional ecological topics under the main heading 'Interactions in Nature', the Alternative Biology syllabus treated 'Implications of Ecological Principles for Agriculture', 'Conservation', and 'Pollution of Air, Water and Land', as topics in 'Applied Ecology'. The 'Importance of Microbes', 'Sanitation', 'Personal Hygiene' and 'Public/Community Health' were treated under the general heading of 'Man and his Environment' in that syllabus. The treatment of 'Public/Community Health' came closest to addressing the ethical questions of personal and collective responsibility to the environment. However, the entire syllabus was a long way from reflecting the linkage between development actions and the environment, or the language and philosophy of present day environmental debates. Modules prepared for the Primary and Secondary School

levels for the 6-3-3-4 system of the new (1986) National Policy on Education represent a more detailed attempt, than the Alternative Biology syllabus, at imparting knowledge on issues germane to environmental management. Thus the subject matter for teaching in the last of the six-year primary school education included 'Man and his Environment', 'Erosion', 'Pollution', 'Exploitation of Natural Resources', 'Safety' and 'Health and Safety'. Each subject matter was broken down into its elements; the objectives were stated in terms of what every pupil should know at the end of the module, and the activities to be undertaken and the time needed to attain those objectives were specified. A similar curriculum with a greater sub-division of the subject matter into its elements was designed for the secondary school level. At the tertiary level EE themes are to be found scattered in various diploma or degree programmes in Science, Agriculture, Forestry, Fishery, Wildlife Management, Medicine and Social Sciences.

Some idea of the number of pupils exposed to these syllabuses may be gained from the figures for primary school enrolment in Nigeria from 1984 to 1987, broken down into male/female and urban/rural percentages (Table 4.2). Student enrolment in Nigerian universities in environment related programmes during 1986/87 also gives a picture of the population exposed at this level (Table 4.3).

TABLE 4.2: PRIMARY SCHOOL ENROLMENT BY SEX, RURAL AND URBAN POPULATIONS IN NIGERIA: 1984-87

Year	Total Enrolment		%		%Rural		% Urban	
	M	F	M	F	M	F	M	F
1984/85	7,256,496	5,768,791	56	44	54.6	45.4	53.2	46.8
1985/86	7,182,552	5,732,318	56	44	54.6	45.4	53.2	46.8
1986/87	6,349,957	4,926,313	56	44	54.6	45.4	53.2	46.8

Source: Federal Ministry of Education, Statistics Section, Lagos, August, 1988

TABLE 4.3: UNIVERSITY ENROLMENT (000'S) IN NIGERIA IN 1986/87 FOR ENVIRONMENT RELATED PROGRAMMES

	Earth and		Science	Environmental		Total
	Agric.	Mining Sci.		Design		
Total Enrolment	9087	564	21,199	5,371	36,221	
% of Total University Enrolment	25.1	1.6	58.5	14.8	100.00	

All of the above attempts at including environmental themes in the formal education curricula suffer from a lack of a coherent vision or policy of the type of environment that Nigeria should have, and of the actions, including the educational pathways, for realising the objectives of such policy.

Current Directions in Environmental Education in Nigeria

Over the past five years or so, however, a clearer perception of the needs for, and the form of, environmental education for the country has been emerging, largely due to the pioneering efforts of the Nigerian Conservation Foundation (NCF). This has coincided with government's growing commitment to a sound environmental base for development. The changes can be seen in a series of events of great importance to the attainment of Sustainable Development in Nigeria which have occurred since 1986. In rapid succession a National Conservation Strategy was launched in 1986, the Federal Environmental Protection Agency was set up by decree and the Natural Resources Conservation Council (NRCC) established in the same year in 1988, and the National Policy on the Environment was launched in 1989.

The Nigerian Conservation Foundation (a Non-Governmental Organization discussed further in chapter 5 of this book) had pressed government for "the inclusion of conservation in schools curricula, as a most important step towards developing the public awareness necessary to making government's policies in this connection, and their rationale, readily comprehensible to the citizens of tomorrow and, through these children to their parents the citizens of today". The NCF followed this up by promoting conservation education actions in a few states, notably Borno, Cross River, Bendel and Lagos States. Because the Borno State experiment was the most comprehensive and formed the basis for the later formulation of a Draft National Conservation Education Strategy for Nigeria, the description of the experience as made by one of the leading members of the NCF is reproduced in Box 4.1.

BOX 4.1: THE BORNO STATE EXPERIMENT IN ENVIRONMENTAL EDUCATION

In collaboration with the Nigerian Conservation Foundation and, through this body, with other International organizations such as the African Wildlife Foundation, the Bornu State Government proposed a conservation education programme for its schools. A pilot conservation club was declared open in Nguru by the Military Governor in April 1987 and he promised all reasonable support for a conservation education programme within the state. The state Ministry of Education appointed a conservation education co-ordinator whose schedule of duties included: liaison with internal and external bodies interested in developing conservation education in the state; researching and developing suitable principles and practices of conservation education in the pilot project area; initiating the introduction of conservation at the tertiary level of education throughout the state; and compilation of a Bornu State School's conservation handbook. In order to assist in the implementation of this programme, a committee known as the "Bornu State Conservation Education Co-Ordinating Committee" was formed in which

continued overleaf

were represented the state Ministries of Agriculture and Natural Resources and various other interested ministries, including the Ministry of Education. This committee provides advice and also assists in conservation project work by providing materials needed.

On conservation education in schools, it was felt that introducing a new subject would have unduly stressed teaching staff. Instead, the programme emphasized parts of what already existed in the new 6334 curriculum, which had just been adopted on a countrywide basis. It was recognised that elements of conservation education existed in every subject and every teacher was expected to identify these elements and to expose them to his students starting with the idea: "Conservation is for All". For example, Islamic Religious Knowledge could focus quite legitimately on Islam's attitude towards the conception of the universe, nature, natural resources and the relationship between man and nature, or on the legislative rules of Islamic Law which govern procedures and measures for the protection and conservation of the environment. In Nigerian languages, teachers could treat the taxonomy of Nigeria's flora and fauna. In Physics and Maths and Home Economics, students could work out the Eindhoven formula when they learn about heat energy or how to cook on a stove. In an English lesson or in social studies, students could debate the environmental issues. In the technical college, the student could learn how to recycle our resources instead of just wasting them. All these conservation issues are relevant to the new primary and/or secondary curricula and in many cases offer the teacher and student excellent opportunities for project work, work that would demonstrate to the student and his parents the value of what he or she is doing at school and its relevance to every-day living. This is known as the cross-curricular approach and is the most effective method of introducing conservation at primary, secondary school levels and at teacher-training colleges.

Source: A. P. Leventis 1989.

The Draft Proposals for a National Conservation Education Strategy, prepared by the Nigerian Conservation Foundation, represent the most comprehensive treatment of Environmental Education as a subject in Nigeria. In the extensive discussion leading up to the Draft Strategy, the proposal traces Nigeria's participation, or non-participation, in the events preceding the world-wide adoption of Environmental Education as an essential instrument for addressing environmental problems. Evidently Recommendation 96 of the first United Nations' Conference on the Environment, in Stockholm in 1972, urged various UN agencies and especially UNESCO, "to institute an international programme for education on environmental questions and to find new ways for improving the advanced education of specialists and technicians in this field". Then followed a series of international workshops, regional seminars and conferences culminating in the Intergovernmental Conference on Environmen-

tal Education at Tbilisi, USSR, in 1977 under the auspices of UNESCO and the newly established United Nations Environment Programme (UNEP). Nigeria, though invited, did not participate in this important international conference, thus losing an early opportunity to initiate an EE programme as did other African countries that took part. It was not until the conference at the Yankari Game Reserve, Bauchi State, 1988, at which the draft proposal by the NCF was discussed, did Nigeria pick up the initiative again to develop a national programme on EE. Prior to the Yankari Conference, the Borno State Government, in collaboration with the NCF, and through the NCF, with other international organizations, like the African Wildlife Foundation, had initiated a pilot conservation education programme for its schools. At the launching of the Hadejia - Nguru Wetlands (Conservation) Project, at Nguru, Borno State, the State Military Governor was persuaded to: (a) direct that all post-primary schools in the state establish conservation clubs as from 1987; (b) along with representatives of the conservation agencies involved in the Wetlands Project, sign, and persuade other important decision-makers in the state to also sign "The Nguru Intent" which was a policy document indicating Government's commitment "to do all in our powers to support the Borno state schools conservation clubs"; (c) grant a special imprest to enable the production of "A Guide to Conservation Education Club Activities", and (d) establish a State Conservation Education Committee, comprising the State Conservation Education Co-ordinator, who was appointed in the Ministry of Education, representatives from the Ministry of Agriculture and Natural Resources, the state Environmental Sanitation Board, various Agricultural Development Projects in the State, and other bodies in the State who have an interest in conservation issues such as the state chapter of the NCF. The functions of the committee included providing advice and assisting in conservation projects by supplying, for example, polybags and seedlings for afforestation work, arranging the subsidized use of tractors on school farms or trucks to carry refuse following clean up exercises by the students. A new subhead in the Ministry of Education's Budgetary Estimates was later created to support conservation education in the State.

The Draft Strategy for Conservation Education In Nigeria

The Borno experiment had operated for a little over a year before the Yankari Conference in 1988. The Draft Strategy for Conservation Education in Nigeria adopted at the Conference drew largely from the lessons of the Borno experience. It is based also on the philosophy, goals and objectives developed by UNESCO for such education, and on ideas, models and programmes that had been developed all over the world, in the USA, Nordic and other European countries, but particularly in East and Central Africa. Its basic aim is not only to make environmental education part of the National Policy on Education, but also to integrate formal education with the National Conservation Strategy and ultimately "make environmental awareness through conservation education part of the Nigerian way of life". The Strategy accordingly recommends to the Federal Ministry of Education that a comprehensive national conservation programme is essential to Nigeria's future and that such a programme

should be guided by a set of eleven principles amongst which are the need for such a programme to:

- consider the environment in its totality;
- be a continuous life-long process;
- be interdisciplinary and participatory with attention to local, national and international dimensions of environmental problems; and
- focus on current and potential environmental situations, utilizing diverse learning techniques.

The essential process recommended by the Strategy is to focus first at the secondary school level of education, and spread subsequently first to the tertiary level before the primary level. This sequence is informed by the peculiarity of the Nigerian situation, in which the population of schools at the primary school level is so large that it would create greater difficulties to begin at that level. A two-pronged approach is proposed by the Strategy: integration of Environmental Education into the teaching curricula and setting up conservation clubs in schools to promote extracurricular environmental activities. In each state, all secondary schools including Grade Two Teacher training schools will be required to establish conservation clubs which should involve the students in environmental improvement and awareness-oriented activities. In addition, Ministries of Education are to: (a) immediately establish at least one Pilot Conservation Education Programme and gradually expand to cover the whole state, (b) appoint state, zonal, local government and school conservation coordinators, and (c) make budgetary allocations to support the programme. The Strategy is to be implemented through Conservation Education Committees set up at the Federal, State, Zonal, Local Government and Schools levels, involving many interested parties but particularly local communities at the school level. The Strategy emphasizes that conservation education be not seen as a new subject, in order to avoid constraints in time-tabling, in finding additional teachers or by over-loading the curricula. Instead the cross-curricular approach is recommended, by which the environmental dimensions of already existing courses are simply to be emphasized by the existing teachers. The need for running a series of orientation workshops for the teachers is stressed, as is the need for maintaining momentum through continuous assessment of the students and regular inspection of the programme.

The National Conservation Education Strategy was adopted in 1990 by the National Council on Education as part of the National Policy on Education. Committees on the implementation of the National Education Policy are currently working to incorporate Environmental Education into the curriculum for the "Citizenship Course", which is a core requirement at the primary and secondary school levels. Teachers' Guides and Classroom Modules for introducing the programme are currently being prepared. The target is to begin implementation of the strategy generally by January 1992. In fact, that process of incorporation has been completed and announced in January 1992 at a workshop on environmen-

tal education sponsored by the Nigerian Educational Research and Development Council (NERDC) and UNESCO.

In summary, the key elements in the strategy for introducing EE to the formal education programme in Nigeria include:

- Development of uniform curricula for each level of education throughout the country;
- Writing of suitable text books and teachers' guides on EE for primary and secondary schools;
- Conducting orientation workshops for teachers on the use of the text books;
- Trial testing of the syllabuses, text books and teachers' guides;
- Commencement of the programme by January 1992;
- Establishment of EE units in the Federal Ministry of Education;
- Institution of EE coordinators and committees at the Federal, State and Local Government levels;
- Establishment of EE clubs in all schools, colleges and universities.
- Organizing in-service and pre-service training programmes for teachers regularly; and
- Providing adequate funds to support all the above actions.

Despite the elaborate preparations there are grounds to be apprehensive about how soon environmental education can become truly integrated into what the student learns at school. Some aspects of existing syllabuses in schools are not taken up because of lack of teachers or the low priority given to such subjects in the examination scheme.

Meanwhile, in addition to the activities already initiated in Borno State, actions implementing part of the Strategy or preparing towards it have already been taken in states such as Kano, Cross River, Bendel (see Case Study) and Lagos States, where state conservation education coordinators and in some, zonal co-ordinators as well, have been appointed. Staff of the Ministries of Education or of Universities and Higher Colleges have been trained at the International Centre for Conservation Education, Jordanhill, Glasgow U.K., on courses specially designed for Nigeria, with the idea that they will return home and organize similar training programmes.

Other Sources Promoting Environmental Education In Nigeria

Apart from actions relating directly or indirectly to implementation of the National Strategy on Conservation Education, environmental education has been promoted in Nigeria in diverse ways by various organizations. The information media, government etc, from time to time call attention to environmental lapses and urge greater awareness and concern about the environment by Nigerians. Non-governmental organizations, the number of which have increased dramatically over the last decade, have mounted programmes aimed at arousing public awareness on environmental issues. The Nigerian Field Society, founded in 1930, for example,

has for long published a journal, *the Nigerian Field*, which has contributed greatly in propagating knowledge about the country's natural history. The Forestry Association of Nigeria (FAN) and the Forestry services in the country initiated the tree planting campaign to popularize tree planting for environmental improvement. The environmental profile of Nigeria prepared by the Nigerian Environmental Study/Action Team (NEST) is the first such comprehensive report in Nigeria and it also has the aim of generating awareness with the view to changing attitudes and ultimately eliciting action from Nigerians towards a better environment. But perhaps the greatest action towards generating environmental awareness has been taken by the Nigerian Conservation Foundation (NCF), a non-governmental organization founded in 1982. The part played by the Foundation in formulating and funding activities related to the Conservation Education Strategy has already been mentioned. In addition, the NCF has set up Conservation Centres at Lekki, Lagos State and Okomu in Bendel State of which the objectives include the education of the general public. The Foundation has also fostered the initiation of conservation education units at the tertiary education level in Cross River, Bendel and Lagos States, and through its links with international organizations, notably the World Wide Fund for Nature (WWF) has attracted funding support for these units and for training of the concerned staff. In fact, the unit in the University of Calabar, Cross River State was recently adopted, by World Wide Fund for Nature (WWF), as one of the 60 EE projects to be supported internationally in the world.

The most concentrated and arguably the most advanced programme on environmental education in the country is the Community Awareness and Mass Mobilization (CAMM) Programme, associated with the European Economic Community-supported North East Arid Zone Develop-

**BOX 4.2: ENVIRONMENTAL EDUCATION IN
THE NORTH EAST
ARID ZONE DEVELOPMENT PROJECT (NEAZDP)**

The Community Awareness and Mass Mobilization (CAMM) component of the North East Arid Zone Development Programme (NEAZDP) is concerned with EE in Borno State. It proposes to site an Environmental Education Centre in Garin Alkali which is situated between the drylands and wetlands of the NEAZDP area of operation, which is a microcosm of the whole West African Sahelian-riverine area, stretching from Senegal to Lake Chad. It is proposed that long term support for this should be solicited from within Nigeria and the world community.

Two staff of Borno State Ministry of Education were among the 12 graduates of Jordanhill College of Education UK. They are currently posted to Gashua on secondment to the NEAZDP to implement the Schools and Colleges Programme and thereby give support to the Ministry of Education's attempts to implement EE.

ment Programme (NEAZP) in Borno State. Designed as part of an integrated rural development programme, CAMM seeks to blend environmental education with development interventions aimed at achieving sustainable development. It hopes to alter people's attitudes towards the environment and help them to commit themselves towards working individually and collectively for a better environment and sustainable life styles. It hopes finally to teach the skills for managing the environment. The outcome of this experiment in Borno State could provide valuable lessons that could be replicated in other parts of the country, Africa or the world.

Formal Training of Environmental Workers

Closely related to environmental education as a means of fostering increased awareness is the training of those who work professionally on environmental problems in the field. In addition to the training of EE teachers already referred to above, training of at least two other categories of workers may be recognized. First are the technical staff that deal with physical environmental resources such as land, water, soils, forests, wildlife, livestock and fisheries. Training to enhance the skills, capacities and competence of this category of workers is given in Nigeria in various post secondary technical institutions offering National Diploma (ND) and Higher National Diploma (HND) programmes. These include federal and state operated polytechnics or specialized schools/colleges regulated by the National Board for Technical Education (NBTE), of which there were about 47 in 1991 (NBTE 1991). In addition, several vocational schools at a lower level exist in the country. Inadequate equipment, staffing and opportunities for practical training, are the general limitations of these institutions. Emphasis on conservation and sustainable management practices which already exist in some of them also need to be strengthened.

The EE programme of NEAZDP is cooperating and collaborating with NCF, WWF-UK and Jordanhill College of Education, U.K.

The Borno State Government has applied for funds to support the NEAZDP's EE from the world community under Lome IV.

A large number of distinct target audience for EE has been identified as being relevant to NEAZDP and these include targets at village, local government and State Government levels. Targets outside Borno may be included, for example, water resource managers in Kano State. From the practical point of view, the targets will be grouped as follows:

- (i) Decision makers
- (ii) Environmental Administration Trainers
- (iii) Schools and Colleges; and
- (iv) The general public, to be addressed by mass awareness programmes.

Next are the change agents who may be extension personnel or community development workers, and who serve as catalysts in bringing about the behavioural and attitudinal changes in target communities. Formal training is required to develop the necessary skills for mobilizing and sensitizing people to form the desired attitudes and patterns of behaviour towards the environment. Few community development training centres exist in the country, but several of the agricultural training institutions offer programmes in extension education. Here, programmes like the two year diploma course in Adult Education and Community Development offered by the Department of Adult Education, University of Ibadan, could be adapted for such training by reinforcing their practical content.

CASE STUDY: ENVIRONMENTAL AWARENESS AND EDUCATION IN BENDEL STATE

INTRODUCTION

In order to (a) illustrate the level of environmental awareness in Nigeria, (b) determine the possibility of incorporating environmental education (EE) into formal and informal educational systems of the country and (c) evaluate the roles played or to be played by the government and NGOs in Nigeria, the former Bendel State, now split into Edo and Delta States, were studied. It was selected because it is a state of different (i) ethnic groups, (ii) religions with considerable representation of Christians, Muslims and those who accept African religions, etc and (iii) vegetation types such as freshwater and mangrove swamps, rainforest and derived savanna woodland. Bendel state is sometimes called a miniature Nigeria because of its heterogeneous character. Its area is about 39,740 km² with an estimated population of 5,647,313 in 1991 computed from 1963 population at an annual growth rate of 2.9%.

MAJOR ENVIRONMENTAL ISSUES

The most important environmental problems in Bendel State are: (i) over-exploitation of the forest resources of the state which is resulting in environmental degradation; (ii) pollution; (iii) over-crowding and noise; (iv) poor city planning and maintenance; and (v) increasing number of destitutes.

Over-Exploitation of Forest Resources

Bendel State was rich in forest resources at the beginning of the 20th century. The state has numerous wood-based industries of different scales of production that have exploited the forests for many years with little or no tree planting. A reliable forest inventory completed in September 1978 by FAO showed that the total area of all the forest reserves in Bendel State was 6,360 km². The reserves have been severely logged by both legal and illegal wood-based industrialists and ravaged by poorly controlled allocations for taungya farming without adequate follow-up on tree planting. Forests outside the reserves are also heavily logged; they are sources of farm lands for the peasant farmers whose farming techniques (especially the shifting cultivation or slash and burn system) contribute to the destruction of the forests within and outside the reserves. Consequently the forests of Bendel State are disappearing at an alarming rate resulting in derived savanna woodland, erosion, soil losses and other forms of environmental degradation. Unless immediate action is taken to check the destruction of the forests, they may disappear in 10 to 15 years from now.

Pollution

The important types of pollution in this state include:

- (i) water and land pollution caused by domestic and industrial wastes
- (ii) oil spillage arising from extraction of petroleum from oil wells in the state and
- (iii) atmospheric/air pollution caused by inefficient sewage and drainage systems, industrial fumes and burning of refuse comprising a variety of materials some of which produce poisonous smoke and gases.

Over-Crowding and Noise

This is a problem of the big cities in the state. The urban dwellers tend to crowd around the commercial area and along major roads of the cities thus creating slum conditions. The areas lack the most basic services and where they exist, they are over-used. Waste disposal is ineffective resulting in litter and the blocking of roads and drainages. The polluted air stinks and the blocked drains contribute to flooding. These are the characteristic features of urban areas such as Benin-City, Warri, Sapele etc. Such over-crowded areas are also very noisy.

Poor City Planning and Maintenance

Bendel State has several ancient cities such as Benin-City, Asaba, Warri, Agbor and Sapele which have continued to expand with little or no planning control. Benin-City, the state capital dates back to the 12th century and the ancient and modern parts often form an incongruous mixture. The cities of Bendel State are poorly planned and maintained. The city roads are narrow with poor drainage facilities and the recreational centres and facilities are too small and old for the populations.

The urban centres are the locations of the major industries in the state. There has been little or no concern for the proper siting of the industries within the urban centres; the industries are characterized by haphazard location in the cities and mixed up with other unrelated forms of land use. Only a few of Benin-City's major industrial establishments are located within the city's three industrial estates.

PEOPLE'S AWARENESS OF ENVIRONMENTAL ISSUES

There are cultural practices in Bendel State that indicate that the people are environmentally aware. The two most obvious ones are the establishment of sacred forests in different parts of the state and the placing of large areas of forests under the custody and control of the kings (Obas), princes or chiefs. People are forbidden from entering sacred forests which are places of worship or for performing rituals in accordance with African religions.

Because members of the public are kept off from sacred forests by their fear of, and respect for the gods, such forests are like the modern day strict nature forests which conserve the plant and animal species of the ecosystems. The introduction of Western education and foreign religions to Africa has changed people's attitudes to sacred forests. Most people (especially those who are not indigenes of the locality concerned) do not treat such forests as sacred places and they are now being exploited.

The forests that belong to Obas or traditional rulers are like forest reserves in the sense that they can be exploited judiciously and slowly to satisfy human needs without destroying the environment. The leaders are like the conservators of forests of the civil service. The different parts of what remains of the old Benin Kingdom have forests which belong to the Oba and his relations (sons, brothers etc.) The traditional leaders in Bendel State often do not have the resources (manpower, funds etc.) to manage maintain and protect the extensive areas of forests they own, consequently parts of the forests are being sold to rich members of the public or given as concessions to timber industrialists.

General Public

The level of hygiene and cleanliness in the rural areas of Bendel State show that the rural communities appreciate the value of a clean environment. The waste disposal system, though old-fashioned are efficient for villages with sparse populations but grossly inefficient for densely populated urban areas. Because the cities are characterized by terrible environmental conditions one could wrongly conclude that people in urban centres are

not environmentally conscious. There are several cases of people who live under sub-human environmental conditions in the cities even though they have built their own houses in their villages with large spaces, gardens and other facilities recommended by experts. This shows that most urban dwellers may indeed be environmentally aware, but are merely in the cities coping with environmental conditions that they do not accept. They possess little sense of attachment or commitment to the urban areas. This is probably because they regard the cities mainly as places to make money for a comfortable life later in the villages.

The inhabitants of Benin-city are aware of many environmental problems especially those that can be easily observed. (Chokor 1988, Ozo 1988). Both those who live near industrial establishments and those who live far away from them are aware of the many types and dangers of industrial pollution. The less visible types of pollution such as chemical contamination (or poisoning) and biological or pathogenic infestation of the environment which are rising to serious dimensions are not generally recognized by members of the public because they are not readily perceived by people.

THE ROLES OF THE GOVERNMENT AND NON-GOVERNMENTAL ORGANIZATIONS (NGOS) IN FOSTERING ENVIRONMENTAL EDUCATION (EE)

Because most of the state government's contributions to fostering environmental education are responses to recommendations, appeals or suggestions by NGOs, especially the Nigerian Conservation Foundation (NCF) it is difficult to separate the two. Almost every part played by the government embodies a contribution by an NGO.

Tree Clubs

These are young foresters' clubs in schools in Bendel State. In 1980 several tree clubs were launched in schools in and around Benin-City. Mr. J.G. Osemeobo, the then Forest Officer in-charge of the Field Office, Benin City ran a series of inaugural lectures on EE in the schools to establish woodlots and taught them landscaping and amenity planting of their premises.

The Environmental Sanitation Day

The government of Bendel State joins other governments in Nigeria to enforce the environmental sanitation day once a month in the state. This is achieved through the enactment and implementation of the Bendel State Environmental Sanitation Edict. This exercise is contributing to keeping the state clean and raising the environmental awareness of the people.

Conservation Education Coordination

This now (1990) exists in the Bendel State Ministry of Education as suggested by NCF in collaboration with Federal Ministry of Education. An officer coordinates and promotes EE in the state.

Conservation Clubs in Schools

Conservation clubs have been established in schools in the state in 1990 to supplement the planned classroom teaching of EE. The clubs are very active in the state and have resuscitated the activities of the tree clubs which waned after the middle of the 1980s.

The Role of Jordanhill College of Education UK

In January 1990 Jordanhill College of Education started to offer to 12 Nigerians a three-month certificate course in EE which was specifically designed for the Nigerian situation. The aim was to train Nigerian educators who would establish similar courses in Nigeria. This course forms part of the NCF training programme in EE. Three of the participants came from Bendel State, two from the Ministry of Education and one from the Ministry of Agriculture. They have returned to Nigeria and are implementing the state's programmes in EE.

Role of Formal Education

Various courses taught at different levels of formal education in the state give students fragmented pieces of information. Apart from the EE programme being planned by NCF, there are no courses in formal educational system designed to give students comprehensive information on the environment. The University of Benin supports the environment education programme of NCF by agreeing to provide accommodation for the EE units and pay staff salaries and this support makes the long term future of the unit more optimistic.

Workshops

One has been held in Benin City for secondary school teachers to raise their awareness and to develop methods and activities for implementing EE in the classroom. Representatives came from all the local government areas in Bendel state. The response from all the participants was very encouraging and new initiatives are being developed as a result of this success. The existing curricula were examined and environmental components identified. These were then used as modules and classroom activities designed by the teachers themselves.

Environmental Education Unit

An independent Environmental Education Unit has been set up within the College of Education, Ekiadolor, Benin to service:

- (a) EE inputs to the formal education sector in Bendel State working with the state Ministry of Education and supporting the implementation of EE programmes in the state; and
- (b) Community education within Bendel State but specifically in the Okomu Forest Reserve liaising with the State Ministry of Agriculture and Natural Resources and with local community groups.

The aims of the unit are to:

- (i) develop training programmes for teachers and community extension workers in EE and run workshops and courses;
- (ii) take curriculum development initiatives in environmental education;
- (iii) develop resource materials (e.g. teachers' manuals, teaching materials, pupil materials, resources for community education);
- (iv) publish resource materials with in-house Desktop Publishing Unit;
- (v) develop community education in the Okomu Reserve and elsewhere in Bendel State;
- (vi) establish a teachers' resources centre for the area;
- (vii) use the Okomu Reserve as a "resource" in the preparation of materials and the training of teachers; and
- (viii) develop the institutional links already established with Jordanhill College of Education.

The College will initially "train the trainers" on its courses in Glasgow, run a programme of workshops at Benin annually, and monitor and evaluate the work of the unit as it progresses.

A Conservation Education Advisory Council will be set up to administer the project. This will be made up of representatives from University of Benin Institute of Education, the State Ministry of Education, the State Ministry of Agriculture and Natural Resources, NCF, Jordanhill College of Education, the Programme Co-ordinator, the Unit Director and three unit co-ordinators.

Wildlife Sanctuary at Okomu Forest Reserve

Okomu Forest Reserve covers an area of 1082 km² and is the largest and least degraded forest reserve in Bendel state. It is also representative of the lowland rain forest ecosystem of south western Nigeria, and contains a variety of plant and animal species unique to this part of West Africa. Important wild animals found in this reserve include the endemic white-throated guenon monkey, forest elephant, West African Dwarf Crocodile, Bushcow, Sitatunga and Yellow-backed Duiker most of which are endangered.

Because the reserve is being degraded at an alarming rate, an active conservation project is on the way. A core areas of 70 km² of the reserve was declared a wildlife sanctuary by the Bendel State Government in 1985 and the NCF launched the Okomu Forest Project in 1987. Under this programme the abandoned Forestry Rest House at Arakhuan Camp was refurbished as project Headquarters, a project consultant and game guards were employed to protect the sanctuary from illegal logging and hunting, and a survey of the limnological resources of the reserve was conducted. In 1988 conservation awareness campaigns were conducted among the communities living in the vicinity of the reserve. Abandoned infrastructural

facilities are being refurbished to provide staff accommodation and offices for conservation Education and Resource Centre.

Conservation Education Project for Okomu

It is a well-known fact that no conservation area can be effectively protected without the support of the communities in the area. Any proposed management plan must involve the local inhabitants in the protection and management process and intensification of economic activities in the project area. Fostering environmental awareness or EE is an integral part of the process. A Conservation Education Project is proposed for communities in and around Okomu Forest Reserve as one of the ways of protecting the Okomu Wildlife Sanctuary.

The aims of the project are to:

- (i) develop the NCF centre at Arakhuan as a multi-purpose Conservation and Education Centre;
- (ii) implement an EE programme for schools in the reserve area;
- (iii) encourage the use of the sanctuary and reserve as a teaching resource and for the production of teaching materials;
- (iv) establish a resource library;
- (v) implement an EE programme for community awareness;
- (vi) develop the long term tourist/visitor potential of the area; and
- (viii) establish a link with the EE Centre at Benin for institutional support.

The details of the implementation of the project have been worked out by NCF.

CONCLUSION

The seeds of environmental education are embedded in the culture of the people of Bendel State and they are therefore environmentally conscious. The current formal educational systems of the state provide environmental information in fragments and there is an urgent need for a comprehensive EE programme in the state. An elaborate and comprehensive EE programme is about to be implemented by the state governments and international organizations. It is important to make sure that the philosophy and the process of implementation of EE in the state are better than those of formal education which are generally believed not to be very successful. Students should be made to see EE as important in their lives both when they are at school and afterwards. They should be discouraged from seeing courses in EE as obstacles that they have to cross in order to earn their certificates or degrees. There should be strong motivation and innovation and innovative disposition to involve students physically, emotionally and mentally. Cash prizes and a variety of other incentives should be used to encourage students to take EE seriously.

The success of EE would be determined not only from students' performance in the EE course but also from their practice of the principles

of EE after formal and informal education. The teachers should look beyond the time students spend at school acquiring EE and should constantly remember that the aim is to produce environmentally conscious citizens who would save the nation and the world at large from environmental disasters. It would be meaningful to evaluate the progress after the planned programmes have been operated for 5 to 10 years.

THE ENVIRONMENT AND INSTITUTIONAL FRAMEWORK

5

INTRODUCTION:

A central element of achieving sustainable development or any other form of far reaching transformation is the extent to which the positive features of change, in this case sustainable environmental management, have been incorporated into society in an enduring and ongoing manner as skills, values, practices, beliefs and technology. In other words, we are referring to the extent to which there has been institutionalization or the putting in place of structures, methods and modes of doing things. In the context of sustainable development in Nigeria, the concern is how this has been done both within private and public spheres and what the problems and constraints are. In this chapter each of these spheres is looked at separately.

Beginning with the public sphere, one major element that has been identified is the tendency in conventional policy circles up till now, to define the basic problem of the Nigerian environment as that of poor sanitation. This environmental sanitation syndrome has been responsible to some extent for the obviously low priority given to institution - building for environmental management. This same definition has given rise to the tendency to reduce the failure of environmental sanitation efforts to the lack of discipline among the populace, and a preference for ad-hoc compulsion to enforce sanitation.

There are, of course other reasons for the low level of institutionalization in the public management of the Nigerian environment. One is the equally low level of political stability incidental on the country's culture of regime-change which has resulted in a lack of institutional and policy continuity and in regime and policy uncertainties.

Another factor has to do with the point that, for a long time in the nation's history, planning for the environment was not seen as a complement to planning for economic development. Until the Third National Development Plan period (1975-1980), nothing was done to integrate "economic and physical planning" In the words of the Third Plan document (FRN, 1975:291):

One of the main weaknesses of Nigeria's planning effort hitherto has been its heavy emphasis on sectoral and financial planning almost to the total neglect of physical planning. The effect of this is now becoming increasingly reflected in the form of disorderly spatial and environmental development, despite the rapidly increasing level of economic activity and rising incomes which the country has achieved in recent years. It is therefore, the main objective of policy during this plan period to reverse this trend by paying greater attention to regional development, including physical and environmental planning, in order to enhance the quality of life for all citizens as development progresses.

Complementary to the over-emphasis on economic planning relative to environmental planning is yet another lag between institutional and administrative reform on the one hand and dominant official perceptions of development planning on the other. Thus, in the words of Nwafor (1979:333):

The principal weakness of Nigeria's development plans...has been the failure to bring development planning and administrative reform together, both organizationally and functionally at the macro as well as at the micro level. Considerations of institutional changes, social development, political and administrative feasibility were not accommodated in the various plans. The underlying reason is that administrative reform has lagged behind development planning and could not, in many cases, establish the necessary rapport that could convince the economic planners of the necessity of its integration in the plan.

Against this background, however, it is important to note the increasing swing within the Nigerian policy and intellectual elite away from extant

perspectives that either defined environmental issues narrowly in terms of conservation or sanitation or posed the relationship between the environment and development at best as conflictual or as one of reversed correlation. The intellectual and policy pendulum in the country appears to have decidedly swung in the direction of what can be called the 'new' conventional wisdom (World Commission on Environment and Development (WCED), 1987:X-XIII, 1-23; o'Riordan, 1990; Warford, 1987; Barbier, 1987; Caldwell, 1984; Imevbore, 1989; Aina, 1990a; and Oguntala, 1989) which emphasizes the elemental and complementary link between the environment and the development process. Thus, it is now acknowledged that the environment, including natural resources therein, constitutes the pivot on which the development effort is hinged, with the warning for the whole African continent that "it is mismanagement or no management at all of the environment and natural resources that is undermining Africa's economic security and plunging the continent into a crisis" (Tolba, 1988: 6 and 3). And, as a Nigerian Minister for Works and Housing, Major General M.T. Kontagora, citing Dr. Mostapha Tolba, Executive Director of the United Nations Environment Programme (UNEP), publicly acknowledged in 1988, planning for long-term and sustainable development must be "based on explicit consideration of the various environmental factors on which the process of development rests" (Kontagora, 1988:2) more so for a country like Nigeria which for long had "neglected environmental considerations" in its development plans.

It would thus appear that a major issue for now is the extent to which the necessary situation could be created that would enable the coping mechanisms of extant institutions to be strengthened and rationalised to better facilitate and sustain an environment more conducive to human existence and development. The coping mechanisms would have to address the two levels of environmental problems: the primary, attributable to poverty, underdevelopment and poor living conditions, and the secondary, generated by the process of development itself (Ayoade, 1979:234).

Two other problem areas relate to the issue of brakes on popular participation in environmental policy making and implementation. These are areas such as illiteracy, ignorance and structural inadequacies and the issues of appropriate legislation and jurisdictional partitioning within the country to allow for a more rational and stable framework for environmental management.

THE CONSTITUTIONAL PROVISIONS

The 1989 Constitution, the most recent in Nigeria's experiments with constitutions, scheduled to become fully operational in October 1992, at the inauguration of the Third Republic, provides the basic sketch for the macro institutional framework for environmental management in Nigeria's federal system. The 1989 Constitution outlines the responsibilities of government and the citizenry and lays down the broad outlines of the jurisdictions of all levels of government - central, state (regional) and local in the federation with regard to environmental management. The Nigerian federal set up is made up of a federal government at the centre with

the country divided into 21 constituent units called states or regions presided over by state governments and a Federal Capital Territory (FCT) presided over for now by a Federal Minister but by the time the Third Republic takes off fully by a mayor. Each of these states and the FCT is further divided into smaller entities called local government areas, 453 in all. However, this changed from August 27, 1991 when an additional nine states were created giving a total 30 constituent units, while 47 new local government areas were also created bringing the total to 500 local government areas.

A significant portion of the constitution's chapter II on "Fundamental objectives and Directive principles of state policy," which essentially lays down the fundamental obligations of government to the people, outlines the duties of government in the area of environmental management. For instance, section 17(1) (2) of the constitution, which addresses the economic objectives of the Nigerian State, indicates that:

- (1) The state shall, within the context of the ideals and objectives for which provisions are made in this constitution:
 - (a) harness the resources of the nation and promote national prosperity and an efficient, dynamic and self-reliant economy;
 - (b) manage and control the national economy in such manner as to secure the maximum welfare, freedom and happiness of every citizen on the basis of social justice, equality of status and opportunity;
 - (c) without prejudice to its rights to operate or participate in areas of the economy other than the major sector of the economy, manage and operate the major sectors of the economy;
 - (d) without prejudice to the right of any person to participate in areas of the economy within the major sectors of the economy, protect the right of every citizen to engage in any economic activities outside the major sectors of the economy.
- (2) The state shall direct its policy towards ensuring:
 - (a) the promotion of a planned and balanced economic development including the diversification of industries and dispersal of industrial projects and infrastructural facilities throughout the Federation;
 - (b) that the material resources of the community are harnessed and distributed equally and judiciously to serve the common good of all the people;
 - (c) that the economic system is not operated in such a manner as to permit the concentration of wealth or the means of production and exchange in the hands of a few individuals or of a group; and
 - (d) that suitable and adequate shelter, food, water supply, reasonable national minimum living wage, old age care and pensions, unemployment and sick benefits and welfare for the disabled are provided for all citizens.

While the responsibilities for the environment are thus subsumed under economic functions, the thrust of these responsibilities as enshrined in the constitution is quite clear. Furthermore, subsections 1, 2 and 3 of section 18 on the state's social objectives amplify this thrust. According to subsections 1 and 2 of the said section 18:

- (1) The state social order is founded on ideals of Freedom, Equality and Justice.
- (2) In furtherance of the social order:
 - (a) every citizen shall have equality of rights, obligations and opportunities before the law;
 - (b) the sanctity of the human person shall be recognised and human dignity shall be maintained and enhanced;
 - (c) exploitation of human or natural resources in any form whatsoever for reasons other than the good of the community shall be prevented;
 - (d) the independence, impartiality and integrity of courts of law, and easy accessibility thereto shall be secured and maintained.

In its third subsection, section 18 of the constitution goes on to add that the State shall direct its policy towards ensuring that:

- (a) all citizens without discrimination on any ground whatsoever have the opportunity for securing adequate opportunities to secure suitable employment;
- (b) conditions of work are just and humane, and that there are adequate facilities for leisure and for social, religious and cultural life;
- (c) the health, safety and welfare of all persons in employment are safeguarded and not endangered or abused;
- (d) there are adequate medical and health care facilities for all persons;
- (e) there is equal pay for equal work without discrimination on account of sex, or any other ground whatsoever;
- (f) children, young persons, the aged, and the disabled are protected against any exploitation whatsoever, and against moral and material neglect;
- (g) provision is made for public assistance in deserving cases or other conditions of need.

Aspects of Part I and II of the Second Schedule to the constitution allocate responsibilities for the environment between the federal and constituent state (regional) governments while Part I of the Fourth Schedule define the responsibilities of local governments in this regard.

Part I, which contains items on the exclusive legislative list meant to be acted upon by the central (federal) government alone, includes:

1. Arms, ammunition and explosives;
2. Aviation, including airports, safety of aircraft and carriage of passengers and goods by air;

3. Construction, alteration and maintenance of such roads as may be declared by the National Assembly to be Federal Trunk Roads;
4. Incorporation, regulation and winding up of bodies corporate, except cooperatives, local governments and others established directly by state (regional) assemblies;
5. Customs and excise duties;
6. Export duties;
7. Drugs and poisons;
8. Fishing and fisheries other than fishing and fisheries in rivers, lakes, water ways, ponds and other inland waters within Nigeria;
9. Immigration into and emigration from Nigeria;
10. Maritime shipping and navigation on tidal waters and the River Niger and its effluents and any other inland waterways designated by the National Assembly as an international or inter-state (regional) waterway; and ports designated by the National Assembly as federal ports;
11. Meteorology;
12. Mines and minerals, including oil fields, oil mining, geological surveys and natural gas;
13. National parks as designated by the National Assembly with the consent of state (regional) governments;
14. Nuclear energy;
15. Quarantine;
16. Identification, collection, preservation and management of ancient and historical monuments and records and archeological sites and remains identified by the National Assembly to be of national importance;
17. Railways;
18. Trade and Commerce, inter-state (regional) and international;
19. Traffic on federal trunk roads;
20. Water from sources deemed by the National Assembly to affect more than one state (region);
21. Wireless, broadcasting and television other than that owned by state (regional) governments and allocation of wavelengths for wireless, broadcasting and television transmission; and
22. Any other matter on which the National Assembly is competent to make legislation.

Part II, displaying items on the concurrent legislative list on which both the central (federal) and state (regional) governments could act, includes the following items of relevance to environmental management:

1. Antiquities, monuments and archives.
2. Electric power.
3. Exhibition of cinematograph films

4. Industrial, commercial or agricultural development and
5. Scientific and technological research.

The absence in the constitution of a residual list meant solely for state (regional) action and the fact that the exclusive list is more exhaustive than the concurrent list is an indication of the preeminent position of the central (federal government) in all matters in the Nigerian federation, including matters of environmental management.

As indicated earlier, Part I of the Fourth Schedule to the 1989 constitution lists the functions of local governments in environmental management to include:

1. Formulation of economic planning and development schemes for the local government area.
2. Establishment and maintenance of cemeteries, burial grounds and homes for the destitute or infirm.
3. Licensing of bicycles, trucks (other than mechanically propelled trucks), canoes, wheel barrows and carts.
4. Establishment, maintenance and regulation of slaughter houses, slaughter slabs, markets, motor parks and public conveniences.
5. Construction and maintenance of roads, streets, street lighting, drains, parks, gardens, open spaces, or such public facilities as may be prescribed from time to time by the House of Assembly of a state (region).
6. Naming of roads and streets and numbering of houses.
7. Provision and maintenance of public conveniences, sewage and refuse disposal.
8. Control and regulation of out-door advertising and other places for sale of food to the public, laundries, and movement and keeping of pets of all descriptions.
9. Licensing, regulation and control of the sale of liquor.

The schedule also enjoins local governments to cooperate with state (regional) governments in the areas of:

1. the provision and maintenance of primary, adult and vocational education;
2. the development of agriculture and natural resources, other than the exploitation of minerals;
3. the provision and maintenance of health services and
4. any other function as may be delegated to local government by state legislatures.

The import of these constitutional provisions is the extent to which the federal government retains most of the regulatory and supervisory powers over the environment and the relative incapacitation, circumscription and decline in the powers and sphere of influence of the lower levels of government (State and Local) as one moves down closer to the grassroots and the local communities. The end result of the constitutional framework is the ironical situation in which the level of government that is closest to

the people (local government) has the least constitutional responsibility in the management of the environment. As discussed further on in this book, the need for greater decentralization cannot be over stressed.

This point will become clearer when the evolution of the institutional framework for environmental management is traced below from the colonial times up to the moment. For now, however, it is important to examine the outlines of the current institutional framework as it has evolved within the ambit of the federal arrangement.

The Federal Institutional Framework

Current federal action on the environment revolves mainly around the much-awaited Federal Environmental Protection Agency (FEPA), created in 1988, and only to a much lesser extent around an inter-ministerial National Committee on Ecological Problems (NCEP) established in 1982 to "implement appropriate projects designed to ameliorate ecological problems in the country" (FRN, 1990b:303) utilising part of the Ecological Fund consisting of 1% of the total money accruing to the federation account set aside yearly to be used to ameliorate ecological disasters. However, as of 1989, the Natural Resources Conservation Council (NRCC) was established with the mandate to formulate a national policy and coordinate all matters concerning the conservation of habitats, species and natural resources in Nigeria. The policy framework for current and future practice at all levels is provided by *the National Policy on the Environment* (FRN, 1989) launched in Abuja, the new federal capital, by the President, General Ibrahim Babangida, on 27 November, 1989, and the philosophy underlying the rolling plan concept and the First National Rolling Plan, 1990-92 (FRN, 1990a:4-10, 29-34; FRN, 1990b:293-309).

The 22-page National Policy on the Environment explicitly recognises the link between "development processes, environmental factors as well as its ultimate goal for the achievement of sustainable development in the country". The plan document recognises that, to achieve this goal, there would be the need for action to "establish and/or strengthen legal, institutional, research, monitoring, evaluation, public information, and other relevant mechanism" (p. 6). The document also notes that: viable national mechanism for co-operation, co-ordination and regular consultation, as well as the harmonious management of the policy formulation and implementation process requires the establishment of effective institutions and linkages within and among the various tiers and levels, of government - Federal, State and Local Governments.

Apart from FEPA, which is basically a federal supervisory agency, the policy document is very scanty in the area of institutional reform meant to strengthen institution building and active participation by the lower levels of government in environmental management. No doubt, the national policy underscores the need for public participation and, in a section devoted specifically to this, notes that (p. 19):

"In order to achieve the goals and objectives set out in the preceding sections, actions will be taken to raise public awareness and promote understanding of the essential linkages between

environment and development, and to encourage individual and community participation in ensuring broad public participation in consensus-building towards defining environmental policy objectives; adopting community-based approaches to public education and enlightenment through culturally relevant social groups, voluntary associations and occupational organizations; intensifying the use of mass and folk media at Federal, State and Local Government levels; giving due attention, in the pursuit of environmental goals, to the role of NGOs and community groups and especially the contributions that can be made by youth and women's groups."

However, it is only in very few areas that the policy document specifically highlights institutional arrangements that explicitly identify the role of other levels of government apart from the Federal. These few instances include the area of population management, where it promises (p. 7) "intersectoral cooperation, involving all tiers of government," and announces that:

"Joint action and complementary programming will be promoted to evolve guidelines, bye-laws and regulations; (and that) a joint consultative committee on Environment and population, involving appropriate public and private institutions at Federal and State levels shall be created."

A similar recognition of institutional engineering for enhancing lower-level governmental and community participation is made in the area of the management of forest and allied resources with the policy promising (p. 10) "increasing support for non-governmental organization (NGOs) and community tree planting programmes."

What our discussions so far have done, is to reemphasise the point that the focus and locus of policy formulation and execution now and in the future revolves around federal initiative. This is an indication of the centralizing trends in Nigerian federalism discernible since independence in 1960, a rising not only from institutional and policy centralization resulting from the many years of military rule which has accounted for 22 of the 32 years of independent nationhood from 1960 to 1992, the decline in size, influence and fiscal viability and autonomy of the federated states incidental on their being divided into more states in 1963, 1967, 1976, 1987, and 1991, and also from the centralization of the Nigerian Federal Public Finance system.

As indicated earlier, even in the specific area of the institutional framework for the management of the environment, the historical evidence outlined below will further buttress this incidence of centralization in Nigeria's federalism.

For now, however, it is important to detail the institutional framework as it exists. From previous discussion, it is obvious that this framework hinges on the Federal Environmental Protection Agency (FEPA) established in 1988 after several years of pressure from intellectual, policy and popular circles for its establishment.

Section 4 of the Federal Environmental Protection Agency Decree,

otherwise known as Decree No. 58 of 1988, which established the agency, gave its functions as including: responsibility for the protection and development of the environment in general and environmental technology, including initiation of policy in relation to environmental research and technology; and without prejudice to the generality of the foregoing, it shall be the duty of the Agency to:

- (a) advise the Federal Military Government on the national environmental policies and priorities and on scientific and technological activities affecting the environment;
- (b) prepare periodic master plans for the development of environmental science and technology and advise the Federal Military Government on the financial requirements for the implementation of such plans;
- (c) promote co-operation in environmental science and technology with similar bodies in other countries and with international bodies connected with the protection of the environment;
- (d) co-operate with Federal and State Ministries, Local Government Councils, statutory bodies and research agencies on matters and facilities relating to environmental protection; and
- (e) to carry out such other activities as are necessary or expedient for the full discharge of the functions of the Agency Under this Decree.

Section 5 of the decree empowers FEPA to

- (a) make grants to suitable authorities and bodies with similar functions for demonstration and for such other purposes as may be determined appropriate to further the purposes and provisions of this Decree;
- (b) collect and make available, through publications and other appropriate means and in cooperation with public or private organizations, basic scientific data and other information pertaining to pollution and environmental protection matters;
- (c) enter into contracts with public or private organizations and individuals for the purpose of executing and fulfilling its functions and responsibilities...;
- (d) establish, encourage and promote training programmes for its staff and other appropriate individuals from public or private organizations;
- (e) enter into agreements with public or private organizations and individuals to develop, utilize, coordinate and share environmental monitoring programmes, research effects, basic data on chemical, physical and biological effects of various activities on the environment and other environmentally related activities as appropriate;
- (f) establish advisory bodies composed of administrative, technical or other experts in such environmental areas as the agency may consider useful and appropriate to assist it...;

- (g) establish such environmental criteria, guidelines, specifications or standards or the protection of the nation's air and inter-state waters as may be necessary to protect the health and welfare of the population from environmental degradation;
- (h) establish such procedures for industrial or agricultural activities in order to minimise damage to the environment from such activities;
- (i) maintain a programme of technical assistance to bodies (public or private) concerning implementation of environmental criteria, guidelines, regulations and standards and monitoring enforcement of the regulations and standards thereof; and
- (j) develop and promote such processes, methods, devices and materials as may be useful or incidental in carrying out the purposes and provisions of this decree.

Part II, sections 15-20 of the decree further mandates FEPA to advise on national environmental standards in the area of water quality, air quality and atmospheric protection, noise and hazardous substances.

Having thus outlined the preeminence of FEPA, the decree goes on in section 24 to state that federal authorities shall "as soon as possible after the commencement of this decree, encourage state and local government protection bodies for the purpose of maintaining good environmental quality in the areas of related pollutants under their control subject to the provisions of this Decree."

State Institutional Frameworks

In line with the establishment of FEPA, states have also established Environmental Protection Commissions and Environmental Enforcement Agencies. In some states, such as Oyo, such agencies are independent of ministerial control while in others, such as Lagos, they are located in ministries. Apart from differences in institutional location, it is instructive to note that the states also differ in terms of the perception of their role in environmental management. The minimalist states tend to focus on environmental sanitation while the more maximalist define the problem more inclusively, even if in practice they also focus mainly on sanitation, especially with regard to domestic solid waste disposal.

In Oyo State for instance, an Environmental Protection Commission (EPC) was established in 1989 and backed by an edict published in the Gazette of Oyo State Government No.33 Vol. 15 of 20 December, 1990.

Membership of the Commission consists of a chairman and four scholars appointed by the state Governor as part-time advisory members appointed from the environmental science, urban and regional planning, solid waste management, and preventive and social medicine, ex-officio members from Ministries of Justice, Works and Transport and Finance and Economic Planning, and the commission's chief executive, a General Manager.

While the EPC has since inception offered advice to government on the environment, it has not achieved much else within its mandate given the administrative and bureaucratic bottlenecks occasioned by bureaucratic

in-fighting and uncertainties. While EPC staff insist that the commission is independent of ministerial control, such a view is not shared by state ministries, particularly the Ministry of Works. Moreover, the commission lacks financial viability since it depends on subventions from the state government which are disbursed on a monthly basis.

Nevertheless, the EPC had done some groundwork within its mandate. For instance, it is mapping areas identified as being prone to flood. It has also identified and commissioned consultancies into different environmental problems in the state. Moreover, while the EPC has been unable to prepare master plans, it depends on and utilises one prepared by Marian & Co. in 1970 for its projections. The commission is also trying to link up with international bodies for the exchange of ideas and resources.

Another factor that has made the EPC's coordination difficult is political. For instance, there is a State-wide Environmental Task Force (ETF) established by the Military Governor with a retired military officer as chairman appointed by and accountable to the governor. Beyond this chairman and a few support staff, there has been little attempt to institutionalize and formalize the ETF which has no identifiable office and literally comes alive mainly during days and periods specifically set aside by the state government for state-wide cleaning up of the environment.

The level of cooperation between the EPC and the local governments is also very low, due in part to the fact that local governments are not represented in the institutional framework of the EPC. However, the EPC has begun an experimental cooperation programme with local governments in and around Ibadan, the state capital. This picture of the Oyo experience is basically replicated in the other states.

The Institutional Framework at the Local Government Level

The problem of low level of institutionalization becomes most acute at the local government level. Not only that, the purview of the local government has been limited to the management of solid waste disposal. All this has led to a situation in which the institutional framework at the local level has been underdeveloped, undermanned by relatively junior and middle-level manpower, and underfunded. As Bello-Imam (1985:9-13) has indicated, the result is that environmental management is left severely to a sub-unit of the health unit in the Health and Social Welfare Department of the local government, often called a Waste Disposal Board. Thus, environmental management at the local government level is plagued by the near-absence of "a resilient and workable institutional framework for the performance of ... services" (Bello-Imam, 1985:35), inadequate funding, lack of qualified personnel, poor remuneration (ibid:35-37) and apathy and inertia on the part of state governments and the federal administration. For instance, only 14.5 percent of the estimate for solid waste management, a local government responsibility, during the Third National Development Plan period (1975-1980) was actually expended by the various state governments, through whom local government allocations from the federation account were made, for that purpose.

Given the various reforms that have been made in the local government system since the 1970s, especially the ones announced between the late

1980s and early 1990s, geared toward providing more autonomy, responsibility, strength and increased funding direct from the federation account to local governments, it is hoped that some of the problems that have weakened the capacity of local governments to manage their environments in their domains would have been addressed and solved to a reasonable extent.

The Legal Framework

It is important at this stage to state that the problem of lack of an adequate and coherent legal framework that is known to all concerned is not limited to the local government alone but also plagues environmental management at the federal and state levels as well. As Agunbiade (1989:11-24), citing authorities, has noted of the era up to 1989:

“industrial operators (other than in the petroleum subsector) are apparently not guided by any environmental protection regulations/legislations and related quality standards ... where such regulations/legislations and related quality standards exist, conformance with them is not systematically monitored and effectively enforced ... It is not surprising that neither industrial establishments nor government agencies responsible for overseeing the industrial sector and environmental matters have a mechanism for monitoring and evaluating the impacts of industrial pollution with a view to controlling and managing them. A survey ... of existing laws ... showed that while there are existing laws both criminal and civil which regulate the environment, such laws are scattered in various statute books.”

Moreover, he goes on, “the laws are generally defective with loopholes and a tendency to over-emphasize penalties for contravention while standards and regulations that could be contravened are loosely specified and vaguely defined” (see also Ijalaye, 1982:63). Box 5.1 lists and briefly discusses some of the laws.

BOX 5.1: THE LEGAL BASES FOR THE PROTECTION OF THE ENVIRONMENT

The legal bases for the protection of the environment are statutory, judicial (common law), protocols/conventions and professional codes of conducts.

The statutory protections are contained in the following pieces of legislation:

1. Agricultural Act Cap 12 LFN 1990
2. Associated gas Re-injection Act Cap 26 LFN 1990
3. Animal Disease Act Cap 18 LFN 1990
4. Civil Aviation Act Cap 51 LFN 1990
5. Criminal Code Act Cap 77 LFN 1990
6. Endangered Species Act Cap 108 LFN 1990

Continued overleaf

7. Energy Commission of Nigeria Cap 109 LFN 1990
8. Exclusive Economic Zone Act Cap 116 LFN 1990
9. Factories Act Cap 126 LFN 1990
10. Federal Environmental Protection Agency Act Cap 131 LFN 1990
11. Harmful Waste (special criminal provisions etc.) Act Cap 165 LFN '90
12. Hydrocarbon Oil Refineries Act Cap 170 LFN 1990
13. Kainji Lake National Parks Act Cap 179 LFN 1990
14. Land Use Act Cap 202 LFN 1990
15. Mineral Act Cap 226 LFN 1990
16. National Water Resource Institute Act Cap 284 LFN 1990
17. Natural Resources Conservation Council Act, Cap 286 LFN 1990
18. Oil in Navigable Waters Act Cap 339 LFN 1990
19. Oil Terminal Dues Act Cap 339
20. Pest Control of Produce (Special Powers) Act Cap 349 LFN 1990
21. Petroleum Act Cap 350 LFN 1990
 - i) The Petroleum (Drilling and Production) Regulations
 - ii) The Petroleum Refining Regulation
 - iii) The Petroleum Regulation
22. Quarries Act Cap 385 LFN 1990
23. River Basins Development Authorities Act Cap 396 LFN 1990
24. Sea Fisheries Act Cap 404 LFN 1990
25. Territorial Waters Act Cap 428
26. World Meteorological Organisation Protection Act Cap 471 LFN 1990

Under civil law, the tort rules of liability that deal with the protection of the environment are nuisance, negligence, the rule in Rylands vs Fletcher, and trespass to land.

The rule in Rylands Vs Fletcher which is supposed to be a strict liability rule has been utilised in cases of environmental pollution. The rule is that any person who for his own purpose brings and collects and keeps there anything likely to do mischief if it escapes, must keep it at his own peril. The determination of non-natural user, what constitutes a mischievous thing that must have been brought and accumulated on the land are matters which have been considered under the rule in environmental litigation in Nigeria. However, the main defect of the rule is the numerous exceptions contained therein. With these exceptions, it could almost not be considered as a strict liability rule.

Trespass to Land

The unauthorised intrusion or invasion of property is termed trespass. The intrusion does not have to be by persons. It may be some

substance from another property. Thus in *Gregory Vs Piper* (1829) garbage from the defendant's property was blown by the wind to the plaintiff's property. It was held that the defendant had trespassed on the land of the plaintiff. This common law rule aims at the protection of the welfare, health and safety of the citizens as every person has a right to quietly and comfortably enjoy his property.

Negligence

The tort of negligence has also been relied upon by plaintiffs in environmental litigation. The burden of proof to be discharged by the plaintiff is always an uphill task and in most cases insurmountable. In some cases, the maxim of *res ipsa loquitur* has been relied upon to relieve the plaintiff from the onerous duty of proving negligence. Thus in *Victor Flen Vs Shell B.P.* (1979) oil escaped from the defendant's oil location to the plaintiff's property thereby causing damage. The learned judge evoked the principle of *res ipsa loquitur* and awarded damages to the plaintiff.

Nuisance

The unlawful interference with the plaintiff's enjoyment of land has led to successful environmental litigation under the tort of nuisance. This success is usually limited to cases of private nuisance. A successful action in public nuisance requires the plaintiff to prove that the injury he has suffered is different from the injury suffered by other members of the community. Thus in *Amos and Ors vs Shell B.P.* (1977), the plaintiff's action for public nuisance failed as he could not produce evidence to show that the damage to the waterway affected him in a way different from other members of the public. This makes an action in nuisance more difficult for the victim. Although public nuisance is a crime actionable by the state, the Attorney General's office has not given it the desired consideration thus, acts relating to public nuisance are hardly prosecuted.

The Harmful Wastes Act has made some slight changes with respect to burden of proof. Where any damage has been caused as a result of harmful waste which was dumped, persons who dumped the waste shall be liable except they can show that the damage was wholly due to the fault of the person who suffered it or was suffered by the person who accepted the risk voluntarily. Thus, once damage is proved, the burden of proof automatically shifts to the defendant.

Source: O. Adewale; 1991, The Nigerian Institute of Advanced Legal Studies, Lagos

While the decree setting up FEPA as well as the new National Policy on the Environment address some of these problems, the fact is that FEPA is still in the process, in conjunction with industry and other concerned bodies, of drawing up specific guidelines, standards and regulations on the Nigerian environment. This means that the lack of specificity in the legal framework is likely to continue for some time and to thereby hinder a more rational operation of the institutions charged with environmental management.

Lessons From the Evolution of the Public Institutional Framework

A critical examination of the public institutional framework highlights several points some of which need to be brought to the fore at this stage. These include the colonial origins of the framework, the palpable federal presence in its design, growth and modifications, ensuring that, to a large extent, ensuing institutions are essentially not people-based and are often, therefore, based on compulsion, the history of regime and policy instability and the attendant institutional, jurisdictional and legislative fragmentation, and the political geography of an institutional networking skewed in favour of federal, state and local government capitals in descending order of prioritization coupled generally with the incidence of weak institutions and resource base at the local level.

Within the exploitative logic of the colonial enterprise, it was not surprising that the British colonial regime in Nigeria placed the environment on a very low level in its priorities vis a vis economic exploitation and political pacification. It was equally not surprising that the colonial state, in its bid to maximize its extraction from the colony for export to the British metropole, emphasised a state-centric planning strategy. Moreover, even within this state-centric strategy, there was an imbalance in spatial focus, with nodal points identified for their economic, administrative and spiritual importance to the colonial regime attracting more attention than the rest of the Nigerian colony. Thus emerged "privileged" cities and towns.

It was this legacy that was handed to the Nigerian elite at independence. It was not until the Third National Plan period that serious effort was made to confront extant tendency to focus on economic planning and not address the environmental component of national development. This was 15 years after independence from British colonial rule. Even then, it is not in doubt that planners still have not fully reflected the intimate link between economy and environment in planning for national development. The emphasis on technicist economic considerations comes out clearly, as much as the secondary attention paid to the environment.

Moreover, the overbearing tendencies of the colonial state, carried over to the postcolonial period, has led to several tendencies in the evolution of the institutional framework for the environment among other public sector needs. Such tendencies include the following:

- (a) federal (central) initiative in determining the direction of the evolution for all other levels of government. Such initiatives have included the creation of additional states in 1963, 1967, 1976, 1987 and 1991 and the comprehensive attempts at local government reform na-

tionwide in 1976, 1986-87 and 1990-91. Beyond the institutional framework, there has also been strong federal pressure and presence at the level of policy as witnessed in the centrally initiated and coordinated National Development Plans and policies and guidelines on the environment (Bello-Imam, 1985; Abdullahi, 1988; Okpala, 1986a; Okpala, 1986b; Okpala, 1979).

- (b) Subsequently, there has developed a dependency syndrome among the other levels of government which appear to have not only lost much of their initiative to the federal government but appear to have considered this as natural. Thus, for instance, while the federal government has enunciated a comprehensive programme on the environment in the National Rolling Plan (1990-92), the picture for state and local government response and promise as reflected in the Plan is not as encouraging and suggests a surrender by the states and local governments in this regard to federal initiative (see FRN, 1990b:293-309).
- (c) A third consequence relates to jurisdictional overlap not only among the various levels of government but also within the central government itself. On the latter, for instance, Oduola (1990:5) has been quoted, on the specific issue of transport management by federal agencies involving the Federal Road Safety Commission (FRSC), the Federal Ministry of Works, the Federal Ministry of Transport and the traffic arm of the police force which is under federal control, as urging for a more rational institutional arrangement. As he observed, the FRSC, charged on the federal level with road safety, "operate separately from the Federal Ministry of Works who provide the roads, the Federal Ministry of Transport which is in charge of road transport operation, and the Traffic Police." The problem of jurisdictional uncertainties is most acute at the local level, given the overbearing tendencies vis a vis this level of the state and federal governments. The situation has thus been created, in the words of Okpala (1986:296), for instance, where: "urban management responsibilities are fragmented among so many disparate institutions or agencies with the result that these responsibilities overlap and conflict. In this situation, professional and bureaucratic jealousies prevent cooperation and coordination among the various agencies or reduce same to the barest minimum, and on an ad hoc basis."
- (d) The fourth and final point arising from the centrist tendencies in environmental planning and management in the postcolonial era, building on the colonial experience relates to their statist implications, including a consequence of not fully involving the mass of the people in managing their own environment. Thus officials involved in environmental planning could argue that such "planning should be done without considerations for what electorates feel" (FRN, 1976, 1966:57). In that context (Okpala, 1979:18) has pointed out that: "State-controlled planning bodies are relatively distant from the citizens and there are no mechanisms for the citizens to exert

relevant pressures on the planning authorities or to have inputs into their planning decisions. Planning authorities, under such a system, therefore have to be accepted as benevolent despots."

Beyond all this, regime instability has led to a relatively rapid turnover in key public policy and personnel. This problem has been more acute under military rule (1966-79; 1984 to 1992) when Heads of the Federal and state governments and their executive councils have been changed not only frequently but often without notice, the consequence often being that (Okpala, 1986: 296-297):

"One function is periodically transferred from one supervisory ministry or department to another. The operational benefits of accumulated experience are not maximised and may even be completely lost. The net result of all these is inefficiency, ineffectiveness, waste and disorder..."

A final lesson to be drawn from the evolution of the public institutional framework for environmental management relates to the tendency to focus on select cities and urban areas. As aptly described by Okpala (1986:299), the tendency is to concentrate public policy on "the capital cities as the only cities and to fashion policies and initiate measures with only the problems of the capital city in mind." The net result is a policy focus on federal and state capitals and the relative neglect of other cities and towns, often with equally or potentially serious environmental problems, subsequently creating a situation in which, even for the "favoured cities," urbanisation and urban growth in Nigeria has become an environmental and developmental liability, rather than the asset it ought to be (Onibokun, 1990:7).

Having said this much, an examination of the private institutional framework - that of the independent sector (which includes business and industry, Non-Governmental Organization (NGOs), Community-Based Organizations (CBOs) and other Grass Roots Organizations (GRCs) is in order at this point. This is done from the point of view that recognizes the necessity for, and importance of decentralization, popular empowerment and community participation.

The Importance of Decentralization and Popular Participation

What the analysis above has shown is the limited nature of decentralization in the management of environmental issues in Nigeria. So far the tendency within the public institutional framework is a centralizing one.

This is expressed both in the legal framework and the actual operation of public formal organizations. But there is scope, however, for massive improvement. First and foremost the 1989 constitution by its very nature contains strong decentralizing tendencies allocating different duties and roles to different tiers of government. Second, recent trends in public policy formation have indicated a direction towards grass roots level participation and implementation of policies based on the principle of reaching the citizens directly at the community level.

The creation in the past five years of institutions such as the Directorate

of Foods, Roads and Rural Infrastructures (DFRRI), the Directorate of Social Mobilization (MAMSER), the Better Life for Rural Dwellers Programme, the Community Banks, the Peoples' Bank etc. indicate the attempt to fulfil this need to be in touch with the levels closest to the peoples. However, a lot still clearly remains to be done in attaining genuine decentralization of these and other public institutions. The first step in decentralizing these institutions is perhaps to move further lower from the Federal and the State level. So far, the Local Governments still remain remarkably under represented and underutilized. This is in spite of the fact that the Federal Military Government also places great priority on them as levels of political action and administration. Their role in the current transition programme, being the first democratically elected tier to be operational marks this commitment at least in the sphere of electoral politics and public administration.

There is therefore the need at policy levels to devolve greater sustainable development activities to the local government and other tiers of administration closer to the people.

Popular Participation

On popular participation, a tradition of popular non-governmental involvement exists in Nigeria as far back as the colonial days when traditional institutions and associations such as age grades, secret societies, women's groups and guilds were adapted to colonial urban life. The colonial era also saw the establishment and growth of ethnic associations and town improvement unions. All of these have provided a basis for participation in the development process and other socio-economic activities. Recent trends in the past one decade have witnessed the formalizing of the activities of the voluntary associations. A significant trend has been the emergence of voluntary development and environment associations and organizations. The structure and activities of these are discussed further in this text.

This growth of civil and voluntary associations in development and environment activities is commendable. However, most of these organizations are top-down, made up mainly of members of the educated elite, namely professionals and individuals concerned with problems associated with these sectors. Although grassroots urban community and village-based associations are many and have been involved in development activities for several years, it is only recently through the activities of DFRRI that they are being given some recognition. Yet they constitute what can be seen as the core of the popular sectors. There can be little meaningful popular participation in environment and development, if the Grass Roots Organizations (GROS) are not strengthened to carry out basic environment and development activities. This is an element of popular participation that requires intervention in the form of mobilization, conscientization and funding.

NON-GOVERNMENTAL ORGANIZATIONS AND GOVERNMENT

As was pointed out above, recent years have seen a proliferation of Non-Governmental Organizations (NGOs) involved in environment and development. Some of these include Ecological Society of Nigeria, (ECOSON), Nigerian Environmental Society (NES), Forestry Association of Nigeria (FAN), The Nigerian Field Society, The Nigerian Environmental Study/Action Team (NEST), The Society for Environmental Management and Planning (SEMP), and the Nigerian Conservation Foundation (NCF)

For most of these associations, the relationship with Government (through FEPA) has been cordial as Government has insisted on providing leadership in defining what sustainable development issues are and what the boundaries of discourse and interaction should be. Some of these associations have also received funding from government for some of their activities such as conference, seminars, workshops, etc. There is a partnership but not yet on equal terms. So far, differences of opinion, styles and concerns have been managed with very little hostility.

Box 5.2, which tells the story of how government intends to create three 'model ecological villages' illustrates the above-discussed centralizing dimension that is often a part of the policy process. In that story the Government (perhaps because it is government) unilaterally selects and declares one NGO 'the premier environmental society'. It also offers this NGO accommodation and landed property. Such a posture has led to the emergence in NGO circles of the new acronym GONGO which is a Government-Owned or Organized Non-Governmental Organization. Although there is still a long way to go before a balanced mutually-acceptable pattern of interaction between NGOs and Government can emerge, some progress is being made in that direction.

The Kaduna Conference of 13-17 May 1991 of the Government and Non-Governmental Organizations in Nigeria convened by the United Nations Development Programme and the Federal Ministry of Social Development was a step in the right direction.

However, that conference also showed that there are major weaknesses in the NGO community in Nigeria. Some of the major ones include a lack of awareness or understanding of a broad NGO ideology, weak capacity particularly in the area of personnel and finance, low level of awareness of environment and development issues, and a mentality of dependence on government for support and funding. All of these weaknesses underscore the need for a bold and dynamic institutional development in this sector. Whatever programme emerges, it must be one that builds on the uniqueness of the NGO movement worldwide particularly in relation to the sustainable development goals of popular participation. It must also institute a broad process of training and development to build the research, advocacy and conscientization capacity of the organizations. So far not many NGOs apart from between, 2 to 3 well-known ones can claim any reliable institutional capacity.

Two of these organizations and one major independent sector association and a community organization are examined below:

BOX 5.2: GOVERNMENT TO CREATE THREE ECOLOGICAL VILLAGES

Three new villages may soon sprout in separate ecological zones of the federation to serve as model for an ideal and sustainable setting, reflective of Nigeria's socio-political culture.

Each of these villages is conceived on the basis of environmental factors and will be designed to serve as models of what environmental experts described last week as a sustainable village in Nigeria.

Although officials of the Works and Housing Ministry declined to say precisely when the project will take off, sources close to the Minister, Major General Mamman Kontagora (rtd) confirmed last week that the project has been handed over to the Nigerian Environmental Society which had only recently been given official recognition.

Apparently, the society would be required to choose the locations where the villages would be sited, provided that each of them fall into a distinct ecological zone of the country.

Senior ministry officials said last week that the authorities had, after protracted consultations, taken the decision two weeks ago to make the society a member of the National Housing Policy council, believing that its assignments would then be better facilitated.

Notwithstanding the laudable role of the Federal Environmental Protection Agency, (FEPA) the government, it was gathered, has also approved that the society be designated "premier environmental society" with the mandate of function side-by-side FEPA as watch dogs of the country's environment. Government's thinking, according to sources, is for both organs to play complimentary roles.

Consequently, the society has been directed to formally apply for office accommodation in Lagos which would serve as its secretariat and also a parcel of land in the new Federal capital, Abuja as its permanent site.

Source: Patrick Asonye, The Guardian: September 5, 1991, p.2.

Nigerian Environmental Society (NES)

The Nigerian Environmental Society (NES) was launched on October, 17, 1985 as a non-governmental organization. The society is run by elected officers and committees, and is open to Engineers, Scientists and others engaged in environmental control work. Some of the aims of NES are:

- (i) To foster and promote the profession of Environmental Science and Engineering and to assist in improving standards of sanitation maintenance.
- (ii) To assess and improve the professional status of all persons engaged in any aspect of environmental control work.
- (iii) To promote public understanding and encourage a sound national policy in matters relating to environmental protection.

- (iv) To establish forums, seminars, workshop for discussing issues relating to environmental protection.

A machinery was set in motion towards the implementation of these goals, by working through committees and an editorial board. In the process, NES has benefitted from extensive support from Government through FEPA, and from the private sector, particularly oil companies. This close relationship has led discerning members of the NGO community to wonder at the extent of independence and autonomy it can muster when environmental issues concerning its funders arise. An interesting dimension of this relationship is illustrated in Box 5.2.

NES, has organized a few visits to manufacturing plants in Lagos, to ascertain the extent of environmental degradation involved in their manufacturing process, and have offered advice to the respective companies towards abating the nuisance. NES has also been able to publish a quarterly newsletter, 'Environmental News', which apart from reporting the activities of the society, take on scholarly articles that are useful for people in the field of environment. Although NES has a few state branches, its make-up of predominantly engineering professionals reduces its grassroots contacts and potency.

Nigerian Conservation Foundation (NCF)

The Nigeria Conservation Foundation (NCF) is a non-governmental organization (NGO) dedicated to the promotion of nature conservation in Nigeria. Registered in February 1982 as a charitable trust, the activities of the NCF encompass conservation education, support for wildlife, research, protection of endangered species and habitats, and lobbying for legislation and policy initiatives that promote nature conservation. With headquarters in Lagos, NCF is the leading non-governmental organization in Nigeria working nationwide to save our native flora and fauna from extermination.

The Nigeria Conservation Foundation became formally affiliated to World Wide Fund for Nature (WWF) in February, 1989, through an associateship agreement signed during the visit of HRH Prince Philip, the Duke of Edinburgh, President of WWF International. By virtue of this agreement NCF is already beginning to reap enormous benefits from WWF's world-wide reputation, and expertise in fund raising and management of conservation projects. The discussions in chapter four on environmental education activities in Nigeria show clearly the extensive and very successful work NCF has been doing.

Manufacturers Association of Nigeria (MAN)

The Manufacturers Association of Nigeria (MAN) is a corporate body set up to protect the interest of private investors (multi-national inclusive) involved in manufacturing in Nigeria. The Association was set up around 1971 and has a directorate headed by a Director-General. Membership is exclusively open to company chairmen/ chief executives within the country. Since the companies are involved in production or processing from raw materials to finished stage, it is expected that industrial wastes, be they

solid, liquid or gaseous will be discharged into the environment. Depending on the nature of what is produced, the toxicity level of the industrial waste is another crucial factor in environmental pollution.

Ever before now, industries have been polluting the environment without any inhibition. But since the dumping of Toxic industrial waste at Koko port, in Bendel State in 1988, the Federal government has renewed its efforts in abating any discharge of untreated effluents into the environment. The Manufacturers Association itself is not oblivious of the situation. They are aware of Government's set standards and regulations for a better environment and they are encouraging all their members to observe the standards. In order to achieve this, an Environmental Sanitation Committee has long been in existence, to maintain a hygienic and clean environment. This committee is responsible for an annual best-kept company premises competition, in which prizes are awarded to the winners.

However, there is another sub-committee within the Environmental Sanitation Committee, which deals with Effluent discharge, Air Pollution and Solid waste. The function of this sub-committee they claim is to advise government and the agencies dealing with the environment about the appropriateness of some of its legislations and regulations to the Nigerian situation. MAN, claimed that they have mounted a campaign amongst manufacturers to treat their effluents before they are discharged into the atmosphere, especially those that contain noxious gases which are injurious to living things. However, there is still some evidence of substantial lack of ease and distrust of environmental issues by business. This distrust needs to be overcome through active involvement in sustainable environmental management strategies and awareness by the business sector. Box 5.3 illustrates the extent of the problem that is generated by insufficient awareness and distrust.

BOX 5.3: LAGOS INDUSTRIALISTS BOYCOTT ENVIRONMENTAL CHARGES, WANT CANCELLATION OF WORLD SUMMIT.

Subtle hints emerged last week suggesting that all might not be well with relations between two government agencies with responsibility for environmental matters on the one hand, and between the organised private sector and one of the agencies - the Federal Environmental Protection Agency (FEPA) - on the other.

While industrialists have begun to question FEPA's whole hearted acceptance of the concept of sustainable development as an environmental management option, the environmental agency has, uncharacteristically, lent its support to protests by the private sector against new environmental pollution charges to be introduced by the Lagos State Government.

The 'polluter-pay-principle' is to be introduced as a measure to abate pollution under the state Environmental Pollution Edict of 1989.

Continued overleaf

But, in a face-off between the two government agencies last week, the private sector found support with the environment agency, which advised against payment of the new charges, while cautioning the state against collection of unapproved charges for environmental services in the future.

Presenting seemingly 'good natured' opening remarks, at the first Business Luncheon/Lecture of the Lagos Chamber of Commerce and Industry's Engineering Services and Repairs Trade Group, the President of the Chamber, Mr. I. A. Salami, had identified the announcement of the environmental pollution charges to be paid by companies on the polluter-pay-principle, as one policy measure not acceptable to industrialists.

In fact, during discussions, chamber members had taken to task the chief executive of FEPA, Evans Aina - who delivered the lecture - baring their minds on the proposed charges.

For instance, Mr. C. O. A. Smith, the chairman of the trade group opened the barrage of opinions and strongly worded views, when he declared that the thrust of government's regulations needs reconsideration.

His words: "I do not think that the decree by the Federal Government is yet well known. The decree needs further publicity. However, the state edict has been well discussed and we think that the thrust needs reconsideration. The impression is that everybody pays for pollution. I do not think this is the intention. The motive should be to prevent pollution, since no fees or fines imposed on firms can compensate for pollution".

Citing the contents of a purported 'state document', Dr. Ademola Banjo, a council member of the chamber and chairman at the lecture, identified some of the categories of fees to be charged for firms as:

- Category A: N45,000 to N60,000 for cement, glass, rubber, tyre and the industrial machine industries;
- Category B: N20,000 to N44,000, for breweries, textiles, soft drinks, flour and paint industries;
- Category C: N5,000 to N19,000 for photographic industries, hospitals with more than two beds mechanised laundries, abattoirs, printing and wood and furnishing industries; and
- Category D: N3,000 to N4,500, for saw mills, packaging industries, petrol filling stations, carpet and rug factories, hotels, beauty houses including hair dressing and barbering salon, and sewage treatment plants.

According to Dr. Banjo, it is difficult for industrialists to understand the edict and they cannot avoid taking exception to its terms, which, essentially, may be stretching the issue too far.

He conceded, however, that "there are firms which cause pollution that can not be repaired by any level of charges. The suggestion is that a decree should aim at prevention, stipulating permissible levels of effluent or treated waste to be discharged into the environ-

ment". He added that "violation should incur a penalty or a suspension of activity until they comply".

Reiterating Mr. Smith's view that, "the present decree gives the impression that government is only interested in collecting revenue rather than controlling environmental pollution", Mrs. Margaret Young, also a council member of the chamber, stressed the importance of industries in working to help the economy.

In fact, the chamber, as part of its protest to the regulations already submitted to the Lagos State Government - recommended to its members to stay away from paying the charges."

Caught in the cross-fire, Dr. Aina said that the Lagos State Government is aware that the edict is controversial. According to him, "it hasn't the backing of FEPA".

Besides, he thinks that the chamber has taken a good decision not to honour the charges, adding that the fact that no prosecution has been enforced shows that there exists the possibility for the regulation to be withdrawn.

His words: "The Lagos State Government is aware that the edict is controversial. It (the edict) hasn't the backing of FEPA. The only enabling decree on environment is FEPA's procedures and guidelines. They (the states) can set stringent measures, but their sanctions must tally with FEPA's guidelines. Besides states must be licensed by FEPA. I wouldn't be surprised if the edict is withdrawn and a new one substituted".

Dr. Aina said he considers it wrong to sanction anybody. "How do you measure the level of pollution", he questioned, saying that the next stage for FEPA (after the regulations) is public enlightenment and adoption of a moratorium. Thereafter, he said, culprits will face sanction.

Currently, the FEPA boss said the agency is looking into the Lagos State edict as well as those for all other states and, according to him: "The National Council of Environment will deliberate on these edicts at their next meeting".

Already, efforts may have been initiated to handle the matter at gubernatorial and ministerial levels by officers of the state's Environment and Physical Planning Ministry, who expressed the state government's displeasure at the reported statements.

Besides, Dr. G. O. Fashina, the State Director for Environment, Sewage and Water, confirmed last week that discussions were held with two of the branches of the Manufacturers Association of Nigeria (MAN), to ascertain their position on the issues raised at the lecture.

The indications, he said, are, however, that members of MAN still feel that the programme of action set out at the end of a seminar jointly organised by the state and the organised private sector in July, should be left on course and will not be disturbed by the reports.

But the concept of sustainable development as a management

Continued overleaf

option, as adopted by FEPA, also drew strong reactions from the chamber.

For instance, Mr. S. O. Oloko, a council member, expressed fears over the cost-benefit analysis of promoting the concept of clean environment over industrial growth.

Said he: "It is a good thing that we keep our environment clean. However, I am worried by the cost-benefit analysis to the nation by some measures being taken, particularly by trends in the world".

According to him: "It is alright for the western world to shout against environment pollution. Those things they have done in the past during the industrial revolution - they are now preventing the 'third' world countries from doing. Each time they preach their sermon there is always an intention which does not meet the eye".

Mr. Oloko added that "this notion may stifle industry. The pollution of the environment through industrialization is the price of progress. It was paid in Europe, it's being paid in the Far East which is now being industrialized. It is not a question of likes, but affordability". He also wondered whether the nation can afford clean environment in lieu of industry.

But the same fears are already being expressed by an American organisation, which is currently at the fore-front in pushing a lobby against the concept of sustainable development. The group, Schiller Institute, Inc., based in Washington D. C., has described the on-going efforts to stage the United Nations Conference on Environment and Development (UNCED - Earth Summit or Eco-92 as a "giant fraud and hoax, whose real objective is to consolidate the Malthusian New World Order promoted by the Anglo American financial elite based on:

- the continued looting of the developing sector by the international financial community;
- the end of national sovereignty; and
- the final destruction of any hope for industrial development in the nations of the South".

The Schiller Institute's thrust, according to its white paper, released in the United States is to:

- expose the true intentions of the oligarchical architects of the Earth Summit;
- debunk the pseudoscientific myths upon which it is promised;
- explain the historical roots of the Malthusian policies now repackaged as "sustainable development", and
- urge the international community to stop the conference from ever occurring.

According to the Institute with 'sustainable development', - that is zero economic growth - legally enforceable under Eco-92, the banks and financial institutions which heavily fund the environmentalist movement will be the big beneficiaries.

Source: Timeyin Uwejamomere, The Guardian, October 28, 1991, p.13.

The Basic Communities Development Programme, Mushin

There are several community-based organizations in Nigeria involved in a wide range of activities from the convivial, to economic and development initiatives. This case study is that of a formalized group which though began on a religious basis has moved into the broader area of development and environment activities. The Basic Communities Development Programme (BCDP), Regina Mundi Catholic Church, Mushin, Lagos started from the Catholic Church in Mushin. They started as collections of friendly members of congregations for regular Sunday worship and were soon embraced by others who share the same area of residence, jobs, voluntary clubs membership, etc. There are now over eighteen of such communities stretching from Mushin where it started to many other parts of Lagos. As one of the leaders of the programme explained "that you are a christian or not, or a Catholic or not, or even atheist is of little importance if at all. The fact that you are a human being is enough to be member and participant in our programmes."

The programme is almost fifteen years old in Nigeria. Development of the potentialities in each person is one of their cardinal objectives, as "development" to them includes "liberation of people from all that holds them back from a full human life".

The first community in this group was formed in February 1979 at 4, Adeyemi Street, Mushin. It was named "Mushin West Basic Christian Community." Before the end of the same month, another "Ojuwoye Basic Christian Community" was also established. With these pioneer communities, formation of others spread around and beyond Mushin. By 1984 there were thirteen such Christian communities already established and run by an office at the Parish Centre. By 1989, the number of these communities had increased to seventeen. However, since 1977 the formation of such communities has spread to other parts of Nigeria. Therefore to the members of these communities "if any person is sick, others should find a means of restoring his/her health, to the illiterates who are adults, teach them how to learn; to the elderly give support; to the youth, help to build towards leadership and righteousness, to the homeless help find a place to sleep, to the troubled, help to find a solution in God through scriptures; to the hungry, find food." All of these the members try to do in spite of the fact that they are confronted by their own day to day individual problems. The range of activities the Basic Communities engage in include primary health care, environmental sanitation, civil and social defence, income-generating activities, employment-liaisons, leadership programmes, youth development training, etc.

The Basic Communities Development Programme is an example of formal organization to implement internal community environment and development programmes. As a result of its location and the circumstances of its existence, it operates a predominantly peaceful and cooperative political orientation. But in other communities, particularly those subjected to various forms of serious environmental and political hardships, there are community organizations with more militant orientations. Box 5.4 illustrates this in relation to the communities located in Nigeria's oil-

BOX 5.4: OIL COMMUNITIES WARNED

The governor of Rivers State, Colonel Godwin Abbe has reviewed the unpleasant disposition of some oil producing communities in the country to oil installations within their areas, saying government would no longer condone such acts of lawlessness.

Declaring open the 'Community Forum' sponsored by the Nigerian National Petroleum Corporation (NNPC) and Gulf Oil Company (Nigeria) Limited (GOCON) in collaboration with the Rivers State University of Science and Technology (RUST) in Port Harcourt on Tuesday, Colonel Abbe said such oil communities should not make their demands through wanton destruction of vital oil installations nor constitute themselves into the prodigal Oliver Twist by making unnecessary demands on oil companies.

He, however warned oil producing companies to always meet their obligation to communities where they operate with all sense of responsibility.

The governor expressed his utmost displeasure with oil companies that believe since they have signed oil participation agreements with the Federal Government "communities in their areas of operation can go to hell".

Time was ripe for oil producing companies to go into meaningful dialogue with their communities for mutual co-existence, he added.

As a first step towards curtailing the level of conflict between oil companies and communities in Rivers State, the governor said an oil firms/communities relation committee has been set up by the state government.

The committee, he pointed out, would identify sources of conflicts to enhance relationship between them with a view to promoting the economic and social development of the oil communities and unfettered relationship among them.

Source: Simon Ebare, *Daily Times*, October 18, 1990, p.7.

producing regions whose experiences of environmental hardships, created through oil exploration, have been severe.

Network and Cooperation Between North-South and South-South NGOs

The importance of networking, cooperation and coalition-building between NGOs is a clearly acceptable strategy and mode of operation within the worldwide NGO movement. In the Nigerian case, this is already happening. As has been pointed out above, the NCF has strong links with the WWF and is engaged in collaborative activities with them and other Northern-based organizations.

The same applies to NEST which has close contacts with a Canadian development organization, CUSO, and the International Institute for Environment and Development (IIED, London). NEST also has collabora-

tive activities with other organizations such as the World Resources Institute, and the Commonwealth Foundation.

However, problems can often arise in these relationships between Northern and Southern organizations, particularly as a result of the differences in the values, priorities and the construction and perception of the environmental agendas of the different regions and their peoples.

The position of NEST is that these relationships must be based on an equal partnership and that the setting of the Sustainable Development agenda must not only be participatory but must be South-driven in its dynamics and content. This position is as a result of the recognition of the long tradition of inequality in North-South interactions and relationships. Thus South-derived priorities such as the debt crisis, poverty, food security, global disarmament and peace and the export of toxic wastes must claim equal pride of place with North-based priorities such as global warming, the population crisis and the depletion of the ozone layer.

Areas of emerging global consensus such as political democratization, popular participation and the institutionalization of human rights of course generate little or no problem in terms of prioritization as all are agreed on their importance.

On South-South networks and cooperation, it is NEST's position that this is desirable and welcome. In this light, NEST is a member of several networks which include the African Network of Environmental NGOs (ANEN), The Environmental Liaison Centre International (ELCI) and a few others. NEST also in 1988 under the auspices of ANEN attempted to create a Nigerian Network of Environmental NGOs along with the Forestry Association of Nigeria (FAN) and the Society for Environmental Management and Planning (SEMP).

Other attempts at national networking in which NEST has participated is the Government/NGO Conference held in Kaduna in May 1991 and the activities of the Nigerian Association of Voluntary Development Organization (NAVDO).

NEST strongly believes that the major path to sustainable development through the strengthening of the institutional framework of the non-governmental sector is this issue of networking, collaboration, cooperation and alliance-building. For the Nigerian NGO movement and sector to develop, a dynamic process of mobilization and awareness-building in this direction is necessary. There are of course several obstacles to this, principal amongst which are: inter-organizational rivalry, Governmental suspicion, and lack of funding for activities. But all of these can be overcome. This is because the promise that a vibrant, strong and independent NGO movement in Nigeria holds for sustainable development is inestimable. In fact the realization of such a goal for the sector is inseparable from the current process of transition to democratic principles and institutions of governance which Nigeria is at the moment undergoing. Such a transition will remain incomplete, if an independent, dynamic, strong and aware Non-Governmental sector does not develop. This is why it is in the interest of all Nigerians to ensure the development of these institutions.

CONCLUSION

Against the background of the preceding, some concluding remarks can be made, beginning with the very important role of human intervention in the task of environmental management. While there has been some debate as to whether the attitude of the Nigerian masses toward the environment has been due to the relatively high level of illiteracy in the country (Chokor, 1988:326), with elements of the debate identifying a positive correlation between level of education and concern for the environment, it would appear for our purpose that attention has to be focussed on the cultural dimension of the institutional framework put in place for the management of the environment. In other words, there is the need for factoring the cultural dimension in attempts to strengthen the weak institutional framework and improve on the people's awareness of the environment.

As others have pointed out:

"the forces of democracy, technology, industrialism, urbanization, increase in individualism, aggressive attitude towards the use of natural resources and the destruction of traditional culture systems all seem to be directly related to our environmental crisis. If we will not design places and spaces which the people desire, if we will not provide social institutions and facilities that are in tune with the cultural expectations of the people, and if we will continue to stifle the growth of indigenous technology, environmental problems will continue to live with us for a long time to come. One obvious manifestation of this apparent oversight is the inability of local authorities in the towns and cities to cope with the domestic solid waste, mainly leaves and related items, generated by households used to consuming items wrapped and preserved with such items."(Olaore, 1986:288)

At a more serious level, Mabogunje (1988:17) poses the problem in terms of the disruptive influence of the march of "civilization." According to him,

"traditional Nigerian Society has a long-term view of the relation between different generations and the land which, as predominantly agricultural societies, provide the most important element of their resource base. In the context of individual lineages, each generation is regarded as holding the family land in trust for succeeding generations. Hence, apart from the right to beneficial usage, no member of a family has the right to alienate one portion of family land to others or destroy its use value. Unfortunately, this principle of care, maintenance and bequest was operated only within the limited confines of the family. The challenge before us in modern times is to extend this principle not simply to the total national area and resources but also to the whole global environment."

Another problem area relates to that of jurisdiction and the tendency

for the power, purview and effectiveness of the institutional framework to decline the more one moves away from government to people, and the federal level to the local government level. This has created the ironical situation in which the local government, which is closest to where the people live, is hardly given the autonomy to act in the area of the environment, has its scope of operation narrowly limited to environmental sanitation, and lacks the wherewithal and will to deliver on even such a limited mandate.

There is the need, therefore, for Nigerian federalism to be operated in a less centralizing manner, and for the federal spirit to manifest not only in central/state relations but also in state/local, federal/local and federal/state/local relations. Popular participation, local empowerment and a culture of human and democratic rights should also be allowed to flower so that the institutions of the people can grow and work along with that of government and business in the pursuit and attainment of sustainable development.

LAND TENURE, LAND USE, AND ENVIRONMENTAL DEGRADATION

6

INTRODUCTION

It is obvious that a major challenge of sustainable development in Nigeria is the relationship between land and environmental degradation. Land, like other basis of human existence is central to the social and physical reproduction of human beings. It, therefore, touches on all the sustainable development issues treated in this book. However, the importance of land and the relations and institutions that develop around it, is such that a discussion of environmental degradation, without independent and specific attention to it, is incomplete. This is what this chapter seeks to do irrespective of how other chapters in this book have treated land in relation to economics, law and government, population growth, the position of indigenous peoples and gender relations.

LAND TENURE

Nigeria's land tenure systems are of two main classes, namely, customary or traditional, and statutory or non-customary. The traditional tenure system is many centuries old, and is still strong, if not overwhelmingly dominant, in most parts of rural and semi-rural Nigeria. Here, the ownership, use, administration, and general management of land are subject to internally-created codes, observances, and sanctions to which all members of each settlement or lineage community must subscribe. Sometimes, particularly in northern Nigeria, it is one man (the village ruler or district head) who exercises the sole authority to grant land to, or withdraw it from, members of the community. In some other places, especially in southeastern Nigeria, such authority is vested collectively in a group of male elders in the community whose word and action in land matters are generally final, not being subject to any higher authority.

The non-customary or statutory land tenure system in Nigeria emerged with the advent of the British colonial government in the 1910s and is gradually replacing its customary counterpart in the urban areas. The best known pieces of legislation here are the Land Tenure Law of Northern Nigeria of 1962 and the Land Use Act (LUA) of 1978. The latter is modelled partly on the former and, being applicable nation-wide, has superseded it.

Briefly, the LUA compulsorily vests all the land in each State of the Federation in the Governor of the State. He holds it "in trust" for the benefit and use of "all Nigerians." Interested persons are required to apply formally for rights of occupancy and use, rights which are conveyed via certificates of occupancy; statutory certificates for land in urban regions and customary certificates for land elsewhere. Both the wording and, more telling, the application of the LUA have been stridently criticized by a wide spectrum of Nigerians - as favouring the rich and the powerful. Some highly placed government officials have indicated that the Act requires a revision. It is expected, therefore, that the Federal government will revise it in the near future.

All the same, it is not expected that such a revision will make a significant difference, in the short term, to the present categorization of land ownership in Nigeria. The major categories are communal, family, individual, government, and corporate ownership. Two strong trends are clear, however. One is that communal ownership of land in the country is fast declining in importance. The other trend, closely related thereto, is that individual ownership is very much on the ascendancy, as much of the erstwhile communally held land is being allocated to individuals or sold to them for permanent and private use as more Nigerians become aware of the immense value of land in modern market transactions.

Finally, whether statutory or communal, and despite the awesome stringencies of the Land Use Act, land is still readily being alienated or otherwise transferred in Nigeria. The commonest modes are inheritance (more often than not only by male children), purchase, pledge, exchange, gift, lease, and, least frequently, compulsory acquisition by government through its power of eminent domain. Needless to add, conflicts over land transfer and ownership are rife in Nigeria, and have been particularly so

within the last fifty years, as land cases pending in the nation's law courts and numerous newspaper reports testify. Often enough, these conflicts entail loss of human lives, destruction of human property, and disruption of socio-economic activities, even if they do not lead to changes in land use.

LAND USE AND ENVIRONMENTAL DEGRADATION

Agriculture

Fifty years ago, Nigeria was still a British colonial dependency, becoming politically independent in 1960. Like most of such colonial dependencies of the period all over the world, the territory's economy was largely agrarian and consumer-oriented. There was, for example, the so-called "fundamental doctrine" to which Great Britain was committed to the effect that "land policy should aim primarily, mainly, and eventually at the development of the agricultural resources of these countries through the agency of their indigenois inhabitants." (Buchanan and Pugh, 1962:100).

The colonial government through this declaration of intent showed that it harboured no plans to involve British nationals in the agricultural scene in Nigeria, either as "absentee" landowners or farmers as was the case in Spanish and Portuguese dependencies in South America, or as "resident" statutory landowners and active farmers. Consequently, agriculture during the period under review was based upon African peasant production, carried on under the traditional land tenure system. Colonial Nigeria had four main types of agricultural activities, as follows:

- (a) a basic subsistence economy which featured crops such as yam, cocoyam, maize, etc.,
- (b) an internal exchange economy made up of basic foodstuffs such as guinea corn and cattle in the north, yam in the Middle Belt, and palm oil in the south, on the one hand, and more "specialized" crops such as rice, fruits, sugar, and kola nuts in various parts of Nigeria,
- (c) a peasant export-production economy with a northern zone centering on Kano city and characterized by such crops as cotton, groundnuts, benniseed, and soya bean; and a southern forest zone featuring perennials such as cocoa, palm produce, and rubber, and
- (d) a plantation economy made up of some estates of oil palm and rubber in the southern rain forest zone.

Since the late 1970s, considerable changes have taken place in the proportions of land associated with each type of farming activity. Increased public and private interest in plantation agriculture, for example, has brought about more land conversion in favour of that sector than hitherto. More recently, the necessity to encourage and operationalize the principle of local sourcing of raw materials for Nigeria's manufacturing sector has added tremendous impetus to the significance of plantation agriculture which today also involves (in addition to the hitherto more conventional plantation crops) such others as maize and sorghum for flour and beer manufacture and cassava for starch and large-scale gari manufacture.

Despite these developments, which appear in widely separated districts, subsistence agriculture remains the dominant mode of agricultural production in Nigeria. This is not surprising, given the fact that some 60 to 65 percent of Nigerians are still rural. The rurality of the population served well the economic interests of the British colonial administration which did not encourage rapid urban development. Rather, the peasant population was conceived of and seen as a rural-based labour force which produced and partly processed the much-needed agricultural raw materials for the secondary manufacturing industries of Britain in particular and Western Europe in general.

Another major component of Nigerian agriculture is the traditional herding of animals such as sheep, goats, cattle, camels, etc. in different parts of the country, but particularly in the northern half of the country. Known as nomadic pastoralism, it involves a seasonal sequence of movements, in search of pasture and water supply for livestock. Pastoralism has serious implications for environmental degradation since it takes place in a geographic region characterized by aridity. In this respect, an arid region may be defined simply as a region where annual total evapotranspiration exceeds the yearly total precipitation. In that region, plant life does not support large-scale livestock raising all year round. The animals, therefore, pose a serious threat to the regeneration of the natural vegetation and encroach on farms planted to arable crops which they devastate. Consequently, much conflict ensues between the cattle rearers (mostly Fulani people), on the one hand, and the farmers, on the other. Also by its very nature, it is a highly vulnerable endeavour, particularly under adverse conditions such as drought. Box 6.1 describes the situation.

BOX 6.1: DROUGHT AND NOMADIC PASTORALISM

In 1970-73, a severe drought descended on the Sahel. This is the 4,000-kilometre long swath of Sub-Saharan fringe stretching from Senegal through the northern edge of Nigeria to the Republic of Chad. An estimated three-quarters of a million to 1 million cattle, goats, and sheep perished in Nigeria in that catastrophe. As if the message of that national trauma was not sufficiently loud (having, perhaps, been drowned in the bustle accompanying the free-wheeling and vast importation into the country of meat and meat products during the following decade, thanks to the petroleum boom), another spell of Sahelian drought struck Nigeria in 1981-1983. The consequences of that second climatic rampage were comparable to those of ten years earlier.

The direct and indirect impacts of these two climatic disasters have forcefully brought home to Nigerians a number of critical facts. One is that most of the national herd of large livestock was and still is held by nomadic people. Practically all of the livestock deaths and morbidity associated with the droughts occurred among the stocks in the hands of the pastoral nomads.

The second fact clearly demonstrated by the droughts is the very fragile nature of the ecology of the Sahelian and Sudan savanna zones of Nigeria. Amounting to about 25% (or 231,000 square kilometres) of the area of Nigeria, it is in these two zones that 70 to 80 percent of the cattle, sheep and goats in the country are reared. As a corollary, incidentally, over 80% of the nation's small livestock, dominated by poultry, as well as nearly 90% of the pigs are reared in the southern one-third of the country, where the natural vegetation is mainly forest and wet savanna. The great environmental sensitivity of the Sahelo-Sudan region derives primarily from the region's subhumid climate which makes it difficult for its vegetation to recover quickly from the onslaughts of drought.

The third consideration brought to the fore by the droughts is an aspect of the socioeconomic connection between northern and southern Nigeria stemming from livestock distribution and flow patterns. Although the animals died in the far north, the impact was felt all the way to the far south, and in more ways than one. Meat, particularly beef, became extremely scarce in the markets and, of course, in homes from Lagos to Calabar and from Ilorin to Makurdi. Naturally, scarcity meant very high prices of what was available.

In addition to considerations of nation-wide meat shortage resulting from the drought, there was the equally momentous crisis of forced migration southwards of large numbers of the remaining livestock and pastoralists at least down to the Middle Belt of Nigeria. Many pastoralists went farther afield, having abandoned their occupations. Thus, numerous hitherto livestock-dependent families, some from Chad and Niger Republics, swelled the ranks of street hawkers and, especially, beggars in large cities, such as Ibadan, Onitsha, Enugu, Lagos, and Ilorin, and even in small provincial towns like Nsukka, Auchi, and Ile-Ife.

One valuable spin-off, though, of these livestock crises, especially that of 1970-73, was the tremendous impetus they gave to the development of the poultry industry in Nigeria. The greatest boom in poultry activity in the country probably took place in the periods 1972-75 and 1983-85. With firm and widespread encouragement by the government, in its bid to cushion the adverse impact of the drought and to boost the protein intake of Nigerians, the activity was eagerly embraced by both large scale corporate farmers and small-time operators.

Drought is clearly a recurrent problem of the Sudan-Sahel belt. As we wait for the next one, one question we must endeavour to answer is what is to be done to forestall or ease its overall environmental and socioeconomic impact and, in particular, to minimize its adverse consequences for Nigeria's pastoral nomads.

Source: NEST (1991:29-30).

In view of the age-long problem posed in Nigeria by nomadic pastoralism, some governments in Nigeria's dry belt have been trying to convert nomadic livestock producers into sedentary ones. This concept and practice of sedentarization have been predicated on the desire of government to increase livestock productivity and hence make more meat and other livestock products readily available to Nigerians. Sedentarization is also aimed at the preservation of natural pastures or the effective management of rangelands.

Some authors see this transition as one from nomadism to some form of capitalism as a drive towards "capitalized farming." Capitalized farming is defined as a system wherein labour is largely replaced by capital, mechanization, agro-chemicals, and other purchased inputs.

Capitalized farming is increasingly evident in most other parts of Nigeria, in respect of both livestock and crops and especially in the many large-scale corporate and private farms, in the establishment of various Agricultural Development Projects (ADPs), and in the intensification of agricultural extension services by various organs of agricultural and rural development in Nigeria, within the last decade.

Forestry

In the pre-colonial and early years of colonial presence in Nigeria, the natural forest vegetation was subjected to systematic exploitation for the purpose of deriving a number of products which were vital to the sustenance of both the local population and the colonial administration. Wood was the most important of these forest products. The necessity to convert some forest lands to agricultural and residential land use also enhanced the speed with which forests disappeared particularly in the areas with rapidly increasing population.

The stage was set for the management of the forest endowments of Nigeria when the colonial government established the Department of Forestry and, among other functions, empowered it to set up forest reserves. In 1949, such reserves occupied about 7 percent of the area of Nigeria. Forest reservation was widespread in the then Western Region of Nigeria which featured a 15 percent areal coverage of forest reserves.

Reserves were also located in the sparsely populated northwestern zone of the country which largely coincides with present-day Sokoto State, the reserves being composed largely of savanna woodlands. In the south-east of Nigeria, intense population pressure on the available land hardly encouraged the setting up of forest reserves. However, in the territory currently occupied by Akwa Ibom and Cross River States, the establishment of reserves on a large scale was possible, in view of the lower population density characteristic of the area.

Despite the current desire among governmental and non-governmental organizations (NGOs) to preserve as much of the natural climax vegetation of the country as possible, the wood resources of the country have consistently depreciated in recent decades. The decline is attributable to indiscriminate felling of trees and forest clearance for agricultural production, as well as the harvesting of timber for construction purposes

and overgrazing. In Kano State, for instance, out of the State's total area of about 43,000 km², only 2,540 km², or about 5 percent, is currently under forest estates. The situation is sequel to the State having witnessed extensive deforestation due to intensive cultivation, overgrazing, and population pressure. This has led to a drastic change from the original Sudan savanna vegetation to a more degenerate vegetation type, thus making the State one of the most deforested States in the Federation. Box 6.2 discusses the problem of deforestation in another State of the federation and the way out.

BOX 6.2: TWILIGHT OF THE FOREST

Prior to 1960, the policy of the Nigerian government in conjunction with the Colonial government and the timber extraction processors was to manage the forest to sustain the supply of wood material in perpetuity by introducing a system of Periodic Block (PB) and Cycles, allocating forest every 25 years and exploiting it on a 50 years' cycle, assuming that on average it takes about 100 years for tropical hardwoods to reach maturity.

The forest allocations were scheduled to be made on the following basis:

First period	(PB I)	1945-1970
Second period	(PB II)	1971-1995
Third period	(PB III)	1996-2020
Fourth period	(PB IV)	2021-2045

The first 1,813 sq. km (700 sq. miles) allocation was made in 1945 and, by natural regeneration of the tropical shelterwood system, was due to be re-allocated in 1996. The second allocation was made in 1970 (re-allocation due 2021) and the system worked very satisfactorily.

However, between 1980 and 1983 most of the forest reserved for the 1996 allocation was given out to a multitude of persons neither professionally engaged in wood processing nor capable of financing and operating wood-based industries. They became simply middlemen between the government and the genuine wood processors, who were obliged to buy from them, or work their concessions at high hire rates in order to ensure adequate supply of suitable materials for their established industries.

The FAO reported during the 1960s that amongst States in Nigeria having tropical rain forests, Bendel was the best and most favourably placed for intensive forestry development from the point of view of suitability of soil, climatic conditions for tree growth, communications, etc. Yet today, just over 20 years later, Bendel State forest resources are depleted to the point of exhaustion and the high forest is in great danger of becoming a faint memory of the past. The Okomu Forest Reserve, consisting of areas BC.9 and BC.10, constituted about 19% of the total Bendel forest Estate of 650,000 hectares, which in itself is

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about 16.5% of the total State land area. This has been reduced by the formation of the Federal Oil Palm Project and by allocation of high forest there to rubber planting and taungya farming. The latter, because it is not managed properly by the authorities, will probably never revert to forest.

It may be too late to save most of the forest of Bendel State, but a serious attempt must be made to do so, led by honest and incorruptible government officials who realize that a precious heritage is rapidly being destroyed through greed and corrupt practices. The following, together with others too numerous to mention require urgent consideration and implementation

- (a) Plantation establishment, using both indigenous and exotic species covering large and protected areas.
- (b) Protection and regeneration of natural forest, particularly at Okomu and to include the Wildlife Sanctuary.
- (c) Vetting of persons allocated forest to ensure they are bona fide processors, willing to assist in forest regeneration.
- (d) Total abolition of the taungya farming system in the forest estate.
- (e) Stiff penalties for illegal felling and trafficking in illegally-felled logs and for corrupt officials conniving at such nefarious activities.

The problem is international, but in Nigeria it is worse in Bendel than in other States. World wide, over half of the tropical rain forests have already been destroyed. By the year 2000, a further 15.2% will disappear, resulting in the extinction of many plant and animal species, soil erosion, flooding, drought and other types of natural global catastrophes and disasters we read and hear about daily.

Source: L. Hodgson, as cited by NEST (1991:138).

Mining and Quarrying

Over the past 50 years, mining and quarrying have equally made their unique demands on the land inventory of Nigeria, no matter how negligible in terms of contiguous areal coverage. Long before the arrival of European colonialists, mining as a land use activity was in existence in Nigeria, using techniques alien to European civilization.

Colonial geologic surveys revealed widespread occurrence of coal and lignite, tin ore on the Jos Plateau, columbite, gold, iron ore, clays, crude oil, sands, etc. Most of the minerals have been consistently exploited over the past fifty years.

Land use changes that have characterized mining operations in the country include the shifts in specific mining sites and the involvement of ever-increasing hectares. These changes have resulted partly from the exhaustion of, or fall in the yield of, existing mines. This has been the case particularly with respect to tin ore and coal. With regards to devastating

BOX 6.3: TIN MINING AND LAND DEVASTATION ON THE JOS PLATEAU

The Jos Plateau is considered by the Plateau State Government to be a "disaster" area, the perceived cause of "disaster" being the legacy of tin mining activity which have, over the last 30 years or so, devastated the landscape of parts of the Plateau. Open-cast mining of cassiterite and columbite has left a lunar landscape of steep-sided mounds and multi-coloured ponds or lakes, the latter numbering over 600. In 1976 the Land Resources Development Centre (LRDC) estimated that some 316sq km of the total 8,600sq km of the Plateau had been damaged by some form of mining activity, and recent estimates suggest that this has increased to about 325sq km. Although this represents only 4% of the Plateau area, it is concentrated in a relatively small area along the Jos-Bukuru-Ropp axis.

With the rapid expansion of towns and villages, often close to these ruined areas, public awareness of the problem has increased, particularly regarding the dangers for children playing around the ponds. For example, between September and December 1982 two children were reported drowned in the pond in the Jos environs. Thus, public pressure is mounting to urge the State Government to reclaim these areas.

Development of Commercial Tin Mining

The first major mining camp was established early this century at Naraguta, just north of the modern town of Jos, and this remained the focus of the early European tin mining on the Plateau until the development of the "Bauchi" light-railway from Zaria in 1915. From Naraguta, mining spread rapidly south to concentrate in two areas centred on the principal sources of the alluvial tin, the Bukuru Dome and the Ropp Dome.

With the rapid expansion of mining activities, conflicts arose between the mining companies and the local population. The problem stemmed largely from the loss of agricultural land to mining, since the areas of richest alluvial deposits also coincide with some of the better agricultural land. Eventually, the government passed legislation whereby mining companies paid compensation for crop damage but not for the destruction of the land.

Mining Techniques and Landscape Devastation

The landscape features of the mined areas are by no means uniform, and the degree of landscape disruption depends entirely on the methods employed in winning the ores, which are in turn controlled by the depth below ground surface at which the mineral-bearing alluvium is to be found. The earliest techniques of mining simply

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involved panning the alluvium of rivers. This later extended to pick-and-shovel working of floodplain deposits and again separating the tin by panning. These techniques (although still employed by individuals) are capable of exploiting only the shallowest deposits, i.e. within about 5m of the surface. Such exploitation was essentially small-scale and hence much localized. Nevertheless, a distinct landscape of small mounds of spoil, irregular canyons, and isolated pillars of unworked sediment has been created along sections of the contemporary river channels, e.g. along Curly Creek in Tudun Wada, Jos.

Although these were the methods initially adopted by the European mining companies in the early years of commercial mining, the pick, shovel and pan were replaced by the bulldozer, water monitor, and sluice box as technology improved. The thin overburden was removed by bulldozer and scrapper to reveal the tin-bearing strata. High-powered water jets (monitors) were then used to turn the tin-bearing sediment into a slurry which was then pumped by gravel pump to sets of sluice boxes in which the metal ore was separated from the dross. This technique is still used today wherever the mineral-bearing alluvium is close to the surface, e.g. at New Delimi between Jos and Rayfield. The resultant landscape is one of shallow (10-15m deep) paddocks (hollows) which are invariably filled with water; long, low, isolated mounds of spoil; and low-angle tailing cones often terminate in flooded paddocks.

In a few localities, the extent and depth of the tin-bearing sediments and the configuration of the surface topography have lent themselves to the economic use of a dredge. Some overburden is removed from the tin-bearing beds and used to construct a dam across the natural water course. This produces a flooded paddock on which the dredge floats. The dredge digs or sucks up the tin-bearing alluvium which is then pumped through a series of dredge borne sluice boxes for sorting. As the dredge moves across the tin-bearing areas, new dams are created and the old dredge paddock infilled with tailings from the sluice boxes. Dredging began in 1932. The only remaining area of tin-dredging on the Plateau is along the Ropp and Tseri rivers at Darowa. These areas have a distinctive landscape of low earth dams, shallow rectangular ponds, and unfilled paddocks surrounded by scattered, long, and low mounds of overburden.

As the mining companies increased their prospecting activities during and just after the First World War, tin bearing alluvium was found to occur not only along contemporary river course but also along an extensive network of buried river courses dating from the Pliocene period to about 500,000 years ago. The change in the drainage network on the Plateau was related to the outpouring of the "Older" and "Newer" basalts. Initially, these potentially rich tin deposits were beyond the depth at which the available techniques could economically and effectively operate. However, in 1924, the

first dragline, a converted steam shovel running on a system of railway tracks which continued in operation until 1981, was introduced. This immediately enabled deeper deposits to be worked and was the forerunner of a major change to the use of draglines to remove the overburden. It also heralded major landscape changes. With tin-bearing alluvium being concentrated in the narrow, sinuous channels of former river courses, the normal cut-and-fill procedures usually adopted by dragline mining operations were impracticable. Consequently, a landscape of steep-sided, multi-coloured, and conical spoil mounds, surrounding very deep, often vertical-sided, and flooded paddocks, has developed.

The impact on the landscape has been exacerbated by the fact that many of these former river courses now run along or across present watersheds. Thus, although the mounds cannot (by law) exceed half the depth of excavation in height, they still stand well above the surrounding areas. As the shallower deposits have become worked out excavations have become deeper and deeper. At Sabon Gida n'Gell at paddock NG8, tin is being won at depths in excess of 36m. Once the tin-bearing sediments have been exposed, they are washed to a slurry pit by water monitors and pumped to sluice boxes in the usual way. The tailings are used particularly to infill previously-worked paddocks.

Thus, the various mining techniques employed on the Plateau have produced a variety of landscape features, highlighted by the multi-coloured conical spoil mounds and variably-coloured waters of the flooded mining paddocks.

Source: M.J. Alexander, "An Historical Introduction to the Reclamation of Mineland on the Jos Plateau" Interim Report No. 4, Jos Plateau Environmental Resources Development Programme, Department of Geography, University of Durham, and Department of Geography, University of Jos, 1985.

effects of tin mining, Box 6.3 tells the painful story. Prior to the discovery of crude oil, coal was Nigeria's principal energy source for electric power generation, and constituted the fuel for driving the country's railway locomotives. Today, coal exists in commercial quantities in Anambra and Benue States and in a few other locations. Coking coal was recently identified at Obi, near Lafia in Plateau State, and "current studies are improving the existing knowledge of this deposit's mineability and suitability for development."

The virtual absence of a virile and dependable export market for the relatively low quality Nigerian coal did not encourage the rapid development of coal mining activity for many decades, since production merely had the objective of satisfying the equally relatively low level of domestic demand. Today, however, the necessity to discover more coking coal for use in the country's various steel and ceramics manufacturing plants has

led to enhanced exploration activities and drilling for better quality coal in Enugu and as well as in Gombe in Bauchi State.

With respect to crude oil exploitation, aggressive exploration has led, over the past 50 years, to the discovery of new oil fields. The environmental impacts of these resources are tremendous and are clearly summarized in Table 6.1.

TABLE 6.1: ENVIRONMENTAL IMPACTS OF FOSSIL ENERGY RESOURCES

<u>Mining Activity:</u>	<u>General Effects</u>	<u>Specific Impacts</u>
Exploration	Landscape disturbance	Aesthetic deterioration of the landscape, path-construction and trampling in wilderness areas
Mineral extraction	Land degradation & ecosystem destabilization	Land surface devastation (including erosion), land subsidence, disruption of drainage systems, deforestation, excessive water drawdown, and lowering and contamination of the water table
Processing, trans-ways, portation,	Gas leaks, oil spills, noise and pollution of the air soil and water	Thermal loading of water-increase storage and consumption in CO ₂ and CO, Ozone layer depletion, acidification of air, soil and water, weather modification, toxicity hazard to plants and animal, death of terrestrial and marine life, loss of crops and livestock, impairment of atmospheric visibility, vehicular accidents, damage to buildings and machinery, nervous disorders, respiratory diseases, cardio-vascular illnesses, cancers and food poisoning

Adapted from: U.M. Igbozurike, "Energy Development and Energy Crisis with Special Referenceto Nigeria," Department of Geography, University of Nigeria, Nsukka, 1983,p.13

Source: NEST,(1991:35).

The prospecting activity, which was begun by Shell D'Arcy in a small inland town, (Iho) near Owerri in Imo State, ultimately moved southwards to the Port Harcourt area in Rivers State where in 1956 the first commercially viable crude oil deposit was found in a tiny community called Oloibiri. The activity has since the last 35 years spread to more locations in present-day Rivers, Akwa Ibom, Cross River, Imo, Ondo and Edo and Delta States, in both on-shore and off-shore sites and involve more than a dozen multinational and a few Nigerian corporations.

With regard to quarrying, it is readily noticed that throughout the country this land use activity and land excavation for various purposes occur sporadically. Excavations for laterite and sand and quarrying for clay, gravel, and stones are common features in many different parts of the country. A few decades ago, excavations for laterite and less lateritic soils were largely associated with the provision of treated mud for the construction and plastering of the earthen walls of traditional dwelling huts, a variant of which is the mud-and-wattle huts characteristic of many cultural groups in Nigeria. Similar excavations also provided the materials used in putting up protective fence walls around residential compounds. In the pre-colonial times, such walls were used to secure the boundaries of some native towns, particularly in northern Nigeria. With the advent of colonialism and the attendant migration phenomenon, the walls were used to distinguish such native or indigenous areas from the *tudun wada* or the quarters of strangers.

In recent times, excavations for laterite have assumed new dimensions occasioned by an ever-increasing tempo of infrastructural development in Nigeria. Most noteworthy are developments in the transportation and housing sectors. Excavations of laterite for road construction on segments of land adjacent to most highways in Nigeria are a common phenomenon. Such laterite is spread and subsequently compacted to form the base on which gravel or stone chippings and, later, bitumen or asphalt are spread to complete the road construction process. In the housing sector, such laterite materials are invariably used in the filling of the floor space where necessary.

One spectacular consequence is the emergence of borrow pits along major highways and even within some urban centres or their suburbs to mark the sites from which man has carted away tonnes to aid him in the reshaping and modification of the natural environment.

Excavations for sand are more often than not associated with the procurement of sand for the making of sandcrete blocks and for use in other construction jobs in which cement features as an indispensable component. Closely associated with sand excavation is the excavation for gravel which like sand, is indispensable in many construction projects.

Sand and gravel excavations are largely confined to the beds of streams and rivers and their banks. Environmental degradation engendered by these activities is usually exacerbated by excavators of river sand and gravel, contractors, tipper lorry drivers, and casual labourers, all of whom are involved in exploiting the sand and gravel resources of various stream and river banks in order to make a living. Use of the land in this respect has been consistent as well as devastating. It has thus enhanced the rate and

areal extent of soil erosion which, during the rainy season, is accompanied by landslides along deeply excavated portions of the banks. Tipper lorries make their own contribution to the land degradation process by constant use of unpaved tracks leading to the stream banks. Such tracks subsequently convert to erosion channels and are thereupon abandoned by the users for yet new and fragile locations.

Quarrying for stones and clay is a factor of the geological structure of the area where such activities take place. In the last 50 years, clay quarrying activity has been transformed from localized and sporadic extractions for labour-intensive traditional pottery industry to quarrying for modern furnace-heated pottery and ceramic products.

Stone quarrying had limited incidence in Nigeria about fifty years ago, since stones were sparingly or hardly used in building construction, except in projects involving the colonial administration, such as the construction of water reservoirs and colonial bridges. Since then, the demand for stones as a construction material has increased considerably as a consequence of increased popularization of high-quality construction works of different types, encompassing housing projects, building of dams, roads, etc. Quarrying for stones, for example, is a common activity in the urban fringes in Anambra, Imo, Kwara, and some other states.

These activities, though socially and economically desirable by virtue of satisfying some important human wants, constitute a form of environmental degradation because the activities invariably upset the balance of nature. Generally, no effort is made subsequently to rehabilitate the areas. Further, stone quarrying on a large scale, such as along the Okigwe -Isuikwuato road via Imo State University site in Imo state has set in motion serious soil erosion and occasional landslides.

SCOPE OF ENVIRONMENTAL DEGRADATION RELATED TO LAND USE CHANGES: A SUMMARY

Primary Activities

So far we have highlighted some primary economic activities in which land use changes have occurred over the past fifty years. These include agriculture, forestry, mining, and quarrying. Land use changes in these subsectors of economic activity have resulted from a variety of inter-related factors.

One of such critical factors has been identified as unprecedented population growth which has meant increased demand for food, forest products, minerals, and even wildlife. In the ensuing man-environment interaction different forms of environmental degradation have taken place. For example, poor agricultural practice (over-cropping, overgrazing, tilling along slopes, bush burning etc.) renders the soil incapable of giving high agricultural yield as well as accelerates sheet erosion and, in some areas, gully erosion. Apart from reducing agricultural yield, soil erosion leads to stream channel siltation. In the past, many water bodies were characterized by clear, sparkling water. Swimming and diving space in various segments of such streams and rivers was quite large and deep, and stream velocity was often high. Today many of the streams are

shallow, polluted, and dying or are already dead as a result of human activity which has consistently degraded them.

Bush burning, which has assumed more widespread incidence in the last fifty years by virtue of increasing demand for food by a rapidly increasing population, is another facet of environmental degradation. Apart from destroying and permanently obliterating some plant species, bush burning also destroys soil nutrients as well as some organisms which play a vital role in soil health and nutrient status.

It is also known that chemical fertilizer application to crops, which practice was virtually non-existent in Nigeria 50 years ago, though having a salutary effect in terms of improved yield per unit of land, has equally brought in its wake a unique dimension of environmental degradation. Nitrates in the fertilizers, like phosphorus from detergents, have ultimately found their way into streams and lakes. Such increased nitrogen input has permitted accelerated growth of algae and photoplankton, bringing about both a process and a state of eutrophication. Plants and animals which invariably result from such process are known to grow, die, and decompose at a rate that causes oxygen depletion in the affected water, which in turn leads to widespread destruction of aquatic life. Above all, the contamination of food grown in nitrate-overloaded soils is of key concern.

Various segments of the water bodies that used to be clear of vegetation are now overgrown with plants. The attendant problem of progressive silting up as it relates to the Lake Chad in northeastern Nigeria has been worsened by the seemingly unrestricted deposition of wind-transported dust and sand particles into the lake. According to a *Daily Times* report of May 21, 1985, the once extensive water body has diminished from a surface area of about 24,000km² in 1963 to about 3,000km² by September 1984. In many Nigerian water bodies, therefore, fish catch has declined considerably as the water bodies have become progressively shallower and more polluted. Moreover, this generally brings about serious flooding of some banks at the peak of the rainy season with its adverse socioeconomic and environmental consequences, particularly in cities like Ibadan. Box 6.4 provides a vivid illustration of the pollution of an urban stream and its health risks.

BOX 6.4: POLLUTION OF AN URBAN STREAM AND ITS HEALTH RISKS

Urban streams and rivers in Nigeria are invariably heavily polluted. Yet people use them for laundry, bathing, swimming, washing food, irrigation and, sometimes, even for drinking. The Samaru stream is no exception. This stream drains much of the small university town of Sumaru in Kaduna State. It also drains some heavily-fertilized agricultural as well as some uncultivated land. It receives effluent from an abattoir as well as kitchen waste and septic

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tank overflow from student hostels. In some places it is used as a "natural lavatory" so that there are concentrations of human excrement. Livestock are regularly watered in it. Therefore, animal faeces are a common feature. The stream is clearly heavily polluted from these various sources.

A study of pollution of the stream came to this conclusion: "There is no doubt that Samaru Stream presents a considerable health hazard to certain sections of the local community. Although the author has not observed people drinking the stream water, food is washed in the water and people washing in the stream must sometimes accidentally swallow some of the water. The waters are contaminated with faecal material and there must therefore be a considerable risk of contracting water-borne diseases. People who come into direct contact with the water must run a high risk of contracting schistosomiasis".

V.G.F.Smith, 'The effects of Pollution in a Small Stream near Samaru in Northern Nigeria', *Savanna*, 4, 1975.

*Editors' note: It is significant that Samaru Stream flows into the Kubanni reservoir which supplies water to Ahmadu Bello University. The risk to the health of the university community can well be imagined, especially if water treatment should, for any reason, be inadequate.

Source: NEST (1991:80).

In a similar vein, unregulated and indiscriminate clearing of forests for agriculture and for the retrieval of forest products constitutes environmental degradation since the cutting down of trees and massive clearing of the land disrupt the ecological balance. In addition to the well-known issues of soil erosion and stream siltation, forest clearance leads to rapid impoverishment of the soil through faster organic matter decomposition and excessive leaching. Consequently the decline in the fertility status of the soil leads to reduction in the population of the microflora and microfauna and their activities. It is such persistent bush clearing which, over the past few decades, has given rise to the phenomenon of derived savanna in more southerly latitudes and to the reduction in the life of hydroelectricity and other reservoirs in Nigeria.

Hunting and gathering as primary economic activities have equally contributed much to environmental degradation. Some wildlife species have become extinct or almost extinct through hunting and some are greatly endangered. The latter include the tortoise, the squirrel, the crocodile, and the python.

Secondary Activities

Industrialization: Industrial land use accounted for an insignificant proportion of the total land area of Nigeria some 50 years ago. Most industrial activities were largely concerned with the conversion of local agricultural products into semi-processed goods for the purpose of exporting them to foreign metropolises where they were subjected to formal factory processing to produce various consumer perishables which were subsequently reimported into Nigeria. Increased devotion of land to industrial use received greater impetus in the post-independence period when national industrial policy revolved around import substitution as a panacea for the unfavourable terms of trade which Nigeria faced and has continued to face like other less developed countries

Therefore, there has been some amount of industrial diversification in the country. The current industrial land use features textiles, breweries, leather tanning, pulp and paper industries, detergents, iron and steel etc., all of which have implications for overall environmental quality in the affected areas.

Whereas most of the formal-sector industries which have the potential of seriously degrading the environment are largely urban-based (for reason of accessibility to market, agglomeration economies availability of skilled labour and so on), many informal sector industrial activities which are equally present in the urban centres, have progressively become widespread in the rural areas of Nigeria. Some of these activities generated small quantities of solid waste (e.g. palm oil processing as well as welding works and iron fabrication) while others produce liquid wastes (e.g. grain and cassava mills, traditional oil palm processing etc). When these wastes are not properly managed, they invariably undermine and degrade the quality of the environment.

LAND, AIR, AND WATER POLLUTION

Despite the frequent mention of pollution in preceding sections of this book, it is useful to focus, at this point, on land, air and water pollution in Nigeria. Apart from the tremendous quantities of organic and inorganic wastes generated by Nigeria's industries in both urban and rural areas, the amount of wastes produced in other land use contexts is equally enormous. In residential zones, commercial areas such as markets and eating houses, transportation routes and centres like motor parks, offices and educational establishments, and numerous other locations, wastes are produced. For instance, as much as 20kg or more of solid wastes is generated per capita every year in Nigeria. Table 6.2 gives the estimated and projected volume of solid wastes produced in some Nigerian cities.

The figures in the Table are merely suggestive, for even though urbanites generate more refuse in the aggregate than ruralites, it should be borne in mind that only about 40 percent of Nigerians live and work in the urban districts, and most of these persons do spend some time in their village homes. Above all, the data in Table 6.2 do not include wastes in liquid or gaseous form. Solid wastes clog up drains, deface the land surface, and constitute a major health hazard, as they harbour all sorts of pathogenic microorganisms and vermin like rats and cockroaches.

TABLE 6.2: ESTIMATED AND PROJECTED VOLUME OF SOLID WASTE GENERATION IN SOME NIGERIAN CITIES (TONNES PER YEAR)

Urban Area	1982	1985	1990	2000
Lagos	625,399	681,394	786,079	998,081
Ibadan	350,823	382,224	440,956	559,882
Kano	319,935	348,580	402,133	535,186
Kaduna	257,837	280,925	324,084	431,314
Onitsha	242,240	263,929	304,477	386,593
Port Harcourt	210,934	229,821	265,129	352,853
Oshogbo	131,903	143,712	173,720	253,841
Aba	131,903	143,712	169,719	236,703
Jos	99,871	111,905	135,272	197,660
Warri	67,477	75,607	91,396	133,531
Gusau	44,488	48,471	57,243	79,835
Potiskum	15,434	16,816	19,399	28,347
Uyo	12,508	13,628	15,721	20,923
Suleja	9,383	10,514	13,311	21,336
New Bussa	5,690	6,200	7,152	9,518

Source: Federal Ministry of Housing and Environment (n.d.): *The State of the Environment in Nigeria*, Monograph series No. 2, Lagos, p.78.

Gaseous and semi-gaseous wastes are of great significance in many parts of Nigeria, if we remember that the ubiquitous internal combustion engine is a principal air polluter, emitting as it does an immense tonnage of carbon dioxide (CO₂), carbon monoxide (CO) nitrogen oxides, etc. The cement-producing industries -Ewekoro, Nkalagu, Calabar, Gboko, and others- are particularly notorious although they are few and their physical impact is restricted to a maximum radius of about three kilometres. Within this space, however, natural vegetation and crops are damaged, wildlife is destroyed or compelled to emigrate, streams are excessively polluted, the soil is overcharged with chemicals, and both man and livestock are inconvenienced to say the least, all by a dense and continuing coating of cement dust. This is not astonishing, if we realize that cement manufacturing in Nigeria employs the dry process kiln in which the particulate emission rate is as high as 20.8kg/bbl of cement. Box 6.5 provides a vivid illustration of some popular perceptions of air pollution.

Finally, it should be noted that apart from the sources of air pollution already indicated there are many others. Among the latter is the unfortunate flaring of natural gas associated with petroleum exploitation. "Statistics on crude oil production indicate that over 75 percent of the total gas produced in association with crude oil by all the oil-producing companies is still flared away in obvious disregard of ...(Nigeria's 1979 Gas Re-Injection) legislation. Energy watchers believe that this abuse arises mainly because the fines (imposed for non-compliance) are low. The Federal

government would rather the gas is not wasted and it is believed to be packaging a new gas policy which would increase the penalty for gas flaring."

BOX 6.5: THE DEADLY AIR

Atmospheric pollution poses a number of health hazards. Absorbed by the lungs, carbon monoxide reduces the oxygen-carrying capacity of the blood and tolerance for exercise, impairs mental function, and aggravates cardiovascular (heart) disease. Prolonged low level of exposure to carbon monoxide diminishes visual perception and ability to perform intellectual tasks. Hence, fumes from generator and vehicle exhausts that are rampant in various buildings and roads in urban areas as well as fumes from industrial power stations are health hazards. Also, acute exposure to hydrocarbons causes eye, nose and throat irritation, while chronic exposure causes cancer. Lead, which comes from such industries as smelting, battery-making factories and pottery glazing, enters the body through the respiratory tracts and walls of digestive systems. It may then accumulate in body organs (e.g. kidneys and nervous system) and damage the brain. High accumulation of lead in the body shortens lifespan, increases susceptibility to infections, hardening of the arteries, and heart attack. Asbestos, a toxic air pollutant that comes from road building construction, mining of asbestos, thermal insulations, asbestos plants, cement, attrition of brake lining, etc., has the effect of not only destroying the ecology, but also jeopardizing the health of workers, by causing lung cancer.

Some Victims Speak

An investigation by Sunday Times reporters in February 1988 revealed that many of our industries do not seem perturbed about the danger of industrial pollution, even though they are located very close to residential areas thereby exposing the people to the danger of pollution. Many patients interviewed by the reporters at the Ikeja General Hospital said that they suffer from lung diseases, having one way or the other got themselves exposed to industrial chemical compounds. Here are some examples of the victims of air pollution.

Kanu worked as a chemical mixer with a firm that produces mosquito coils. Whereas he earns as little as N150 per month including "fringe benefits", his factory does not have any clinic to cater for the staff in case of emergency and does not provide him with any industrial respirator, thereby exposing him to affliction by lung disease. Presently he is facing the repercussion of being exposed to industrial hazard of air pollution.

Popoola is another patient at the hospital suffering from lung sickness which he contracted in 1986. As a chemical mixer with a textile mill, he used to mix chemicals such as hydrogen peroxide, acid, and some dyeing stuff for the mill.

Continued overleaf

A battery charger at Mushin in Lagos is also a victim of dangerous vapour or gases usually associated with his job that he was in for about eight years. Recently, he started noticing symptoms of lung disease. Doctors later confirmed that he was suffering from tuberculosis.

A practising musician also said he was a victim of industrial air pollution. Said he: "I live very close to a factory that manufactures bar soap and detergents. I contracted it this year (1988)".

Samson Anjorin, a former student of Government Teachers' College, Ikorodu, had to abandon school when he became a victim of environmental pollution. He said the lung disease might have been contracted "when I was working for both a shoe-making company and a detergent-making firm."

Source: Sunday Times, February 14, 1988.

Water pollution is even more pernicious in Nigeria than air pollution. Beyond the instances of water pollution mentioned in earlier portions of this text the matter of oil spillage is of critical concern. This is especially true of the primary oil-producing states of Rivers, Bendel, Imo, Akwa Ibom, and Cross River, where both water and soil have become so polluted with oil that fishing, forestry, and agriculture are no longer possible in large areas, and potable water is being imported at great cost from distant locations -among other adverse effects. According to government reports widely cited in Nigerian newspapers, between 1976 and 1990 the nation lost 1,641,000 barrels of oil in 2,796 spillage incidents, or a yearly average of 200 incidents and 117,214 barrels. By the standards of any oil-producing country in the world, these are very high figures, and the Federal government in February 1991 vowed to stem the tide of spillage.

OTHER MAJOR ASPECTS OF ENVIRONMENTAL DEGRADATION

The other types and sources of environmental degradation that affect land in Nigeria are innumerable. They include the application of pesticides, soil salinization through improper irrigation, land blasting for various purposes, dyeing of textiles, emplacement of soil overburden, and thermal loading of waterways, as well as soil erosion, desertification, and urban living. For an elaborate discussion of these and related issues, see the volume on *Nigeria's Threatened Environment. A National Profile*, produced by the Nigerian Environmental Study/Action Team (NEST) in 1991

Desertification is also a major scourge in large parts of the northern one-fifth of Nigeria. Adjacent to the semi-arid fringe of the Sahara desert, this area is subject to the devastating southward advance of semi-desert conditions. These are most noticeable during the protracted (October to May) yearly dry season, with its peak in the harmattan months, when incredible loads of dust and sand mask the land surface, causing havoc to man and his property, and when the soil becomes bone-dry, making

unirrigated crop farming impossible. Man, of course, actively aids desertification through a myriad of activities: bush burning, overgrazing by his livestock (mainly cattle, sheep, and goats), and land clearance for different purposes.

Without doubt, soil erosion is the best-known among the components of environmental degradation in Nigeria, as virtually all segments of the country are subject to erosion. While the southern three-fourths are eroded by rainfall, the northern quarter is eroded principally by the wind. Of the four broad categories, namely, sheet erosion or sheet wash, rill erosion, gully erosion, and bank erosion, the last-named affects only the Atlantic coastal regions and major waterways and has by far the least spatial coverage, followed by gullying.

Easily the most awesome and the most spectacular, gully erosion is the most expensive to control and very seriously afflicts all the southeastern states. Here occur thousands of gullies, including Africa's single largest gully erosion system, i.e. the Agulu-Nanka erosion complex in Anambra State.

The impact of soil erosion has wide dimensions. They range from the truncation of transportation bases and routes to the collapse of buildings, from the loss of wildlife habitats to the diminution of rangeland and farmland, from damage to electricity installations to disruption of waterworks, and from reduction of soil fertility and recreational potential to loss of livestock and human life. Expectedly, Nigerian governments, at Federal, State, and Local levels, as well as communities, corporations, and individuals have taken various measures to combat soil erosion in many sections of the country. In the north these measures are dominated by tree-planting which also doubles as a strategy against desertification. In the south, where gullies are much more widespread, engineering works involving the emplacement of concrete structures are more frequent. All told, however, a lot more land is still lost to erosion than is being reclaimed from it.

POLICY CONSIDERATIONS

For a long time in Nigeria, there was no nation-wide or comprehensive legislation on environmental degradation. Instead, there were disparate pieces of legislation or regulations. These either concern only a few environmental aspects of land, life and economy (e.g. the Petroleum Drilling and Production Regulations of 1969) or were confined to specific states in the country (e.g. bush burning edicts passed by some state governments). It was not until December 1988 that the Federal government passed the Federal Environmental Protection Agency (FEPA) Decree, setting up FEPA to work out rules governing the handling of Nigeria's environment.

A year later (1989), the government produced a National Policy on the Environment to ensure "sustainable development based on proper management of the environment in order to meet the needs of the present and future generations." This policy document, which now guides FEPA's activities, has spelt out implementation strategies for the various sectors of concern. A lot still remains to be done in the area of implementing these policy elements.

CONCLUSION AND RECOMMENDATIONS

Attention has been called to changes in Nigerian land use as an inevitable facet of man-environment relationships in the country. The changes occur as Nigerians attempt to adjust their seemingly endless wants and desires for food, shelter, recreation, infrastructural facilities, and so on to the land and other resources available to them. While making welcome contributions to the overall development of the country, these land use activities have equally produced negative impacts on the Nigerian environment, impacts collectively referred to as environmental degradation and implying the abuse of the environment through improper resource management.

All is not lost, however, and the future appears promising, since the Federal government has at last started to face squarely the issue of environmental degradation in the country. In line with this new official resolve, therefore, the following recommendations are offered:

- (i) Government should ungrudgingly assist FEPA, through adequate funding and through the facilitation of judicial processes, whenever required, to execute the 1989 National Policy on the Environment.
- (ii) Government should also clearly demonstrate a commitment to the success of the policy by ensuring that all of its own officials, ministries, parastatals, and agencies comply with the provisions of the policy as well as with the stipulations of FEPA.
- (iii) On its part, FEPA should always keep in sharp focus the seriousness of its responsibility and take maximum advantage of the abundance of expertise in Nigeria - located outside FEPA, in the universities and polytechnics, in industry and the professions, among the non-governmental organizations (NGOs), and within ministerial departments. There is the need for FEPA to take a participatory approach to environmental problems as its central strategy.
- (iv) Above all, everyone in Nigeria should be made to appreciate the fact that environmental degradation in the country is everybody's business, and that everyone has a definite and not-so-difficult role to play in stemming it and making the country a better place in which to live and work. Here lies a major challenge to government, FEPA, NGOs, and Nigeria's educational institutions.

ENVIRONMENT AND GENDER ISSUES

"Decision-makers must concern themselves with women's issues. To devise development planning without the participation of women is like using four fingers when you have ten" (Thomas Sankara, March 8, 1987)

INTRODUCTION

Environmental protection and development are now recognised to be closely linked if the latter is to be real, sustainable and permanent. Although women constitute a very significant proportion of the world's population, the links between women and the state of the environment have only recently begun to be recognized. It was the devastating impact of the 1968-1974 Sahel drought and the consequent mass migration of men from the region's countryside that made the role of women in the environmental conservation of the fragile semi-arid ecosystem a burning issue.

For some reasons, however, the position of women, as a social group, in meeting the two critical challenges of development and environmental protection, can not be overemphasized. First, if the goals of development include improved standards of living, removal of poverty, access to dignified employment, and reduction in social inequality, then women, who constitute the majority of the poor, the underemployed, and the economically and socially disadvantaged in many societies, must be consulted and actively involved in development processes both at the planning and the implementation level. Secondly, women are universally known to be closer to nature than men, and this may underscore their assiduous relationship with their physical environment. Because of their close links with the environment, the primacy of women in food production and processing, in responsibility for fuel, water, health care, child-bearing, sanitation and the entire range of basic needs must be recognized. In addition, women in many African societies participate in commercial sectors and local enterprises using local materials that are vulnerable to environmental degradation. Thus as farmers and traders, women experience environmental problems, perhaps even more than men. Yet women appear to be largely ignored in the planning, design and implementation of development and environmental programmes in a world dominated by men.

There are two basic premises behind this contribution. The first is that with increasing environmental degradation, women are the worst affected. In other words, the consequences of environmental degradation has a "gender bias" effect. For example, when confronted with environmental degradation that reduces the availability of fuelwood or water, or the productivity of the soil which produces their food, women are forced to work harder than men. The second postulate is that the linkage between Nigerian women and their environment is largely a result of their embedded conditions in a "culture of poverty." Against this background, Nigerian women's involvement in the use and management of natural resources is made a crucial issue. Our emphasis is focussed on the rural areas where about 90 percent of the food and 65 percent of cash crop production are undertaken.

THE STATUS OF WOMEN IN NIGERIA: PROBLEM OF MARGINALIZATION

"Poor, powerless and pregnant." (Population Crisis Committee, 1988).

Nigerian women are not homogeneous because of the enormous variety of socio-economic and cultural situations in which individual women may find themselves. The specifics of traditional gender-based subordination would, therefore, vary across the country because women have different economic roles. Different classes of women exist in Nigeria. The class position of a woman determines how she relates to her environment; the relationship between poor women and the environment differs from those of more privileged women.

In spite of the heterogeneity, however, Nigerian women's subordination, like her counterparts in the Third World, has typically limited their access to and control over such productive resources as land and labour, imposed

sexual divisions of labour (in which women's work is accorded lower status or social importance), and curtailed women's physical mobility. Thus put, in spite of the fact that more than 50 percent of the population of Nigeria is made up of women, their status can be regarded as generally poor.

The Population Crisis Committee that rated the status of women in 99 countries in 1988 ranked Nigeria sixth to the last. Although some of the indicators of status need to be accepted with caution, a low score of 29 percent (Table 7.1) obviously indicates that Nigerian women are performing poorly in terms of marriage and children, and accessibility to health care, education, employment and social equality. Among the 16 Sub-Saharan African countries that were surveyed, Nigeria came second to the last after Mali.

TABLE 7.1: STATUS OF WOMEN IN NIGERIA

<u>Category</u>	<u>Indicators</u>	<u>Score*</u>
<u>Health</u>		
	1. Infant and child mortality	1.5
	2. Mortality-child bearing years	1.5
	3. Life expectancy	1.0
	4. Female/Male, differential life expectancy	2.0
<u>Marriage and children</u>		
	1. Teen marriage	2.5
	2. Total fertility rate	1.0
	3. Contraceptive prevalence	0.5
	4. Female/Male, widowed, divorced, separated	-
<u>Education</u>		
	1. Secondary school teachers	1.5
	2. Primary/Secondary school enrollment	2.5
	3. University enrollment	0.5
	4. Female/Male, differential literacy rate	2.0
<u>Employment</u>		
	1. Self-employed	2.5
	2. Paid employees	0.5
	3. Professionals	0.5
	4. Share of paid employment	1.5
<u>Social Equality</u>		
	1. Economic equality	2.0
	2. Political and Legal equality	2.0
	3. Equality in marriage and family	0.5
	4. Female/Male social equality	1.5
<u>Totals</u>		
	a. Women's status subtotal	20.5
	b. Gender gap subtotal	8.5
	c. Grand total score out of maximum score of 100	29.0

*Each of the 20 indicators has a maximum of 5 points, 5 indicating the highest status

Source: Population Crisis Committee (1988 chart)

The low status of Nigerian women, like most Third World women, may be explained by many factors. In the words of Esther Boserup, the young age at marriage, the large age difference between spouses, the frequency of polygamy, the disproportionate work burden between the sexes, the high bride price, poor health facilities and low educational level of women may all combine to perpetuate their low status.

In general Nigerian women suffer de facto discrimination and most often they have no say in their own marriage and divorce. Their husbands or other male family members have traditional legal or de facto control over them and their children. In many places, women may not accept employment, engage in trading, or even dispose of their own income without permission from their husbands or male family members. Their husbands or male family members usually have the right to decide on the living arrangements, education, future occupation, and marriage partners of their children. In many instances, widows have no right to inherit their deceased husbands' properties unless sanctioned by male family members. Among married Muslim Hausa women in northern Nigeria, seclusion has been the norm for several decades. This implies a restraint on women's freedom of movement, and discourages any contact between women and men who are not part of their home compound.

Repeated pregnancies and long periods of lactation after each birth place a nutritional and health strain on Nigerian women, especially rural mothers who must also work in agriculture. Even for the employed married women, wide spacing of births and long periods of lactation between pregnancies are serious impediments. Thus for poor Nigerian women, who tend to have large families, the bearing and nurturing of children can add considerably to physical chores and physical stress over a lifetime.

BOX 7.1: A VILLAGE HAUSA WOMAN (NORTHERN NIGERIA)

A muslim village Hausa girl begins very early to help with housework and her mothers' occupations. By the time she is seven years old a Muslim girl will be running errands for her mother, and so on. But her main activity will be hawking the goods her mother produces in the privacy of the compound, and with a tray aloft on her head she will walk from house to house and round the market selling her mother's bean cakes, rice, sweetmeats, etc.

From an early age she will also do a little trading on her own account, the proceeds being put aside for the purchase of her "dowry" goods. By ten years of age or so she will be flirting with the young men she meets on her travels, and her parents will begin to think about her marriage. At eleven or thirteen she will marry, at considerable expense to her mother in particular, and her life of mobility and freedom will be abruptly curtailed.

Seclusion implies a restraint on women's freedom of movement,

and discourages any contact between women and men who are not part of their home compound. Seclusion is practised most strictly for the young married girls who are not allowed out for any activity apart from the occasional wedding or naming ceremony, and even this only with their husbands' consent. Within their new homes they will usually do little domestic work for at least a year. In the compound other women will cook for them, as they are supposed to be "ignorant." Nor will they engage in any other occupation for some time, partly because of their role as ignorant child-wives but also because they will not yet have young children to hawk for them. However, as time passes they become more economically active.

After her first year of marriage, a woman will have to deal with most of the domestic chores of the household and help with her husband's farming activities. The latter may be entirely confined to the compound where she processes his crops, pounds sorghum and bags it up for sale, shells maize after drying, prepares okra for drying, and so on. Or she may be allowed out to pick groundnuts, beans, and peppers in the fields, and to glean grain.

Young women are also quite likely to divorce their first husbands after a few years. Divorce is extremely common for Hausa women, and many women have several marriages before menopause. Divorces are usually initiated by the women themselves, although officially, of course, the husband will dissolve the marriage.

Officially, secluded muslim women do no farm work, and indeed some studies estimated that women contributed less than 1 percent of farm labour (according to their husbands). Other studies reported a much greater amount of farm work by these women and portray muslim women of nucleated settlements as being responsible for the majority of cotton, groundnut, bean, and pepper picking as well as helping with millet and sorghum harvesting and processing.

An examination of archival records by Cecil Jackson indicates that during this century there has been a shift from agriculture to petty-commodity production for muslim Hausa women. Monetization of the economy seems to have been one reason for this. This shift has led to higher incomes, more individualism, less unpaid household work and more real freedom for these women. Comments such as "the most important feature of the Hausa economy is the position of the wife. She is usually as rich as her husband, often richer" are frequent in the anthropological literature. By 1970, market exchange was already the basis for both men's and women's separate account activities.

Muslim women prepare a seemingly limitless number of snack foods for sale. In addition many women who have the necessary working capital trade in a relatively small way in kerosene, salt,

Continued overleaf

sweets, cigarettes, kola nuts, and the like. Petty trade involves little work and can be added easily to most combinations of occupations.

The relations between a muslim husband and wife are highly monetized. Colonial officers frequently observed that muslim husbands have no claim to their wives' earnings and that women are not obliged to contribute to the upkeep of the household. Examples are given in various reports of women lending their husbands money to buy their daily food (and sometimes charging interest), of women lending grain to their husbands when their supply is exhausted (and again expecting interest or a gift), and indeed of women who buy grain from their husbands at harvest time when prices are low, store it and sell it back to them at high preharvest prices - all to provide the meals they share with their husbands! Women are also said to sell the manure of their livestock to their husbands to use on household farms. Muslim wives' overall contribution to family maintenance can be considerable: they clothe and provide snack lunches for the children, buy most of their own clothes and cosmetics, purchase the goods necessary for daughters' dowries, and help sons with marriage expenses. But they hold their private money separately, and there is a very clear distinction in their minds between what is theirs and what is their husbands'. In many ways the household is not a corporate financial unit but a collection of separate accounts. Even a child will have his or her own money, earned perhaps by doing errands for childless women, selling a few mangoes collected in season, or making up a small batch of fried groundnuts (with the mother's help) for sale.

Muslim women frequently own land. Some 25 percent of 147 Muslim men sampled by Jackson reported that their wives had farms (and 32 percent of women claimed to have farms). Eight percent of the men were farming land belonging to their wives. In terms of land tenure, she found that of the 129 muslim women's farms surveyed in this study, 94 percent were inherited or purchased; the rest were on various loan arrangements. Although land is not a significant means of production for muslim women, the right to inherit land is of some value to them. Even if few wish to farm that land, it nevertheless gives them a right to a share of the farm produce and membership in the very common multiple ownership groups. In precolonial days, muslim women inherited land only as residual heirs. But in the 1920s pressure from muslim women claiming inheritance rights developed, and in Emir Sanusi's reign it was conceded that under Maliki law women could inherit land.

Women's reserves are held principally in the form of enamel dishes, *kwano*, which almost constitute an alternative women's currency. Every last amount earned seems to be spent on yet another bowl or tray to be piled under the bed. There is a marked intergenerational transfer of resources between muslim women; a woman with daughters will put a great deal of energy into earning

money to buy *kwano* which daughters take with them as a store of private assets into their marriages. The endowment of daughters by their mothers and gifts from their bridegrooms, neither dowry nor bridewealth in their usual meanings, provides women with assets for their independent economic activities.

Kwano also undoubtedly serve as a bank balance (whose value rises with inflation), and they may be resold when cash is needed. Thus women's reserves are kept separate from men's, and tend to circulate in a separate female world.

It is easy to imagine that the muslim divorce code, whereby men can divorce by repudiation of their wives, places Hausa women in perpetual fear of being cast out. But recurrent themes among those interviewed for this study were that women divorce to marry richer men, that they expect their prospective husbands to pay for the divorce, and that they can and do threaten husbands with divorce. Men without wives are scorned and have to eat with other men. On the other hand, an alternative role for a divorced woman is that of courtesan, a powerful and potentially profitable position. Courtesans are thought to have supernatural power.

The observance of seclusion and the rising divorce rate in recent decades are linked. Hausa men see seclusion as a means to stabilize marriage. They see women as naturally promiscuous and sexually uncontrolled so that if allowed to go about freely they will inevitably lust after men and divorce their husbands with even greater regularity than they do at present. The oft-heard notion that seclusion protects women from the lust of men is thus the opposite of that held by Hausa men.

Source: Adapted from C. Jackson, 'The Kano River Irrigation Project', 1986.

Harrington noted that Nigerian women spend extremely long periods under the physical and nutritional stress associated with their total child-bearing-mothering role. For example, about 60 percent of a sample of urban Yoruba women in the 25-34 age-group were found to have spent more than half of their adult lives either pregnant or lactating.

The overall feature of Nigerian women's status is essentially that of marginalization, which is best explained within the context of productive relations. Women in Nigeria form an active and reserved labour force, but they rarely own the means of production. While they contribute about 80 percent of the labour force in agriculture, Nigerian women, generally speaking, do not own land, and commercialization of land has overlooked women's cultivation rights.

There is also marginalization of women in the modern labour force. Nigerian women in the modern industrial sector are mostly employed as nurses, cooks, secretaries, receptionists and other jobs regarded as suitable for women. In the public sector, only 1 percent of women are in the top echelons of the bureaucracy, such as directors and directors-general. In

1984, about 30 percent of civil servants on grade levels 1-2 were women, while only about 4 percent were on the senior cadres on grade levels 16 and above. In general, women employment in the formal economy is very low (Table 7.2).

TABLE 7.2: WOMEN EMPLOYMENT IN THE NIGERIAN FORMAL ECONOMY

Employer	Males	Females	of total	Women as %
				Total
Federal Civil service	154099	22408	176567	12.7
Federal Govt parastatals	93715	16059	109774	14.6
State Civil service	40931	8612	49548	17.4
State Govt. parastatals	54112	9530	63632	15.0
Total	737786	133799	870386	14.2

Source: S.N. Ekwachi 'The State and Women in Nigeria', (1990).

The marginalization of Nigerian women extends to the field of education. More than half of the population of Nigeria is made up of females; but fewer girls go to school than boys. In 1986, only about 45 percent of primary school enrolment was for females, while in 1987, only 42 percent of females were in secondary school. Tables 7.3 and 7.4 clearly reflect women's poor access to tertiary education and their consequently low participation in productive labour.

TABLE 7.3: STUDENTS ENROLMENT IN NIGERIAN UNIVERSITIES BY FACULTY AND SEX (1986/87 ACADEMIC YEAR)

Faculty	Male	Female	Total	Women as %
				of total
Administration	7492	1372	8869	15.47
Agriculture	7469	1618	9087	17.81
Arts	13543	6712	20255	33.14
Earth & Mining Sciences	498	66	564	11.71
Education	17419	10759	28178	38.18
Engineering Technology	11708	847	12555	6.75
Environmental Design	4693	678	5371	12.62
Law	6955	2136	9091	23.50
Medicine/Health Services	7423	2433	9856	24.69
Pharmacy	1398	597	1995	29.92
Natural Sciences	15785	5414	21199	25.54
Social Sciences	14046	3342	18288	18.27
Veterinary Medicine	1144	148	1292	11.46
Basic/Remedial Studies	3167	846	4013	21.08
Total	113645	36968	150613	24.55

Source: National Universities Commission Annual Report (1987) p.20.

TABLE 7.4: ACADEMIC STAFF IN NIGERIAN UNIVERSITIES BY FACULTY AND SEX (1986/87 ACADEMIC YEAR)

Faculty	Male	Female	Total	Women as %
				of total
Administration	298	28	326	8.59
Agriculture	789	46	830	5.52
Arts	1423	219	1642	13.34
Earth & Mining Sciences	66	7	73	9.59
Education	1130	255	1385	18.41
Engineering Technology	909	20	929	2.15
Environmental Design	358	27	385	7.01
Law	242	39	281	13.90
Medicine	1163	177	1340	13.21
Pharmacy	132	27	159	17.00
Natural Sciences	1882	253	2135	11.85
Social Sciences	1039	104	1143	9.10
Veterinary Medicine	225	7	232	3.02
Basic/Remedial Studies	187	75	262	28.63
Total	9838	1284	11122	11.54

Source: National Universities Commission Annual Report (1987), p.27.

In general, Nigerian women's burdens multiply endlessly. They are paid less than men but they work more. The poor in the Nigerian society are generally slightly more likely to be female than male, particularly in the urban areas. Nigerian women are less educated, but bear greater responsibility for the health of children than men. They are expected to give birth to, rear and feed numerous - preferably male - offsprings and consequently grow weak and ailing as their bodies are exhausted by the circle of repeated pregnancy and childbirth. The IMF-inspired Structural Adjustment Programme that has been adopted as a panacea to the country's economic crisis may worsen the lot of women in Nigeria. The implications of political and economic powerlessness, marginalization and obscurantism of Nigerian women on the country's environment is discussed in the next section.

BOX 7.2: SAP, WOMEN AND ENVIRONMENT

As a response to the growing economic crisis of a dependent neo-colonial society the Nigerian state embarked on an IMF-inspired Structural Adjustment Programme, SAP as a panacea. As an economic policy, SAP has had significant impact on all aspects of social life in Nigeria - the physical and social environment inclusive. The

Continued overleaf

parlous state into which the economy has sunk is reflected in the various levels of collapse and decay of institutions, processes and services in contemporary Nigeria. This state of affairs has direct and indirect effect on the position and roles of women and their relationship with the total environment.

In any situation of crisis or national adversity, the poor are usually the first and greatest victims. Since women constitute a significant proportion of the army of the poor and weak in Nigeria, they have more than a fair share of the problems and pains of SAP. This has helped to further pauperise and marginalise the poor and the weak, thus the various problems and burdens which women have hitherto experienced have increased in number and magnitude.

As noted by FAO (1990), the total effect of Structural Adjustment Programmes is to further worsen the condition of the poor. As subsidies and funding of social services were drastically reduced or totally withdrawn, the living condition of the poor became more precarious. Nigeria's hospitals became worse than "mere consulting clinics."

Educational institutions have degenerated. Thousands of people resort to precarious feeding habits while nutritional diseases claim the lives of countless number of children. Maternal death has continued to increase, while children of the poor steadily drop out of school as education becomes a luxury commodity they cannot afford. Retrenchments and closures of work organisations expand the army of the unemployed and urban poor. Deviant behaviours such as crime and prostitution become normal ways of life.

One of the major hidden costs of SAP is the extra demands it makes on women. "Poor women are bearing much of the stress of adjustment" (FAO, 1990). The capacity to fully participate in social life is largely a reflection of the material condition of existence of the individual. Thus it follows that since SAP has further emasculated the poor (men and women) their capacity to meaningfully affect their environment has been curtailed.

The present administration has however, created an avenue for women in the maintenance of the environment. As part of its environmental sanitation campaign, women are engaged as street sweepers especially in the Federal and state capitals and big cities. While this seems to have been part of the traditional contribution of women to the maintenance of the environment, the new form has some implications with regards to the terms of their involvement. Street sweeping is indeed a high-risk job. The women are exposed to great danger of road accident as they carry out their assignment amidst heavy traffic. There is no form of insurance in spite of the heavy hazard they face. Furthermore, their labour is cheaply exploited as they are paid very low wages

Source: F. Adelokun (Personal Communication).

NIGERIAN WOMEN AND ENVIRONMENT: THE CRUCIAL LINKS

"I'm just too tired with the work and these babies," (Huston, 1979).

Women in Nigeria, especially those living in rural areas, interact with and shape the environment. Like women in other parts of the developing world, Nigerian women bear a disproportionate share of survival burden - they produce most of the food; they are in charge of water, fuel and household management and they also bear and take care of the future generation. In other words, they are the backbone of the family economy.

Rural Nigerian women are totally dependent upon the natural resource base for food, fuel, water and shelter. Like other rural women in most parts of the world, they look to the local environment for medicines, fodders, fertilizers, materials for house construction and the ingredients of many of their income-earning enterprises. They have a close link with the protection or destruction of our environment in circumstances which are dictated by their position within the Nigerian social structure. Their roles in shaping the environment are reflected in their participation in agricultural and pastoral production, providing food and water, meeting energy needs and environmental sanitation. Though very little detailed time-budget study involving all activities has been done for Nigerian women, it has been estimated that they spend between 10 and 16 hours daily engaged in both productive and reproductive activities.

Agricultural and Pastoral Production

Africa has been described as a region of "female farming par excellence" where women provide some 60-80 percent of the agricultural labour force and produce some 80 percent of the food for family consumption. The same generalization is applicable to Nigeria where the division of labour in rural agricultural activities is gender-specific. There are, however, variations among different social groups in their participatory roles in agricultural and pastoral production.

Among the Yoruba in the cocoa belt of southwestern Nigeria, women participate in planting, harvesting and spraying cocoa in addition to processing crops such as making yam flour, plantain and cassava and crushing palm kernels for oil. They also grow cotton, okra, tomatoes, peppers, onions on the family food farm, mostly for family consumption. Women were estimated to be spending about 42 percent of their time on farm operations as compared with about 49 percent of men's time.

The Yoruba women in the Savanna zone play an even more prominent role in agricultural production and crop processing. Women help their men to plant, weed, harvest and apply fertilizer for yam, maize, tobacco and cassava. In some instances, women farm on their own account, often on small plots of land allocated by their husbands. In general, the land is usually under men's control.

Igbo women in the forest zone of southeastern Nigeria are most likely to take part in farming than their Yoruba counterparts. Here women have land allocated to them usually by their husbands. The land may then be used to grow cassava, cocoyam, maize, beans, okra, pepper and pumpkins

TABLE 7.5: ROLE OF WOMEN IN AGRICULTURAL PRODUCTION IN BORNO STATE

Farm Operation	Level of Female Participation	Manner of Participation	Location of Practice in Borno State
Land clearing.	Minimal - generally they do not participate significantly in this stage.	Burning of items gathered.	Minimal role, around Fune to Fika Local Government areas.
Land preparation e.g. ploughing.	Not significant - Mostly a male affair with ox-plough etc. in some areas.	-	-
Planting.	Very significant.	Placing of seeds in the little holes mostly cut in wet ground by males with long handledhoe (<i>Sungumi</i>) or in dry land in case of dry planting.	Examples can be found all over the State.
Weeding: First weeding is known as <i>Raga</i> ('to reduce' in Hausa) while the second weeding is called <i>Maimai</i> ('repeating' in Hausa).	Women participate very significantly. In fact, there are rich farmers who prefee using hired female labour to male labour for <i>Raga</i> because women are more careful in thinning the young crops.	Weeding, thinning of stands and weeding second time to destory weeds.	Examples can be found in most parts of the State.
Harvesting - cutting down of stalk of millet or corn. (<i>Girbi</i>)	A most male activity.	-	-
Harvesting - cutting off of heads of millet, etc, (<i>Yanka</i>)	Mostly by females and children.	Using knife.	Examples in Bade, Fika, and Fune Local Governments.
Collecting. (<i>Taru</i>)			
Threasing especially winnowing. (<i>Sissika</i>)	Mostly by females. Highly a female activity.	Using basket, calabash, etc. Using motae and pestle to thresh and clalbashes to winnow.	Mostly in Northern and Central Borno.

primarily for household consumption but the surplus may be sold by the women.

In the traditional Tiv society of Benue State, men clear and prepare land and make yam mounds. The women then plant the yams, and also maize, millet and cassava and intercrop the yams with vegetables and legumes. Tiv women do the weeding, harvesting and transporting of all the crops. In addition, they are responsible for processing yam, cassava and millet and grinding them into flour for both consumption and sale.

Kilba women in the Gombe Local Government Area of Gongola State are very active in agricultural operations. Men and women have their own separate farms. Women clear, burn, plough, and plant crops such as groundnuts, bambara nuts, beans, tiger nuts, and vegetables like okra, pumpkins, Uli, Mbulanji, and garden eggs. In addition, they weed, harvest, thresh and transport crops, store the produce in barns and market surpluses from their farms to meet other economic demands. Kilba women may also weed, harvest and thresh produce from their husbands' farms together with their children; but this is infrequently reciprocated by their men. The women provide staple grains between the harvest time and December. They also supply all the soup complements requirements for household consumption throughout the year. Thus they gather and preserve wild vegetables as well as those from their farms for use during the dry season, such as *nduvwang*, *Ndaha*, *baha*, *bang*, *hiba*, *baobab leaves and fruit*, and *relishes/spices like locust bean, sheanuts, tamarind and malsiri*.

Among the Muslim Hausa women, their farm work is almost entirely in harvesting, which is invariably rewarded in kind. Women's low participation in agricultural production, compared with other ethnic groups, is due to the wide practice of seclusion which curtails their mobility and freedom. Unlike Muslim women, however, non-Muslim Hausa women, known as the Maguzawa, are largely involved in agriculture, though as perpetual juniors within the household farming unit. They are obliged to work on their husband's farms with no remuneration. As junior members of the household, they are given small plots (*gayauna*) for their individual production. Produce from each *gayauna* is theirs to sell, consume or give away, such as okra, harvested from her *gayauna* for general consumption. Traditionally, the Maguzawa women work in their households and husband's fields (*gandaye*) in the mornings of Saturday through Thursday, and devote afternoons and Fridays to their own *gayauna*. Table 7.5 provides a good summary of the spatial characteristics of farming activities among women in Borno State. It is quite common to see Kanuri women doing field work including hoeing. Box 7.4 also provides a wider national picture. Nigerian women also participate in animal husbandry practices, especially raising small ruminants and poultry. Processing and marketing of diary products is very prominent among the pastoral Fulani who are not permanently settled farmers. Their role is nonetheless secondary. Men do most of the farm work. Although women help with the harvesting and processing of grain harvest, their main preoccupation is the processing of milk and milk products for home consumption and sale in the nearest markets, which could be between 5 to 15 kilometres away. Women as a rule are not involved in herding or other aspects of tendering cattle, except

for calves too young to graze which are left in the homesteads. Hence they hardly can influence herd management decisions to influence milk yield. Women are nonetheless consulted concerning decision on sale of cattle even if it belongs to the household head.

The preceding examples of Nigerian women farmers suggest that women play extensive and varied roles in agricultural work in Nigeria. In some rural areas of Nigeria, up to 80 percent of the food and 65 percent of cash crop production are undertaken by women.

The table in Box 7.4 provides the general picture for Nigeria as of 1984. By their extensive involvement in agricultural and livestock production, Nigerian women have by trial and error acquired cumulative knowledge about the natural resource-land - upon which their family livelihood depends. They have developed various compatible ways of interacting with the environment which far exceeds that of men. Yet Nigerian women are largely landless, and only have access to land if they have a husband or sons alive. Box 7.5 discusses this problem vividly.

BOX 7.3: NIGERIAN WOMEN IN AGRICULTURE

A very small proportion of trained agricultural personnel is made up of women in Nigeria. The contribution of Nigerian women to agricultural development cannot be appreciated by taking into consideration only the few workers, large scale investors and those involved in training services for policy making. Those who participate in the production of the bulk of food for our population are the small holders. However, about 30.8 per cent of this rural population represent adult female (Federal office of Statistics, 1977).

Rural women, like the men, are engaged in agriculture but are more prominent than men in activities such as harvesting, transportation, storage, processing and marketing of farm products. For example, in rice production, Olayemi (1974) observed that while adult males undertook land preparation, rice planting, weeding and harvesting, adult females sometimes took part in planting but mainly participated in rice harvesting and paddy collection. However, they are not left out in farm tasks that are regarded as being difficult and energy sapping like land clearing and preparation. A good example is the rural women in Ondo State who constituted themselves into co-operative societies providing for the needs of the community. Under an umbrella called Country Women Association of Nigeria (COWAN), they engaged in the production and processing of yams, cassava, maize and in fishing. The products are offered for sale along with home crafts which they also produce. COWAN is a project of the Ondo State Rural Development Agency.

Their main objectives are:

- (i) to increase the productivity and consequently the earning capacity of rural women so as to improve overall living standard;

- (ii) to promote programmes that are self-sustaining and could be replicated in various ecological zones of the state; and
- (iii) to diversify economic opportunities by promoting rural crafts, processing of agricultural products and creating job opportunities. The methods employed by these women are not in the least sophisticated although in a few aspects, they have graduated from the age-long traditional methods to the use of semi-modern equipment; for example, the production of gari from cassava in which hand-grating has been replaced by mechanical grating of the peeled cassava.

The potential of the Nigerian women, engaged in agriculture to contribute to national development has been emphasised by Janelid (1975). The report of a rural agricultural survey by the Federal Office of Statistics in 1984 on farm practice in Nigeria indicated that 86 per cent of the rural households are engaged in crop farming, 50 per cent in livestock production, while only 4 per cent are involved in fishing. Fish farming is most prominent in the Rivers State followed by Lagos State. The report also showed that 48 per cent of all females fully participated in agricultural production compared with 77 per cent of the men. The percentages of females above the age of 15 years engaged on the farms on a state basis are presented in the accompanying table. In Anambra, Benue and Imo states where over 80 per cent of women are involved, women outnumbered the men in the farming business. The spread of involvement of these rural women for the remaining states in the country is 60-80 per cent for Gongola, Borno, Plateau and Cross River; 40-60 per cent for Rivers, Ondo and Bendel; 20-40 per cent, for Sokoto, Oyo and Ogun and less than 10 per cent for Kwara, Kano, Lagos, Niger and Kaduna states.

Farm holdings are usually on land owned by the families and so vary in size. The greater part of the land is used for crop production and the rest is available for livestock and pasture. The women invariably participate and specialize in the production of whatever crops and livestock their families have chosen to grow or raise and these, of course, vary from state to state.

Food Production

Women and men in this sector have holdings that are rather small. Only a fraction of them, less than 48 per cent, use chemical fertilizer, 26 per cent use improved seedlings and nearly all use traditional equipment in their farm practices.

Crop production by the farmers are usually in a mixed cropping system geared towards boosting land productivity and at the same time making available a range of foods. While most crops grow in almost any part of the country, certain crops are primarily grown in particular areas guided by climatic and edaphic factors along with

Continued overleaf

many socio-economic factors. The northern states are the major producers of cereal grains, cotton-seeds while the southern states produce most of the roots and tubers...

Food Processing and Preservation

Processing is an activity handled predominantly by women in many parts of the country. The degree of involvement varies among ethnic groups. Processing is a means of preservation whereby foods are converted to various forms prior to storage. Processors obtain raw materials from their own farms or they sometimes purchase them from the local markets...

About 33.5 per cent of food crops are lost during and after harvest. Processing, no matter how crude, helps in minimizing post harvest losses. Some nutrients are sometimes lost during processing. Such losses vary depending on processing procedure. Methods employed are traditional and the bulk of locally produced foods have passed through the hands of these women before reaching consumers. The grains are shelled or threshed before further processing. Threshing is usually done manually by hand-beating with stick. Among the tubers, cassava is processed into many different forms depending on locality. Cassava tubers, unlike other tubers, deteriorate and discolour rapidly and so are better processed within 24 hours of harvest. If stored for more than 3 days in the raw state, they begin to rot. During the processing of cassava, the cyanogenic glycoside (a toxic substance) contained in it is eliminated. The removal may not be completed depending on the method of processing.

Vegetables and fruits are also produced. Most fruits are eaten fresh and this are not processed further. Vegetables are normally boiled fresh for home consumption. Drying is the only form of processing to which vegetables are subjected for preservation but this is rarely done on a commercial scale except for the local peppers.

Livestock products such as poultry meat and eggs are not processed further but cow's milk is processed into local cheese while goat and pig meat, mutton and beef are salted or dried for preservation. The main product from cow's milk is soft cheese produced in the North and certain parts of the Southern states, leaf extracts of the sodom apple plant (*Calotropis procera*) is added to the milk to alter the PH of the medium and aid precipitation. Fish, meat from cattle, donkey, camel and horses are the major animal protein sources that are popularly processed by women. In the North, however, men are more engaged in food processing than the women.

Game animals are hunted by the men but are processed mainly by the women particularly in the Southern states. The principal methods of processing and preserving game animals, meat products and fish are smoking and sundrying to prolong the shelf life of the products.

Sundrying is a cheaper method but takes a longer time. In smoking, the smoke acts as a surface sterilant to the meat and fish while drying is achieved. Smoked meat and fish are popular for their smoky flavour which is attributable to the phenolic fraction of the smoke. Some of these phenolic components, unfortunately, are toxic (Alonge, 1984).

Packaging materials include jute bags, cartons and for fish, cane baskets. Most processed products keep from days to several months. The shelf life of the product partly depends on the residual moisture.

**Percentage of Females Engaged in
Agriculture by State in Rural Nigeria**

State	Percentage Engaged in Agriculture
Anambra	86
Bauchi	19
Benuue	84
Bendel	43
Borno	67
Cross River	62
Imo	81
Kaduna	2
Kano	8
Kwara	8
Lagos	7
Ogun	26
Ondo	53
Oyo	38
Gongola	68
Niger	6
Plateau	64
Rivers	58
Sokoto	30
Total Nigeria	47

Sources: Federal Office of Statistics, Lagos Dec. 1984 & Extracted from: O.Y. Longe: The Role of Women in Food Production, Processing and Preservation in Nigeria; *African Notes*, Special Number 3, 1988, pp 28-31

BOX 7.4: RURAL WOMEN AND LAND TENURE

Land is the most important single factor in the agricultural production process. Yet as far as women are concerned, there are very few who can claim title to land except in matrilineal cultures and there are not many in Nigeria. Women have only vicarious usufructuary rights over land i.e. through the rights of their husbands, male children and male relatives. Thus traditional societies laid the onus of food provision on rural women and took away in the same fell swoop the very means which made food production possible.

Furthermore, colonial capitalism, created a reservoir of cheap rural labour force, of which rural women constitute a large segment without legal access to land on which to produce food. Colonialism initiated a process of land individualization which entailed two contradictory developments; the emergence of a minority of moneyed and land-owning class of rural bourgeois and of a majority of the rural women who are already disadvantaged by traditional pre-colonial structures. The modernization of agriculture seems to have had some negative side effects on rural women. As technical innovations are introduced into the production and marketing/distribution process, men find it profitable and honourable to expand their lines of economic activity, thus encroaching on the marginal dependent rights of women to land use. In this way, the increased process of land alienation hits the rural women most as men tend to use what little land women have for production of cash crops and economic trees. The so-called agricultural development projects provide examples of ventures that are established not in response to the food needs of the household but in response to the requirements of the domestic urban and international markets. Modern capitalist agriculture therefore made rural women food producers who are alienated from the land.

Women in Rural Labour Force

When, men migrate to the non-rural sector to eke out an existence, a good number of the women stay behind to produce food in scattered and sparse farm holdings as well as engage in farm and non-farm work as wage earners in order to augment their subsistence production. Thus in addition to their traditional roles as biological reproducers, women also carry wood, draw water and manage the household.

The Kano River Project is a case in point of the practice of lower pay for women for the same work that men do. The Kano-River Project (KRP) gave a contract to a Brussels-based holding company (BUD) to grow beans and other vegetables meant for the markets of Europe. This company engaged the services of local women who picked and packed the beans at the wage rate of 11/2 kobo per kilo per woman. A woman starts work from 8 a.m. till 2 p.m. during which

time she would pick between a minimum of 20 and a maximum of 24 kilos. This means she would earn between 30 and 36 kobo per day. The scheme management pays N2.2 per day to the male labour for the same time duration. (Sam Jackson, (1978) Simmon (1976) studied the food processing activities of Zaria women. The invasion of the traditional food processing industry does mean a reduction in the purchasing power of rural women with the consequent lowering of nutritional quality of the family menu. The food and feed firms go to the urban middle classes and pass as inputs into the manufacturing and processing of food products often beyond the purchasing power of the rural population, particularly women.

Very few, if any, projects are conceived and executed with women as an integral part of the planning process. This is partly true of internationally financed projects such as the World Bank integrated rural development projects. Nigeria has attracted as many as eight of the World Bank agricultural development projects. The commercial orientation of these projects has tended to exclude the role of women as food producers. Consequently, the credit facilities available in these projects have tended to reinforce the traditional bias against women.

Nigeria has over the last decade established well over eleven River Basins Development Projects, yet it is nowhere near self-sufficiency in food. Among the many factors responsible this food dependency is the fact that women, who are largely responsible for providing the food and the nutritional needs of their families, are not taken into account in the planning process.

Source: Extracts from Segun Famoriyo: 'The Significance of Women in Nigerian Agriculture', *African Notes*, Special Issue 3, 1988, pp. 83-88

Providing Rural Household Energy Requirements: Women and Fuelwood

Of all traditional fuels, fuelwood is the most important. The vast majority of rural Nigerians depend on fuelwood, for cooking and heating for both domestic and non-domestic purposes; domestic consumption represents the largest share of the total consumption. In many rural areas of Nigeria, fuelwood supplies over 80 percent of the total energy consumed for all purposes.

The division of labour by gender in Nigeria ensures that women, assisted by girls, are largely responsible for fuelwood collection for household use. The task of fuelwood collection is often difficult and sometime hazardous. For example, it is common on the Jos Plateau to see women desperately hacking away at shrubs and deadwoods with children on their backs. Branches of trees are attacked with machetes and hoes with a lot of energy and time being expended to cut through a single

branch. When stumps are too thick to cut at a time, they are left until the following dry season. By this time, the branches would have dried off, and therefore easier to cut. The younger and fitter women climb up the trees, scramble up steep slopes of sharp rocks, on bare feet, and wrestle with shrubs perched on the edge of cliffs. Falls and injuries from cutting tools and stones are quite common. Women may trek up to 5 km into the hills seeking for fuelwood and they make such trips two or three times a week.

Rural household's fuelwood self-sufficiency depends not only on the size of farms, but also on the number, location, and quality of the land parcels that the women's husbands own or use. If parcels are widely separated, for example, collecting fuelwood may take more time.

In spite of these hardships women may encounter when collecting fuelwood, they are again blamed for deforestation and seen as environment destroyers. Such a stigma is rather unfair because fuelwood collection is simply a desperate attempt by Nigerian women especially in the rural areas, to provide the energy requirements of their families through local sources. Moreover women's role in fuelwood collection is determined by the structure of society which makes them to bear the burden of accounting for 80 percent of energy consumption, particularly in the rural areas.

Women and Water

Nigeria as a whole is well endowed with both surface and ground water resources. However, water availability is poorly distributed in time and space. There is abundant water supply in the southern part, but the northernmost areas of Borno, Kano, Katsina and Sokoto states are zones of serious water scarcity. Also, water is more readily available during the rainy season than in the dry season. Because the rainy season is very short (4 to 5 months) in the arid and semi-arid zones of northern Nigeria, the scarcity of water cannot be overemphasized.

Fetching water is traditionally the work of women and girls in Nigeria, and it is one of the hardest tasks in rural life. The task can take anything from an hour a day upwards. In the dry season, it can take up to half the day or more. But Nigerian women have demonstrated tremendous knowledge on various aspects of this important "liquid of life" (water).

Nigerian rural women know where to get water. Among the Tiv of central Nigeria, women wake up as early as 5 a.m. with their daughters to fetch water in the streams at a time when it is free from human and animal pollution.

In the rural areas, women travel long distances with their daughters and spend 2-4 hours to get water from lakes, ponds and streams. They may trek up to 18 km to fetch water and back while carrying their babies on their backs and water on their heads. In the dry season, women may have to dig shallow wells on dry river beds and wait endlessly for water.

The problem of fetching water in Nigeria is not restricted to the rural women. In the urban centres, women also do a lot to get water. Only about 20 percent of homes in our cities have water connected to their houses. Even then, they do not get water regularly and women have to look for water elsewhere to supplement the pipe-borne one. They often resort to

hand dug wells which may dry up during the dry season. Water is so important that its scarcity or misuse can lead to serious health and environmental problems.

Nigerian women have different ways of purifying and classifying water. Their interest in clean environment and healthy living underscores women's concern for water. From the way they ration water in the face of scarcity, they are water managers. Yet their role has been taken for granted in planning water resources management in Nigeria.

BOX 7.5: THE THIRST FOR WATER

Heavier than collecting firewood, the burden of rural Nigerian women is the collection of water. The task can take anything from an hour a day upwards. In the dry season, it can take up half the waking day and more.

In a day spent with Mama Deke Ullam, of Gwer Local Government in Benue State, I gained a harrowing insight into the suffering and the painful dilemmas involved: the choice between filthy water that brings disease and sometimes death, and an exhausting trek for clean water that brings hardship. Quite often, I had to take short rests under tree shades before moving on, a luxury Mama Deke could not afford.

The people of this particular village have made 11 attempts to sink a well. Each time the sandy soil has collapsed. The nearest well is seven km away, dug and fortified by missionaries, but the queues there are so long that it is quicker to go to Mbayase, nine km away.

In the rainy season, water collects behind the earth dam which the villagers built, only a kilometre from Mama Deke's compound. This water is the filthiest I have ever seen, the colour of clay, with wriggling insects and larvae visibly swimming around in vast numbers.

It is the source of diarrhoea, of guinea worm and much more. These women know this, but their work burdens are such in the farming season that they have no choice but to use it.

Shelter

Nigerian women are not only great users of the environment, but perhaps greater users of shelter than men. This is because most of their activities are carried out within the house. In general, they spend more time at home than men and are thus strongly affected by the place in which they live, its amenities and its surrounding environment. In a recent survey of women activities within the house in Benue, Kaduna and Niger States, M.J. Sokomba showed that rural women and low income earners hardly have time for recreation (Table 7.6). Women meet at places for grinding grains, hair braiding, firewood, and these are activity times and points to socialize while working. Given the activity patterns of women, their productive and unremunerated participation in agricultural and shelter activities, they perceive housing differently from men and understand their need for

space more than men.

Women's contribution to the provision and maintenance of shelter vary with their cultural background. Each cultural environment determines the form, standard and quality of shelter as well as the specific roles women would play in its provision and maintenance.

Women from many Nigerian cultural groups where thatch roofs are still common such as Tiv, Junkun, Berom, Hausa and Fulani are involved right from the onset of shelter construction. Women fetch water for men to make the mud for bricks and for building the wall. Men do the building but women provide the basic implements and particularly water. Men cut and trim the trees to make pillars for roofing. Women assist in carrying these from the bush to the construction site. When the walls and the roof are complete, men's work on the construction of a shelter is finished. Women are left with the task of making the floor which usually involves levelling the interior with gravel and sand. Women also do landscaping. Thereafter, it is the woman who maintains it and constantly identifies areas to be renovated. She sweeps and keeps the surrounding environment clean. Nomadic Fulani women are often responsible for the preparation of materials for building and maintenance of their homes, and dismantling and rebuilding them when they move. Thus in the Nigerian traditional environment, women are expected to, and do play a significant role in the provision and maintenance of shelter.

In the modern construction industry in Nigeria, women also participate albeit in a dominated and exploited way. Berom women on the Jos Plateau form an outstanding example of women involved in modern construction. They form the major labour force employed by building contractors in the Jos metropolis. They move sand, gravel, water, planks and other relevant implements from one point to another within the construction site of buildings. The absence of Berom and Bassa women could create a big problem for building contractors in Jos.

In spite of the significant role of women in the construction of shelter, in both traditional and modern shelter development, they lack the power to make decisions concerning shelter. They are never participants in decisions on housing policy or programmes. Departments involved in policy and programme formulation for shelter are staffed with professionals, such as architects, estate surveyors, planners, engineers etc., whose women's representations are abysmally low. On individual family basis, the major decision on shelter rest with men who decide the type and where a family shelter could be erected with little or no consultation with the women.

In the urban areas, Nigerian women's shelter problems are compounded by the country's housing crisis in terms of inadequate housing units and facilities. Sokomba (1991) has estimated that 2.3 million housing units are required in the urban areas by 1994 in order to meet the demand occasioned by the high population growth. The rural areas in turn would require about 7.6 million housing units by the same year. Yet the current rate of housing production is about 2.3 dwelling units per 1000 of the population. The result is overcrowding and inadequate facilities in the urban areas. For example, Lagos, with a population of about 4 million

people, has about 5.8 persons per room, 50 percent of homes with water/ electricity, less than 1 telephone per 100 people and it scored only 19 percent on an international urban living standard index (Population Crisis Committee, 1990). Because Nigerian women spend more time at home than men, they bear the direct negative outcome of lack of space, especially in the urban areas. In crowded city slums and squatter areas, insanitary conditions increase environmental health problem of the poor, who are in most cases women. Yet the 1990 National Housing Policy pays no particular attention to the need for the involvement of women in shelter provision strategy.

TABLE 7.6: WOMEN AND ACTIVITIES CARRIED OUT IN TIME AND SPACE WITHIN THE HOUSE

Activity	Space location within the compound	% of total time spent per day
1. Food production	Within the courtyard	7.5
2. Food processing	Within the courtyard	8.5
3. Child rearing and family care	Within the courtyard and outside for needed items	9.0
4. Food storage	Barns within and outside the	8.0
5. Fetching water (mean distance 2km)	River/ stream or dug up wells within the courtyard	7.5
6. Firewood fetching (mean distance 2km)	Farmlands and surrounding areas	7.0
7. Beer brewing	Within the courtyard	9.5
8. Marketing	Market, veranda, another settlement (periodic markets)	8.0
9. Preparation in housing construction (when necessary)	Fetching water, cooking food, brewing beer, plastering etc.	7.0
10. Recreation	Within the courtyard except at festivals or ceremonies	3.0
11. Sleeping	Bedroom or courtyard	25.0

Source: Field survey of some rural settlements in Niger, Benue, and Kaduna States (1985-88) by M.J. Sokomba (personal communication)

Health

The importance of the relationship between health and environment has long been established. It has been shown by many scholars that the environment has more profound impact on the health of individuals than modern medicine. For example, J. Azurin and M. Laverro (1974) have shown that the provision of sanitary facilities for human waste disposal can reduce the incidence of cholera by 76 percent.

The poor status of Nigerian women and its relationship to tradition, customs and various cultural practices affect their health in many ways. Under the patrilineal nature of the Nigerian society, a major role of Nigerian women is the maintenance of their households. This task is often arduous and may involve working for an average of 10-16 hours per day.

Women are also responsible for child bearing and child care as well as their husband needs. Yet, most decisions that affect their health are usually taken by the husbands. The multiplicity of the role of women creates greater vulnerability to ill health due to fatigue.

Most of the dangerous practices which are harmful to women's health in Nigeria are performed under the auspices of traditional or cultural beliefs. One of such practices, especially among the Hausa-Fulani culture of northern Nigeria, is the practice of early marriage of women before they obtain adequate physical and emotional maturity. Results of the Nigerian fertility survey gave the mean age at marriage of the cohort of women aged 20-24 years to be 16.1 years with 24.3 percent of the surveyed females marrying before the age of 13 years, 37 percent before 14 years and 5.1 percent before 15 years of age. Regional comparisons showed that the north had the lowest mean age at first marriage (Ejembi, 1988). For instance, recent studies in Zaria Local Government Area, Kaduna State, showed the average age of marriage to be 13.6 years with 83.4 percent of the girls being married by the age of 14 years and 98.5 percent before the age of 20 years. In Hausa-Fulani culture, the family, the koranic education and Islam provide the backing for the transmission of child marriage from one generation to another. Child marriages are seen as a way to avoid dishonour to the family because it is believed that virginity can only be guaranteed between the ages of 8-10 years.

There are however many risks associated with early marriage, and these have been classified by Ejembi (1990) into: (i) medical hazards; (ii) psychosocial and economic problems; and (iii) demographic problems.

Child brides are not psychologically, emotionally, and physically mature to appreciate, and carry out marriage obligations. In some instances, superior force is brought to bear on the unfortunate child brides with resultant physical and psychological trauma. This is a form of child abuse. A widely reported example by Nigerian newspapers in 1987 is the case of Hauwa Abubakar, a twelve year old Fulani girl in Sokoto who was forcefully married to a man in his thirties. Because she would not consent to marriage and conjugal rights demanded by her husband, he stabbed her lower limbs with a poisoned sword. Bilateral amputation of the limbs could not save her life and she died as a result of the assault. In many cases, on encountering difficulty at penetration, husbands forcefully attempt to consummate the marriage sometimes with the aid of local surgical incisions (*gishiri* cut) to widen the vaginal orifice resulting in vaginal injuries and profuse bleeding (Ejembi, 1990).

When these girls are married they are usually kept in *purdah* (*Kulle*) to prevent them from being exposed to other men. For most of these child brides pregnancy soon follows. They usually welcome these first pregnancies, enduring the health hazards as their prize for entry into the world of women.

Biologically, the odds weigh heavily against pregnant child brides as they are not physically, psychologically and socially mature to cope with the stresses of pregnancy and child birth. Teenage pregnancies are associated with a high degree of morbidity and mortality. Anaemia, toxemia in pregnancy, and obstructed labour are common in young

brides. The pelvises of these girls are usually not well developed to allow for the passage of the foetal head during normal vaginal delivery. Thus when they go into labour, invariably the labour becomes obstructed. Further compounding their problem is the concept of *Kunya*, a culturally instituted behaviour which requires a woman to show modesty and shyness, especially with regards to the first pregnancy and everything related to it. A girl is not expected to shout or cry in such a way as to attract other members of the household, especially men, when she is in labour. She is expected to deliver her babies at home and can only go to the hospital if there is complication.

Without medical attention, obstructed labour may result in death of the foetus, death of the mother, or any of the following morbid conditions; nerve palsies, vesico-vaginal fistula (VVF) which is an abnormal connection between the bladder and vagina resulting in uncontrollable dripping of urine, or recto-vaginal fistula (RVF), a connection between the rectum and vagina resulting in faecal incontinence. Sometimes, in an effort to relieve the obstruction, a 'traditional surgeon' may be called to perform blind incision into the anterior vaginal wall ('*gishiri cut*'), which can in itself cause VVF. A study in Zaria, as reported by Ejembi (1990), showed that 83.8 percent of the 1443 VVF patients were due to obstructed labour, while '*gishiri cut*' accounted for 13 percent of the cases.

Teenage pregnancies are also associated with high foetal wastage and low birth weight which negatively impacts on the survival chances of the infant. A recent survey of women in Basawa village, Zaria Local Government Area by Ejembi (1990) showed that the probability of a pregnancy ending in a live birth is only about 41 percent in women aged less than 15 years as compared to between 90 and 97 percent for women between 20 to 39 years. Other studies have shown that maternal mortality accounts for up to 60 percent of all deaths in mothers aged less than 16 years (Maine, 1982). Prenatal and perinatal mortality (stillbirths and deaths in the first week of life) and infant mortality are also found to be more prevalent among children of teenage mother than children of mothers aged 20-34 years. A study of the outcome of pregnancies of 146 VVF patients in Zaria showed that 93 percent were still-births as compared with 5.2 percent of 156 controls. (Ejembi, 1988).

In addition to these health hazards, adolescent marriage is associated with many psycho-social problems. An adolescent mother has a much less chance of acquiring adequate professional skills and competences other than becoming a mother. This restricts her opportunities for socio-economic emancipation as she is likely to be unemployable.

When young girls are brought into homes as wives, especially in polygamous homes, they are made to perform long hours of household duties, and sometimes they are even terrorised by the older wives, all under the guise of training the young brides into adult status. It is therefore not surprising that a high rate of divorce was observed among young girls married off in adolescence in Zaria city (Ejembi, 1988).

Victims of VVF undergo more serious social and psychological problems. They are usually rejected at all levels in the society. In most cases, as soon as the woman develops the condition, the husband divorces her.

A study in Zaria showed that about 92 percent of a series of 150 VVF patients were divorced. Rejected by the husband, such a woman then turns to her family who may also reject her. Because she is incontinent of urine and faeces, she usually wears napkins like a baby and her presence can be offensive to other. To the society, therefore, she is an outcast; no one wants to be associated with. Because the majority of VVF cases occur after first birth which usually follows a still birth, she may remain childless for the rest of her life, unless repairs are possible or subsequent pregnancies are medically managed. If left untreated, a VVF victim's life is that of pain, misery, destitution, utter loneliness and shame, especially in the Nigerian culture where social stigma is attached to childlessness.

Like in many African countries, female circumcision is widely practised in Nigeria. About 25 percent of women and children among Hausa, Yoruba, Igbo, Effik, Ibibio and many others in Bendel States are reportedly affected (WIN, 1985). The common type of female circumcision in Nigeria entails the removal of the clitoris, and in some cases, together with adjacent parts of the labia majora. It is called *clitoridectomy*, and its operation varies among different cultures. It may be performed on infants that are a few months old as among the Yoruba, or between the ages of 3 and 6 years or at puberty as among the Effik and southern Ibo communities (WIN, 1985).

The main reason given for female circumcision is to safeguard premarital chastity and virginity by reducing feminine pleasurable sensation. Some ethnic groups (e.g. Yoruba) superstitiously believe that if a baby's head touches the mother's clitoris during childbirth, stillbirth may occur.

As it is now widely accepted, female circumcision has many negative consequences on women's health and the children on whom it is performed. Because it is usually performed by 'traditional midwives' who use unsterilized surgical instruments, the patients stand a good chance of being infected. Severe shock and hemorrhage may result from the use of a knife or razor unaccompanied by anaesthesia. Difficulties in passing urine and menstrual blood, vaginal fistulae, genital infections, excessive scarring and keloid formation which may lead to severe problems during childbirth or even infertility have been attributed by many authors to female circumcision (WIN, 1985).

Nigerian women are highly pronatalistic. A high value is placed on children as they are seen as a form of economic investment (source of labour) and social security in old age. The Nigerian Fertility Survey of 1981-1982 revealed a fertility rate of about 6.3 children per woman (Goliber, 1989). A more recent UNDP report puts the figure higher to 7.0 (Table 7.7). In another recent study by Ejembi and Bandipo (1990), 314 married women in Giwa district (near Zaria) desired an average number of 8.4 children. The fertility rate could even be higher for women in polygamous families where having children can be a matter of competition among wives. To have more children than any of your husband's other wives is viewed not only as a privilege but as a means of guaranteeing that your children benefit most from any inheritance left by the father after his death. Moreover, because of the traditional preference for male children, Nigerian women may end up having several daughters in their attempts to produce a son.

**TABLE 7.7: HUMAN DEVELOPMENT IN NIGERIA:
AN INTERNATIONAL COMPARISON**

Country	Fertility rate 1988	Contraceptive Prevalence rate (%) 1985	Births attended by health personnel (%) 1988	Maternal mortality rate (per 100,000 live births) 1987	Female life expectancy at birth 1982
Nigeria	7.0	5	40	800	52
Malawi	7.0	7	45	-	46
Cameroun	5.7	2	-	300	55
Ghana	6.4	10	40	1000	57
Gabon	5.0	-	92	-	-
Kenya	8.1	17	28	170	59
Brazil	3.4	66	95	120	66
Haiti	4.7	7	40	230	56
Cuba	1.7	60	-	-	77
Malaysia	3.5	51	82	-	69
Thailand	2.5	66	40	70	65
Sub-Saharan Africa	6.5	6	36	520	-
Least Developed Countries	6.0	10	23	530	60
All Developed Countries	4.0	47	42	290	-
World	3.5	50	51	250	-

Source: Extracted from Population Crisis Committee 1991; Human Development Report.

The high fertility rate of 7.0 for women in Nigeria is surpassed by women in only a few other countries of the world, notably Kenya, where the fertility rate is a record 8.1 (Table 7.7). There is generally little attempt at conscious regulation of fertility among women in Nigeria, and considerable ignorance concerning knowledge of modern contraceptive methods. In Zaria Local Government Area, for example, less than 20 percent of women know at least of a modern contraceptive method with less than 2 percent having ever used a method. The 1987 World Birth Control Survey revealed a contraceptive use of only 21 percent for Nigeria.

What this implies is that the average Nigerian woman spends a great deal of her adult life, reproducing and caring for children. Not only does this affect her health and drain her vitality, it often hinders her from staying consistently in paid employment, advancing steadily in her career, or acquiring new skills. Quite often, the bearing and rearing of so many children, effectively confines her to a life of poverty, stress and misery.

There is evidence that the recently introduced Structural Adjustment Programme (SAP) and various hospital consumer charges have reduced the survival chances of women giving birth in Nigeria. For example, the

maternal mortality rate in Ahmadu Bello University teaching hospitals was found to have risen by a factor of 7 from 283/100,000 to 2125/100,000 between 1982 and 1988 with the increase being more marked in 1986, the year cost recovery policy was introduced in the hospitals (Ejembi, 1990).

The combination of these risks and the overall socio-economic situation in the country, often imply that the average Nigerian woman may not live as long as women in several other parts of the world. This becomes quite clear when we undertake an international comparison of female life expectancy rates at birth or the number of years a new born baby girl would live if the patterns of mortality prevailing at the time of her birth were to stay the same throughout her life. From the foregoing, it is obvious that women in Nigeria are exposed to a lot of hazards in carrying out their reproductive functions and this results in poor maternal health status.

The social condition of women also exposes them to diseases. By the virtue of their being the primary water fetchers, especially in the rural areas, women are more likely to be affected by water borne diseases such as guineaworm and filariasis than their male counterpart. In a very recent (1991) pilot survey of some villages along the Sokoto-Rima River system, D.J. Shehu of Usmanu Danfodiyo University, Sokoto, reported that elephantiasis, which is one of several variants of filariasis, affects more women than men. In the six villages surveyed along the Tsamiya river, a tributary of the Sokoto-Rima Basin in Dange Shuni and Talata Mafara Local Government Areas, only 16 percent of the cases were male and then the disease may manifest as hydrocele or a swollen scrotum. The swellings on the legs of women who constitute the remaining 84 percent of the cases and who frequently visit the water courses, have been noticed for more than ten to fifteen years. Many of the affected women aged over 30 years noticed the swellings shortly before or after their first pregnancies. In the majority of cases, only one leg was affected.

The higher percentage of affected women compared with men has been attributed to the frequency of women's visit to the river or stream. Even though men also fetch water from the streams, women are the predominant water carriers using the traditional water pots (tulu). Apart from mere fetching of water, girls also regularly carry the family cooking pots and plates to streams to wash, staying for about half an hour or more per day in water. Thus there is every reason to deduce that there is some association between elephantiasis infectivity of women and their frequency of visits to the riverine areas. The frequency determines the rate at which women suffer from mosquito bites.

In addition to the above-discussed environmentally-related health problems, Nigerian women are also victims of undocumented cases of sexual harassment, wife battering, rape, incest and sexually transmitted diseases including the recently emerging crisis, Acquired Immune Deficiency Syndrome (AIDS).

WOMEN AND ENVIRONMENTAL DEGRADATION

“Men generate environmental problems; women deal with the consequences.”(Ibrahim, 1982, p. 25.)

The preceding arguments have shown that Nigerian women and their environment are crucially linked. They play an important role in the utilization and conservation or destruction of the natural resource base (soil, water and forest). As wives and mothers they also play a crucial role in population resource. Nigerian women have a central role to maintain the delicate balance between population and natural resources in order to sustain the environment. This is because man-induced degradation of the environment penalizes women and add to their traditional domestic tasks that are so essential to the survival of society. The overall result of environmental degradation on women is to worsen their already low socio-economic status. Some of the ways by which environmental degradation can penalize women are discussed as follows.

With rapidly increasing population, fallow is now shortened in many parts of Nigeria. This leads to continuous use of the land and rapid deterioration of the natural resources. In addition, land now becomes private property at an accelerated rate through land reform, illegal action, mechanization and gradual change of customs. As land shortages emerge, women are forced to find more new land for cultivation. This trend has some undesirable social consequences. For example, Johnson-Stone and others show that land shortages in Kofyar prevents young people from setting up independent households, causing them to marry later.

In the Northern arid and semi-arid regions beset by hardship, and periodic drought-caused famine, the role of women in the management of the environment is compounded in many ways by land degradation in the form of desertification. Faced with the degradation and reduced availability of cultivable land, women may be allocated increasingly marginal plots of land, or are refused land altogether. Working on marginal lands would exhaust both the land and the women alike. Women’s work on the fields would increase to make up for falling yields, while intensive cultivation of the land will further exhaust it.

Desertification results in deforestation and scarce fuelwood supplies. Wood scarcity increases the time required for fuelwood collection by women and takes family labour away from other essential activities. Because fuelwood gathering has to be done several times in a week, increase in collection time becomes burdensome and unbearable on women. Since labour required for other tasks will be expended on fuelwood collection, land degradation will seriously diminish welfare and production. Loss of vegetation cover also means reduction in wild plant products that have often provided nutritional supplements and medicine for the entire family.

Shortage of water increases the burden of women as water carrying becomes a tremendous waste of time and energy. They now have to travel longer distances in search of water, and where wells are sunk, women sometimes have to go at night to them. This means that there would be less

water for the family for higher women's labour input.

One of the most painful consequences of desertification in Nigeria is the mass exodus of men, leaving bewildered women to battle with the harsh environment. The out-migration of men has important consequences for women who must then take on additional agricultural tasks. It destabilizes their marriage patterns and may turn many women into "widows" in areas where husbands have to migrate far distances. This act of outmigration generally destabilizes both the economic and social systems of a community. Its effect is more devastating on women in areas where a community is completely forced out of its locality. This is the case with Gidan Kaura village northwest of Sokoto where sand dunes were reported to have levelled up vast areas of farmland and swept a whole village of nearly 300 houses out of existence. Such a dislocation would bring about more work and more responsibility for women as a community settles in a new area.

All in all, Nigerian women are faced with increased burden as environmental degradation increases. They are likely to become poorer and weaker in the face of diminishing returns from the resource base - land, water and air - upon which their livelihood depends. In particular, desertification weakens the socio-cultural role of women because they spend more time everyday in survival tasks rather than educating and counselling the future generations.

WOMEN'S PARTICIPATION: MAKE IT WORK FOR THE FUTURE

Nigerian women's close link with the environment is a function of their position within the country's social structure.

As managers of the resource base at the micro level, as consumers and as bearers of children (future generation), women have the capacity and the responsibility to solve environmental and population problems. Yet the Nigerian environmental protection and population policies have not specifically recognized the strengths and the constraints of women who are responsible for almost 80 percent of the country's total food production and who most depend on the natural resource base (land, water and air). Even when women's efforts to improve their social recognition gained some success this is either limited to concessionary political appointments or seriously curtailed by economic constraints. Such are the biases against women as a social category that recognition of their importance and contribution to society has remained largely at the level of rhetoric.

Women in Nigeria are involved in environmental issues not because they have consciously decided to work on improving or maintaining the environment. Their close link with the environment is largely unconscious; it is taken for granted and considered natural.

The relative political powerlessness and marginalization of women has made women uninformed of basic economic and political matters affecting the state of our environment. In order to ensure their workable participation in environment resource management, Nigerian women must be empowered through better education and political participation. This would ensure their involvement in public policy. As cultural guard-

ians and first educators, women and their organizations must act as educators, and opinion and consciousness raisers.

The Empowerment of Women

There are various environment and development issues that concern women directly, we look here at just two of them:

Pollution is now a major concern in water supply especially in the industrial centres of Lagos, Enugu, Ibadan, Kano and the oil producing states of Imo, Bendel and Rivers. Women need to be aware of the insensitivities of the oil companies who cause environmental damage, through leakages, corrosion and blow out of oil wells and pipelines. Oil spillage kills crops, destroys farmlands, creeks, fish ponds and destroys water sources. Gas flaring and other forms of industrial pollution are important issues to attract national debate. Women organizations need to form their opinions about these issues and raise the consciousness of Nigerian women. They should initiate debates and act as agents of change in environmental sustenance.

Fuel is another issue. Women in Nigeria have been rather dormant on the issue of fuel. Like water, women use fuel energy for different tasks including cooking. But they have not been able to initiate debates on the difficulties associated with using firewood. Nor have they brought out the problems including environmental and health hazards associated with the use of traditional firewood. Wood now accounts for 80% of energy consumption in Nigeria. But the side effects are several. There is emission from firewood or smoke which pollutes home and especially where women cook everyday all year round. Women are affected from the smoke more than smokers. It is estimated that the smoke inhaled by women is more than 20 packets of cigarette per day. Wood cooking produces carbon monoxide poison which causes respiratory and eye diseases, as well as cancer.

Women need to promote fuel energy saving systems such as cooking stoves and solar heating. This should be among the central and key issues of our national environmental debate. Women apart from this must also promote awareness about afforestation, water supply, sanitation system and improvement of livestock management. Local village networks and associations along with trained teachers can pass on the environmental knowledge to other women groups. To do all of these, women's groups need to be strengthened through autonomous, participatory involvement in various development activities. The position of women as educators should also be recognized. Through the empowerment of women via legislative reforms and the expansion of their access to educational, professional and income generating opportunities, women can begin to take their rightful equal place in society. But all of these require a dual process of conscientization and investment in women.

Investing in Women

Nigerian women bear more environmental burden than men. Even where women and men share the agricultural load, women bear the greater burden. Recent studies have indicated that taking into account the respec-

tive contributions of men and women working together as a husband-and-wife-team, women are responsible for twice as many tasks as men. This suggests that given the same kind of help, encouragement and incentives as men, women are actually better farmers. Yet rural women get only token cash gifts from their husbands in return for services rendered on the farm throughout the year. Nigerian women largely do not own land and other means of production. They lack capital base and all necessary ingredients of power in the Nigerian capitalist system. The time has come to increase the current amount of investment in women in all sectors. This should be the focus of public policy and international aid. The range of investment is limitless. It includes education, women's productive and livelihood efforts, reproductive and children's health, law reform in the areas of ownership of productive assets, access to resources, taxation, inheritance and marriage and

divorce. Indeed, the scope for investment in women is endless and once increased women participation and equality are considered central, it becomes clear that it is not difficult to do this. These activities(that of women's participation and increased investment in women)should not be seen as merely altruistic. They are in fact, central to the attainment of a sustainable environment and development.

THE CHALLENGE OF SUSTAINABLE DEVELOPMENT IN NIGERIA: THE WAY FORWARD

8

INTRODUCTION

This book has documented several important aspects of the process and status of environment and development in Nigeria. It has identified problems and shortcomings, raised questions and issues, commended worthwhile efforts and initiatives and critiqued attempts, practices and strategies that are patently unsustainable either in intent and/or content. It has also offered alternatives from the perspectives and broad position of the Nigerian Environmental Study/Action Team (NEST). But the positions taken here must be seen in relation to the very nature and history of NEST, the objectives we have set for ourselves, and the current level of development of the NGO community in Nigeria.

Of significance also is that although this book has been prepared by NEST, the methodology used in preparation particularly the consultative and participatory aspects, by its very nature makes this a text which goes beyond NEST and beyond the short period taken to prepare it. What we have here, it must be clearly stated, embodies within it both explicitly and implicitly the working out of elements of ongoing debates and controversies in Nigeria on such subject matter as the political economy, environment-development nexus, the gender and population questions, the North-South relations problem, the poverty question, and the issue of human and democratic rights. The arguments, engagements, positions, conclusions and even evasions, here reflect and express the structuring and growth of an NGO like ours (NEST), and the evolution of the Nigerian NGO community, particularly the environmental currents, and the contradictions lodged within these. It further expresses the failures and the successes, the hopes and the fears of the Nigerian NGO movement. It is the hope of NEST that the debate and struggles which produced this document and those that it further generates, will help to ensure that this document in its present form is transcended through the emergence of a qualitatively higher level of awareness and action in both the governmental and non-governmental spheres.

It is therefore for NEST, a totally Nigerian document emanating from a long-term process of searching for answers to questions that surround the issues of environment and development in Nigeria. The formation of NEST in 1987 was part of the search and struggles that go beyond NEST itself, and beyond UNCED Brazil 1992. In essence all that is here is about the struggle for sustainable development as we understand it in Nigeria, by Nigerians for Nigerians and to the benefit of all Nigerians. It is within this context that the previous analyses and discussions, and the path forward be taken.

SUMMARY OF ISSUES

The Status of Environment and Development in Nigeria

The book begins by clearly stating the standards and values by which the sustainable development question as it relates to Nigeria is understood in this study. Sustainability of development in our view must be judged according to the presence and expression of the following key elements:

- (i) ecological integrity and sustainability;
- (ii) equity and distributive justice at all levels;
- (iii) socially and culturally relevant economic productivity and technological development;
- (iv) popular participation and collective autonomy; and
- (v) the prevalence and institutionalization of human and democratic rights.

These of course must be understood in relation to the history and cultures of Nigeria and in this regard the five National Objectives in the Second National Development Plan, 1970-74, embody all of them. These are to establish Nigeria as:

- (a) a united, strong and self-reliant nation
- (b) a great and dynamic economy
- (c) a just and egalitarian society
- (d) a land of bright and full opportunities for all
- (e) a free and democratic society for all.

The challenge of sustainable development in Nigeria is the building of a Nigeria which in the context of a rapidly changing world still emphasizes the values in her national objectives while simultaneously ensuring ecological integrity and sustainability. The inventory on the status of environment and development as contained in this volume does not reveal much that generates confidence in the expression of a motion towards sustainable development so far.

Population and the Environment

The population and environment question in Nigeria is examined in depth here. While the 'Malthusian panic' that is the stock-in-trade of certain North American and European analyses of the issue as it affects developing countries is rejected, the point is made that the management of rapid population growth is a serious development issue which Nigeria cannot afford not to take seriously.

The study recognizes the recency of efforts at the promulgation of a National Population Policy in Nigeria (February 1988) and at the same time the near-absence of reliable and current national population figures upon which one can situate a meaningful and accurate discussion of the relationship between Nigeria's population growth, the environment and the economic development process. However, it is hoped that the publication of the figures taken during the National Census, held in the latter part of 1991, will provide acceptable and meaningful data that will put an end to the problem of scarcity of reliable statistics. The study also finds that the increasing demands on the resources of the country and the linkage between this pressure and poverty as well as the linkage with environmental quality deterioration have not been seriously assessed in Nigeria.

In spite of the absence of reliable and accurate recent data, Nigeria's population growth rate based on projections when compared to available national resources is high enough to give cause for alarm. According to the World Fertility Survey of the International Statistical Institute, Nigeria's population was estimated to be 93.7 million in 1984. In 1990 the UNPFA's *State of the World Report* estimated Nigeria's population at 113 million and projected this to 301 million by the first quarter of the next century. This amounts to an annual growth rate of 3.5 percent, which is the fourth highest in Africa after Kenya (4.1), Cote D'Ivoire (3.9) and Libya (3.6). This is considered as the fastest growth rate in human history for an entire region.

In terms of the relationship between the environment and development, it needs to be known that the Gross Domestic Product and the real income of many Nigerians have been declining in recent years relative to population growth. The GDP grew by about 3.1 percent per year in the 1960s and by an average of 7.4 percent in the 1970s. Since the 1980s the economy has been declining, and in real terms, the GDP was about the

same in 1981 as it had been in 1978. Partly due to continued population growth, the GDP per capita in 1981 had declined to 1973 levels. The implications of this for resources and for the provision of basic services and development goods are obvious - less to go round for more people.

There is also evidence of relationship between population growth and a creeping process of environmental degradation and resources depletion. Other relationships include the constraints on the provision of social services and infrastructures, the depletion of forest, water and marine resources, the depletion of mineral resources and the growth of uncontrolled urbanization. Population growth of both humans and animals has also contributed to the increasing process of desertification in the sahel part of the country where overgrazing, tree felling and overcropping are common phenomena.

There is of course in place now a National Policy on population which contains clear-cut principles and programmes that relate the population situation to the development process. But the Policy contains its own weaknesses such as the absence of a legislative base and clear-cut incentives and disincentives to adhere by the stipulations and objectives of the policy. Furthermore, several elements deriving from the indigenous cultures, religion (particularly Islam and Christianity) and other aspects of the lives of the people introduce serious constraints to adherence to the contents of the Policy. This is because there are more pro-natalist values, orientations and institutions in the society.

Environment and Economics

The concern here is on the nature of economic activities and policies in Nigeria and the attempts made to reflect environmental factors in the development process, paying special attention to the nature of incentives and disincentives to environmental protection and resource conservation.

The relationships between environment and economics in Nigeria was also examined. The relationship may be appreciated through a review of a number of issues such as the extent of incorporation of the environmental component into national development plans, the valuation and pricing of natural and environmental resources, the cost of environmental policy, and the range of incentives and disincentives to environmental degradation in Nigeria.

It was found that there are no clearly formulated policies in Nigeria aimed at coordinating and monitoring the relationship between environment and economic development. Rather, there are a number of scattered and weakly articulated programmes, rules and legislations which when reviewed and analyzed may help to reveal the directions as well as the limitations of environmental and natural resource management strategies in Nigeria.

The environment and economic development planning in Nigeria is characterized by overemphasis on economic growth and gross underfunding of the environmental sector. Although the consideration of the environmental impacts of economic activities is increasingly being built into national development planning, especially in the last one decade or so, and although there is now an emerging emphasis on sustainable development, there is still much to be done in Nigeria.

In general, not much has been done to establish the value of natural sceneries, valleys, rivers, wetlands, forests and game reserves. To do this entails introducing effective and correct pricing which must take into consideration the environmental impacts of resource use, the value of the resources to present and future generation, including direct and indirect use as bequest/recreational use value.

There is the general absence of specific charges on damages to the natural ecosystems such as fresh water swamps, air, water, soil, vegetation, especially one that is commensurate with the degree of degradation that is caused.

The efforts of Nigeria to date are concentrated on granting concessions on land needed for mining and other natural resource exploitation as well as imposition of certain legal charges or fines on trespassers. A major feature of such policy is that the direct earnings and taxes arising from such concessions, for example, in the area of forestry and mineral resources are viewed essentially as nationally generated revenue or income and this as contributions to the GNP with very little being ploughed back into environmental renewal and protection. Thus of the billions of naira generated from petroleum taxes/concessions and which over the years have accounted for at least 90% of public national sector income, only 1% of federal revenue is devoted in principle to the management of ecological problems and damages nation-wide.

Government effort in forestry and wildlife protection is concentrated on declaring forest and game reserves and the imposition of fines or terms of imprisonment on illegal lodgers, poachers, and other trespassers.

There are no standard and established techniques for valuing the cost of environmental damage in Nigeria. Costing seems to be based on mere estimates of damage to property and loss of agricultural crops and physical facilities and infrastructures especially in cases of erosion, flooding, drought, etc. Much of the estimates are prepared by estate surveyors, valuers, economists and agricultural economists. Under this simple straight-forward procedure of costing, the direct use, and intrinsic and extrinsic value of resources are often ignored.

An effective system of national resource account is yet to be developed for Nigeria. What exist are land use data and maps especially in the area of agriculture, forestry and wildlife. Although environmental accounting embraces both the monetary approach which describes the value and flow of resources and the physical approach in which land use accounts and resources are classified and presented in terms of percentages devoted to particular uses, if Nigeria is to adopt the physical approach there is still the need to evolve a comprehensive system of national resource accounts in which a 'balance sheet' gives a profile of the stock of resources available at a particular point in time, what uses are made of this stock, what sources are derived from, and how they are added to or transformed over time.

Incentive packages for environmental restoration and pollution abatement are also a necessary part of effective environmental management which Nigeria is currently lacking. A range of incentives could be identified in Nigeria, for example, tax concessions for reafforestation, pollution reduction and adoption of clean industries, subsidies for tree

planting as well as the introduction of licensing fees, pollution taxes, property rights and product charges to act as disincentives to polluters and mismanagement of resources. The introduction of Polluters-Pay-Principle (PPP) is very desirable.

Environmental Education and Public Awareness

This analysis commences with underlining the fact that environmental problems are essentially people-centred; the ideas, attitudes, and behaviours of different sections of the population are critical variables in efforts to resolve or prevent such problems, hence the link between environment and human capital formation. It also examines the level of environmental awareness and the development of environmental education in Nigeria.

On level of environmental awareness, during the precolonial times, the people of what constitute present-day Nigeria have always been aware of their environment. The clearest evidence of this sense of awareness is to be found in traditional land use and human settlement practices, in folklores and rituals, and in various technologies that rely on environmental resources. Present day attitudes are therefore seen as an amalgam of this traditional relationship and those that have developed since contact with eastern and western cultures, before, during and after the colonial period.

In pre-colonial times and even up until today, most Nigerians lived on crop production, livestock rearing, hunting and fishing, and through these activities related to their environment. Settlement patterns and practices also demonstrated this awareness. Most of these relationships were in the direction of conservation, respect, good husbandry and efficient use of environmental resources. Land allocation and use, plant and animal protection and conservation techniques were presented in the language of folkloric taboos, religious practices and prescriptions and rituals.

A major change in environmental awareness and relationship with the environment emerged during the colonial period. Colonization introduced the notion of development, the major thrust of which was the exploitation and transformation of natural and human resources, primarily for the benefit of the colonial rulers. There was a mental shift in the perception of the natural environment from being a factor to work with to secure sustenance, to being a factor that had to be overcome, subdued or transformed to promote human welfare. Further, the introduction of a monetized economy weakened the effectiveness of communal approaches to using environmental resources, while new imported religious ideas undermined traditional beliefs and the bases for many protective practices towards the environment. Colonization in particular affected land use.

The post colonial period saw the continuation of the policies and approaches that defined environmental awareness in narrow sectoralist terms. The National Development Plans from 1962 to 1985 showed these trends and the gradual changes that occurred from the narrow definition to a broader, holistic definition that saw the environmental question in terms closer to the current sustainable development terms.

On environmental education (EE), its evolution was shown as being mainly from the perspectives of the natural and physical sciences subjects

in schools. What amounted to EE was taught in primary and secondary schools as part of the Nature Study and Hygiene, Integrated Science, Alternative Biology, Agricultural Science, Geography, Social Studies and Family Living.

All of the above attempts at including environmental themes in the formal education curricula suffer from the lack of a coherent vision or policy of the type of environment that Nigeria should have, and of the actions, including the educational pathways, for realising the objectives of such a policy. Over the past five years or so, however, a clearer perception of the needs for, and the form of, environmental education for the country has been emerging, clearly due to the pioneering efforts of the Nigerian Conservation Foundation (NCF), which have coincided with government's growing commitment to a sound environmental base for development. The NCF is also promoting conservation education actions in a few states, notably Borno, Cross River, Bendel and Lagos States. The Borno state experiment is the most comprehensive and formed the basis for the later formulation of a Draft National Conservation Education Strategy for Nigeria.

The Draft Proposals for a National Conservation Education Strategy, prepared by the Nigerian Conservation Foundation, represent the most comprehensive treatment of Environmental Education as a subject in Nigeria. It was at the Conference in Yankari Game Reserve, Bauchi State, 1988, at which the draft proposal by the NCF was discussed, that Nigeria picked up the initiative to develop a national programme on EE.

The National Conservation Education strategy was adopted in 1990 by the National Council on Education as part of the National policy on Education. Apart from actions relating directly or indirectly to implementation of the National strategy on Conservation Education, environmental education has been promoted in Nigeria in diverse ways by various organizations. The information media, government and others from time to time call attention to environmental lapses and urged greater awareness and concern about the environment by Nigerians. Non-governmental organizations, the number of which has increased dramatically over the last decade, have mounted programmes aimed at arousing public awareness on environmental issues.

The most concentrated and arguably the most advanced programme on environmental education in the country is the Community Awareness and Mass Mobilization (CAMM) Programme, associated with the European Economic Community supported North East Arid Zone Development Programme (NEAZP) in Borno State. Designed as part of an integrated rural development programme, CAMM seeks to blend environmental education with development interventions aimed at achieving sustainable development; it hopes to alter people's attitudes towards the environment and help them to commit themselves towards working individually and collectively for a better environment and life styles; it hopes finally to teach the skills for managing the environment. The outcome of this experiment in Borno State could provide valuable lessons that could be replicated in other parts of the country, Africa or the Third World.

The Environment and Institutional Framework

Many issues come under this broad umbrella but focus here is on formal institutional development. The study recognizes the hindrances to the development of an institutional framework for managing environmental issues in Nigeria as due to several factors namely:

- a) Poor historical conceptualization and definition of the nature, scope and importance of environmental questions, and
- b) Low level of political stability incidental in the country's culture of extra-constitutional regime-change via military coups and counter-coups, resulting in a lack of institutional and policy continuity and in regime and policy uncertainties.

Two other problems related to the issue of brakes on popular participation in environmental policy making and implementation are illiteracy, ignorance and structural inadequacies and the issues of appropriate legislation and jurisdictional partitioning within the country to allow for a more rational and stable framework for environmental management.

The 1989 constitution, the most recent in Nigeria's experiments with constitutions, scheduled to become fully operational in October, 1992, at the inauguration of the Third Republic, provides the basic sketch for the macro institutional framework for environmental management in Nigeria's federal system. Like the preceding 1979 constitution, the 1989 constitution outlines the responsibilities of government and the citizenry and lays down the broad outlines of the jurisdictions of all levels of government - central, state (regional) and local - in the federation with regard to environmental management.

The import of the constitutional provisions is the extent to which the federal government retains most of the regulatory and supervisory powers over the environment and the relative incapacitation, circumscription and decline in the powers and sphere of influence of the lower levels of government (State and Local) as one moves down closer to the grassroots and the local communities. The end result of the constitutional framework is the ironical situation in which the level of government that is closest to the people (Local government) has the least constitutional responsibility in the management of the environment.

Current federal action on the environment revolves mainly around the Federal Environmental Protection Agency (FEPA), created in 1988. The policy framework for current and future practice at all levels of government is provided by the National Policy on the Environment (FRN, 1989) launched in Abuja, the new federal capital, by the President, General Ibrahim Babangida, on 27 November, 1989 (New Nigerian, 28 November, 1989:1), and the philosophy underlying the rolling plan concept and the First National Rolling Plan, 1990-92.

The 22-page National Policy on the Environment explicitly recognises the link between "development processes, environmental factors as well as human and natural resources" and has as its ultimate goal the achievement of sustainable development in the country. The document recognises that, to achieve this goal, there would be the need for action to "establish

and/or strengthen legal, institutional, research, monitoring, evaluation, public information, and other relevant mechanisms”.

Apart from FEPA, which is basically a federal supervisory agency, the policy document is very scanty in the area of institutional reform meant to strengthen institutional-building and active participation by the lower levels of government in environmental management. No doubt, the national policy underscores the need for public participation and notes this in a section devoted specifically to it.

The problem of low level of institutionalization becomes most acute at the local government level. Not only that, the purview of the local government has been limited to the management of solid waste disposal. All this has led to a situation in which the institutional framework at the local level has been underdeveloped, undermanned by relatively junior and middle-level manpower, and underfunded.

Another significant weakness in the public structure is the near absence of the institutionalization of popular participation either via NGOs, Community-based Organizations, the communities or business enterprises. So far, the non-governmental sector and business have been weak in their participation in environment and development issues and in several cases have either abdicated their role to FEPA or allowed it to provide a definition and direction.

Land and the Environment

Given the high pressure of population on land in some parts of the country, the low level of environmental education in Nigeria, and the extreme economic hardship of the last seven years, it is not surprising that there is widespread degradation of land, water, and air in the country.

Nigeria's land is held under two tenure systems, customary and statutory, the former being far older than the latter. In 1978, the Federal government promulgated a Land Use Act (LUA) to streamline land transactions and ownership and facilitate the acquisition of land for development purposes. Complaints about the Act are numerous and loud, and the government is likely to review it.

The use of the land and of the nation's water bodies is bedevilled by many serious problems, mostly from the viewpoint of environmental degradation - whether in the sphere of agriculture, forestry, mining and quarrying, petroleum exploitation, manufacturing, fishery, transportation, or urban settlement. The principal problems here include oil spillage and other forms of water pollution, discharge of industrial effluent, the emission of air pollutants, and agro-chemical contamination of soil, food, and water, as well as solid waste generation and its improper disposal. Among others are the destruction of wildlife habitats, disappearance of plant species, wanton flaring of natural gas, and, above all, desertification and soil erosion.

Land is also used in pastoralist pursuits. It is the basis of grazing for both nomads and sedentary livestock rearers. Pastoralist activities particularly of the nomadic type are under pressure as a result of the decreasing available stock of land owing to other forms of development. Several conflicts have been reported between pastoralists and sendentary

farmers in Nigeria. The pastoralists are also themselves vulnerable to drought and disease for their animals.

Environment and Gender Issues

The fact of the position of women as a social group in meeting the two critical challenges of development and environmental protection is highlighted. Both the status of women and their involvement in shaping the environment with particular emphasis on their interaction with the natural resources (e.g. soils, water, forests) upon which family livelihood depends are also examined. It is pointed out that the consequences of environmental degradation have a "gender bias" effect in this case for women who are forced to work harder than men when there is a decline in the availability of fuelwood or water or/and productivity of the soil. Nigerian women though not a homogeneous group, are limited in their access to and control over such productive resources as land and labour. Also imposed sexual divisions of labour had curtailed women's physical mobility. The subordinated condition is reflected in the lack of basic social rights over their bodies and family properties in a lot of cases. It is also reflected in the marginalization of women in the modern labour force and the field of education. In the modern labour force, women predominate in low-status jobs.

The division of labour in rural agricultural activities is gender-specific. Evidence for female farming in Africa show that women provide some 60-80% of the agricultural labour force and produce some 80% of the food for family consumption. The same generalization is applicable to Nigeria. In some rural areas of Nigeria up to 95% of the food is produced by women. In South-West Nigeria Yoruba cocoa belt women were estimated as spending 42% of their time on farm operation apart from involvement in housekeeping and crafts. Nigerian women also participate in animal husbandry especially raising small ruminants and poultry and processing and marketing of dairy produce. Women's participation in livestock production is very prominent among the pastoral Fulani.

In many rural areas of Nigeria, fuelwood supplies over 80% of the total energy consumed for all purposes, and women are the main collectors. In the Jos Plateau, women have been known to trek up to 5 km into the hills seeking for fuelwood and they make such trips two to three times a week. Women, again are the main fetchers of water. They trek several kilometres and have devised all sorts of means and knowledge about how to fulfil their household's needs for water. The problem of water scarcity extends also to the cities, where again poor women are responsible for fetching the water.

Women's subordinate position also makes them vulnerable under conditions of environmental degradation and problems. Women in parts of Northern Nigeria suffer more during drought and often have access only to the marginal lands in wake of desertification. Their health is often threatened. When food is scarce such as during severe drought, the women's workload may increase without corresponding increase in their food intake. Because of their primary role as water fetchers, Nigerian women are most likely to be affected by water borne diseases such as

typhoid, guinea worm, bilharzia and malaria than their counterparts especially when in contact with polluted water.

Women in Nigeria are involved in environmental issues not because they have consciously decided to work on improving or maintaining the environment: Their close link with the environment is largely unconscious; it is taken for granted and considered natural. The relative political powerlessness and marginalization of women has made women uninformed of basic economic and political matters affecting the state of our environment. The challenge is in the mobilization and conscientization of women over sustainable development and women issues, and the removal of the various obstacles to the individual and collective realization of the potentials of women.

Global Inequality and North-South Relations

In several parts of this book, the issues which emerge from the unequal structuring of the world economy and the relationships between the different nations within it were discussed. This summary brings together the different parts.

The divisions mentioned above are often broadly considered in terms of North-South dichotomy with the North referring to the predominantly European, North American and Japanese industrially-advanced nations, while the South refers to the predominantly poor ex-colonial nations of the southern hemisphere.

Within this structure the dominant themes, trends and issues in global economy, policies and culture are defined and raised from the North with the South playing the role of recipients. These points also apply to global environmental politics and the definition of sustainable development priorities. In this case, it is the Northern countries both their governmental and non-governmental agencies who define the agenda and who emphasize issues and concerns that are Northern priorities. Thus, foremost attention is given to issues such as global climatic change, the destruction of rain forests, the depletion of the ozone layer and the population question. Issues such as mass poverty, the dumping of toxic waste, which are all southern-derived issues are given less priority.

These relations operate across the board in all interactions between the North and South including those between NGOs. For an effective movement towards global sustainable development there is the need for a shift in this pattern of unequal relations, particularly between NGOs. This has to emerge through the development of stronger southern NGOs and the increase in their capacity to launch and ensure southern driven issues and questions at the global level.

The Debt Crisis, SAP and Environmental Degradation

An issue related to that of Global inequality is the 'Debt Crisis' which refers to the situation of financial indebtedness in which large numbers of 'Southern' nations have found themselves in their relationship with the 'Northern' countries. Attempts at resolving the payment of these debts, by the debtor-nations, have led to the generation of certain macro-economic policies spearheaded by The World Bank and the International Monetary

Fund (IMF), known as the Structural Adjustment Programmes (SAP).

These programmes involving trade liberalization, deregulation and withdrawal of welfare and other subsidies have generated a tremendous amount of social problems and welfare-related problems such as unemployment and increased impoverishment in the various countries that have adopted them. As part of the strategy of debt-repayment, these programmes have also greatly encouraged mineral production and natural resources exploitation to secure much-needed foreign exchange.

The result has been an intensification of these activities and consequently some increasing form of environmental degradation. Poverty and immiseration, and decline in health and nutritional status of the poor in general, but children and women in particular, have increased.

This study has documented this in different parts, namely the study on economics and environment, and gender and the environment. The theme of the impact of SAP however recurs in relation to every issue and across sectors. This is seen in the underfunding, consequent decay, and ineffectiveness of environmental and health institutions and the functioning of other basic services. As an expression of macro-economic structures and policies, SAP and the debt crisis possess tremendous macro-structural implications for sustainable development.

THE PATH FORWARD

As can be seen from the different chapters of this book, the path to sustainable development has been outlined in the policies, programmes and plans of action recommended for each sectoral concern or/and issue.

The suggestions as to the path to sustainable development in this case, are the products of analyses carried out in a comprehensive and holistic manner which have taken all or most of the variables into consideration. However, prescriptions from analyses represent only one major step in the direction of political action and the generation of a correct awareness and consciousness. This is a multi-strategic, multi-tactical level which all those who are concerned must be prepared to work at. The points of action involve the provision of theory and conceptualization, identification of issues and questions, consciousness-raising, organization and mobilization for systematic collective and individual action. This final part of our study states those directions for which this kind of work can be carried out. The approach here is two-fold - the examination of specific sectoral issues and questions as they were treated in the study, and the treatment of general questions as they arise. The discussions that follow also encapsulate the consensus arrived at among the participants at the NGO Consultative Forum in Lagos on August 26 1991 as to what path Nigeria is to take on environment and development.

The Status of Environment and Development in Nigeria

On the questions raised on this theme, it was felt that much more remains to be done in the area of human development. Resources should be directed towards enhancing basic education, combating infant and maternal mortality, expanding primary health care services, ensuring food security

and enabling the access of the majority of the people to sustainable livelihoods and other basic needs.

In this light, there is the need to review our development philosophy and policies. We must seek the redefinition of our priorities in relation to the needs of the majority and our stated five national objectives. This can be done through greater popular participation and a more effective system of decentralization. There is also the need to ensure that development strategies and economic policies such as SAP do not contradict or conflict with wider cultural and political needs and objectives. A means of ensuring this is to mobilize towards the effective attainment of participatory democracy at all levels. Above all, we urgently need a sustainable development model that integrates the five basic national objectives.

The path towards this is clear. It is through committed political action that involves policy and grassroots advocacy, legislative reforms, popular mobilization and conscientization and the expansion and strengthening of the capacity of civil and voluntary associations.

Population

Perhaps one of the greatest challenges facing Africa today is the need to reverse the rapid decline in the living standard of the African peoples which have occurred since the 1980s. This requires a long-term integrated strategy that combines policies of accelerated development with programmes to conserve the environment and its resources and to slow down population growth.

Achieving sustainable development requires that we accelerate the process of providing basic education for all Nigerians particularly women and children.

There is also the need to back the population policy with laws which protect women such as the prohibition of child and/or forced marriages. Greater efforts should be made in the direction of strengthening the health care delivery system and ensuring reduced infant, child and maternal mortality. The family and the individual household must be empowered morally and materially.

There is the need to build and institutionalize a self-sustaining system of population statistics.

There is the need to find means of depoliticizing population figures through the reorganization of the politics of resources distribution and revenue allocation by de-emphasizing population as a determinant of these.

There is the need to develop a structure of incentives and disincentives to encourage more manageable family sizes.

Also, ways must be sought for developing and adopting appropriate population management technologies.

Above all, the political management of Nigeria's national resources must reduce waste and unsustainable expenditures and activities that are of less benefit to the attainment of access to sustainable livelihoods for the majority of Nigerians.

Economics and Environment

The path forward with regard to the issues here are as follows: Appropriate national guidelines and standards on environmental pollution and national resources conservation should be developed and where they exist be firmly administered. Pollution problems and damage to the environment should be more adequately monitored. For this, the institution concerned with environmental management should be decentralized and strengthened at every level particularly at the local government level.

Effective resource pricing instruments for resource conservation and nature protection need to be introduced, compensation for environmental damage should be enforced and made to reflect current cost realities. This is particularly so in the petroleum sector.

There is the need to develop appropriate instruments and techniques for environmental damage costing especially those that take into consideration damage to the value of natural sceneries and ecosystems.

Incentive packages for environmental restoration and pollution abatement are also necessary.

In the area of resource accounting, there is the need for Nigeria to change the National Accounting System from one based on Gross National Product (GNP) which fails to consider environmental cost or cost of environmental renewal to a system in which expenditures on pollution abatement are added to GNP while those incurred as environmental damage are assured and deducted from GNP.

The Ecological Fund/Environmental Sector Budget should be raised to 4-5% of public sector budget to finance environmental protection and rehabilitation programmes.

There is also the need to fund and develop basic centres or units for research and training in Environmental Economics.

Furthermore, the collection of environmental information and the creation of an environmental data bank should be accelerated.

Finally, the requirement of an environmental impact assessment (EIA) and statements (EIS) on all projects as contained in the National Policy on the Environment must be fully embraced and pursued with vigour. If possible, it should be backed by law.

Environmental Education and Public Awareness

Although the emphasis in the book is on Environmental Awareness and Education, it needs to be stressed that any major campaign must make the link between environmental degradation and the increase in the loss of livelihood available to the population.

It is important to use and develop the ready at-hand cultural equipments and indigenous technical knowledge to generate Environmental Awareness seeing culture as central to our behaviour.

To ensure effective conscientization on environmental issues, linkages should be developed for effective coverage and discussion by the media and policy makers on environmental issues. To this end, constant training workshops, policy seminars and enlightening sessions should be carried out by NGOs and the Government agencies with the media, policy

makers, managers, and decision makers.

The Environmental Education (EE) experiment in Nigeria should be extended to cover all the Federation. The Federal Ministry of Education and all related state and Local Government agencies should accelerate the adoption and institutionalization of EE into the school curriculum at all levels.

Resources must be made available for training EE teachers, for research into EE, and for developing appropriate learning resources.

Above all there is the need to strengthen the provision of basic education to all Nigerians and to include EE as an essential component of the content and mode of basic literary campaigns.

Environmental and Institutional Framework

For effective environmental management, the existent institutional framework requires some overhauling. There is the need first and foremost, for the Nigerian federation to be operated in a less centralizing and more participatory manner leading to an institutional framework in environmental management in which:

- (i) the Federal Government sets the policy framework, environmental standards and coordinates implementation in the country
- (ii) The Federal Government implements and enforces policy and standards only in matters that affect or are likely to affect more than one state
- (iii) State government set policy framework and standards within the context of the broad outlines laid down by the federal government and coordinate implementation in their states
- (iv) State governments implement and enforce policy and standards only in matters that affect or are likely to affect more than one local government.
- (v) Local Governments implement and enforce policy and standards on all matters pertaining to the environment in their areas of jurisdiction; consequently local governments should: Receive higher level of funding to provide them with better technical manpower, better conditions of employment, and increased training and strengthening of general capacity for environmental and development planning and management.
- (vi) NGOs and other participants in the independent sector are recognized and respected by government with little interference in and resentment of their activities. NGOs, communities and other Grass Roots Organizations (GROs) are integrated into a participatory development process from conception, through planning, implementation to monitoring and evaluation.
- (vii) NGOs to endeavour to cooperate and build networks and alliances amongst themselves, both nationally and globally so as to ensure:
 - a) the healthy autonomous development of the NGO community and world view

- b) to strengthen their capacity both individually and collectively and
- c) to ensure not only the institutionalization of environmental protection and defence but also the provision and institutionalization of human and democratic rights and the growth of global and national distributive equity.

In conclusion, institutions involved in environmental management in general must be made to respond to issues and problems in a flexible, dynamic and innovative way.

Land and Environment

All efforts must be made by Governments, communities, business, NGOs, and international agencies to halt the rapid rate of land degradation in Nigeria through increased education and investment in sustainable land use practices and conservation.

The land tenure system still remains unwieldy and complex and the Land Use Act of 1978 which constitutes the legal basis requires urgent review to remove the bottlenecks it embodies and the complications and inequities it contains.

Government has a major role in halting land degradation in Nigeria by demonstrating an absolute commitment to the 1989 National Environment Policy and other related parastatals, and agencies comply with the provisions of the policy as well as with the stipulation of FEPA and other principal environmental agencies.

NGOs need to educate farmers and all those who interact with the environment on the appropriate and sustainable use of technology and agro-chemicals in their activities. Greater attention in particular should be paid to the importation of agro-chemicals and the monitoring of the transportation and disposal of hazardous and toxic waste.

All efforts must be made to ensure that toxic waste is not imported and dumped in the country.

There is need for more effective land use planning and control in urban areas particularly with reference to the creation of open spaces and recreation facilities for the young and the aged, and the control of urban development, industrial and commercial land-use.

Gender and the Environment

The relative political powerlessness and marginalization of women has made women uninformed of basic economic and political matters affecting the state of our environment. A first step to ensure women's workable participation in environmental resource management is their empowerment through the provision of universal basic education and increased political participation. Women should be encouraged, equipped and given greater access to participation in meaningful and rewarding work particularly in science and technology.

All extension activities in the area of health, agriculture etc should include women as participants. Efforts should be made to design appro-

appropriate technology directed specifically at facilitating women's work or protecting their health i.e. in the area of provision of water and energy resources. Women should be the subject of policies and programmes that generate greater access to economic resources such as land, etc. and more strategic placement in the policy process. This should be accompanied by greater investment in women's education, health and productive activities, child care and nutrition.

There is the need for legislation on child marriages, obnoxious family practices such as cultural restrictions on movement of women, female circumcision, etc.

There should be law reform in legislations that affect women's rights negatively in taxation, access to resources, inheritance, marriage, divorce and custody and rights to children.

Global Inequality and North South Relations

There is the need to bring back to the fore of the Global agenda, the serious discussion of the uneven and unequal world development pattern and international relations. Effective and concerted action on poverty that tackles its underlying causes such as the inequality of the world economy that allows the unequal transfer of resources through debt servicing from the nations of the South to the North must be initiated.

So also must the definition and recognition of the threats posed to the global environment by the economic adversity in which the poor countries find themselves and which lead to environmental degradation through unsustainable economic activities based on the search for foreign exchange to service international debts, be intensified.

There is the need to find an enduring and lasting solution to the debt crisis through a revocation and repudiation of the debts by both debtor and creditor nations.

There is the need to transform the structure of global power relations away from the excessive domination by the North in all issues be it culture, politics and economics. Since environmental issues are global, Southern agenda, priorities and concerns should be given equal priority with Northern-derived position.

There is the need for greater cooperation and pooling of common resources by South-based NGOs to share ideas, strategies and activities for sustainable development and to articulate southern-driven concepts, beliefs and practices that relate to environment and development issues.

REFERENCES

- Abdullahi, H. 1988. "Policy Issues and Institutional Arrangements in National Environmental Programmes: A Keynote Address," In P.O. Sada and F.O. Odemerho, (Editors). *Environmental Issues and Management in Nigerian Development*, Ibadan: Evans, Nigeria.
- Adeniji, K. 1989. "Planning for Hazardous Material Transportation in Nigeria" *NISER Monograph Series*, 8.
- Adeniyi, E.O. 1981. "Administrative Framework for Physical Planning in Nigeria" in *Urbanization Processes and Problems in Nigeria*, edited by P.O. Sada and J.S. Oguntoyinbo, Ibadan, University of Ibadan Press.
- Adeniyi, E.O. 1986. "Environmental Management and Development in Nigeria." In E.O. Adeniyi and I.B. Bello-Imam (Editors) *Development and the Environment: Proceedings of a National Conference*, Ibadan: NISER.
- Adewale, O. 1988. "Claims and Compensation for Oil Spills: Principles and Criteria." In J.N. Nwankwo, C.N. Ifeadi and Others, (Editors) *The Petroleum Industry and the Nigerian Environment*, Lagos: The Nigerian National Petroleum Corporation and the Federal Ministry of Works and Housing.
- African Notes, 1988. *Women in Agriculture*, Ibadan.
- African Report*: November/December, 1990.
- Agbaje A, and J. Adisa, 1988. "Political Education and Public Policy in Nigeria: The War Against Indiscipline (WAI)." *Journal of Commonwealth and Comparative Politics*, XXVI, 1.
- Agboola, T. 1988. "A Review of Environmental Components in Nigeria's National Development Plans," In P.O. Sada and F.O. Odemerho (Editors). *Environmental Issues and Management in Nigerian Development*.

- Agunbiade, B. 1989. "Rationalizing Jurisdiction for Industrial Pollution Control and Impact Management in Nigeria" *Journal of Environmental Management*, 28.
- Aina, E.O.A. 1989. "Current Trends in Sustainable Development and the Future of the Nigerian Environment" Paper presented at NEST Workshop, Lagos: October 5-7.
- Aina, T.A. 1990a. "The Politics of Sustainable Third World Urban Development," In D. Cadman and G. Payne (Editors). *The Living City, Towards a Sustainable Future*, London and New York: Routledge
- Aina, T.A. 1990b. *Health, Habitat and Underdevelopment in Nigeria*, London: International Institute for Environment and Development.
- Akeredolu, F. 1989. "Atmospheric Environment Problems in Nigeria - An Overview," *Atmospheric Environment*, 23.
- Akinyemi, A.B., P.D. Cole and W. Ofonagoro (Editors). *Readings on Federalism*, Lagos: Nigerian Institute of International Affairs, 1979.
- Arowolo O.O. 1980. "Population and Development Planning," In Arowolo O.O; and O. Daramola (Editors). *Philosophy of Population Census in Nigeria*, Lagos: National Population Commission.
- Awolowo, O. 1968. *The People's Republic*, Ibadan.
- Ayeni, J.S.O; 1985. "Conservation of Natural Resources: The Dynamics of Vanishing species and their habitats," In S. Nwoke, *The Nigerian Environment: Ecological limits of Abuse, Proceedings of the Annual Conference and General Meeting of the Ecological Society of Nigeria*, Port Harcourt: Rivers State University of Science and Technology.
- Aylward, B; J. Bishop and E. Barbier, 1991. *Guidelines to Environmental Economics in Developing Countries*, London: Environmental Economics Centre.
- Ayoade, J.O. 1979. "Toward an Environmental Policy in Nigeria," in P.O. Sada and G.E.D. Omuta (Editors). *Spatial Perspectives in National Development*, Benin: University of Benin, Department of Geography.
- Bain, J.S. 1973. *Environmental Decay: Economic Causes and Remedies*. Boston: Little Brown and Co.
- Barbier, E.B. 1987. "The Concept of Sustainable Economic Development," *Environmental Conservation*, 14, 3, Autumn.
- Barbier, E.B. 1989. *The Economic Value of Ecosystems: Tropical Wetlands, Gate Keeper Series*, No. 87-02, London: London Environmental Economics Centre.
- Barbier, E.B; and J.C. Burgess, 1989. "Challenges for Environmental Economics in Developing Countries," Paper presented at the International Congress on Environment and Economics, Netherlands, Economic Institute, Rotterdam, September 1.

- Bello-Imam, I.B. 1985. *Institutional Framework for Environmental Management in Nigeria*, Ibadan: NISER.
- Bello-Imam, I.B. 1986. "Administrative Framework for Environmental Management in Nigeria with Emphasis on Refuse Collection and Disposal," In E.O. Adeniyi and I.B. Bello-Imam (Editors) *Development and the Environment: Proceedings of a National Conference*.
- Black, M. 1988. *Mothers of the Earth*, Earthwatch, No. 32.
- Boserup, E. 1970. *Womens Role in Economic Development*, London: Allen and Unwin.
- Boserup, E. 1985. "Economic and Demographic Interrelationships in Sub-Saharan African," *Population and Development Review*, 11.
- Buchanan, K.M. and J.C. Pugh, 1955. *Land and People of Nigeria*, University of London Press.
- Caldwell, L.K. 1984. "Political Aspects of Ecologically Sustainable Development," *Environmental Conservation*, 11, 4. Winter.
- Carew, B.K. 1991. "Emergency Relief, Evacuation and Rehabilitation in Oil spill Response," Paper presented at the International Symposium on National Oil Spill Contingency Plan for Nigeria, Badagry, Lagos: Administrative Staff College of Nigeria.
- Central Bank of Nigeria, *Annual Report and Statement of Accounts*, December, 1989.
- Chokor, B.A. 1988. "Environmental Awareness and Effective Environmental Pollution Control," in P.O. Sada and F.O. Odemerho, (Editors). *Environmental Issues and Management in Nigerian Development*.
- Chokor, B.A. 1991. "Government Policy and Environmental Protection in the Developing World: The case of Nigeria's Mines," Benin: University of Benin, Department of Geography and Regional Planning.
- Cline-Cole, R.A; et al. 1989. *Wood fuel in Kano: Final Report of the Rural Energy Research Project*, Kano: Bayero University.
- Conable, B.B. 1989. "Development and the Environment: A Global Balance," *Finance and Development*, 26.
- Conway, G.R. and E.B. Barbier, 1989. *After the Green Revolution: Sustainable Agriculture for Development*, London: Earthscan Publications.
- Cooper C; 1981. *Economic Evaluation and the Environment*, London: Hodder and Stroughton.

Daily Times (Lagos) 26 October, 1987.

Dankelman I. and J. Davidson, 1988. *Women and Environment in the Third World*, London: Earthscan.

Economist Intelligence Unit, Ltd *Nigeria: Country Profile 1990-91*, London.

Egborge, A.B.M. 1991. "Industrialization and Heavy Metal Pollution in Warri River," *32nd Inaugural Lecture*, Univesity of Benin.

Ekwachi, S.N. 1990. "The State and Women in Nigeria," *B.Sc Dissertation*, Department of Sociology, University of Jos.

Elaigwu, J.I. and V. Olorunsola, 1983. Federalism and the Politics of Compromise," In D. Rothchild and V. Olorunsola (Editors) *States versus Ethnic claims: African Policy Dilemmas*, Westview: Boulder Co.

Ene-Ita, A. 1989. "The Need for an Environmental Impact Assessment in a Development Economy" In J.N. Nwankwo, C.N. Ifeadi and Others (Editors) *The Petroleum Industry and the Nigerian Environment*.

F.A.O. 1975. *Women in Agriculture*.

Fashoyin, T. and Others (Editors), 1985. *Women in the Modern sector labour force in Nigeria: Issues and Prospects*, Lagos: University of Lagos.

Federal Environmental Protection Agency (FEPA), 1989a. *The Nigerian Environment*, 1989-91 Newsletter of the Federal Environmental Protection Agency, Lagos.

Federal Environmental Protection Agency (FEPA), 1989b. *Our National Environmental Goals*, Special Volume to mark the formal launching of the National Policy on the Environment at Abuja on November 27, 1989, FEPA, Lagos.

Federal Environmental Protection Agency (FEPA), 1990. *The Environment and Sustainable development in Nigeria*, Proceedings of a Workshop held in April 1989 at Abuja. Federal Environmental Protection Agency, Lagos.

Federal Environmental Protection Agency (FEPA)/Federal Ministry of Budget and Planning, 1991. Environmental Management Workshop for Socio-economic Development in Nigeria, *Communique and Proceedings of the Workshop* jointly organized by the Federal Environment Protection Agency and the Federal Ministry of Budget and Planning, Abuja, FEPA, Lagos.

Federal Government of Nigeria, 1962. *National Development Plan, 1962-68*, Federal Ministry of Econmic Development, Lagos.

- Federal Government of Nigeria, 1970. *Second National Development Plan, 1970-74*, Federal Ministry of Information Lagos.
- Federal Government of Nigeria, 1975. *Third National Development Plan, 1975-1980*, Federal Ministry of National Planning, Lagos.
- Federal Government of Nigeria. 1975. *Third National Development Plan 1975-80*, Lagos: Federal Ministry of Economic Development.
- Federal Government of Nigeria. 1983. *Nigeria Fertility Survey 1981-82*. Lagos: National Population Commission and World Fertility Survey.
- Federal Government of Nigeria. 1988. *National Policy on Population for Development, Progress and Self Reliance*, Lagos: Federal Ministry of Health.
- Federal Ministry of Budget and Planning (1990). *First National Rolling Plan 1990-92*, Lagos: Federal Ministry of Budget and Planning.
- Federal Ministry of Housing and Environment, *The State of the Environment, Monograph series No. 1*, Lagos n.d.
- Federal Ministry of National Planning, *Guidelines for the Fourth National Development Plan, 1981-85*.
- Federal Republic of Nigeria, 1966. *Proceedings of the Lagos Executive Development Board: Tribunal of Enquiry 1966, Daily Verbatim Reports*, Lagos: Federal Ministry of Information.
- Federal Republic of Nigeria, 1988. *Supplement to Official Gazette Extraordinary Decree No. 58 - Federal Environmental Protection Agency Decree of 1988*, Lagos: Federal Government Printer.
- Federal Republic of Nigeria, 1990 Budget by Alhaji Abubakar Alhaji, Minister for Budget and Planning, Lagos: Press Briefing on the National Rolling Plan, 1990-92 and the 1990 Budget by Alhaji Abubakar, Ministry for Budget and Planning, Lagos.
- Federal Republic of Nigeria, *National Policy on the Environment*. 1989 - Federal Environmental Protection Agency (FEPA).
- Federal Republic of Nigeria, *Population Census of Nigeria, 1963* Vol. III.
- Friedmann, J. and Weaver. 1979. *The Evolution of Regional Planning*, Edward Arnold.
- Gailey, H.A. 1970. *The Road to Aba: A study of British Administrative Policy in Eastern Nigeria*, New York: University of London Press.
- Gberesu, O.A. 1988. "The Concept of Fair and Adequate Compensation in Nigerian Oil Industry," In J.N. Nwankwo, C.N. Ifeadi and Others (Editors).

- Gornitz, V. 1983. "A Survey of Anthropogenic Vegetation Changes in West Africa During the Last century - Climatic Implications," *Climatic change*, 7.
- Government of Malawi and Unicef, 1987. *The Situation of Women and Children in Malawi*, Lilonge, Malawi.
- Greenhill, J.C. 1973. "Administrative Agencies for Urban Development," In A. Adedeji and C. Rowland (Editors). *Management Problems of Rapid Urbanization in Nigeria*, Ife: Ife University Press.
- Guardian* (Lagos) 8 March, 1991.
- Guardian* (Lagos) 17 May 1990.
- Harrington, J.A. 1983. "Nutritional Stress and Economic Responsibility: A study of Nigerian Women," In M. Burinic and others (Editors). *Women and Poverty in the Third World*.
- Harris, M. 1978. *Cows, Pigs, Wars and Witches*; New York: Vintage.
- Hjort, Anders of Ornas and M.A.M. Salih (Editors) 1989. *Ecology and Politics*, Stockholm: Scandinavian Institute of African Studies.
- Home, R.K. 1976. "Contradictions in the Colonial Political Economy in Nigeria," In *Economy and Society*, (G. Williams, editor), Rex Collings, London.
- Huston, P. 1979. *Third World Women Speak Out*, Praeger.
- Ibrahim, F.N. 1982. "The role of Women peasants in the process of desertification in Western Sudan," *Geo Journal*, 6, 1.
- Idoniboye-Obu, B. 1973, "Oil Pollution in Rivers State," Public Lecture, Port Harcourt.
- Ifeadi, C.N. and J.N. Nwankwo, "Critical analysis of oil spill incidents in the Nigerian Petroleum Industry," In J.N. Nwankwo, C.N. Ifeadi and othes (Editors). *The Petroleum Industry and the Nigerian Environment*.
- Igbozurike, U.M. 1977. *Agriculture at the Crossroad: A Comment on Agricultural Ecology*, Ile-Ife University of Ife Press.
- Igbozurike, U.M. 1980. *Nigeria Land Policy: An Analysis of the Land Use Decree*, Nsukka: University of Nigeria, Department of Geography.
- Igbozurike, U.M. 1987. "Land in the context of Rural Development," *Presidential Address to the Nigerian Geographical Association, 30th Annual Conference*, Okigwe: Imo State University.

- Igbozurike, U.M. 1990. "Socio-economic Impact of Soil Erosion," Paper presented at the National Seminar on Erosion Ravages in South-eastern Nigeria: Quest for Solution, Owerri: Federal University of Technology.
- Igugu, G.O. and B.A.O. Adebisi, 1985. "Shelter belts and Windbreaks: Their potential role in rehabilitating a battered arid zone environment," In S. Nwoke (Editors). *The Nigerian Environment: Ecological limits of Abuse*, Proceedings of the Annual Conference of the Ecological Society of Nigeria. May 13-15, Port Harcourt; Rivers State University of Science and Technology.
- Ijalaye, O.A. 1982. "Environmental Laws in Nigeria," In *Proceedings of an Environmental Awareness Seminar for National Policy Makers*, Lagos: Federal Ministry of Housing and Environment.
- Ikporukpo, C. 1985. "Managing Oil Pollution. Toward an Intergrative Approach." In P.O. Sada and F.O. Odemerho (Editors). *Environmental Issues and Management in Nigerian Development*.
- Imevbore, A.M.A. 1989. "Environmentally sound Management of Natural Resources in Nigeria," Paper presented at FEPA Workshop on Environment and Sustainable Development in Nigeria, Abuja: 25-26 April.
- Isimi C., "Eight Oil Firms Pay N1.8 million Fine for Gas Flaring," *The Guardian* (Lagos) 25 September, 1990. p.3
- Ityavyar, D. 1991. "Women Educators, opinions and consciousness raisers: Implications for the Nigerian Environment," Unpublished Monograph, Sociology Department, University of Jos.
- Ityavyar, D. and G. Gusau, 1979. "The State, Health and Environment in Nigeria," Unpublished Manuscript, Department of Sociology, University of Jos.
- IUCN Monitoring Center: "Nigerian Conservation of Biological diversity."
- Iwunze, L. "Environmental Awareness," *The Punch* (Lagos) 21, August, 1984.
- Izeogu, C.V. 1986. "Ecological Impact of the Oil Industry on Urban Centers in Rivers state." in *African Urban Studies*, East Lansing MSUNo.17.
- Jackson, C. 1986. *The Kano River Irrigation project*, West Hartford: Kumerian Press.
- Jagun, D. "Politics of Environmental Policies in Nigeria" *Sunday Times* (Lagos), 30 June, 1985.

- Johnson-Stone, M.P. and R. McNetting and G.D. Stone, 1984, "Household Variability and Inequality in Kofyar Subsistence and Cash-cropping economies." *Journal of Anthropological Research*, 40.
- Kilby, P. 1969, *Industrialization in an Open Economy: Nigeria 1945-66*, Cambridge: Cambridge University Press.
- Labaran, A.A., 1987. "Land Appropriation for Capitalized farming in the Sokoto Region: Some Preliminary Findings in M. Mortimore and Others (Editors). *Perspectives on Land Administration and Development in Northern Nigeria*, Kano: Bayero University, Department of Geography.
- Ladan, M.T. "On legal protection of Nigeria's Environment," *New Nigerian* (Kaduna) 29 May, 1988.
- Lutz, E. and E. Jimerez, 1991. "Accounting for the Environment" in *Finance and Development: A Quarterly Publication of the IMF and The World Bank*.
- Mabogunje, A.L. 1988. "The Debt to Posterity: Reflections on a National Policy on Environmental Management." in P.O. Sada and F.O. Odemerho (Editors).
- McNamara, R.S. 1990. *Africa's Development Crisis: Agricultural Stagnation, Population Explosion and Environmental Pollution*.
- McNamara R.S. 1991. "A Blueprint for Africa," *People*, Vol. 18, No.1.
- Mithin, D. and D. Satterthwaite, 1990. *Human Settlements and Sustainable Development*, London: I.I.E.D.
- Monimart, 1979. *Women in the Fight against Desertification*. Club du Sahel (89).
- Mordi, K. 1991. "Nigeria and the E.E.C: An Association of Mutual Advantage?" Paper presented at National Seminar on "Europe 1992." Benin: Faculty of Social Sciences, University of Benin.
- Mortimore, M. 1989. "The Causes, Nature and Rate of soil Degradation in the Northernmost States of Nigeria and an assessment of the role of fertilizer in counteracting the Processes of Degradation," *Environment Department Working Paper*, The World Bank.
- Mrakpor, C.O. 1988. "Individual Rights and the Environmental Sanitation Task Forces," In P.O. Sada and F.O. Odemerho (Editors).
- My T. Vu. 1985. *World Population Projection, 1985*, Published for The World Bank: John Hopkins University Press.
- National Concord*. (Lagos) June 1985.
- New Nigerian*. (Kaduna) 28 November 1989.

- Newswatch*. (Lagos) February 29, 1988.
- Ngur, N. 1987. "Women and work in the Informal sector of the Nigerian economy: A review of existing definitions and methods of documentation," Paper presented at the NAUM Biennial Conference. Zaria, Ahmadu Bello University, 10-12 March.
- Nigerian Environmental Study Action Team, 1991. *Nigeria's Threatened Environment: A National Profile*, Ibadan: NEST.
- NISER, 1983 *Development and the Environment in Nigeria*, Policy Paper, No.5, Ibadan: NISER.
- Nwafor, J.C. 1979. "Administrative Reforms, Development Planning and the Re-ordering of the spatial patterns of socio-economic development" in P.O. Sada and G.E.D. Omuta (Editors).
- O'Riordan T. 1990. *Future Directions for Environmental Policy*, Berlin, International Institute for Environment and society.
- Obadan, M.I. 1991. *Studies on the Nigerian Economy*, Mimeo, Benin: University of Benin.
- Oduola, S.O. cited "Meeting the Physical Planning Challenge" *NISERREEL Physical Planning and Development*, NISER House Journal, 10, 1990.
- Ofomata G.E.K. 1979. "Environmental Planning and National Development in Nigeria" In P.O. Sada and G.E.D. Omuta (Editors).
- Ofomata, G.E.K. 1991. "Soil erosion: An impediment to Better Life for Nigerians," Geographical Association. Owerri Alvan Ikoku College of Education 9-11, April.
- Ogbonna, D.O. 1991. "Effects of Land capitalization on the Rural economy Niger State, in Igbozuruike (Editor) *Empiricism in Rural Development*.
- Oguntala, A. B. 1989. "The Role of Non-Governmental Organization (NGO's) in promoting sustainable Development in Nigeria." Paper presented at workshop on Environment and sustainable development Abuja, 25-26 April.
- Okafor, F.C. 1988. "Rural Development and the Environment degradation versus protection."
- Okali, D.U.U. editor, 1991. *The Nigerian Environment: Non-Governmental Action. Proceedings of NEST's 1989 Workshop at Lagos*. Nigerian Environmental Study/Action Team (NEST), Ibadan.

- Okpalla, D.C.I. 1979. "Municipal Governments and city Planning and Management in Nigeria". *Africa Studies Review*, XX113.
- Okpalla, D.C.I. 1986a. "Environment in Nigeria's Urban Development: A New challenge Requiring strengthened urban Management Institutions" In E.O. Adeniyi and I.B. Bello-Imam (Editors).
- Okpalla, D.C.I. 1986b "Institutional problems in the Management of Nigerian Urban Environment" NISER Monograph series 15.
- Okwechime, V.N. "Oil pollution Liability: Nigeria Law" In P.O. Sada and F.O. Odemerho (Editors).
- Oladipo. 1990 "Urban pollution problems in West African cities: Some cases of vehicular and industrial pollution in Nigeria" Paper presented at the conference on Economic Development and Environmental Sustainability in West Africa - The Responsibilities of Northern and Southern NGO's Accra Ghana, 7-9 September.
- Olaore G.O. 1986. "The Cultural Basis of Environmental crisis in Nigeria". In E.O. Adeniyi I. B. Bello-Imam (Editors).
- Ologe, K.O. editor, 1991. *Sustainable Development in Nigeria's Dry Belt: Problems and Prospects. Proceedings of NEST's 1990 Workshop at Kano.* Nigerian Environmental Study/Action Team (NEST), Ibadan.
- Olokesusi A. 1987. "Characteristics of Environmental problems in Nigeria and Management prospects". *The Environmentalist*, 7, 1.
- Olowu, D. 1990. "Centralization Self-Governance and Development in Nigeria," In J.S. Inunsch and D. Olowu (Editors). *The failure of the centralization state: Institutions and Self - Government in Africa*, Westview: Boulder Co.
- Onibokun, P. 1990. Cited "Thoughts on the Environment" *NISERREEL: Physical Planning and Development*, NISER House Journal, 10, 1990.
- Onokerhoraye A.G. 1988. "Case studies of urban slums And Environmental problems in Nigerian cities," in P.O. Sada and F.O. Odemerho (Editors).
- Organization for Economic Cooperation and Development (OECD), 1990. *The Economics of Sustainable Development, A Progress Report.* Paris: OECD.
- Ortner 1974. "Female to Male as Nature Is to Culture,"; M.Z. Rosalds. (Editors) *Women Culture and Society* Stanford University Press.
- Orubima I.I. 1984. "The Abudu pipeline oil spillage: Case History" In J.N. Nwankwo, C. N. Ifeadi and others (Editors). *The Petroleum Industry and the Nigerian Environment.*

- Oseni, A.M. 1985. "Ecological basis for natural resource utilization - A Foresters viewpoint" In S. Nwoke (Editor). *The Nigerian Environment: Ecological limits of Abuse. Proceedings of the Annual Conference of the Ecological Society of Nigeria: Port-Harcourt, Rivers State University of Science and Technology.*
- Overseas Department Natural Resources Institute 1989 *Nigeria: Profile of Agricultural Potentials*, U.K.
- Ozo, A.D. 1988. "Perception of Industrial pollution: A case study from Benin-City" In P.O. Sada and F.O. Odemerho (Editors).
- Ozogu, A. 1989. "Population - Are we up to 60 million?" in *New Nigerian* (Kaduna) 20, March.
- Panayaton, T. 1990. "Policies, Incentives and Regulation: The Use of Fiscal Incentives" Paper presented at the conference on Environmental Management in developing countries, Organization for Economic Co-operation and Development, Paris - September.
- Pearce, D., W. A. Markandya and E. Barbier. 1989. *Blueprint for a Green Economy*, London Earthscan.
- Pearce, D.W. 1989 *Sustainable Development: An Economic perspective*. Gate keeper series No. LEEC 89-01, London. London Environmental Economic centre.
- Pearce, O.W, E. Barbier and A. Markandya 1990 *Sustainable Development: Economics and Environment in the Third World* London: Earthscan.
- People. "Nigeria's Population Policy Becomes Official," Vol. 16, nO.3, 1989.
- Postel, S. 1990. "Saving water for Agriculture" *State of the World 1990*. A Worldwatch Institute Report.
- Sada P.O. and G.E.D. Omuta (Editors). 1979. *Spatial Perspectives in National Development*, Benin: Department of Geography, University of Benin.
- Sada P.O. and F.O. Odemerho (Editors) 1988. *Environmental issues and management in Nigeria Development* Ibadan: Evans 1988.
- Sambo, H.H; 1990. "An Appraisal of Better Life Programme for Rural Dwellers in Plateau State" BSc Disertation, Department of Sociology, Univeristy Jos.
- Scharmn G. J. Warford (Editors) 1989. *Environmental Management and Economic Development: A World Bank Publication*, John Hopkins University Press.

- Sen, G. and C. Grown 1988. *Development, Crises and Alternative Visions: Third World Women's Perspectives*, London:
- Shell Petroleum Development Company Nigeria: *A Jubilee Journey*, Essex: U.K. Scorpion Publishing Ltd.
- Smil, V. 1979. "Energy flows in the developing World," *American Scientist*, 67.
- Sule, S. 1981 "Problems of Environmental Assessment and Management in Oyo State": Public Lecture, World Environment Day, Ibadan: 6 June.
- Timberlake, L. 1985 *Africa in crisis: The causes, the cures of Environmental Bankruptcy*, London: International Institute for Environment and Development.
- Todaro M.P. 1989 *Economic Development in the Third World*, New York: Longmans.
- Tolba, M. cited in "Special Issues: The African Environmental crisis" *ECO Africa*, 2,2, 1988.
- Turabu, H.M. 1990 "The Role of Afforestation in sustainable Development. The Kano State experience". Paper presented at the NEST Workshop on Sustainable development in Nigeria's Dry Belt Kano.
- Uche, L.U. 1990. "How the Media reacted to Toxic dumping in Nigeria," *Media Development* XXXV11,2.
- Uchegbu, A. 1989. "A Legal Framework for Environmental Protection and Enforcement," In P.O. Sada and F.O. Odemerho (Editors).
- Umeh, L.I. 1986. "Deforestation: Its extent and effects in Nigeria" In A:B Oguntala, (Editor) *The Challenge of Deforestation in Nigeria*.
- UNCO, 1977. "Status of Desertification in Hot Arid Region: Map plus Explanatory Notes:" *United Nations Conference on Desertification*, Nairobi Kenya.
- United Nations Development Programme (UNDP), 1990. *Human Development Report* .
- Western State of Nigeria (WSN), "The Ibadan Waste Disposal Board Edict No. 7" Supplement to the Western State of Nigeria, Gazette 20, 22, 17 May, 1973.
- Winterbottom, R. 1991. "Environmental Action Plans for the Greening of Africa." *People*, Vo. 1. 18, No 1.

- Women in Nigeria (WIN) 1985. *WIN Document: Conditions of Women in Nigeria and Policy Recommendations to 2,000 A.D.*, Samaru Zaria.
- World Bank, 1984. *World Development Report*. New York: Oxford University Press.
- World Bank, 1985. *World Development Report*. New York: Oxford University Press.
- World Bank, 1986. *World Development Report*. New York: Oxford University Press.
- World Bank, 1987a. *Social Indicators of Development*, New York: Oxford University Press.
- World Bank, 1987b. *World Development Report*. New York: Oxford University Press.
- World Bank, 1988a, *Environmental Guidelines*, World Bank, Washington D.C.
- World Bank, 1988b. *World Development Report*. New York: Oxford University Press.
- World Bank, 1989a. *Nigeria: Strategy for Agricultural Growth*, Report No. 7988 - UNI, World Bank, Washington D.C.
- World Bank, 1989b *Subsaharan Africa: From Crisis to Sustainable Development*, World Bank, Washington D.C.
- World Bank, 1989c. *World Development Report*. New York: Oxford University Press.
- World Bank, 1990a *Towards the development of an Environmental Action Plan for Nigeria*, World Bank, Washington D.C.
- World Bank, 1990b. *World Development Report* . New York: Oxford University Press.
- World Commission on Environment and Development (WCED), 1978. *Our Common Future*, Oxford: Oxford University Press.
- World Fertility Survey, *The Nigerian Fertility Survey, 1981-82 Summary of findings*.
- World Resources Institute, 1990, *World Resources 1991*, New York: Oxford University Press.

World Watch Institute, 1987. *State of the World : A World Watch Institute Report on Progress Towards a Sustainable Society*, New York: W.W. Norton and Company.

World Watch Institute, 1988. *State of the World: A World Watch Institute Report on Progress Towards a Sustainable Society*, New York: W.W. Norton and Company.

World Watch Institute, 1989. *State of the World: A World Watch Institute Report on Progress Towards a Sustainable Society*, New York: W.W. Norton and Company.

World Watch Institute, 1990. *State of the World: A World Watch Institute Report on Progress Towards a Sustainable Society*, New York: W.W. Norton and Company.

World Watch Institute, 1991. *State of the World: A World Watch Institute Report on Progress Towards a Sustainable Society*, New York: W.W. Norton and Company.

Yeboah - Afari, A. 1989. "A fresh impetus for Ghana's Population Policy," *in People* Vol. 16, No.4, March.

APPENDIX ONE: NIGERIA: A SUSTAINABLE DEVELOPMENT BALANCE SHEET

• Capital	Abuja
• Land Area	924,000 km ²
• Coast Line	853 km
• Total Population	112 million ⁷
• Population Under 16 Years	53 million ⁴
• Lagos	7.5 million (1991 estimate)
• Percentage of Total Population	
Urban Population	34 ⁴
Rural	66 ²
• Number of Cities Over 500,000	9 ¹

STATUS OF WOMEN

• Percentage of Labour Force	54 ²
• Adult Female Illiteracy Rate (Percentage)	69 ⁴
• Maternal Mortality Rate Per 100,000 Live Births	1,500 ¹
• Percentage of Births Attended by Trained Health Personnel	40 ⁴

STATUS OF CHILDREN

• Percentage of Infants with Low Birth Weight (1982-88)	20.0 ⁴
• Percentage Moderate and Severe Wasting (12-23 Months)	21.0 ⁴
• Infant Death Rate (Per 1000 live Birth 1985-90)	105.0 ⁵
• Under Age Five Mortality Rate	174
• Infant Mortality Rate (per 1000 births) (Under Age 1) 1988	104 ²
• Annual Number of Births	
Infant and Child Deaths (0-4)	5286/920
• Percentage One Year Olds Immunized	62 ⁶

- Percentage Share of Household Income Age Group Enrolled in Primary School 1986-88 64⁴

STATUS OF HEALTH

- Public Health Expenditure (as Percentage of GNP) 0.2⁶
- Life Expectancy at Birth 51⁴
- Birth Rate 50⁴
- Population with Access to Health Services (Percentage 1985-87) 46⁶
- Population per Doctor 7,990⁶
- Population per Nurse 1,020⁶
- Registered Doctors 6,146⁷
- Registered Dentists 999⁷
- Registered Nurses 56,120⁷
- Registered Pharmacists 4,466⁷
- Registered Midwives 45,852⁷
- Total Fertility Rate 7.0
- Crude Birth Rate (Birth per 1000 Population 1985-90) 49.8⁵
- Adult Consumption of Spirits per Capita (Litres) 3.7⁶
- Adults who Smoke (Percentage) 28

RURAL URBAN GAPS

- Rural Population with Access to Services (Percentage 1985-88)
 - Health: 30.0
 - Water: 20.0
 - Sanitation: 5.0
- Urban Population with Access to Services (Percentage 1985-88)
 - Health 75.0
 - Water 100.0
 - Sanitation 6.0

HUMAN CAPITAL FORMATION

- Adult Literacy Rate (Percentage) 43.0²
- Male Literacy Rate (Percentage) 54.0²
- Female Literacy Rate (Percentage) 31.0²
- Education Expenditure as Percentage of GNP 1.4¹
- Human Development Index
- Rank for Developing Countries 129⁶
- Human Freedom Index (Medium Freedom Ranking 11-30) 13⁶
- Scientists and Technicians (per 1000 People 1980-88) 1.2⁶

- Tertiary Graduates (As Percentage of Corresponding age group 1986-88) 0.3⁶
- Science Graduates (as Percentage of total graduates 1986-88) 25.0⁶

EMPLOYMENT

- Labour Force (Percentage of Population 1985-88) 30.3⁶
- Agriculture (Percentage) 44.6⁶
- Industry (Percentage) 4.2⁶
- Services (Percentage) 51.2⁶
- Earning per Employee Annual Growth Rate (Percentage) 9.6⁶

ECONOMY

- Economic Classification Low Income Economy¹
- Currency Naira
- Exchange Rate US\$1=11.5 naira as at Aug. 6, 1991
- GDP US\$23.7 Billion
- GNP US\$207 per capita
- GDP Growth Rate 1.1

GDP STRUCTURE

- Agriculture (Percentage of GDP) 1.6
- Petroleum (Percentage of GDP) 29.8
- Services (Percentage of GDP) 26.3
- Manufacturing (Percentage of GDP) 8.6
- Indirect Taxes (Percentage of GDP) 2.3
- Construction (Percentage of GDP) 1.0
- External Debt \$30.78(US) Million¹
- Debt Service as a Percentage of Current Borrowing 76.0

GOVERNMENT EXPENDITURE (in Naria)

- Total 4.1 Billion⁷
- Defence (Percent of Total) 5.4⁷
- Education (Percent of Total) 8.3⁷
- Housing and Social Services (Percent of Total) 14.8⁷
- Economic Services (Percent of Total) 11.8⁷

ECONOMIC SECTORS

- Main Agricultural Crops Maize, Millet, Sorghum, Cotton, Rubber, Rice, Cassava, Yam, Groundnuts, Cocoa, Palm Oil & Kernel, Livestock: Cattle, Sheep, Goats, Poultry
- Total Annual Fisheries Catch 310,000 Tonnes

•	Total Energy Production (Gigawatt-Hours Electricity)	9,905 ⁵
•	Total Energy Export (Gigawatt-Hours Electricity)	100.5
•	Main Imports	Capital Equipment, Raw Materials, Consumer Goods, Transport Passenger Cars
•	Main Exports	Petroleum, Cocoa, Fertilizers

NATURAL RESOURCES BALANCE SHEET

•	Arable Land as Percentage of Total Land	57 ⁶
•	Livestock per Capita	0.56 ⁶
•	Production of Fuel Wood per Capita	0.92 ⁶
•	Average Annual Deforestation (As Percentage of Forest Area)	2.7 ⁶
•	Greenhouse Index (Carbon heating equivalents per capita)	0.8 ⁶
•	Average Annual Deforestation	320,000ha ⁵
•	Industrial Round Wood	7,868,000m ³⁵
•	Fuel and Charcoal	90,735,000 m ³⁵

CLIMATE AND BIOLOGICAL DIVERSITY:

•	Climate Type	Tropical
•	Rainfall	625 - 4,300mm
•	Mean Minimum Temp.	25.0 Centigrade
•	Mean Maximum Temp.	32.0 Centigrade
•	Vegetation Zones	Tropical Wetlands, Forest, Savanna, and Sahelian Scrubland
•	Percentage Habitat Loss in:	
	Dry Forest	76.0 ⁵
	Moist Forest	83.0 ⁵
	Savanna	80.0 ⁵
	Wetlands Marsh	80.0 ⁵
	Mangrove	50.0 ⁵
•	Number of Threatened Animal Species:	
	Mammals	57
	Birds	8
	Reptiles	9
	Amphibians	3 ⁵

PROTECTED AREAS

•	Number	4 ⁵
•	Land Area	960,082 Hectares ⁵
•	Marine and Coastal Area	0 ⁵
•	Biosphere Reserve Area	460 Hectares ⁵

SOURCES AND KEY

1. *World Development Report, 1990*
2. *Human Development Report 1990*
3. *Sub-Saharan Africa from Crisis to Sustainable Growth*
4. *State of the Worlds Children 1990*
5. *World Resources 1990-91*
6. *Human Development Report 1991*
7. *First National Rolling Plan 1990-92 Vol.1*

APPENDIX TWO: CONTRIBUTORS TO THE BOOK

- Nigeria: The Challenge of Sustainable Development
C.V. Izeogu, T. Akin Aina, A.T. Salau
- Population and the Environment in Nigeria
K.O. Ologe, R.R. Bature, S. Nkom, D.O. Ogbonna
- Environment and Economics
M.O. Obadan, B.A. Chokor, A.T. Salau
- Environmental Education and Public Awareness
D.U.U. Okali, A.E. Akachuku, I.I. Ero, E.E. Osuji
- The Environment and Institutional Framework
A. Agbaje, K. Taiwo, K. Agbaje, T. Akin Aina,
- Land Tenure, Land Use, and Environmental Degradation in Nigeria
U.M. Igbozurike, E.J. Nwosu, E.E. Okpara,
- Environment and Gender Issues
E.O. Oladipo, L. Tseayo
- The Challenge of Sustainable Development in Nigeria: The Way Forward
T. Akin Aina, A.T. Salau
- Nigeria: A Sustainable Development Balance Sheet
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- Nigerian Medical Association, Lagos State Branch
- Women In Nigeria (WIN)
- Nigerian Urban and Rural Industrial Mission



The Organization

NEST is a non-governmental organization (NGO), a non-profit research and advocacy agency dedicated to increasing public awareness of issues of the environment and of sustainable development. Established in 1987, it has its headquarters in Ibadan, Nigeria. Its programmes and policies are coordinated primarily by an Executive Committee drawn mainly from six Nigerian Universities, with its day-to-day activities being overseen by an Executive Director.

The Objectives

NEST is determined to continue addressing these and related environmental issues from various perspectives. Hence, its objectives are:

*To collect basic and comprehensive information and data on the status of the Nigerian environment.

*To investigate and document areas of potential hazards, with a view to identifying gaps in knowledge and promoting specific ameliorative projects.

*To analyze patterns of human behaviour, social relations, and cultural preferences as these affect the environment.

*To stimulate debate and help intensify awareness in Nigeria of the environmental consequences of our socioeconomic activities.

*To place at the disposal of all relevant groups and governments the information and perspectives which will assist in the formulation of policies for rejuvenating and conserving the Nigerian environment.

Other Available Documents

**Profile on Nigeria: Land Degradation*

**The Nigerian Environment: Non-governmental Action*

**Sustainable Development in Nigeria's Dry Belt: Problems and Prospects*

**Nigeria's Threatened Environment: A National Profile.*

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