

**VOLUME TWO**

**BOOK 4**

**SPORTS ECOLOGY AND**

**ENVIRONMENT**

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## **CHAPTER ONE**

### **INTRODUCTION TO THE BOOK**

#### **A. SPORTS**

1. Sports have evolved over the years from being an activity that provide entertainment to an instrument of international diplomacy. It also helps to promote social harmony and to unify nations especially in multi-ethnic societies like Nigeria. Countries are often described by the name of the Sports in which they excel. It is therefore not a surprise that huge sums of money are budgeted yearly by countries for sports promotion. Nigeria has made very significant impact in certain sports particularly soccer in which the country has done very well in the age group competitions. It is recalled, Nigeria won the first FIFA-JVC U-17 competition in China in 1985 and the U-23 gold medal at the Atlanta Olympic games in 1996. The often acrimonious preparation for the 1998 World Cup should therefore be seen in the light of Nigeria's quest for the ultimate prize in the World Cup.

2. However, much of our success at the international arena may well be due more to the natural talents of our sportsmen and women rather than superior organisation and training. Sports is largely financed by government, sports infrastructure is highly inadequate, school sports ( a source of abundant talents) has gone into decline, basic equipment are not available, training of coaches and athletes is ad-hoc. The administration of sports is in the main poor, disorganised and plagued by constant in fighting among officials. This is due largely to poor definition of roles between the Sports Ministry and its parastatals. Management turnover is unacceptably high because this undermines continuity, destroys institutional memory and technical capabilities. The country has no comprehensive sports master-plan.

3. As in much of Nigeria's national affairs, Sports financing and administration is largely a public function. However, government's financial allocations to sports have declined, yet its control remains while private sponsorship of sport is yet insignificant. It is to this that the decay in sports infrastructure and the huge exodus of Nigeria's brightest sportspersons are being attributed, among other reasons. Of course, the law of the market compels sportsmen to go abroad where they are heavily paid and celebrated. The Sports Vision Committee however envisions Nigeria to be the best sporting nation in Africa, and it will do so by turning out world class coaches and referees, attract major international sporting events to Nigeria to stimulate greater interests and develop sports as a tourist attraction.

## **B. ENVIRONMENT AND ECOLOGY**

4. Nigeria's land area of 923,773 square kilometres is highly endowed with a rich variety of vegetation made up of mangrove, rain forests, various savannahs, semi-arid eco-systems and an array of wild-life, medical plants, mineral resources and fisheries. It is this environment that provides life supports systems in the air, on water and on land. However, the environment in Nigeria is endangered, beset as it were with numerous environmental problems. Some of the problems are: population pressure that leads to continuous exploitation of marginal lands; severe gully erosions in the East and North; coastal and marine erosion; flooding in low-lying belts of mangrove and fresh swamps along the coast; uncontrolled logging, poor agricultural practices and oil spillage. Other manmade environmental problems manifest in climatic change / ozone layer depletion, oil pollution, urban decay and squatter settlements, industrial pollution/waste, municipal solid waste and loss of fauna and flora.

5. Some of the reasons for these include: gas flaring, failure to reclaim mined lands, uncontrolled use of agro-chemicals, among others. Government has responded to the situation through four main instruments: legal policy and institutional framework; collaboration with international organisations, capacity building/institutional strengthening and funding. Well intentioned as they are, the persistence of problems of the environment is an indication of the much that remains to be done.

6. The Vision Committee envisions a Nigeria with a "healthy environment that secures the economic and social well being of the present and future generations".

7. To achieve this desired Vision state, Nigeria will do the following:

- a. Ensure that the air is free of pollution and dangerous gases;
- b. Rivers, seas and coasts are free of oil spillage;
- c. Conserve fully natural habitats of Nigeria's wild-life and plants;
- d. Ensure that soil and vegetation are relatively free of gully erosion, desertification and flooding; and
- e. Ensure that cities are well planned and free of industrial and municipal wastes, sewage and noise.

## CHAPTER TWO

### SPORTS

#### SECTION ONE

##### **Background**

1 It is generally acknowledged that sports play a significant role in the:

- sustenance of good health;
- develop competitive spirit;
- entertainment of the citizens;
- capitalisation of social harmony and national unity;
- enhancement of international respect

2. The national excitement which greeted Nigeria's success in winning the 1996 Atlanta Olympic soccer gold medal provides an excellent example of the unity sports can foster, irrespective of social, religious or ethnic differences. Sports also has a major contribution to make to the entertainment and tourism industry, particularly in Nigeria where the passion for soccer is shared throughout the nation. Furthermore, sports can be an instrument for boosting the external image, particularly when the country performs exceptionally well in international competitions.

3. On the economic front, sports has become big business in most countries. The prospect of turning sports into big business in Nigeria is attractive and clearly feasible given the popularity of sports in Nigeria and the outstanding performance of Nigerian sportsmen and women abroad.

4. Although Nigeria has recorded some remarkable performances in international sporting competitions in recent years, it is generally believed that the industry could be further developed. It is recognised that Nigeria does not realise her real potential in sporting activities given her population and the natural sporting talents of her people.

5. Generally, sporting activities in Nigeria are still largely dominated by government, in terms of the provision of facilities and funding. The provision of facilities is often inadequate, and this affects training resulting in less than satisfactory performances in international sporting competitions. Even the facilities available, are poorly maintained. Training of coaches, and sportsmen and women is not given serious attention. Many sportsmen and women are thus denied the opportunity to fully actualise their potentials.

6. In view of the enormous socio-economic benefits which can accrue from a properly structured sporting environment, the adoption of long term planning to develop sports to ensure that the nation can realise her potential for the benefit of the country and for all Nigerians, is appropriate.

7. In the light of the above challenges, the chapters in this part focus on the following objectives:

- (a) To examine the current state of sporting activities in the country with a view to assessing performance; management/administration, training, sports infrastructure and facilities.
- (b) To set objectives and targets which are robust enough to make the country a leading sporting nation in the world.
- (c) To propose strategies and action plans that would enable the country to achieve these goals and targets, and
- (d) To develop a framework for the preparation of a detailed sports master plan for Nigeria.

## **SECTION TWO**

### **WHERE WE ARE**

#### **THE STATE OF SPORTING ACTIVITIES**

8. One striking aspect of Nigeria's growing reputation in the world today is her remarkable but isolated success in international sporting competitions. It is also true that Nigeria's vast potential in organised sports is still largely underdeveloped. This is not unconnected with the poor and declining state of sports infrastructure and facilities, poor funding and administrative problems.

#### **PERFORMANCE**

9. Nigeria has been participating in the Olympics and other international sports competitions since 1948. Nigeria first came to the international sporting limelight in 1957 when a Nigerian won a world boxing title, and a year later Nigeria won her first Gold Medal in the Vancouver Commonwealth Games. A few more medals and world titles were won over the years in various international competitions. In particular, the country has performed well particularly in football in the past two decades. Nigeria won the first FIFA under 17 world cup in 1985 in China, and the second in Japan in 1993. Nigeria also emerged runner-up in FIFA under 20 in 1989 in Saudi Arabia and performed well in her first World Cup outing in 1994. On the African continent, the country won several All Africa Cup of Nations tournaments and was ranked top on the medals table of the All Africa Games on many occasions.
10. However, Nigeria's greatest achievement to date was recorded at the 1996 Atlanta Olympic Games, where the Nigerian football team won the Gold Medal. Similarly, Nigeria won a Gold Medal, 2 Silver and 2 Bronze Medals in athletics, and 3 silver and 3 bronze medals in boxing. Nigeria's disabled sportsmen and women also recorded successes in the 'Para Olympics Games' of the same year. These successes have re-awakened the nation to the importance of sports in boosting the external image of Nigeria as well as its effectiveness as a galvanizing force for national unity. This was manifest in the internal and international sentiments following Nigeria's successes in the 1996 Atlanta Olympic Games.

## **INFRASTRUCTURE AND FACILITIES**

11. Both the Federal and State governments have in the past invested heavily in the provision of sports infrastructure, particularly stadia. Almost 90% of the sports facilities in the country today are provided by government. In 1995, the Federal Government took over seven stadia in the country and up-graded them.
12. However, despite the enormous government commitment to the development of sports infrastructure and facilities, inadequacies are pervasive while existing facilities are not properly maintained.
13. Sports facilities in schools are in some cases non-existent or very inadequate. The situation has worsened within the past 10 years. For example, simple sports supplies are no longer readily available, as many secondary schools do not have basic sporting equipment, such as footballs, javelins, high jump stands and basket ball courts.
14. Successive governments have failed to develop comprehensive long term plans for sports. Thus, sport management has been on ad-hoc and short term basis. Too much focus on football has adversely affected the development of other sports.

## **TRAINING**

15. As noted earlier, there has been a general decline in training and co-ordinating of sportsman and woman in schools. Most schools do not have qualified coaches, and games-masters are largely inactive due to lack of facilities. Regular inter-schools competitions which used to prompt rigorous training have almost disappeared. A systematic framework for training coaches and games masters is absent. The capacity of the National Institute for Sports is inadequate, relative to Nigeria's demand.
16. There is no system for identifying, encouraging and nurturing sports talents right from primary to secondary schools, and linking such talented and trained persons to various clubs and national teams.
17. The quality of coaching and training has been inadequate due to lack of exposure of most indigenous coaches to the latest techniques of training. Consequently, the country continues to rely on foreign coaches and technical advisers at very high costs. Parents and the society have failed to adequately encourage children's participation in sports. The emphasis has always been on school academic work and children assisting parents with household chores.



## ADMINISTRATION AND MANAGEMENT

18. The Federal Ministry of Youths and Sports is at the apex of sports administration and development in the country. It has four parastatals, two of which are directly relevant to sports administration. These are: the Nigerian Football Association (NFA) and the National Institute of Sports (NIS) the Ministry co-ordinating the activities of 27 semi-autonomous sports associations. The Nigerian Olympic Committee (NOC), a member of the International Olympic Committee (IOC), also collaborates with the Ministry on Olympic sports outings.
19. The two parastatals noted above depend entirely on the Ministry for funds. These parastatals have governing boards, and their responsibilities are statutorily demarcated. They should therefore, under normal circumstances, be independent. However, because they depend almost entirely on the Ministry for funding, their autonomy is weakened. Consequently, friction and conflict are incessant to the detriment of sports development in the country.
20. Similarly, the Nigerian Olympic Committee which is an independent body, also relies on the Ministry for financing international sports outings.
21. Thus, the Ministry has a delicate and often uneasy relationship with the NFA and the NOC, in particular, and to a lesser extent, with other sports associations which always complain of undue interference even on technical matters. This has also led to the high rate of management staff turnover in sports organs such as the NFA. This is unhealthy for sports development.
22. Each State of the Federation has Sports Council which co-ordinates sporting activities such as inter-State and international competitions in which State teams are involved. School sports activities within the State are managed by the State Ministry of Education. There are also some football clubs being managed by the public and private sectors. School competitions are no longer the regular phenomena they used to be.

### **SECTION THREE**

#### **WHERE WE WANT TO BE**

- 23.** It is the aspiration of all Nigerians that by the year 2010 Nigeria should:
- (a) Be the best sporting nation in Africa and one of the best in the world.
  - (b) Popularize sports and make physical fitness a way of life for Nigerians.
  - (c) Develop sports to become an agent of national unity.
  - (d) Utilize achievements in sports to boost the country's external image
  - (e) Develop world class coaches and referees.
  - (f) Attract major international sporting events to Nigeria and exploit their benefits for the tourism industry.
  - (g) Create linkages between sports and development of sporting goods industries.
  - (h) Host and win major sporting competitions.
  - (i) Professionalise sports in Nigeria.

## **SECTION FOUR**

### **HOW TO GET THERE**

**24.** Nigeria needs and effective master plan for sports development if she is to achieve the aspirations set out herein. The master plan will be a blueprint detailing the comprehensive policies, programmes and projects for sports development, in the rural level, in the urban level and in the national and international arena over a relatively long period. Each proposed project in the master plan, including the linkage to tourism and the sporting goods industries, will be set out in detail to facilitate implementation.

**25.** The master plan will provide, inter alia, for the following:

- Facilities
  - Training
  - Administration
  - Funding
  - External Image
  - Promotion of National Unity
  - Sporting Goods Industry
  - Tourism
  - Professionalism

## 26. FACILITIES

### a. Objective

To provide facilities to enable Nigeria to become one of the leading sporting nations of the world and host major international competitions.

### b. Strategies

- (i) To undertake a census of sports facilities in the country with a view to assessing their status and adequacy.
- (ii) The country should restore and expand sports infrastructure to acceptable standards.
- (iii) States and Local Governments should furnish all schools with sporting facilities in the following order:
  - All primary schools should have access to:
    - athletics pitch and equipment, including a football field
    - volley ball court/net
    - handball facilities
  - Secondary schools should have access to the following facilities
    - athletics pitch and equipment
    - football field
    - volleyball
    - handball
    - table tennis
    - lawn tennis
    - basket ball

- Each Local Government area should have a centre for sports with additional facilities for Basket Ball, Badminton, Swimming pool, Gymnasium, etc.

- Each university should also have all sporting facilities – including a swimming pool. Where possible, a mini stadium and indoor games facilities could be built and maintained.
- (iv) Each state of the Federation should endeavour to build and maintain a stadium, including indoor games facilities.
- (v) Government should up-grade, to international standards, the seven stadia under its control (National stadium, Lagos; Liberty Stadium, Ibadan; Liberation stadium, Port-Harcourt; Ahmadu Bello Stadium, Kaduna; Tafawa Balewa Stadium, Bauchi; Ogbe Stadium, Benin; and Nnamdi Azikiwe Stadium, Enugu). This would improve Nigeria's chances of hosting international sporting events and facilitate training.

## 27. TRAINING

### a. Objective

To enhance professional competence and inculcate the winning spirit through a systematic training and selection of talents.

### b. Strategies

- (i) Every primary school should have a trained games master.
- (ii) All secondary schools and colleges should have trained coaches.
- (iii) Inter-school, inter-local government, inter-state and national sports competitions should be restored. For this purpose, the State Sports Councils, local governments and private organisations should become fully involved in organising the following competitions:
- Annual inter-primary schools competition could be done at local government level. Winners from each local government would compete to find the State winner. Athletics, football, volleyball and handball should be the main focus.
  - Secondary schools competitions should involve more games than primary schools. Inter-state competitions should be organised, on an annual basis.

- NUGA Games and inter-collegiate competitions should also be encouraged.
  - Inter-local government games should be introduced so that the best local government in each state will compete at the national level.
  - Table tennis and snooker which have become popular sports (on commercial basis) in wards and villages, in addition to traditional sports should be encouraged. Youth organisations and local communities should organise inter-ward competitions on regular basis.
  - Inter-service and intra-service sports competitions between the Army, Navy, Airforce, Police, Immigration, Customs, Prisons, Civil Service, etc. should be encouraged and facilitated.
- (iv) Talented pupils and students identified from the young competition should be given automatic scholarships up to university level.
- (v) The National Institute for Sports should be upgraded and be well equipped with latest techniques and technology to facilitate the training of sports men, women and coaches.
- (vi) Referees and coaches should be trained to international standards through national and international exposure.
- (vii) To intensify training and achieve excellence, we should target sports where we have built up comparative advantage. Targeted sporting events are listed below in the order of priority:
- Category 'A'
    - Football
    - Athletics
    - Boxing
    - Weight lifting
    - Table Tennis
    - Handball
    - Swimming
    - Wrestling.
  - Category 'B'

- Basketball
  - Judo
  - Volleyball
  - Hockey
  - Golf
  - Lawn-Tennis
  - Cycling, and disabled sports.
- Category 'C'
  - Badminton
  - Cricket
  - Squash
  - Chess
  - Gymnastics and Others.

- (viii) A cursory examination of the above categorisation reveals that all the sports in category 'A' except swimming, are those sports in which Nigeria has made tremendous impact in global and continental competitions. Although there are currently swimming associations in only seventeen states, it is in category 'A', because it is the single largest medal winning event in any competition. If Nigeria must therefore achieve her stated sports objectives by the year 2010, she must embark on a massive promotion, encouragement and development of swimmers and swimming facilities. The Swimming Association needs to develop a programme urgently to galvanize public and private sector support and partnership for the development of swimming.
- (ix) In the same vein, wrestling and weight lifting have been included in category 'A' because of the known potential of Nigeria in these sports. Additionally, the cost involved in developing world champions in these events is relatively small. It is imperative that the country embarks on an immediate programme to develop these sports beginning from the fourth quarter of 1997 in view of the forthcoming Commonwealth and All Africa Games slated for 1998 and 1999 respectively.
- (x) To cultivate a sports culture, it is necessary for governments across the country to provide demarcated areas for recreation and playground for youths and children. Such demarcated areas can be leased out to private sector organisations who will run them as commercial ventures. Town planning authorities should make provisions for sports grounds in designing our towns and cities. Multi-purpose indoor gymnasia could also be provided where possible.

## **28. ADMINISTRATION**

### **a. Objective**

To bring stability, consistency and efficiency to sports administration.

### **b. Strategies**

- (i) The role of the ministry responsible for sports and professional associations should be properly demarcated to reduce areas of conflict.
- (ii) The NFA and other professional associations should reduce their dependence on the Ministry for funds by developing alternative sources.
- (iii) Frequent changes of sports administrators should be discouraged in the interest of continuity and stability.
- (iv) All international sports regulations binding the sports associations should be adhered to.
- (v) The number of sports administrators and government officials in international sports contingents should be minimised in favour of competitors and technical personnel.
- (vi) Allowances and entitlements of all competitors and technical personnel should be promptly disbursed.
- (vii) There should be more transparency and accountability in the management of sports.

## **29. REWARDS AND WELFARE**

### **a. Objective**



To motivate sportsmen and women.

b. Strategies

- (i) Government should introduce an award scheme for individuals, institutions and organisations that make significant contributions to sports development, training and discovery of new talents.
- (ii) Encourage the naming of streets and landmarks after outstanding sports men and women who have brought honour to our country.
- (iii) Scholarship and bursary awards should be used to encourage sports.
- (iv) Improve the welfare of sports men and women by:
  - increasing allowances during training;
  - providing more specially trained medical personnel to be attached to sport clubs and associations;
  - § providing trained psychologists to associations and training camps; and
  - § providing adequate accommodation for the sports men and women during camp training and competitions.

30. **FUNDING**

a. Objective

To mobilise more funds for sustainable sports development.

b. Strategies

- (i) **Gate Taking**: The major source of revenue for sports development is a regular holding of fee-paying sporting events.
- (ii) **Club Membership Drive**: This would entail aggressive recruitment of members into clubs for specific sports.
- (iii) **Television Rights**: Before sporting competitions can be shown on television, stations that may be interested in televising such competitions should pay certain fees to the organising body.
- (iv) **Sports Lottery**: This is useful in raising funds for sports development. Appropriate legal framework would, however, need to be provided for it to be successful.
- (v) **Sports Trust Fund**: The fund which had earlier been launched should be regularly replenished with donations from governments at various levels, the private sector and international sports governing bodies as well as surplus funds generated from local and international competitions.
- (vi) **Endorsements**: This source of revenue for sports should be developed.
- (vii) **Royalties From Sports Promotional Items**: Any individual or organisation interested in developing promotional items in the name of a club, a sports man or woman, should pay royalties on such promotional items. Clubs generally should also develop promotional materials and souvenirs which will be sold widely at designated outlets.
- (viii) **Advertising**: Encourage organisations, institutions, etc. to advertise through sporting competitions and programmes to raise funds for sports development.
- (ix) **Sponsorship/Sports Marketing**: Sporting events should be appropriately packaged and marketed to public and private sector organisations.
- (x) **Fund Raising**: Funds can be raised through private dinners, launching and

other activities which fit into the Olympic calendar.

- (xi) **Donation of Prizes and Equipments:** Parents, communities and individuals should do more in supporting schools competitions by donating prizes, equipment, etc.
  
- (xii) **Government As a Catalyst for Sports Development:** Government could gradually withdraw from direct funding of sports that have potentials for self-financing. However, government should continue to provide sports infrastructures and remain a catalyst for sports development.

### **31. SPORTS AND THE ECONOMY**

#### **a. Objective**

To use sports as a catalyst for economic development.

#### **b. Strategies**

- (i) Host international sporting events which could attract foreign exchange inflow and new investments in infrastructure and support services. It could also boost the tourism industry.
  
- (ii) Cultivate greater interest in sports in Nigeria, to make sporting activities economically viable and therefore attractive for private sector investments.
  
- (iii) Government should waive existing import restrictions to make sports equipment available and affordable. Government should encourage local manufacture of sports equipment in the medium to long term.

### **32. SPORTS AND NIGERIA'S EXTERNAL IMAGE**

#### **a. Objective**

To use sports as an instrument of diplomacy.

b. Strategies

- (i) Maintain the momentum of the Atlanta 1996 feat and use it to project our image abroad.
- (ii) Organise more bilateral friendly competitions.
- (iii) Evolve a sub-regional sport festival at the ECOWAS sub-region.
- (iv) Train more coaches and referees to international standards to help project Nigeria's image abroad.
- (v) Encourage professional excellence amongst Nigeria's sportsmen and women abroad.

**33. SPORTS AND NATIONAL UNITY**

a. Objective

To use sports as an instrument of national unity.

b. Strategies

- (i) Hold regular inter-school competitions at national and inter-State levels and bring people of different backgrounds and culture together.
- (ii) Promote inter-local government sporting competitions throughout the country.
- (iii) Revive inter-State sporting competitions.
- (iii) Encourage bi-ennial national sports festival on rotational basis amongst the States in the country.

**SECTION FIVE**

### **34. CONCLUSION**

The importance of sports in today's world is no longer in doubt. In Nigeria's case in particular, sports plays crucial roles which are readily acknowledged throughout the country. Sports is a catalyst of national unity and an instrument of international diplomacy. The sustenance of Nigeria's achievements in sports in the future, should be ensured through deliberate national efforts to development through a sports master plan. It is therefore, necessary, to evolve a carefully planned development programme for sports to ensure that the nation is in position by the year 2010 to have acquired an international reputation for sporting excellence in a wide range of sports.

### **CHAPTER THREE**

## ECOLOGY AND ENVIRONMENT

### **Section One: Executive Summary**

34. Nigeria has a total land area of 923,773 km<sup>2</sup> and is richly endowed with abundant natural resources, both renewable and non-renewable. These comprise of land, water, air, vegetation, solid - and other minerals. It features various soil types from the weakly developed soils to hydromorphic soils. The mineral wealth of the country is insufficient to establish a firm industrial base for rapid economic development. Important mineral deposits include crude oil, coal, tar, iron ore, limestone and tin.
35. The country's physical and biological resources include vegetation and forage, water, fisheries, livestock and soil. Our energy resources include fuelwood from the 360,000 km<sup>2</sup> of high forest and savanna woodlands, huge deposit of coal, deposit of about 100 trillion standard cubic feet of natural gas, huge deposits of crude petroleum and hydro power mainly from the three international rivers (Niger, Benue and Cross Rivers). The nation is also blessed with abundant potentials of solar, wind, and tidal energy.
36. Today, the Nigerian environment is faced with a myriad of environmental problems across the length and breadth of the country. Population pressure and the continuous exploitations of the marginal lands have aggravated the process of drought and desertification in the north. On the other hand, the eastern states suffer from severe gully erosion. Also affected by the menace of erosion are Gombe, Jigawa, Benue, Kogi and Adamawa State in the north.
37. In the coastal and riverine states, coastal and marine erosion and land subsidence are major environmental problems. Flooding also occurs in low-laying belt of mangrove and fresh swamps along the coast, the plains of large rivers and short lived flash floods associated with the inland rivers where sudden heavy rains change them into destructive torrents within a short period.
38. Uncontrolled logging with its inherent problems of biodiversity, industrial raw materials and wildlife habitat losses and soil erosion continues unabated in the rainforest and Savanna zones, while inappropriate agricultural practices, destruction of watersheds, loss of water cause soil-crust formation and destruction of vast agricultural lands are common in the middle belt and northern regions. Also associated with these regions are the creation of burrow pits associated with bad mining practices, mining wastelands and pits.
39. Oil prospecting in the Delta region creates oil pollution and gas flaring-related problems which constitute considerable environmental problems. Also related to oil exploration and exploitation, are environmental problems such as soil degradation, heat stress, acid rain, water resources degradation and destruction of biological

diversity. With Nigeria approaching the threshold of industrialization, industrial pollution, municipal waste generation, and urban decay now dent most of our cities.

- 40.** In recognition of the extent of the nation's environmental problems, government at all levels, private sector and NGOs have been making efforts to tackle and reverse the situation. On its part Government has been responding in the form of:
- i) Policies, legal and institutional frameworks;
  - ii) Capacity building and institutional strengthening;
  - iii) Collaboration and partnership arrangements with other countries, international organizations and institutions.
  - iv) Provision of financial resources.
41. The private sector has formed various environmental associations to tackle various environmental problems. A number of environmental NGOs have also sprung up primarily to assist towards sensitizing the public on environmental issues.
- 42.** By the year 2010, our objective should be to achieve sustainable development - without negative impact on the environment. Towards this, Nigeria has to redress the existing major environmental problems by evolving appropriate strategies for afforestation, erosion control, biodiversity conservation, combating desertification and mitigating the effects of drought, rational and sustainable use of oil and gas resources, sustainable human settlements, management of mining site and restoring mining wastelands, industrial pollution management, protecting and managing water, management of municipal solid wastes, and control of the menace of water hyacinth infestation.
43. The achievements so far recorded in environmental protection efforts in the country need to be strengthened. This requires that our environmental protection programmes need to be anchored on solid foundation. And as part of the necessary pre-requisites for achieving sustainable development in Nigeria, the following are recommended for implementation:
- i) Integrating environment into development planning and decision making.
  - ii) Strengthening the legal basis for sustainable development.
  - iii) Creating and improving capacity for sustainable development.
  - iv) Harmonizing Federal and State responsibilities for environmental management.
  - v) Promote research and development of environmentally sound technologies.
  - vi) Forging viable partnership among various stakeholders and interest groups both at national and international levels.

- vii) Managing environmental information for decision making.
  - viii) Internalizing environmental cost through the use of economic instrument in the management of natural resources.
  - ix) Improving the funding mechanism for sustainable development.
- 44.** Actions and responsibilities towards realising the strategies outlined were elaborated. Finally, for the nation to attain the envisaged sustainable development status by the year 2010, it is vital that the recommendation proffered in this document be integrated into the formal report of the VISION 2010 Committee so that all future developments would be made to consider the provision of ‘The Green Agenda’.

## **INTRODUCTION**

### **Nigeria’s Environment and Natural Resources**

- 45.** Nigeria’s natural resources comprise land, water, air, rich flora and fauna, solid and other minerals. From the mangrove, and rain forests the south, through the various Savannas, and semi-arid ecosystems of the north, the nation is richly endowed with fisheries resources, wildlife, timber, medicinal plants, ornamental and food plants. Nigeria’s natural resources unarguably form the capital base of the nation’s economy and the bedrock of the socio-cultural life. A planned strategy to address the growing depletion of the nation’s natural resource base has become most compelling in the light of the nation’s expanding economic, and socio-cultural development process.

#### **Land and Soil:**

- 46.** Nigeria has a total land area of approximately 923,773 km<sup>2</sup>. The greatest length covered from east to west is over 1,127 km while the greatest length covered from north to south is 1,046 km. The coastline extends about 853 km along the Atlantic Ocean. Nigeria covers wide and diverse bio-physiographic features.

The topography is characterized by three drainage systems, namely:

- i) the Niger/Benue Drainage System;
- ii) the Komadugu -Yobe/Lake Chad Drainage system; and
- iii) a series of coastal rivers that flow southward through the lagoons and estuaries into the Atlantic.



47. The country lies essentially within the tropical climatic zone with a prevalence of high temperatures throughout the year, which favours the growth of a great variety of agricultural crops.

**Soils:**

48. Soil resources are most important in a largely agricultural country like Nigeria. The major soil types are related to environmental features of lithology (geology) climate, vegetation and relict. Six major soil groups occur in a zonal pattern from the coast to the northern boundary. These include:
- a. weakly-developed Soil - (Entisols/Inceptisols)
  - b. highly ferruginous tropical soils (Alfisols)
  - c. ferrolitic soils (Ultisols/Oxisols)
  - d. ferrisols (Lithosols)
  - e. vertisols or dark, highly clayey Soils
  - f. hydromorphic Soils (Inceptisols), including acid sulphate chikoko soils.
49. Some essential features of Nigerian Soils which are crucial to achieving high levels of productivity include their predominantly sandy nature, the predominance of kaolin-type clays with low nutrient holding capacity, and their low nutrient and humus status especially with increasing destruction of the natural vegetation cover.

**Rocks and Minerals:**

50. Nigeria is underlain by two major groups of rocks. The first consist of crystalline igneous, metamorphic and old sedimentary rocks of the basement complex. The geological nature of the rocks determines their associated minerals. The sedimentary formations consist of sandstones, sands, shales, clays and limestones and contain rich deposit of crude oil, coal, lignite, natural gas, lead, zinc, tin, columbite and gold among others.
51. The country is just beginning to realise the potentials of this mineral wealth to establish a firm industrial base for rapid economic development. Important deposits of crude oil, coal, tar, sands, tin, columbite-tantalite, lead, zinc, gold, iron ore, barite, glass sands, Clays, Limestones, Marbles and gem stones have been found and are being exploited. Smaller occurrences of gypsum, asbestos, graphite, silver, zircon, manganese ore and other minerals have been discovered.

### **Ecosystem Characterization:**

52. Nigeria can be classified into the following nine ecological systems based on the physiognomy and floristic composition of the vegetation:

#### **Mangrove Swamps and Coastal Vegetation (Wetlands)**

53. These occur in the Niger Delta and also along the coastal line of lagoons and creeks. It is characterized by salt water, and soil consisting of entirely organic matter (chikoko soils), and heavy rainfall distributed evenly throughout the year. The vegetation occurs as thickets and low woodlands along the creeks and lagoons, sometimes attaining the height of 60m. Plant species commonly found in this ecosystem include Rhizophora racemosa, R. mangle and Avicennia nitida. Mangrove swamps have low resilience/dynamics to perturbation.

#### **The Lowland Rain Forest**

54. The low land rain forest has a mean annual rainfall of about 1,200mm and a primary productivity of over 2,500 gms/in<sup>2</sup> per annum. The underlying soils are ferrallitic tropical soils. This ecosystem also extends to areas of drier climate along river valleys where they are supported by hydromorphic soils. The tallest stratum of this forest ecosystem comprises dominant plant species of economic importance, such as herbs, climbers, epiphytes, stranglers, saprophytes and parasites. The vegetation is highly resilient to perturbation while the soil is highly fragile.

#### **Fresh Water and Wetlands**

55. The fresh water consist of lakes, rivers and their flood plains within the rainforest zone and in the drier areas along the floodplain of the larger rivers such as the Niger, Benue, Cross River, Imo and Anambra. Riparian vegetation along the banks maintains some appreciable amount of biodiversity. In the semi-arid areas, the fresh water and wetland constitute the only green belts and animal refuge in the dry season. The waters also have a wide variety of aquatic life.
56. In the savannah region, the wetlands are referred to as Fadama. Fadamas have fertile alluvial soils which sustain the cultivation of crops. They are also noted for providing refuge and drinking holes for wildlife. Fresh water and wetlands are vulnerable to hydrological and other changes brought about by dam construction, intensive agriculture etc.

### **Montane**

57. This ecosystem is found mainly in Jos Plateau, Mambilla Plateau and Obudu hills with heights between 1,200m and 1,800m. It is also characterized by relatively low temperatures, heavy rainfall and varied types of vegetation. The vegetation is sensitive to over-grazing and deforestation, leading to high erosion rates.

### **Savanna**

58. This is found in areas characterized by “xerophytic” woodlands, deciduous forests and drier margins of the tropical rainforest. It is also characterized by a very simple structure made up of a continuous herbaceous layer underneath broken tree stratum. Four sub-types of savanna are usually recognized on the bases of Physiognomy and floristic composition, namely: derived, guinea, sudan and sahel savannas. Savanna vegetation, either modified or natural, contributes significantly to biodiversity in Nigeria. The sandy soils of the savanna are susceptible to sheet erosion, capping that leads to reduced productivity.

### **Tree Crop Plantations**

59. These are man-made low land rainforest type of vegetation. The most important tree crops are cocoa, kola, rubber, oil palm, coffee and citrus. In the tree plantations, weeds, epiphytes, parasites and shade plants can also be found.

### **Fallow Vegetation (Farm Land)**

60. In all climatic zones, large areas are planted with food crops under the system of shifting cultivation or rotation bush fallow. After harvesting a succession of crops, the plot is allowed to rest under fallow vegetation. In the forest zone, the plot may remain longer under fallow to complete a process of forest ecosystem development.

The system of bush fallow is responsible for much of the structural or floristic variations in Nigeria. The nature and status of the vegetation cover, and soil fertility status change from year to year. Farmland ecosystems therefore suffer soil or vegetation degradation.

### **Coastal and Marine Ecosystems**

61. The Nigerian coastal zone is composed of (a) coastal plain lagoons and estuaries, (b) continental shelf, and (c) the Exclusive Economic Zone (EEZ). The entire coastal zone covers an area of 41,090sq.km. Coastal vegetation consists of mangroves and

shrubs which are permanently under water for most parts of the year. This is due to the low lying topography which makes the area susceptible to flooding especially during high tides. The EEZ extends beyond the continental shelf and extends to 200 nautical miles (320km) offshore. The Nigerian coastal environment contains a wide and varied species of plants and animals.

## **Physical and Biological Resources**

### **Vegetation and Forage Resources**

62. The major vegetation formations have been characterised in paragraph 2 above under ecosystem classification. About four tenths of the land area of 923,773 km<sup>2</sup> is savanna and sahel while the remainder is forest and coastal vegetation. But the impact of man's activity has reduced the landscape to a patch work of natural vegetation at various stages of maturity and land under varying degrees of human interference.
63. The natural vegetation formations are intimately bound with the welfare of the nation, particularly as sources of numerous products that sustain both the rural and industrial economies. A vast array of foods, drugs, timber, building materials, fuels, fibres, ornamental species, resins and gums and other cash crops that provide significant support to the nation's economy are obtained from the wild. The current status of Nigeria's biodiversity shows that there are about 500 viral species, 3,423 fungal species, 748 algae and 2,455 species of higher plants. The Cross River National Park and the Okomu Forest Reserve are examples of this diversity and endemism which are characteristic of these rainforests.

### **Water Resources:**

64. Water, in whatever way it is viewed, is almost a larger – than - life resource, with respect to national growth and development. It is no gain saying that without water, there would be no life of any kind on earth. Air aside, it is the most important commodity, even more important than food.
65. It should be further noted that water sustains human life and constitutes about 70% of human body weight. It has wide spectra of uses: ranging from domestic industrial, agricultural, navigational, and recreational. In the energy sector, it is the water here in Nigeria that sustains our efforts towards nation building as more than 70% of energy consumption come from hydropower generation.
66. Nigeria is wholly situated in the tropics with temperatures rarely exceeding 35<sup>0</sup>C (90<sup>0</sup>F) in the south, but humidity is generally very high (up to 90% in the morning)

and nights are hot. On the other hand, in the central and northern parts of Nigeria there are two distinct seasons: a wet season from April to October, with generally lower temperature, and a dry season from November to March, with mid-day temperatures sometimes above 38<sup>0</sup>C (100<sup>0</sup>F) but with relatively cool nights. On the plateaus of Jos, Obudu and Mambilla, temperatures are more moderate.

67. The rainfall throughout the country varies from minimum in the extreme North-East to the maximum in the southern part of the country. In the latter, the rainfall tends to increase towards the South-East and South -West and the occurrence of short dry season, in July-August in the latter area. The annual rainfall is less than 500mm in some parts of the North and greater than 2300mm in some parts of the South. The duration of rainfall period varies between 100 and 230 days in the Northern Nigeria while it is between 270 and 300 days in the Niger Delta of the South.
68. Nigeria has vast surface water resources, receiving very large part of her water from drainage arteries of West and Central Africa, South of the Sahara which are international. It is well-drained country with a close network of rivers, lagoons, lakes and streams most of which carry less water in the dry season. The perennial rivers of the Northern part of the country in particular are easily depleted during prolonged dry periods.
69. The major surface water resources of Nigeria are those of Niger River System, Lake Chad and Cross River, in that order of importance. River Niger takes its source from Sierra Leone and Guinea and flows in North-East direction across the country to the Gulf of Guinea. With its principal tributaries the Benue, Kaduna and Sokoto rivers, it drains an area of 575,000 square kilometers in Nigeria. Its major tributary, the Benue, also takes its course from the Republic of Cameroon and has a catchment area of about 233,000 square Kilometers in East Central Nigeria.
70. Lake Chad is a shallow, fresh water lake about 15,540 square kilometers in area out of which about 4,800km<sup>2</sup> lies at the North –East corner of Nigeria on the boundary with the Republic of Chad. The Nigeria portion of the Chad Basin area is about 155,400 square kilometers with four minor streams, the Ebeji, Komadugu Yobe, Yedseram and Ngadda rivers. These four provide less than 10% of the lake in-flow, practically all of the remainder coming from the Chari River, which has its source in the Chad Republic.
71. The Cross River which originates in Cameroon, drains an area of about 44,030 square kilometers in the South-East corner of Nigeria.

### **Wild Animal Resources**

72. Wild animal life consists of a reservoir of genetic diversity from which new stock can be domesticated. Wild life is a source of animal protein especially in the rural

communities. It provides drugs and animals for the advancement of medicinal research and it is a source of raw materials for the leather and tanning industry and income for rural communities. Wild life viewing provides recreation and entertainment in the tourist industry. The wild animal resources of Nigeria occur within and outside Conservation areas (Parks and reserves). These Resources are under threat from habitat loss and over-exploitation.

### **Soil Resources**

73. For a largely agricultural country, Nigeria's soil resources are of vital importance. The most serious threat to our soil resources is erosion occasioned by inherent fragility of the soil, the aggressive tropical climate and inadequate soil management practices. In the semi-arid areas of the north, lack of adequate vegetation cover at the beginning of the rainy season results in severe erosion on arable lands. In the forest region, deforestation and uncontrolled mechanized farming expose the structurally unstable soils rainfall to high intensity. A conservative estimate suggests an annual loss of 13 million tons of soil, equivalent to a monetary loss of N3 billion annually.

### **Solid Mineral Resources**

74. The Natural geomorphic formations over the years and favourable geological setting ensure the availability of many mineral resources in the country. The exploitation of mineral resources in Nigeria began in December 1903, when the Colonial Government inaugurated the Minerals Survey Committee. So far, solid minerals deposits of commercial quantities known to exist include iron, gypsum, limestone, coal, kaolin, uranium, bentonite, barytes, talc, phosphate, feldspar, soda ash and precious stones including gold, topaz, emerald etc.

### **Energy Resources**

75. The nation is endowed with a variety of natural energy resources, namely: Renewable and Non Renewable Energy.

### **Renewable Energy**

#### **Biomass**

76. Nigeria is blessed with a rich variety of biomass including grasses, herbs, leaves, post-harvest crop and animal wastes, and woody vegetation among others. This is a

resource that can be utilized as energy for cooking, heating either directly or when converted to biogas.

77. The country has about 360,000km<sup>2</sup> of high forest and savanna wood land (about 40% of total land area) which provides an estimated 51 -88 million cubic metres of wood annually of which 80% is consumed as fuelwood. In the savanna region alone, approximately 22.55 million cubic metres of fuelwood was consumed in 1990. This consumption rate is expected to rise to over 34 million cubic metres by the year 2010. Within the Savanna, about 4000 hectares of woodland are deforested annually. To provide a balance in this ecosystem about 300,000 hectares of afforestation is required. Fuel wood as a source of energy is used for a number of household services including cooking, heating, distillation, food processing and preservation.

### **Solar Energy**

78. The average annual solar radiation on a horizontal surface ranges from about 3.7kwhm<sup>-2</sup> day<sup>-1</sup> along the coastal areas, to about 7.0kwhm<sup>-2</sup> day<sup>-1</sup> along the semi-arid areas to the North of Nigeria. Twenty five percent of the country receives a solar radiation level of about 5.5kwhm<sup>-2</sup> day<sup>-1</sup> on the average. This translates to about 5.081 x 10<sup>12</sup>kwhm of solar energy per day. The minimum average is about 3.55kwhm<sup>-2</sup> day<sup>-1</sup> in Katsina during January and 3.4kwhm<sup>-2</sup> day<sup>-1</sup> in Calabar during August and the maximum average is about 8.0kwhm<sup>-2</sup> day<sup>-1</sup> in Nguru during May.
79. If solar devices which have 10% efficiency are used to cover 1% of Nigeria, this would provide 5.082 x 10<sup>6</sup>kwh of electricity. This amount of energy is equivalent to 9.322 million barrels of oil per day which is about 5.2 times Nigeria's oil production level of 1.8 million barrels per day in 1991.

### **Hydro power**

80. Nigeria is the natural outlet of two major drainage basins in the West Central African Sub-region, namely Niger Basin, and the Cross River Basin. The three international rivers that drain these basins; River Niger, River Benue and Cross River and their numerous tributaries provide ample sites for the construction of dams and reservoirs for hydroelectric power generation, navigation, irrigation, fisheries, water supply, flood control and recreation. There are about 200 registered dams of various sizes in Nigeria, of which 7 are for hydroelectric power generation, capable of generating over 1,950MW of electricity. These water resources can further be developed to harness hydro power to increase the level of hydropower generation and utilization in Nigeria.

### **Tidal Energy**

81. Nigeria is blessed with a coastline of about 853km that opens into estuaries and lagoons. Although Nigeria has not developed the technology to harness tidal energy, this resource is a potential source of energy for the nation and can be harnessed when the technology is developed.

### **Wind Power**

82. The history of wind power in Nigeria dates back to the 1950s when windmills were introduced. This cheap energy source was used to pump water from wells in rural areas. Today, new technologies for harnessing wind energy have been developed and wind generators are available in Europe and North America.
83. For the purpose of this new technology, Nigeria is blessed with many highlands which include the Jos Plateau, Bauchi Plateau, Biu Plateau, Mambila Plateau and the Obudu high land and a stretch of 853 km of coastline ideal for the citing of wind power generators (wind power farms).
84. The development of these alternative energy sources will alleviate the increasing pressure on fuel wood, and conserve the nation's forests and vegetative cover from further depletion and biodiversity loss.

### **Non Renewable Energy**

#### **Coal**

85. Nigeria has a rich reservoir of coal found largely in the Enugu Coal Mine areas. The production of coal has had a chequered history, from about 24,511 metric tons in 1916, to 905,397 metric tons in 1959. After the Nigerian Civil War, coal production which was stalled during the war period, rose to about 341,000 metric tons in 1972. Currently production has increased remarkably and coal is now being exported through Government efforts and private sector initiatives.

#### **Natural Gas**

86. Nigeria has abundant reserves of gas, mostly concentrated in the Niger Delta. Some 100 Trillion Standard Cubic Feet (TSCF) of gas have been recorded and another 45 (TSCF) remain in undiscovered but recoverable reserves. About 50 per cent of this proven reserves are associated gas. However, the level of gas utilization in Nigeria is very low, even though the quantum of gas reserves discovered so far exceeds that of crude petroleum oil. Gas utilization is for now limited to some small quantities being used as fuel for petroleum operations, for enhanced oil recovery projects, for pressure



maintenance in some industrial processes on a relatively modest scale, and for power generation. Plans are already at an advanced stage to focus on gas as a fuel for the future. The utilization of gas should be encouraged in the country for these processes as well as for producing LNG, CNG, and LPG.

### **Petroleum**

87. Nigeria's petroleum resources which is believed will last up to the year 2020, provides the nation's major foreign exchange earnings. Oil exploration began in Nigeria in 1908 and by 1956 oil was discovered in Oloibiri by Shell – BP. Since then, production has increased from 5,000 barrels per day in 1957 to 17,000 barrels/day in 1960 and 450,000 barrels/day by 1966. Peak production level of about 2.4million barrels/day was achieved during the second quarter of 1979. There are four refineries located in Kaduna, Warn and Port-Harcourt, producing a total of 445,000 barrels of refined petroleum per day. These refineries produce petrol, kerosene, diesel oil, and lubricating oils, for local consumption.

### **Terms of Reference**

88. It is in view of the above issues and challenges that the Head of State specifically charged the Vision 2010 Committee to “suggest ways by which we can give adequate attention to the protection of the environment and ecology”. This implies that by the year 2010, our goal should be to achieve sustainable development without impacting negatively on the environment. In order to achieve this goal, the country has to evolve appropriate strategies to address the problems of deforestation, drought and desertification, soil and coastal erosion, water pollution, oil pollution, water hyacinth, loss of biodiversity, flooding, urban decay and industrial pollution. These are the concerns addressed by this report.

### **Layout of the Report**

89. This report is structured into four main parts. The first part is the Background which consists of an Executive Summary and an Introductory Section. Part I of the report deals with the current state of the Nigerian environment i.e. Where We Are. This part explores the various forms of environmental degradation in Nigeria, the various official responses to these problems, as well as the current constraints to the implementation of environmental policies.

**Part II** of the report presents the core objectives of different forms of environmental protection, as well as the strategies and action steps for realizing these goals. The report further apportions responsibility for the specific action steps prescribed between various arms of the government, the business community/NGOs and the citizens. Part III of the report continues with the methodological approach used in Part II in presenting the strategies and action steps necessary for strengthening, improving

and coordinating the implementation of environmental management.

## **WHERE WE ARE**

### **STATE OF THE NIGERIAN ENVIRONMENT**

- 90.** In general, the environment provides all life support systems in air, water, and land as well as the materials for fulfilling all developmental aspirations of man. However as in any other country of the world, the Nigerian Environment today presents a grim litany of woes across the length and breadth of the country.
- 91.** Every State of the Federation suffers from one form of erosion or the other in varying degrees. The northern part of the country literally “blows away” in wind erosion while the southern part “washes away” into the ocean using the descriptions of Mr. McNamara, former President of the World Bank. Wind erosion could be quite severe in States such as Sokoto, Zamfara, Kebbi, Katsina, Kano, Jigawa, Borno and Yobe. Farmlands become inundated by drifting sands burying young crops, roads and sometimes huts and public buildings may be completely buried by active sand dunes rising sometimes up to 12 meters high.
- 92.** Population pressure, over grazing and the continuous exploitation of marginal lands have aggravated drought and desertification. Nigeria is presently losing about 351,000 square kilometers of its land mass to the desert which is advancing southward at the rate of 0.6 kilometers per year. According to a recent survey by the centre for Arid zones studies in Nigeria, desertification is by far the most pressing environmental problem in the northern states along the Nigeria Republic border. The outward and visible sign of this desertification process is a gradual shift in vegetation from grasses, bushes and occasional trees, to grass and bushes and in the final stages, expansive areas of desert-like sand. Entire villages and major access roads have been buried under sand dunes in the Northern portions of Katsina, Sokoto, Jigawa and Borno States. With about 55 percent of its land under siege from desertification, Borno State which suffered from a protracted fifteen-year drought in 1972-1987, is one of the most threatened land areas of Nigeria. The pressure of migratory human and livestock from these areas of desertification are absorbed by pressure point buffer states such as Plateau, Taraba, Niger, Kaduna, Kwara and Benue.
- 93.** The increased intensification in the use of the fragile and marginal ecosystems has led to progressive degradation and continued desertification in areas of marginal agricultural lands even in years of normal rainfall. It is feared that the damage by drought and population pressure may have resulted in the genetic loss of a vast array of valuable plant species.
- 94.** Sheet erosion indicate a phenomenon in which a large area of surface soil is lost by

almost even 'blanksheet' flows of surface or near surface water. Indeed similar pattern can be seen through the interaction of wind over land surface. Thus sheet erosion slowly removes this surface soil layers by rainfall runoff down slopes having a devastating effect on agriculture. Sheet erosion occurs nation wide, but it is least perceived because of its "deceitful" slow progress. Gully erosion in contrast though limited in its distribution catches the eye because of its disastrous nature and rapid progress.

95. Gully erosion is particularly severe in Abia, Imo, Anambra, Enugu, Ondo, Edo, Ebonyi, Kogi, Adamawa, Delta, Jigawa and Gombe States. Anambra and Enugu States alone have over 500 active gully complexes, with some extending over 100 meters long, 20 meters wide and 15 meters deep.
96. Coastal and marine erosion and land subsidence occur particularly in the coastal areas of Ogun, Ondo, Delta, Rivers, Bayelsa, Akwa Ibom and Cross River States. The most celebrated case of the effects of Coastal erosion is the over flow of the Bar Beach in Lagos by the surging waves of the Atlantic Ocean now a regular feature since 1990, threatening the prime property areas of the Ahmadu Bello Way, Victoria Island, Lagos.
97. Flooding occurs throughout Nigeria in three main forms; coastal flooding, river flooding, and urban flooding. Coastal flooding occurs in the low-lying belt of mangrove and fresh water swamps along the coast. River flooding occurs in the flood plains of the larger rivers, while sudden, short lived flash floods are associated with rivers in the inland areas where sudden heavy rains can change them into destructive torrents within a short period. Urban flooding occur in towns located on flat or low lying terrain especially where little or no provision has been made for surface drainage, or where existing drainage has been blocked with municipal waste, refuse and eroded soil sediments. Extensive urban flooding is characteristic of every rainy season in Lagos, Maiduguri, Aba, Warn, Benin and Ibadan.
98. Uncontrolled logging and tree felling with paltry taxes for immediate revenue generation, accentuated by lack of re-stocking are the order of the day in many parts of the country. This practice of uncontrolled logging carries with it loss of precious biological diversity (natures gene bank of raw materials for future development breakthroughs).
99. Nigeria's wildlife is rapidly declining due to habitat loss and increased pressure from hunters and poachers and bush burning. Animals that have disappeared from Nigeria in recent times include the cheetah, the pygmy hippopotamus, the giraffe, the black rhinoceros and the giant eland. About 10-12 species of primates including the white throated guenon species of primates and sclater's guenon are under threat. Also an estimated 484 plant species in 112 families are threatened with extinction because of habitat destruction and deforestation.

- 100.** Inappropriate agricultural practices, the destruction of watersheds, and the opening up of river banks and other critical areas lead to silting of river beds and loss of water courses.
- 101.** Uncontrolled use of agro-chemicals and the concomitant problems of chemical persistence in the soil in humid areas and soil-crust formation in arid climates have contributed to destruction of vast agricultural lands.
- 102.** Petroleum prospecting which creates oil pollution problems including spills, oil well blow-out, oil ballast discharges, and improper disposal of drilling muds have resulted in problems such as:
  - (a) the loss of the aesthetic values of natural beaches due to unsightly oil slicks;
  - (b) damage to marine wildlife, modification of the ecosystem through species elimination and the delay in biota (fauna and flora) succession; and
  - (c) decrease in fishery resources.
- 103.** Gas flaring and the resultant problems of ecosystem heat stress, acid rain and the acid precipitation-induced destruction of fresh water fishes and forests are rampant in the coastal areas of the country. (A scientist once estimated that the waste heat and energy from gas flaring in 1986 was equivalent to all electrical power generated by the National Electric Power Authority (NEPA) that year). Global estimates indicate that the flaring of petroleum associated gas in Nigeria alone accounts for 28% of total gas flared in the world.
- 104.** Problems of exposure to radiation and creation of artificial ponds associated with bad mining practices and the problems of mining waste land and mining pits without addressing reclamation as provided for in the Minerals Acts, are common in the mine fields of Jos plateau, Ilesha, Enugu etc.
- 105.** Excessive pressures on available urban resources, infrastructure and space, due to rural urban migration and the resultant problems of urban decay and squatter settlements are evident in Lagos, Port-Harcourt, Ibadan, Umuahia, Kano, Kaduna, Maiduguri and of recent Abuja and its satellite towns.
- 106.** There are also the multifarious problems of industrial pollution. Nigeria has about 5,000 registered and easily located industrial facilities and perhaps another 10,000 backyard small scale industries operating illegally within residential premises. In places like Kano, Kaduna and Lagos, coloured, hot and heavy metal-laden effluent especially those from the textile, tannery and paints industries are discharged directly into open drainage and water channels, constituting direct dangers to water users downstream. Also disturbing is the practice whereby some of our industrial facilities

bury their expired chemicals and hazardous chemical wastes in their backyards threatening the water quality of innocent neighbours who rely on their dug-out wells for drinking water.

- 107.** Stack fumes from industries evoke nauseating odour with grave respiratory and cardiac ailment consequences. Their physical spread often include sunlight for hours in several parts of Lagos, Kano, Enugu and Port-Harcourt. Air inversion with its accompanying foggy dispersion and visibility reduction to less than 20 meters has almost become a permanent feature of the Oko Baba mid-section part of the Third Mainland Bridge where saw millers burn away saw dust and other wood shavings. A similar phenomenon is experienced at the toll gate end of the Lagos-Ibadan Expressway at Oregun, where smoke from a nearby dump site pollutes the air, and emits nauseating odour.
- 108.** Municipal solid waste heaps dot several parts of our major cities blocking motor roads and making passages of alleys and pavement difficult. Municipal wastes disposal problem is particularly serious in Lagos, Ibadan, Enugu, Kaduna, Aba, Port Harcourt and Owerri and Warri. So also are sewage problems and flooding during the rains in several parts of Nigeria, especially Lagos. Specifically the following characterize our major urban centers:
- (a) the various non-biodegradable household petrochemical products such as polythene bags, plastic containers, Styrofoam packages and tyres litter every available space in our cities;
  - (b) the issue of crankcase oil disposal from mechanic workshops, industries, power stations and commercial houses, estimated at about 20 million gallons are discharged carelessly into drains and ground surfaces in our cities. They contaminate surface and underground waters and are esthetically unpleasing;
  - (c) public buildings and residential quarters sited in flood-prone areas, while unsettled dump sites are improperly reclaimed and converted into plots for the erection of residential quarters and public buildings such as market stalls in ecologically sensitive areas.
- 109.** There are also the problem of invasive species including those of locust and quela birds which seasonally threaten crop production and farm harvest in the north and the menace of water hyacinths threatening fishing and transportation in the coastal areas.
- 110.** Many of our cities are turning into concrete jungles where plants are no longer used for home landscaping. High rise buildings and other commercial centres have displaced areas earlier earmarked as low density residential areas in Ikoyi and Victoria Island. Our show case capital city of Abuja is a pathetic example of this development where the rich and natural vegetation is being systematically depleted as

a result of non-adherence to the provisions of the Master Plan. Rampant bush burning is threatening the growth of trees and wildlife species and reducing the ecological life and diversity of the city; gravel mining is aggravating the problem of erosion and surface runs off; while indiscriminate discharge from construction sites is already leading to pollution and siltation, while areas earmarked as green belts and recreational areas are being systematically converted into building sites.

- 111.** Poverty is also a cause and a consequence of environmental degradation. It is often said that the two groups particularly responsible for a disproportionate share of environmental degradation are the world's top richest and bottom billion, that is, the poorest of the poor. The former always try to satisfy wants and not needs. In contrast, the bottom billion due to economic necessity, borne out of survival instinct and lack of options, scavenged marginal lands to survive there today at the expense of their tomorrow. Thus they are caught in the perpetual web of poverty and environmental degradation.
- 112.** The poor are usually both victims and agents of environmental damage. Poverty, particularly in our rural areas, and its attendant malnutrition and under nutrition are closely linked to degradation of environment, as poverty depletes natural resources which in turn exacerbates the sufferings of the poor.
- 113.** Health related environmental problems in Nigeria vary with the social and economic development achieved by different states and even different towns, and villages within individual states. They are linked to poverty, absence of adequate water supplies, lack of sanitation services, and poor housing conditions. With increasing industrialization, the risk of respiratory illness and cancer-related deaths also rises. Extensive and rapid development in all industrial and many agricultural sectors have sharply increased the exposure of industrial workers and large segments of the population to these risks. The major public health problems associated with poor environmental sanitation and exposure to communicable diseases and poor personal hygiene predominate and are often compounded by malnutrition which reduces resistance to diseases especially among vulnerable groups i.e children, pregnant and lactating mothers and the aged. Malaria, cholera, schistosomiasis diarrhea and other diseases transmitted by mosquitoes and other vectors such as filariasis and other parasitic infestations like guinea worm and onchocerciasis are still major public health problems. Many other diseases including tetanus, whooping cough and tuberculosis are becoming more prevalent in urban areas as a direct result of overcrowding and poor sanitary conditions. Other public health problems are associated with exposure to hazardous chemicals and heavy metals.
- 114.** Virtually every Nigerian is vulnerable to disasters, natural or manmade. Every rainy season wind gusts arising from tropical storms claim lives and property worth millions of Naira across the country. Flash floods from torrential rains wash away thousands of hectares of farmland. Dam bursts are common following such floods. In August 1988 for instance, 142 people died, 18,000 houses were destroyed and 14,000 farms were swept away when the Bagauda Dam collapsed following a flash flood. Urban flooding, such as the Ogunpa disaster in 1980 which claimed over 200

lives and damaged property worth millions of Naira, are common occurrence. On their part disease epidemics such as cerebro-spinal meningitis, yellow fever and cholera constitute real scourges that almost annually bring about a large toll in human life. A number of devastating political and sectarian conflicts have also been recorded in the country with concomitant death, injury and heavy economic losses. The plane crash in Kano in 1973, the 1983 Enugu air disaster and the frequent occurrence of phenomenal air mishaps of recent, have claimed hundreds of precious lives. Since oil production entered the Nigerian scene, there have been increased incidence of accidents associated with oil exploration, processing, storage and transportation often accompanied by fire outbreaks. Perhaps less spectacular, but of grave consequence are the persistent droughts which a number of times have resulted in famine in the northern part of the country. During the drought of 1972-73 for instance, about 300,000 animals died and farm yields dropped by up to 60%.

- 115.** According to the Report of a 1990 Study (Towards the Preparation of Nigerian Environmental Action Plan by the World Bank), the long term loss to our country from environmental degradation was estimated to be about US\$5 billion annually or the equivalent of our annual budget.
- 116.** Nigeria also has had to contend with global environmental issues such as Climate Change, Ozone layer Depletion, Drought and Desertification. Climate Change or global warming is due to the increasing concentrations of atmospheric warming gases or Green House Gases (GHG) especially Carbon Dioxide (CO<sub>2</sub>) whose concentrations have increased from 280 ppm in 1800s to about 370 ppm now. These gases warm the atmosphere by their capacity to trap heat and cause change in the weather pattern of the earth. The increase in temperature causes the polar ice caps to melt and ocean water to expand. This in turn could result in rise in sea level which may lead to submergence of many low-lying areas of the world. An area that is highly prone to this sea level rise is the 29,000 sq km of Nigerian coastline, which houses prime real estate, and one of the largest mangrove forests in the world, as well as being very rich in biodiversity.
- 117.** In the case of the Ozone Layer Depletion, certain miracle chemicals of yesteryears, namely Chlorofluorocarbons (CFCs), Halons and Carbon Tetrachloride, are the culprits responsible for the destruction of the ozone layer - nature's shield which filters off ultraviolet B radiation in the stratosphere thus protecting human beings, animals and plants from the harmful effects of these ultraviolet (UV) rays which could cause skin cancer, eye cataracts, loss of body immune systems etc. Chlorofluorocarbons, Halons and Carbon Tetrachloride are used as freezants, sterilants, solvents, propellants and active ingredients in the pharmaceutical industries, hospitals, electronic, refrigeration, air conditioning, foam and aerosol industries.
- 118.** Another important environmental problem is the non-natural but trade-related environmental problem of Transboundary movement of toxic chemical wastes, expired and contraband chemicals and pesticides. Over 11 million chemical substances are known of which about 60,000 to 70,000 are in regular use. But only 3,000 chemicals account for 90% by mass of the worlds total chemical usage.

Adequate toxicological data have been produced for only a small fraction of these chemicals, and data on their environmental and ecotoxicological effects are sparse. Every year with increasing knowledge, chemicals with grave eco-toxicological and environmental effects are withdrawn and banned from international trade. In addition to these banned and obsolete chemicals are other radio active wastes that must be disposed of carefully and in an environmentally - sound manner.

119. As Nigerians, we cannot forget the Koko Saga involving 3,780 tonnes of toxic wastes from Italy in 5 shipments. That incident was nearly a national embarrassment but for the swift and decisive response of our government.
120. Over the past decade, unscrupulous foreign businessmen acting in collaboration with local links have found a new way of making money through an illegal trade thriving on these cargoes of death from the developed countries to the poor, helpless and largely illiterate developing countries. 94% of all hazardous waste trade originates from the OECD countries. The sole aim is to avoid the strict environment and health safety regulatory requirements and public opposition of the host developed countries which is deeply rooted in economic calculations. For example, the treatment and disposal of Polychlorinated biphenyl (PCB, a highly toxic chemical), costs 3000 US Dollars per tonne in the U. S. compared to a mere 2 Dollars 50 cents including shipment cost and disposal in a developing country, where it is simply buried in dug out pits in the backyard or farms of their helpless citizens.
121. By their organisation and trade links using merchants, brokers, shippers and disposal agents, the tricks and sophistication of packaging and routing organisation, the frequency of volume of toxic cargoes on the high seas literally perching and waiting for weak surveillance to berth at any developing country ports, the trade, has assumed the dimension of toxic terrorism.

## **RESPONSE TO ENVIRONMENTAL PROBLEMS IN NIGERIA**

122. In recognition of the extent of the nation's environmental degradation problems, government has been making efforts to tackle and reverse the situation. The responses may be classified into four main categories, namely:
  - (a) Policies, Legal and Institutional Frameworks.
  - (b) Capacity Building.
  - (c) Collaboration with International Organisations.
  - (d) Funding.



## **Policies, legal and institutional framework**

- 123.** The issue of environmental and natural resources consideration has been approached in an uncoordinated piecemeal fashion in Nigeria. This is evident in the existence of a number of legislation directed at specific environmental or resources issues or problems, such as the Forest Ordinance Act of 1937, Mineral Act of 1946, Oil in Navigable Water Act of 1968, the Quarries Act and Regulations of 1969, Northern Region wild animal law of 1963, Endangered species Decree No 11 of 1985, the Sea Fisheries Decree of 1971, the land use Decree of 1978 etc.
- 124.** It is in the field of forestry that Nigeria has made the most notable efforts at conservation dating back to the colonial days when the system of forest reservation was established with the overall objective of using and developing the land and resources under the reserve in a national manner to maintain their sustained yield. The first game reserves were demarcated in the early 1930s.
- 125.** In 1956, Yankari Forest, located in the Sudan Savanna vegetation zone and Borgu in the Guinea Savanna zone were declared regional game reserves by the government of Northern Nigeria. By 1967 the number of game reserves had increased to 10 and by 1975 they had risen to 23. In 1975, the Kainji Lake National Park (KLNP), comprising the previously gazetted Borgu and Zugurma Games Reserves was established. Currently, there are five National Parks in Nigeria.
- 126.** In the field of afforestation, the first large scale intervention by government was in 1976 with the launching of the Arid zone Afforestation Programme in Sokoto to arrest the Sahara desert from further advancing southwards. This was followed by the institutionalizing by Government of a tree planting campaign all over the country, particularly in the Northern part.
- 127.** The Stockholm Conference on Environment in 1972, ignited the desire in Nigeria for environmental management. In 1975, a division of Urban Development and Environment was created in the Federal Ministry of Economic Development to handle among other things, pollution and other related industrial matters. The Division was later in the year to form part of the newly created Federal Ministry of Housing, Urban Development. However, its status as a component of the Administrative Division of the Ministry made it ineffective. To redress this situation, the Division was relocated in 1978 to the Industrial Policy Planning Department of the Federal Ministry of Industry.
- 128.** Further re-organisation of Federal Ministries during the Second Republic, 1979 - 1983, brought it to the Federal Ministry of Works and Housing where it was renamed the Environmental Planning and Protection Division.
- 129.** In 1981, a Bill came before the Federal House of Representatives for the

establishment of a Federal Environmental Protection Agency (FEPA). Nothing came forth from the Bill. However in 1984, the Federal Government introduced the monthly Environmental Sanitation Day as part of the WAR AGAINST INDISCIPLINE (WAI). Last Saturday of every month is still being observed as Environmental Sanitation Day across the country.

### **Establishment of FEPA**

- 130.** The discovery of about 4,000 tons of highly toxic waste dumped in Koko, in the then Bendel State in 1987, marked a turning point in the history of environmental protection in the country. The incident did not only lead to increased national concern and awareness about the environment but served as catalyst for the development of appropriate legislative and institutional framework for environmental protection through a more integrated approach by the promulgation of Decree No. 58 of 30th December, 1988 establishing the Federal Environmental Protection Agency (FEPA).
- 131.** The Decree established FEPA as an autonomous body charged with full legal responsibility to control and oversee the state of the Nigerian environment. By its mandate, the agency as the environmental watch dog and conscience of the nation is to motivate and inspire, raise the level of awareness of the various target levels of the society, as well as take the lead in the formulation and coordination of environmental policy and monitoring activities at all levels and sectors of the Nigerian economy. Thus, the Agency has specific powers to:
- (a) develop plans of action and advise the Federal Government on national environmental policies and priorities;
  - (b) prescribe standards for and make regulations on air quality, water quality, pollution and effluent limitations, atmosphere and ozone protection, control of toxic and hazardous substances etc.
  - (c) Monitor and enforce environmental protection measures.
  - (d) enforce international laws, conventions, protocols and treaties on the environment.
  - (e) promote cooperation with similar bodies in other countries and international agencies connected with environmental protection.
  - (f) cooperate with Federal and State Ministries, Local Governments, statutory bodies and research agencies on matters relating to the protection of the environment.

## **Institutional Strengthening of FEPA for its Apex role**

- 132.** In view of the cross sectoral nature of environmental issues, the responsibility of the Agency as the apex institution for environmental matters in the country, the requirements of AGENDA 21 of the United Nations Conference on Environment and Development (UNCED) and the need to give the authority required to coordinate the practices of line ministries whose activities impinge on the environment, government by the Decree 59 of 1992 expanded the FEPA mandate to cover those of conservation of natural resources and biological diversity and moved the Agency from the Ministry of Works to the Presidency. By the Decree, the policy direction of the Agency is now vested in Ministerial Governing Council under the Chairmanship of the Secretary to the Government of the Federation and comprising Ministers with responsibility for Agriculture, Aviation, Finance, Health, Industry, Labour, Mining and Solid Mineral Resources, Petroleum Resources, Science and Technology, Transport, Water Resources, Works and Housing. In composition and stature, the FEPA Governing Council is second only to the Federal Executive Council.
- 133.** While the FEPA Governing Council is the supreme organ of the Agency and one for the harmonization of lateral arms of Government (Federal Ministries and Agencies) whose functions have bearing with the environment, there is a Consultative Forum called the National Council on Environment comprising the Secretary to the Government of the Federation/Chairman FEPA Governing Council and the Secretaries to the State Governments (SSGs) of all the States of the Federation for vertical harmonization of policy implementation across the three tiers of government.

## **FEPA's Strategy and Achievements**

- 134.** Since its establishment, FEPA has adopted measures including strategies, activities and programmes to implement its mandate. Its achievements have included the following:
- (a) development of the National Policy on the Environment launched by Government on 27 November, 1989 - with specific guidelines for achieving the goal of sustainable development (i.e environmentally sound development) in fourteen vital sectors of the nation's economy, namely: Human Population, Land use and Soil Conservation; Water Resources Management; Forestry; Wildlife and protected Natural Areas, marine and Coastal Area Resources, Sanitation and Waste Management, Toxic and Hazardous Substance, Mining and Mineral Resources, Agricultural Chemicals, Energy Production, Air Pollution, Noise Working Environment, Settlements, Recreational Space, Green belts, Monuments and Cultural Property.
  - (b) establishment of a National Council on the Environment (NCE) - a forum for

consultation and harmonization of environmental management matters throughout the federation. The NCE comprises Commissioners responsible for the environment in the respective states of the Federation and under the current administration comprises Secretaries to the State Governments. Some achievements recorded through consultations within the NCE have included the harmonization of environmental protection institutions throughout the Federation leading to the creation of State Environmental Protection Agencies in the respective States of the Federation.

- (c) establishment of Guidelines and Standards for Environmental Pollution Control in Nigeria as well as regulations on Effluent Limitations, Pollution Abatement in Industries, as well as Management of Solid and Hazardous Wastes.
- (d) regulation of Environmental Impact Assessment (EIA) Decree No. 86 of 1992 which makes it compulsory for every new and major developmental projects to carry out a feasibility study to determine the environmental impact of the project and for FEPA to prescribe mitigation measures which must be adhered to before being allowed to commence operation.

## **Other Policies, Legal and Institutional Framework Related to Environment**

**135.** Other major policies of government include the following:

- (a) the National Policy on Population and Sustainable Development (1988) aimed at improving the standards of living and the quality of life of the people of this nation among other things. The document also sets specific targets for achieving stipulated goals.
- (b) The Housing Policy (1991) aimed at ensuring that all Nigerians own or have access to decent housing accommodation at affordable cost by the year 2000 AD.
- (c) Agricultural Policy aimed at the attainment of self-sustaining growth in all sub-sectors of agriculture as well as the realization of the structural transformation necessary for the overall socio-economic development of the rural areas. Specific objectives include production of basic food commodities with particular reference to those food commodities that consume considerable shares of the nation's foreign exchange and which can be produced locally.

- (d) Policy guidelines on Energy for Nigeria (1987) – its thrust is the environmentally conscious exploitation and utilization of our energy resources in the overall interest of our people for the present and the future.
- (e) Industrial Policy - Its major objectives include promotion of nationwide industrial development through industrial dispersal and providing greater employment opportunities, improving technological skills and increased export of manufactured goods.
- (f) National Health Policy - the goal is to bring about a comprehensive health care system based on primary health; that is promotive, protective, preventive restorative and rehabilitative to every citizen of this country within the available resources so that individuals and communities are assured productivity, social well being and enjoyment of living.
- (g) National Trade and Tourism Policy - aimed at encouraging increased production and distribution of goods and services to satisfy domestic and international markets for the purpose of accelerating economic growth and development.

## **Other National Legislation**

**136.** Other major national legislation in the area of environment may be highlighted as follows:

- (a) Agricultural (Control of Importation) Act Cap 12 LFN 1990
- (b) Associated Gas Re-injection Act Cap 20 LFN 1990
- (c) Civil Aviation Act Cap 51 LFN 1990
- (d) Criminal Code Act Cap 77 LFN 1990
- (e) Endangered Species Decree Cap 108 LFN 1990
- (f) Exclusive Economic Zone Act Cap 116 LFN 1990
- (g) Energy Commission of Nigeria Cap 109 LFN 1990

- (h) Factories Act Cap 126 LFN 1990.
- (i) Federal Environmental Protection Agency Act Cap 131 LFN 1990.
- (j) Harmful Waste Act Cap 165 LFN 1990
- (k) Kainji Lake National Park Act Cap 197 LFN 1990
- (l) Land Use Act Cap 202 LFN 1990
- (m) Minerals Act Cap 226 LFN 1990.
- (n) Natural Resources Conservation Agency Council Act Cap 286 LFN 1990.
- (o) Oil in Navigable Waters Act Cap 339.
- (p) Petroleum Act Cap 350 LFN 1990.
- (q) Quarries Act Cap 385 LFN 1990.
- (r) River Basin Development Authority Cap 396 LFN 1990.
- (s) Sea Fisheries Act Cap 404 LFN 1990.
- (t) Standards Organisations Cap 412 LFN 1990.
- (u) Territorial Water Act Cap 1990.
- (v) Mineral Oil (Safety) Regulations 1963 Cap. 350.Vol.xix P 12667.
- (w) Petroleum Regulations 1967 Cap. 350 Vol. xix P. 12755;
- (x) Petroleum Act 1969 Cap. 350 Vol.xix P 12687;

- (y) Petroleum (Drilling and Production) Regulations 1969 Cap. 350 Vol. xix P. 12777;
- (z) Oil in Navigable Water Act 1968 Cap 337 Vol.xixP 12327;
- (aa) Petroleum Control Act 1967 Cap. 351 Vol.xxP 12839;
- (bb) Nigerian National Petroleum Corporation Act 1977 Cap 320 VolxviiiP.11889;
- (cc) Crude Oil (Transportation and Shipment) Regulations 1984 Cap.350.Vol.xixP. 12833;
- (dd) Water Resources Decree No. 101 of 1993.

**Other related Federal Government Ministries with Environment Related Responsibilities.**

**137.** A synoptic overview of other Federal Government Ministries that have responsibilities related to environmental protection and improvement, and their main relevant responsibilities are provided below:

- (a) Ministry of Agriculture and Natural Resources: establishment of botanical and zoological gardens, game reserves and wildlife; forestry; fisheries; plant quarantine and in charge of all Agric related research institutes including the Nigerian Institute of Oceanography and Marine Research.
- (b) Ministry of Aviation: Meteorological services.
- (c) Ministry of Employment, Labour and Productivity: Factory inspection; labour safety, health, welfare and education.
- (d) Ministry of Health: Public health; port health and quarantine; safety and control of food and drugs.
- (e) Ministry of Industries: Industrial development; standardization and quality control.

- (f) Ministry of Power and Steel: Formulation and implementation of the national energy policy;
- (g) Ministry of Petroleum Resources Conservation, control and inspection of the Nigerian Oil industry; the development of hydrocarbon industries including the flared gas project, processing, refineries and petrochemical industries; licensing of all petroleum operations and activities including control and licensing of liquefied natural gas.
- (h) Energy Commission of Nigeria: Responsible for formulating and implementing the National Energy Policy as well as promoting sustainable development of the energy sector.
- (i) Ministry of Science and Technology: Industrial, medical, road, building, energy and basic sciences research; formulation and monitoring of National Policy on Science and Technology; the promotion and administration of technology transfer programmes, the promotion of scientific and technological research.
- (j) Ministry of Transport: Inland waterways; maritime shipping and navigation; ports.
- (k) Ministry of Water Resources and Rural Development: Control of water resources, dams and irrigation; development of river basins; exploration and development of underground water, hydrological and hydro geological investigations; water supply and control of soil erosion.
- (l) Ministry of Works and Housing; Construction and maintenance of public buildings; federal highways; federal surveys and mapping; housing policy and development; lands; parks and gardens; protection of the sea coast against erosion; road research; urban planning and development, human settlements.
- (m) Federal Ministry of Education: Incorporation of environmental education in school curricula.
- (n) Federal Ministry of Justice: Legal drafting of environmental and ecological laws and policies.
- (o) Ministry of Commerce and Tourism: Active involvement in negotiation process at Multilateral Trade Negotiations (MTN) fora, such as the GATT, aimed at formulating general guidelines for trade in Domestically Prohibited



Goods, including hazardous substances and toxic waste; development and conservation of the tourism-related aesthetic nature of the total environment.

- (p) Ministry of Foreign Affairs; International environmental negotiations.
  
- (q) Ministry of Solid Minerals; Quarries; geological surveys and mineral investigations; investment in mining activities.
  
- (r) Ministry of Finance: Budgetary allocations and issuance of permits on restocking of timber.

#### **State Initiatives:**

- 138.** In line with the National Policy on Environment and FEPA Decree all States of the Federation have established their Environmental Protection Agencies to carry out the mandate of implementing the National Policy and enforcing environmental standards and regulations. In addition to the States Environmental Protection Agencies (SEPA) are other related line ministries/agencies responsible for companies of the environment such as urban planning and development ministry, environmental sanitation task forces, forestry department etc.

#### **Private initiatives:**

- 139.** These include the establishment of the Manufacturers Association of Nigeria (MAN), the National Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA), the Oil Producers Trade Sector (OPTS), Clean Nigerian Associates (CNA). Environment Units have been established by some Oil Companies and manufacturing industries for more effective monitoring and protection of environment, health and safety matters.

#### **Main Environmental Non-Governmental Organisations.**

- 140.** There has been marked increase in the establishment of Non-governmental Organisations concerned with environment over the past two decades. These include the Forestry Association of Nigeria (FAN), Nigerian Conservation Foundation (NCF), Nigerian Environmental Society (NES), the Nigerian Environmental Study/Action Team (NEST), Foundation for Environmental Development and Education in Nigeria (FEDEN), Country Women Association of Nigeria (COWAN), the Ecological Society of Nigeria (ECOSON) the Friends of the Environment (FOTE), CASSAD, EANET Africa, the Media Practitioners Environment Group and the Fisheries Society of Nigeria (FISON), Nigeria Regional Group of the International Bar Association of

Nigeria, (NRG/IBA).

### **Capacity building and institutional strengthening**

141. Priority attached by government to capacity building in the area of environment is evident in a number of initiatives on public awareness, training, institutional strengthening and infra structural development embarked upon by FEPA and other line Ministries, agencies with environment related responsibilities.

FEPA's capacity building initiatives have included:

- a) Assistance to all states of the federation for the establishment and strengthening of State Environmental Protection Agencies (SEPA's) and the initiation and coordination of the development of State Environmental Action Plans (SEAP's).
- b) Training for state environmental Managers on specific environmental management issues including workshops on Environmental Impact Assessment and Enforcement methods.
- c) Institutional Strengthening of selected universities to serve as Centre of Excellence on specific environmental management areas namely: University of Lagos, Lagos (Environment and Human Resources Development); Federal University of Technology, Minna (Fresh Water Resources and Climate Change); University of Ibadan, Ibadan (Hazardous Waste and Clean production Technology); University of Maiduguri, Maiduguri (Desertification and Drought Control); University of Agriculture, Abeokuta (Forest Conservation and Biodiversity; Federal University of Technology, Owerri (Gully Erosion); Abubakar Tafawa Balewa University, Bauchi (Solid Mineral Research); and Usman Danfodio University, Sokoto (Energy and Environment).
- d) Collaboration with the Federal Ministry of Education to promote environmental education at the primary, secondary and tertiary levels - through the development and adoption of appropriate curriculum.
- e) Organisation of various sectoral workshops, seminars for other agencies, Non-Governmental Organisation (NGOs) and Community Based Organisations (CBOs). Various reputable NGOs organise training on environment for various government agencies on environment - related matters.

### **Collaboration with International Bodies:**

- 142.** In recognition of the importance of cooperation with other nations of the world for the effective protection of the global nation's environment, Government has over the years ensured collaboration with the international community in the area of the environment.
- 143.** Such collaborative efforts have resulted among other things in the nation's positive contribution to the development of appropriate policies, legislation action plans and programmes at regional and international levels for the protection of the environment.
- 144.** The nation's commitment to cooperation in environmental protection is evident in a number of International Environmental Conventions signed and or ratified by Government. Major ones include the following:
- a) 1963 Act Regarding Navigation and Economic Cooperation between the States of the Niger Basin.
  - b) 1964 Agreement on the River Niger Commission on Navigation and Transport
  - c) 1964 Convention on the Development of lake Chad Basin
  - d) 1968 African Convention on the Conservation of Nature and Natural Resources
  - e) 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage.
  - f) 1972 Convention on the Protection of the World Cultural and Natural Heritage.
  - g) 1972 Convention on the Prevention of Marine Pollution by the Dumping of Wastes.
  - h) 1973 Convention on International Trade in Endangered Species
  - i) 1979 Convention on the Conservation of Migratory Species of Wild Animals
  - j) 1981 Convention for Cooperation in the Protection and Development of the

## Marine and Coastal Environment of West and Central African Region.

- k) 1982 Convention on the Law of the Sea.
- l) 1985 Vienna Convention for the Protection of the Ozone Layer
- m) 1987 Montreal Protocol on Substances that Deplete the Ozone Layer
- n) 1989 Basel Convention on the Transboundary Movement of Hazardous Wastes and their Disposal.
- o) 1992 Framework Convention on Climate Change
- p) 1992 Convention on Biological Diversity
- q) 1994 Convention on Desertification.

### **145. Funding**

- a) Federal, State and Local Government budgetary allocations on the environment and its related activities.
- b) The Ecological Fund

As a practical demonstration of the government's commitment to environmental protection and improvement, the Federal Government, in 1981, set aside 1% of the Federation Account for the amelioration of ecological problems in the following areas;

- soil erosion and flood control,
- desertification and drought control,
- general environmental control (Refuse, solid waste, water hyacinth, industrial waste etc.)

This amount was recently increased to 2%. This amount is paid into a Special Ecological Fund.

c) Funding from Crude Oil Revenue

In order to effectively tackle the ecological problems that have arisen from the exploration of oil minerals, the government has established a fund from 3% of the revenue accruing from crude oil in the country. This was effected through the Oil Minerals Producing Areas Development Commission (OMPADEC) - Amendment Decree No. 23 of 1992 as amended by Decree No. 7 of 1996. The administration of the fund rests with the Management of the commission comprising one member from each of the nine Oil Mineral producing States namely, Rivers, Delta, Akwa Ibom, Imo, Edo, Ondo, Abia, Cross River, and Bayelsa States. An upward review of fund is proposed.

d) Organised Private sector funding which include Oil Companies, manufacturing industries, etc.

e) Financial contributions from Non-governmental Organisations are also known to run a number of environmental improvement initiatives which includes in particular, environmental awareness and education programmes.

f) Bilateral and Multilateral Financial Assistance - The country has benefited from several environmental financial assistance initiatives from such agencies like the World Bank, UNDP, UNEP, FAO, IUCN, UNICEF and ADB covering such areas as desertification control capacity building etc.

## **CONSTRAINTS TO IMPLEMENTATION**

- 146.** Uncoordinated piecemeal Policy and Legal Instruments in the Environment and natural resources conservation in Nigeria: This is evident in the existence of a large number of disparate legislation and policy documents directed at individual environmental or resources issues or problems.
- 147.** Weak Data Base: Inadequate data remain a major constraint to policy formulation, project planning and implementation in environment and natural resources conservation in Nigeria. The inadequate and unsystematic inventory of Nigeria's natural resources is responsible for the dearth of really detailed technical data that could be used to plan the management and national utilization of the resources.
- 148.** Inadequate Enforcement: Apart from inadequacy of the policy and legal instruments guiding the protection of the environment, the enforcement of the existing rules and regulations has been problematic especially as there are no clear demarcation of responsibilities between Federal and State Ministries and agencies as well as the inadequate monitoring and enforcement mechanism.

149. Institutional Problems: Failure to implement existing policies and legislation. Apart from the lack of coordination of the various government organisations handling environment and natural resources conservation there is also inadequate institutional capacities to manage the environmental and resource management network throughout the country. Also, there is lack of inter-sectoral communication and co-ordination.
150. Funding;- Lack of adequate funds, and or mismanagement, misuse and misappropriation of funds due to lack of transparency and accountability. I
151. Manpower: - Lack of trained manpower in the area of integrated environmental management. Also, there is inadequate environmental awareness on the importance of environment and natural resources management especially in the area of resource accounting.
152. Inadequate public awareness, thus lack of appreciation and involvement in environment related issues in development.
153. Political reasons, impacts and distortions.
154. Increasing tendency for arable and grazing lands to be used for human settlement.
155. “Top-down” approach in rural development projects; i.e. Insufficient popular participation in project design and implementation.
156. No built in evaluation, assessment (EIA) and monitoring procedures in project implementation.
157. Use of inappropriate technologies.

## **HOW TO GET THERE**

### **REDRESSING THE MAJOR EXISTING ENVIRONMENTAL PROBLEMS**

158. Nigeria is confronted by major environmental problems among which are: deforestation, drought and desertification, soil and coastal erosion, water pollution, oil pollution, water hyacinth, loss of biodiversity, flooding, urban decay and industrial pollution.
159. Studies have indicated that the country would suffer large ecological and economic

losses if this priority environmental problems continue unchecked. Initial estimate indicate that the costs of unsustainable development for our country are around US \$5.1 billion per year. Corrective action and new investment programmes are needed now to reduce and eventually avoid these losses.

- 160.** Measures to redress the major environmental issues in Nigeria are examined below with relevant mission statements and strategies.

### **Mission Statement**

**“Secure for Present and Future Generations a Safe and Healthy Environment, and a Sound and Prosperous Economy”**

### **OVERALL GOAL**

- 161.** The goal of environmental protection and natural resources conservation in Nigeria is to achieve sustainable development by the year 2010 and in particular, to:
- a) secure for all Nigerians a quality of environment adequate for their health and well being;
  - b) conserve and use the environment and natural resources for the benefit of present and future generations;
  - c) restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere to preserve biological diversity and the principle of optimum sustainable yield in the use of renewable natural resources and their ecosystems;
  - d) raise public awareness and promote understanding of essential linkages between the environment and development and to encourage individual and community participation in environmental improvement efforts; and
  - e) co-operate in good faith with other countries, international organizations/agencies through information exchange, technology cooperation to achieve optimal use of transboundary natural resources and effective prevention or abatement of trans-boundary environmental pollution, and the enhancement of environmental quality.

## **CORE OBJECTIVES**

- 162.** To achieve the above goal, strategies and action plans must be evolved to fulfill the following core objectives:
- a) redressing the major existing environmental problems; and
  - b) building on the gains already made and providing the means of implementing our transition to sustainable development by strengthening, improving and coordinating the implementation of environmental management.

## **FOREST PROTECTION**

### **Mission statement**

- 163.** Increase forest reserve from the present 10% to 25% of the total land area by the Year 2010.

### **Justification**

- 164.** World-wide forest reserves are intended to secure and retain land under forest. It is a pre-requisite for effective and prudent forest estate development. In many developed and developing countries, the forest estates cover at least 25% of the total land areas, the minimum level required by international standard. The first indicative forest inventory project completed in Nigeria in 1977 put reserved forest at approximately 10% of the total land area. Between 1976 and 1990, deforestation proceeded at an average rate of 400,000 ha. per annum, in 1981-1985 at 3.48% while in 1986-1990 it was 3.57% including some forest reserves. The FAO concluded that if this rate was maintained, the remaining forest area in Nigeria would disappear by the year 2020. The value of lost forest cover has been estimated at US\$750 million annually by the 1989 prices. The degradation and depletion of the forest reserve base has major effects on other sectors of the economy. The disappearance of forest cover leads to erosion, soil degradation and hydrological changes. The World Bank in 1990 estimates the value of forest cover which protects and regulates soil, water, wildlife, biodiversity and carbon fixation (in terms of value of avoided costs) at over US\$5 billion annually (World Bank, 1990). There is need to address this enormous loss to ensure sustainable provision of goods and services including wood, protection of soil and water catchment areas, stabilization of hydrological regime, carbon sequestration and provision of habitat to numerous fauna and flora. In addressing the problem, at least the minimum international standards of 25% of the land area should be the target.

### **Strategy**

- 165.** Ban the export of log wood until the 25% reserve forest cover is achieved.
- 166.** Provide a policy and institutional environment favourable for private investment in trees and forest resource management.
- 167.** Increase community participation in forest management and utilization.
- 168.** Encourage afforestation with species which provide other forest produce such as fruits, gum, etc. as an incentive to community participation in afforestation



- programme.
169. Undertake scientific management of the 10 million ha. of existing forest, including the existing 37,800 ha. of plantations and rehabilitation of existing 590 woodlot.
  170. Establish a total of 15 million hectares of plantation comprising plantings for various purposes such as shelterbelt, watershed conservation, rehabilitation of degraded sites, forest fruit trees, Gum Arabic etc.
  171. Promote agro-forestry with multi-purpose tree species to diversify farm produce and improve the soil environment.
  172. Encourage private sector industrial plantation establishment especially in already degraded forest estate.
  173. Adopt protection forestry development strategies which includes shelterbelt establishment, afforestation of eroded site, stabilization of sand dunes etc.
  174. Promote community woodlot which could include forest fruit trees, fuel wood plantation.
  175. Improve efficiency of use of fuel wood.
  176. Manufacture affordable bio-mass stoves.
  177. Develop other alternative sources of energy such as solar energy.
  178. Support research into conservation and improvement of soil, genetic resources, silviculture, utilization of forest products, agro-forestry, wildlife, afforestation of difficult sites.
  179. Encourage inter-sectoral collaboration between forestry and related productive sectors.
  180. Strengthen planning, monitoring and evaluation.
  181. Support human resources development.

## **ACTION AND RESPONSIBILITIES**

**182. CITIZENS**

- a) Comply with relevant extant laws
- b) Adopt the use of fuel efficient stoves
- c) Adopt Agro-forestry practices
- d) Participate in public awareness programmes
- e) Report defaulters of anti-logging laws.

**183. BUSINESS/NGO**

- a) Comply with all legislation in Forest Protection.
- b) Embark on and support public enlightenment campaigns.
- c) Sponsor training workshops on forest management.
- d) Adopt and maintain parks, awareness and gardens.
- e) Embark on developments of industrial plantations.

**GOVERNMENT**

**184. LOCAL:**

- a) Mobilise communities for mass participation in afforestation.
- b) Embark on enlightenment campaigns on bush burning, illegal logging and forest protection.
- c) Identify and designate as forest reserves.

- d) Solicit and support and involve traditional institutions in afforestation programme and environmental protection.
- e) popularise on new innovations, techniques and methods in forest management.

**185. STATE:**

- a) Review conditions for issuance of log extraction permits.
- b) Designate traditionally protected groves as strictly reserved areas.
- c) Identify and designate sites and species of conservation interest.
- d) Encourage industrial large scale plantation projects.
- e) Grant loans and create employment opportunities.
- f) Create awareness on scientific management of forest resources endowment.
- g) Formulate comprehensive plan for afforestation programmes.
- h) Maintain strategic forest reserves.
- i) Monitor and evaluate conservation programmes.

**186. FEDERAL:**

- a) Enact laws and regulations to enhance protection and increase the hecterage of forest estate.
- b) Embark on the constitution of more reserves toward achieving the 25% total reserve area.
- c) Strengthen, revive and adequately fund research institutes to effectively accomplish their mandates on forest research.

- d) Fund through annual budgetary alleviations and strengthen Federal Department of Forestry.
- e) provide easy access to land for private and industrial plantation establishment.
- f) Support the development of alternative energy fuel-efficient stoves.
- g) Fund Research into forest management.
- h) Establish more national botanical gardens.

## **EROSION CONTROL**

### **187. Mission statement:**

Stabilize all gully and coastal erosion sites nation-wide, restore all amenable erosion sites and enforce management practices aimed at preventing/minimising the incidence of erosion.

### **188. Justification:**

It is estimated that over 90% of the total land area of Nigeria is under severe sheet, rill and gully erosion with the severest gully erosion accounting for 80% of Nigeria total land area. Sheet erosion leads to impoverishment of the soil as nutrients are washed away, loss of livelihood as farmlands become wasteland thus increasing the menace of rural urban migration and pollution and siltation of available sources of drinking water. Human lives and properties especially buildings are endangered as they collapse into gullies. There are currently over 2,000 active gully erosion sites spread around the country.

Gully erosion is widespread in Abia, Imo, Anambra and Bayelsa states while coastal erosion is commonly found along the nation's 853km long coastline with estimated mean shoreline retreats of 2 - 30 metres per year. The worst affected areas include Victoria Beach in Lagos, Awoye/Molome in Ondo State, Ogborodo/Esravos and Forcados in Delta State, Brass in Bayelsa State and Ibeno - Eket in Akwa Ibom State. In recent years, the Federal Government spent almost ₦1.0 billion on the periodic rehabilitation of the Bar Beach in Lagos. In the far north where vegetation cover is scarce, wind erosion is a common land degradation factor which frequently sweeps

away the top soil.

Erosion is a continuous process once it sets in there is urgent need to stabilize all existing erosion sites if we are to stem the rate of soil degradation and loss of lands, forest resources and property and also restore all those erosional bad lands and gullies that are amenable to restoration.

## **189. Strategies**

1. Prepare and implement a comprehensive national policy on soil and coastal erosion and flood control.
2. Formulate and enforce regulations for soil and water conservation especially in erosion-prone areas.
3. Carry out national watershed delineation and characterization for use as a basis for development of an aggressive management and enforcement programme to protect and maintain the quality of the nation's lands, water and coastal resources and implement the programme.
4. Prepare periodic masterplan on the management of soil and coastline erosion and flood, and advise the Federal Government on the financial requirements for the implementation of such plans.
5. Carry out feasibility and scientific studies on soil erosion and related flood problems for the design of appropriate integrated remedial control measures.
6. Carry out public enlightenment campaigns on environmental degradation arising from poor land and water management practices.
7. Provide and promote training on environmental issues as they relate to flood, erosion, land degradation and water conservation.
8. Promote integrated ecosystem management with other agencies connected with agriculture, land use, soil and water conservation, rural development and coastal resources management including environmentally sound recreational use.
9. Strengthen national capacity through personnel development, provision of training facilities and research on combating climate-related ecological problems.

10. Strengthen capacity of the Environmental Management Support System (EMSS) for Remote Sensing data gathering, GIS facilities and development of disaster/environmental data bank.
11. Support agro-forestry and integrated Coastal Zone Management.
12. Encourage planted fallow in abandoned farmland using soil-enriching species.
13. Promote conservation farming and use of organic fertilizer and soil conditioners.
14. Establish viable contingency plans for tackling socio-economic and other problems resulting from coastal and other erosional disasters.

## **ACTION AND RESPONSIBILITIES**

### **190. CITIZENS:**

- a) Comply with regulations protecting vulnerable areas.
- b) Adhere to recommended environmentally sound farming techniques
- c) Support government efforts and report promptly disasters.

### **191. BUSINESS/NGO:**

- a) Build in awareness and enlightenment campaign in corporate plans.
- b) Comply with land use plans and regulations.
- c) Support and organise workshop to enhance manpower development.

### **GOVERNMENT:**

### **192. LOCAL:**

- a) Mobilize grassroots support for management of erosion prone areas.
- b) Encourage fallow periods in farming practices and ensure equitable distribution of Agro-forestry inputs.
- c) Facilitate education of the rural communities in soil and water conservation.

**193. STATE:**

- a) Implement national policy on soil and coastal erosion and flood control.
- b) Enforce and monitor compliance with laws and regulations on land use practices.
- c) Execute provisions of master plans on the management of soil and coastal erosion and flood.
- d) Establish institutions providing training and manpower development on environmental sciences.
- e) Mount public awareness campaign on soil and water management.
- f) Identify, categories and characterise erosion prone area.

**194. FEDERAL:**

- a) provide adequate fund for the preparation and formulation of masterplans on the management of soil and coastal erosion and flood.
- b) Strengthen erosion and flood management departments.
- c) Establish in the Ministry of Water Resources and Rural Development Watershed delineation and management committee/body.
- d) Sponsor studies and research on soil erosion, landslides and land subsidence.
- e) Put in place effective inter-ministerial multi-disciplinary monitoring and evaluation outfit for erosion control projects.
- f) Encourage and assist in feasibilities and scientific studies on soil and water management.

## **MANAGEMENT OF MUNICIPAL SOLID WASTES**

### **195. Mission Statement**

**Achieve not less than 80% reduction in volume of municipal solid waste generated at all levels and ensure its environmentally sound management.**

### **196. Justification**

- a) Need to minimise wastes generated at all levels - this is a clean and environmentally sound approach which will reduce the volume of wastes destined for disposal particularly in the face of increasing population and the concomitant value attached to land.
- b) Need to ensure environmentally sound waste management of Municipal Solid waste including elimination of litter on Nigerian streets and promote basic sanitation;
- c) Need to combat indiscipline and promote responsible care.
- d) Need to secure for all Nigerians a quality of environment adequate for their health and well being.

### **197. Strategies**

- a. Promote education and awareness on waste prevention, separation of waste at source of generation and other environmentally sound Municipal Waste management approaches.
- b. Develop and implement through the collaborative approach national guidelines and blue print for integrated management of Municipal Solid Waste, encourage markets for recovered waste products and ensure that those who generate waste pay the full cost of environmentally safe disposal.
- c. Promote strict compliance with anti-litter laws and regulations including ensuring provision of waste collection facilities.



- d. Promote the development and adoption of appropriate technologies for the conversion of organic municipal solid waste to compost and encourage markets for its use as soil conditioners.
- e. Review and strengthen existing laws and regulations for environmentally sound management of Municipal Solid Waste.
- f. Ensure provision, upgrading and maintenance of necessary infrastructure for environmentally sound collection, transportation and disposal of Municipal Solid Waste.
- g. Encourage and provide enabling environment for active private sector participation and commercialization of municipal solid waste management.
- h. Ensure and promote establishment of sanitary landfill sites.
- i. Strengthen local and state capabilities for environmentally sound management of Municipal Solid Waste through effective collaboration, cooperation and provision of necessary technical support;
- j. Promote simple, inexpensive, easy use of community/locally based technological initiatives for recovery, recycling, and re-use of municipal solid waste at all levels.
- k. Encourage active participation of Non-governmental Organizations and (NGOs) Community Based Organizations (CBOs) in promoting sound management of municipal solid waste.
- l. Promote environmentally sound collection, handling, transportation and disposal of other non-hazardous wastes.
- m. Encourage industries to produce bio-degradable packaging materials.
- n. Assess, monitor and improve on strategies for environmentally sound management of Municipal Solid Waste and non-hazardous wastes.
- o. Devote reasonable amount of the budget to addressing municipal solid management and ensure safe and healthy environment.

## **ACTIONS AND RESPONSIBILITIES**

### **198 CITIZENS**

- (a) change personal attitudes and practices which negates environmentally sound management of municipal solid waste.
- (b) patronise consumable goods with bio-degradable packaging
- (c) use compost as soil conditioner
- (d) separate domestic waste for proper disposal
- (e) participate in NGOs and CBOs with main objectives of municipal solid waste sensitization and management
- (f) comply with environment for management of non - hazardous wastes
- (g) comply with anti-litter laws and regulations

### **199. BUSINESS/NGO**

- (a) sponsor public enlightenment campaign in respect of environmentally sound municipal solid waste management.
- (b) adopt recycling and reuse of waste.
- (c) Support research and development in environmentally sound technologies for composting.
- (d) Encourage the use of indigenous technologies for collection, transportation and disposal of municipal solid waste
- (e) Adopting re-usable packaging and products
- (f) Set aside a percentage of annual profit for environmentally sound management of municipal solid waste.

## **GOVERNMENT**

### **200 LOCAL:**

- a) disseminate information, through formal and informal communication media, to the grassroots on proper management of solid waste.
- b) Charge waste collection fees commensurate to the value generated.
- c) Ensure proper disposal of municipal solid wastes in accordance/with the National guidelines and Blue print for environmentally sound management municipal solid wastes including non-hazardous waste.
- d) set aside at least one percentage of the budget from Federal allocation for municipal solid waste.

### **201 STATE:**

- a) implement the National Guidelines on Blue Print on Municipal Solid Waste Management.
- b) inventorize, review/up date and enforce anti-litter laws at the State Level.
- c) designate sanitary landfill sites. Establish infrastructures for composting.
- d) encourage private sector/NGOs participation in Municipal solid Waste management.
- e) organise competition and award for the local Government in the State and the cleanest town in each local government.
- f) establish, strengthen bodies to enforce anti-litter laws.

## **202 FEDERAL**

- a) develop Public Awareness Programme on waste minimization, prevention, recovery, recycling, re-use and disposal.
- b) provide incentives for the cleanest state in the federation.
- c) formulate National Guidelines and Blue Print on Management of Municipal Solid Wastes and other forms of non-hazardous wastes.
- d) support development and maintenance of indigenous technology for municipal solid wastes management.
- e) encourage public participation in policy review relating to solid waste management.
- f) provide incentives for companies manufacturing products with bio-degradable or recyclable packaging.
- g) strengthen Federal Environmental Protection Agency to enhance the capacity of the State and Local Governments to manage municipal solid waste in environmentally sound manner.

## **COMBATING DESERTIFICATION AND MITIGATING EFFECTS OF DROUGHT**

### **203. Mission Statement:**

**Arrest desert-like conditions, rehabilitate affected areas and institutionalize drought amelioration measures.**

### **204. Justification:**

Drought and desertification are the most important twin environmental problems affecting the 15 Northern most states of the country. Government, and at some instances in collaboration with donor countries, international organizations and institutions, has done a lot to combat desertification, and mitigate the effects of drought since the beginning of the 1970s. Efforts have been made through more efficient utilization and alternative sources of fuel wood, promulgation of State Edicts, afforestation and reforestation programmes. Despite all these efforts, desertification has continued its down-south movement which currently renders the areas north of Latitude 15° either desertified or prone to desertification. This process coupled with the effects of drought have continued to cripple the socio-economic lives of the people living in the affected areas. The negative impacts on the people call for urgent actions to check the desert encroachment currently estimated at about 1 km annually, and institutionalize drought ameliorating measures which should be periodically reviewed.

## 205 Strategies

- (a) implement the UN Convention to Combat Desertification
- (b) strengthen political and financial commitment of government towards drought and desertification control programmes in the country's national development plans;
- (c) intensify public awareness and education on causes and dangers associated with drought and desertification, as well as the contents of the CCD;
- (d) develop National Action Programmes (NAPs) in accordance with the spirit and aspiration of the CCD;
- (e) strengthen national and state institutions involved in drought and desertification control programmes;
- (f) promote sustainable agricultural practices and management of water resources;
- (g) encourage the development and adoption of efficient wood stoves and alternative sources of fuel wood;
- (h) establish drought early warning systems;
- (i) involve the local people in the designing, implementation and management of natural resources conservation programmes inimical to combating desertification and ameliorating the effects of drought;
- (j) encourage viable afforestation and reforestation programmes using tested drought resistant and/or economic tree species;
- (k) encourage international cooperation and partnership arrangements in the areas of training, research, development and transfer of affordable and acceptable environmentally sound technology and provision of new and additional technical and financial resources;
- (l) carry out survey of degraded lands, and implement preventive measures for lands that are not yet degraded or which are slightly degraded.

- (m) adopt an integrated approach addressing physical, biological and socio-economic aspects of desertification and drought.
- (n) cooperate with relevant Inter-and Non-governmental Organizations in combating desertification and mitigating the effects of drought;
- (o) strengthen the nation's food security system;
- (p) establish, review and enforce cattle routes and grazing reserves.

## **ACTIONS AND RESPONSIBILITIES**

### **206 CITIZENS**

- a) endeavour to familiarize with the contents of the Desertification convention.
- b) adopt the use of efficient wood stoves and alternative sources of fuel wood.
- c) participate in designing, implementation and management of natural resources conservation programmes.
- d) encourage the formation and active participation in local environmental associations/groups.
- e) encourage sustainable utilization of forest and water resources.
- f) participate in tree planting campaigns.

### **207. BUSINESS/NGOs**

- a) Sponsor public awareness activities on causes, consequences and remedial measures of desertification
- b) Participate in the preparation and implementation of National Action Programme (NAP).

- c) integrate drought and desertification into plans and policies.
- d) Cooperate with government, IGOs, other NGOs in the execution of programmes relevant to combating desertification.
- e) promote private initiatives in the establishment of woodlots, parks, etc. desertification prone areas.

## **GOVERNMENT**

### **208. LOCAL**

- a) Carry out awareness programmes to educate the local people on impact of aridity and sustainable livelihood.
- b) Sponsor programmes in local languages to promote sustainable agricultural practices and water resources management within the semi-arid region.
- c) encourage the formation of local environmental associations (school clubs, women and youth associations).
- d) Carry out viable afforestation and reforestation programmes and protect forest reserves.
- e) Enforce land use legislation and logging laws.
- f) train extension officers to liaise with community on conservation of national reserves (soil, forest and water).

### **209. STATE**

- a) Organise Workshops and seminars to sensitise the people about the contents of the CCD and the NAP.
- b) allocate adequate resources to programmes aimed at combating desertification and mitigation effects of drought.

- c) Strengthen agencies municipal in drought and desertification control programmes.
- d) Support the development of efficient wood stoves and the use of alternative source to fuel wood.

## **210. FEDERAL**

- a) Develop a National Action Plan to combat desertification and mitigate the effects of drought in the spirit of the CCD.
- b) Organize and coordinate workshops and seminars for policy and technical experts, and land users on desertification control.
- c) Support/review/implement relevant legislation on national resources, conservation and management.
- d) establish early warning systems.
- e) strengthen the food security system including storage and marketing facilities in rural areas.
- f) Strengthen institutions, organisations and Agencies involved in desertification control programme.
- g) Integrate environmental conservation in the natural education curriculum.
- h) Cooperate with all donor countries and agencies, multilateral, relevant IGOs and NGOs in combating desertification and mitigating the effects of drought in the spirit of the CCD.
- i) develop an organisational structure to clear and enhance drought preparedness and response.
- j) make more funds available through Ecological funds office to finance drought desertification programmes.



- k) Assess the extent of land degradation due to desertification.
- l) Institutionalize bottom -up approach in policies and implementation of drought and desertification control programmes.

## **RATIONAL USE OF OIL AND GAS RESOURCES**

### **211. Mission Statement**

Produce oil and gas in an environmentally responsible and socially non-disruptive way, endorse long term optimum returns from its exploitation and invest its proceeds in the development of sustainable societal objectives and projects.

### **212. Justification**

The oil and gas sector has continued to be the backbone of the Nigerian economy, contributing over 90% of the nations' foreign exchange earnings and at least 80% of the GDP. This situation is likely to continue unchallenged in the near future and well into the third millennium. The development of the oil and gas sector is, therefore, of utmost importance, especially since virtually all of the activities in both upstream and downstream sectors are not only pollution prone, but readily provoke social discord.

### **213. Strategies**

- a. develop and implement environmental assessment methodology, taking into account the economic, socio-cultural and conservational values of the environment;
- b. develop a comprehensive set of measures to mitigate any negative impact;
- c. ensure strict compliance with Environmental Impact Assessment Laws;
- d. implement Health, Safety and Environmental Management Systems and Quality Assurance Control;
- e. establish comprehensive waste management programmes;
- f. implement and continually update fully operational oil spill prevention programmes;
- g. enforce environmental risk assessment, to predict eventual consequences of accidents and take appropriate mitigation measures.
- h. design an appropriate facility and operational procedures;

- i. implement and continually update the national oil spill contingency plan for control, containment and cleanup;
- j. review and implement procedures to timely and adequately address the damage to the third parties;
- k. encourage the general public to report emergency incidents to regulatory bodies;
- l. ensure an internal and external market for gas;
- m. put in place continuous public awareness programme;
- n. stop gas flaring;
- o. ensure full compliance with legislation and Regulations and, Standards of the Federal Environmental Protection Agency (FEPA) and Department of Petroleum Resources;
- p. plan long term rational exploitation of both oil and gas reserves and draw up investment strategies.

## **ACTIONS AND RESPONSIBILITIES**

### **214. CITIZENS**

### **215. BUSINESS/NGO**

- a) Comply with environmental aiding regulation.

- b) Ensure strict compliance with Environmental Impact Assessment Decree 86 of 1992.
- c) Implement Health, Safety and Environmental Management System and Quality Assurance Control in the oil and gas sector.
- d) Establish/strengthen comprehensive waste management programme for facilities generating wastes.
- e) Update and implement operational oil spill prevention programmes through simulation, drills preventives maintenance etc.
- f) Design/implement customised and appropriate standard operational procedure for faulty.
- g) Implement procedure to address damages to third parties.
- h) Make available information and publish facility environments audit report on regulation basis.
- i) Put in place necessary facilities to stop gas flaring.
- j) Ensure compliance with Laws Regulations, and Standards of the Federal Environmental Protection Agency (FEPA) and Department of Petroleum Resources (DPR).
- k) Encouraging the general public and workers to report emergency incidents to regulation bodies through release of relevant information and data vital for emergency procedures.

## **GOVERNMENT**

### **216. LOCAL**

- a) Sensitise and mobilise the local community for mitigating any negative impact on the environment.
- b) Develop institutional, legal/enforcement and manpower requirement for ensuring strict compliance with Environmental Impact Assessment Law.
- c) Develop and implement a fully operational local oil spill prevention programme.
- d) Develop local enforcement strategies for environmental risk assessment for prediction of eventual consequences of accidents and take appropriate local mitigation measures.
- e) Implement and continually update the local aspect of the national oil spill contingency plan for control, contaminant and clean up.
- f) Participate in the review and implementation procedure for timely and adequate address of damage to the third parties.
- g) Participate in continuous public awareness programme.
- h) Plan long term rational exploitation of both oil and gas reserve and draw up local investment strategies.

### **217. STATE**

- a) Establish institutional and capacity to ensure and implementing of environmental methodology.
- b) Develop the capacity for the strict enforcement of Environmental Impact Assessment Decree 86 of 1992
- c) Establish a monitoring system for comprehensive facility waste management programmes.

- d) Set up a state-wide action for the enforcement of environmental risk assessment for the eventual consequences of accidents and monitor when appropriate mitigation action.
- e) Update any aspect of the national oil spill contingency plan.
- f) Establish a mechanism to enhance public report of emergency incidents to State Regulatory Bodies.
- g) Ensure a continuous public awareness on oil and gas operations.
- h) Cooperate with the Federal Environmental Protection Agency (FEPA) and Department of Petroleum Resources (DPR) in ensuring compliance with relevant laws, regulations and standards.

**218. FEDERAL**

- a) Develop Guidelines and implement environmental aiding procedures.
- b) Establish modalities for ensuring strict compliance with Environmental Impact Assessment Decree 86 of 1992.
- c) Ensure the implementation of Health, Safety and Environmental Management Systems and Quality Assurance Control in all facilities in Oil and Gas operations.
- d) implement operational oil spill prevention strategies.
- e) Enforcement of strict compliance with environmental risk assessment.
- f) Review the design of appropriate standard Operational procedure for facilities.
- g) Update and implement the national oil spill/hazardous material release contingency plan.
- h) Develop appropriate procedure to timely and adequately address damages to third parties.

- i) Empower and encourage the general public to report emergency incidents to regulatory bodies at National, State and Local Governments.
- j) Create an enabling environment for ensuring sustainable internal and external market for oil and gas.
- k) Ensure the Stoppage of gas flaring by the year 2010.
- l) Develop a public awareness programme on rational use of oil and gas
- m) Develop an action orientated programme plan for long-term rational exploitation of both oil and gas reserve and draw up investment strategies.
- n) Update, and enforce, laws and regulations relating to operations of all gas industries.
- o) Ensure adequate long term investment on the oil and gas industry.

## **PROTECTING AND MANAGING WATER RESOURCES**

### **219. Mission Statement:**

Ensure optimal development of water resources on an environmentally sound and sustainable basis for food production, water supply, hydro-power generation, transportation and recreational uses.

### **220. Justification**

The earth is a water planet and it is the abundance of this unique liquid that has made life possible on earth. Water has numerous physical, chemical and biological uses, and it could be used most efficiently when it is in its purest form. This purity, however, is threatened by human activities. In order to avert this trend, several countries instituted minimum water quality standards. Nigeria has not been left behind in this process. In Nigeria, there exists water quality standards for several use, but despite that the pollution and degradation of water quality continues unabated due to discharge of untreated effluent from industries, sewers, non protection of water sheds, hydrocarbon

contamination of ground water, saline intrusion of ground water, irresponsible mining activities to name a few. This is aggravated by the reckless and unregulated abstraction of ground water. These trends have to be arrested to forestall sufficient quality water.

## **221. Strategies**

- a. Establish inter-ministerial Committee on Water Shed and Water Quality Management.
- b. Provide potable water in all urban and rural areas.
- c. Eliminate discharge of untreated effluent.
- d. Ensure the implementation of the Water Resources Decree 101 of 1993.
- e. Develop Water quality, inventories and map.
- f. Restore polluted water, both surface and ground water especially in the large cities and the Delta.
- g. Promote research in ground water recharge and saline water intrusion.
- h. Develop sustainable irrigation practices for food production.
- i. Ensure the establishment of fisheries projects in relevant water resources management programmes.

## **ACTIONS AND RESPONSIBILITIES**

### **222. CITIZENS**

- a) Comply with provision of the Water Resources Regulations.
- b) Use water rationally.



- c) Adopt and environmentally friendly irrigation practices.
- d) Participate in community water supply schemes.

**223. BUSINESS/NGO**

- a) Observe Water regulations/standards.
- b) (Effluent Limitation) regulations of 1991.
- c) Cooperate with government restoration of pollution water.
- d) Adopt rational utilisation of Water Resources.
- e) Organise awareness programmes.

**GOVERNMENT**

**224. LOCAL**

- a) Support Community who embark on self help portable water projects.
- b) Enforce water regulations/standards
- c) Support public awareness programmes on water pollution.
- d) Establish and maintain information unit on Water Resources Management.
- e) Develop manpower on water resources management.
- f) Organise training workshop for local communities on sustainable irrigation practices.

**225. STATE**

- a) Establish functional laboratory for analysing and monitoring of water quality.
- b) Enforce water regulations/standards.
- c) Create enabling environment for NGO's to assist in Monitoring.
- e) Train staff on water resources management.
- f) Establish a viable water resources information management unit.
- g) Ensure public awareness on sustainable utilization of water resources.

**226. FEDERAL**

- a) Establish and support inter-ministerial committee on water quality and watershed management.
- b) Up-date and implement water resources master plan.
- c) Strengthen database information management center.
- d) Fund research programs in water resources management.
- e) Cooperate with international organisations on transboundary water resources management.
- f) Establish/strengthen capacity, for the formulation/review of water policies, legislation and enforcement.

**INDUSTRIAL AND AIR POLLUTION MANAGEMENT**

**227. Mission Statement:**

Attain full compliance with pollution abatement standards in industries, motor vehicles, air crafts and generating plants.

## **228. Justification:**

The unpleasant side effect of industrialization is the waste generated from industrial processes. These include liquid, gaseous, noise, heat, and solid wastes. Several reports confirm the non-inclusion of waste management provisions in industries cited in Nigeria. However, since the inception of the Federal Environmental Protection Agency, progress has been made in enacting laws and creating awareness for the need to install waste handling facilities in industries. These efforts have yielded fruits and the compliance level of industries with national industrial waste management requirements stand at about 20%. This is good progress in 2 years of the expiration of the moratorium for compliance. The progress should continue and mechanisms to achieve 80% compliance is being proposed for emplacement.

Another source of pollution is gaseous emission, most especially from fossil fuel burning processes and processes using gas. The obnoxious gases of concern include CO, NO<sub>x</sub>, SO<sub>x</sub>, VOC, HC, ODS, smoke and particulate originating from exhausts of vehicles, generators, aircraft, boilers, etc.

This sector of pollution source is a major health hazard in view of the fact that around these facilities, the highways and runways, the levels of the gases emitted are sometimes 10 times higher than permissible levels in Nigeria, Ghana, Europe and many other countries. It is therefore a requirement, in order to reduce the levels of these gases to tolerable ambient limits, to single out these sources of gaseous emissions and maintain them at the level of full compliance by the year 2010.

## **229. Strategies:**

- a) review existing national guidelines and standards to include vehicles, generating sets, aircraft etc.
- b) intensify public enlightenment campaign at all levels on the benefits of adequate maintenance, retrofitting, adopting effective technology, ensuring efficient energy use and increased cost benefit.
- c) maintain effective data base on industries and compliance status
- d) maintain register of technologies, vehicles, generating sets, aircraft for approval for manufacturing and importation
- e) introduce and enforce emission control certificates for vehicles, generating sets, aircrafts by 1999.
- f) eliminate ODS consuming processes
- g) enforce laws relating to the siting of new industries

- h) install a minimum of primary treatment on all new industries
- i) build secondary central treatment facilities in all major industrial estates in cities such as Lagos, Kano, Kaduna, Port-Harcourt, Warn, Ibadan and Enugu by 2005.
- j) invoke polluter pays principle immediately
- k) ensure 100% waste segregation, recycle and re-use by 1999
- l) promote research in Best Available Technology Effective for Local Adoption (BATELA)
- m) make Eco-Labeling compulsory for all products by the year 2000
- n) promote commercialization of sanitary landfill and incineration as appropriate
- o) encourage citizen empowerment in pollution control
- p) introduce green technologies and promote Environmental Management Systems (EMS) in all industrial facilities
- q) create environment fund for soft loans for environment economic incentives related activities in industries
- r) promote tax rebates for industries installing pollution abatement facilities

## **ACTIONS AND RESPONSIBILITIES**

### **230. CITIZEN**

- a) Participate in public enlightenment campaign on the benefits of adequate maintenance of plants and equipment.
- b) Report any incident of pollution to the appropriate authority.
- c) Observe emission control regulations/Standards.
- d) Avoid patronages of Ozone Depleting Substances.
- f) Avoid patronise product with Eco-labelling.

### **231. BUSINESS/NGO**

- a) Adopt pollution management policies
- b) Organise and Support Public Enlightenment on pollution management including ODS.
- c) Comply with FEPA Decree on Pollution Abatement in Industries and Facilities Generating Wastes Regulations.
- d) Comply with EIA Decree pollution abatement Decree and regulations on National Guidelines and FEPA Standard.

- e) Adopt technologies that promote wastes segregation recycle and re-use.
- f) Adopt Eco-labelling.

## **GOVERNMENT**

### **232. LOCAL**

- a) Participate in enforcement of emission control regulations
- b) Participate in programmes aimed at eliminating ODS processes and environmental pollution.
- c) Implement EIA Decree No 86 of 1992.

### **233. STATE**

- a) Establish/Strengthen environmental Information/data Management Unit on industries and technologies.
- b) introduce legislation on emission control
- c) Monitor compliance with EIA Decree, FEPA Decrees on pollution Abatement Control.
- d) Encourage industries that promote waste segregation, recycle and re-use.
- e) Promote Eco-labelling.
- f) Encourage Public participation in landfill and incineration.

### **234. FEDERAL**

- a) Establish and support inter-ministerial committee to review existing national guidelines and standard on industrial and air pollution.
- b) Integrate environmental engineering into formal education.
- c) Establish information management center.
- d) legislate on vehicular emission
- e) Evolve and enforce legislation eliminating ODS consuming processes.
- f) Enforce EIA Decree, and regulations on pollution abatement.

- g) Promote private participation in Sanitary landfill and incinerations
- h) Empower citizens to seek redress against offenders of environmental pollution.

## **BIODIVERSITY CONSERVATION**

### **235. Mission statement**

By the Year 2010, Nigeria's rich biological endowment together with the diverse ecosystems will be secured, its conservation and management assured through appreciation and sustainable utilization. Nigeria will continue to be active at the international arena while at the local level infra-structural, human and institutional capabilities are developed to ensure equitable sharing of its benefits over time.

### **236. Justification**

The continual depletion of plant and animal species, and the degradation of ecosystem due mostly to economic motives, have become an important issue of growing global concern. Despite the unbridled rate of increase in the exploitation of biodiversity globally, the rate of replacement has not been commensurate with use. Thus, the number of threatened and endangered species is continuously increasing. Biodiversity being the economic and socio-cultural base of human systems, providing unquantifiable benefits to man and the environment including shelter, food, clothing, medicine, recreation and resources for the industry, need to be conserved and managed sustainably for the present and future generations.

### **237. Strategies**

- a) Inventorise, identify and rehabilitate all threatened and endangered species of fauna and flora.
- b) Increase the network of protected areas to include all ecosystem types in consonance with internationally accepted categorization.
- c) Promote and enhance measures for both in-situ, and ex-situ conservation through identification, inventories, evaluation, monitoring, research, education, public awareness and training.
- d) Increase the nation's biodiversity management capability (human, infra-structural, institutional and technological).
- e) Develop economically and culturally sound strategies to combat biodiversity loss.
- f) Protect and promote policy guidance for bio prospecting and indigenous knowledge (intellectual property right).

- g) Rehabilitate degraded ecosystems.

## ACTIONS AND RESPONSIBILITIES

### 238. CITIZENS

- a) Obey all laws prohibiting hunting, collection and cutting of wild plants and animals.
- b) Participate in the enforcement of extant laws by reporting promptly any contravention of such laws to the relevant authorities.
- c) Participate in public awareness programmes on biodiversity conservation and prospecting.
- d) Embark on establishment of private woodlots and botanical Gardens/orchards.

### 239. BUSINESS/NGOs

- a) Embark on establishment of woodlots, plantations, botanical Gardens.
- b) Support and fund conservation projects.
- c) Finance research in bio- prospecting and biodiversity conservation.
- d) Embark on sustainable afforestation/reforestation programmes.

## GOVERNMENT

### 240. LOCAL

- a) Carry out inventory of biotic resources of all community forest reserves and forest plantations/wood lots, traditional/fetish groves, abandoned farmland/homesteads in the local government area.
- b) Survey/ collect common local fruit trees and preserve them in Local Government herbarium. Establish herbarium where such do not exist.
- c) Establish/reactivate local government nurseries for the purpose of propagation of endangered species.

- d) Identify and declare at least two sites of ecological importance as community forest reserves by the year 2010.

241. STATE

- a) Carry out biotic inventory of all Game reserves, game sanctuaries and forest reserves in the state.
- b) Establish captive breeding centres for endangered species of plants and animals for future reintroduction.
- c) Establish captive breeding centres for endangered species of plants and animals for future reintroduction.
- d) Establish Zoological Gardens.
- e) Upgrade at least two existing Forest reserves that are important wildlife habitats to Game reserves.
- f) Identify and constitute as forest reserves at least two areas of ecological importance in the state.

242. FEDERAL

- a) Identify and designate sites and species of conservation interest.
- b) Identify at least two wetlands of international importance especially as wild fowl habitats.
- c) Identify and declare as National Park at least one mangrove/marine ecosystem.
- d) Carry out a biotic inventory of all National Parks.
- e) Enact laws and regulations against the de-reservation of conservation areas.
- f) Establish a National arboretum in the Federal Capital Territory.
- g) Up-grade and enlarge the Forest Herbarium in Ibadan.
- h) Tax bio-prospecting and use the proceeds for biodiversity conservation
- i) Regulate and tax bio-prospecting on private lands.
- j) Designate centers of excellence for biodiversity studies.



## SUSTAINABLE HUMAN SETTLEMENTS

### 243. Mission statement

Achieve a state of environmentally sound human settlements free of slum conditions and in which all have access to adequate and affordable shelter, efficient infrastructure and services, which will foster sustainable economic growth, improved standard of living and well being of all Nigerians.

### 244. Justification

Over the years, Nigeria has been experiencing a rapid rate of urbanization. In 1952, 10% of the population lived in urban centres of 20,000 people and above which increased to 20% and 38% in 1970 and 1993, respectively. By the year 2010, 60% of the population will live in cities. On the growth in size of cities, the rate has equally been rapid. In 1960, Lagos and Ibadan were the only two cities with more than 500,000 people, which have increased to 9 in 1980. In 1990, about 14 cities have a population of over one million, which are expected to rise to 18 by the year 2000.

The problems and challenges posed by rapid urbanization in the country are immense, among which are inadequate shelter resulting in over crowding, inadequate and inefficient transportation systems, infra-structural facilities and services, development of slum areas in cities such as Lagos, Ibadan, Kano and Port Harcourt, and general poor environmental conditions. All these problems need to be redressed to improve the well being of the people.

### 245. Strategies.

- a) Adopt an integrated approach to the provision of water, electricity, sanitation, drainage and solid waste management.
- b) Ensure appropriate implementation and monitoring of master plans for major towns where they exist and preparation and implementation of new ones where they are non-existent or out of date.
- c) Raise awareness on environmental issues needed for sustainable human settlements.
- d) Commence and ensure the implementation of the National Plan of Action for sustainable human settlements development in Nigeria.
- e) Improve rural economies through the development of cottage and agro-allied industries to create job opportunities for rural dwellers so as to stem the tide of rural-urban migration.
- f) Provide not less than 75% of rural communities with social amenities to stimulate and sustain self-reliant development to curb rural-urban migration.

- g) Ensure effective implementation and enforcement of all existing relevant sectoral laws, standards and regulations that make for sustainable human settlements.
- h) Institutional strengthening with a view of making them more responsive and accountable.
- i) Encourage private sector and community participation in urban renewal activities, housing and infra-structural provision.
- j) Replicate the Sustainable Cities Programme (SCP) in major urban centres in Nigeria. The SCP emphasizes the two-way relationship between development and environment which promotes better awareness and understanding of the priority issues to be addressed in urban environment and development, better understanding of modern urban and environmental management approaches, and the most effective and lasting impact.
- k) Develop and implement guidelines and put in place appropriate institutional arrangement for effective land resources management.
- l) Establish a National Human Settlement Data Bank (NHSDB) to provide baseline information that can be used to better plan for sustainable human settlements.
- m) Renewal of all existing slum areas and prevent conditions that may lead to the development of new ones.
- n) Promote the development of parks and gardens and ensure retention of adequate natural green areas within human settlements to maintain ecological balance and amenity.
- o) Promote efficient and affordable transportation within urban and rural areas.
- p) Promote easy access to land, especially for low income families.
- q) Improve the revenue base for human settlement management.

## ACTIONS AND RESPONSIBILITIES

### 246. CITIZEN

- a) Participate in tree planting campaigns and beautification projects.
- b) Ensure national use of public utilities.
- c) Comply with land use and Town Planning Laws and Regulations.
- d) Observe rules of personal hygiene and sanitation laws.

247. BUSINESS/NGO

- a) Embark on beautification and landscaping.
- b) Participate in communities improvement programmes.
- c) Support the implementation of the Sustainable Cities Programmes (SCP).
- d) Encourage / establish cottage and agro-allied industries to create employment in the rural areas.

GOVERNMENT

248. LOCAL

- a) Provide infrastructure for rural communities (waste management, electricity, water, etc).
- b) Delineate green belts and parks.

249. STATE

- a) Provide affordable and sustainable human settlement.
- b) Simplify and enhance access to land.
- c) Update and enforce land use laws and regulations.
- d) Provide infrastructures for urban and rural settlements (electricity, water supply, roads, etc)
- e) Make available information on SCP to estate developers.
- f) Implement urban development master plan.

250. FEDERAL

- a) Prove support for the implementation of the Sustainable Cities Programme (SCP).
- b) Establish a National Human Settlement Data Bank (NHSDB).
- c) Strengthen the Federal Mortgage Bank, National Housing Fund, Federal Housing Authority and other relevant bodies to provide decent housing and

infrastructures for sustainable development.

## **MANAGING MINING SITES AND RESTORING MINING WASTELANDS.**

### 251. Mission Statement

Prevent and redress mining-related pollution and environmental degradation; reclaim and restore all identified degraded mining wastelands.

### 252. Justification:

Mining and its associated activities are a source of considerable environmental damage to surface water, groundwater and land. Health and safety risks are also considerable for people working in a mine or living close by. The resulting deterioration of the environment and human health, are evidenced in existing mining wastelands all over the country, especially in the Middle Belt States, including Plateau, Bauchi, Niger, as well as Borno, Yobe, Adamawa and Enugu States. The degradation of the natural environment has a negative effect on the long term growth potential of the country, even though immediate economic benefits are being derived by individual enterprises. It is important therefore that all approvals to initiate mining should be carried out in an environmentally sound manner, so as to minimize the negative impacts, and reclaim all abandoned and closed mining sites.

### 253. Strategies

- a) Inventorise all existing and closed mining sites.
- b) Enforce compliance with all National Mining Laws and Regulations, especially the EIA Law, Safety Code and Accident Prevention Regulations.
- c) Enforce mining Wasteland Reclamation measures for closed mining sites.
- d) Provide financial incentives to assist and encourage the reclamation of abandoned mining sites.
- e) Encourage public participation through dialogue with affected communities and other directly interested parties on the environmental aspects of different phases of mining activities.
- f) Adopt environmentally sound mining technologies and practices in all phases of mining activities, especially appropriate technologies to mitigate environmental impacts, including those from small-scale mining operations.
- g) Build capacity in environmental management in the mining industry.

## ACTIONS AND RESPONSIBILITIES

### 254. CITIZENS

- a) Abide by all mining laws and safety regulations.
- b) Assist in the location and reporting of abandoned mine sites for inventory and reclamation.

### 255. BUSINESS/NGO

- a) Comply with all mining laws and regulations especially the EIA law, safety code and accident prevention regulations.
- b) Integrated mined land reclamation into corporate policy.
- c) Embark on the adoption and updating of environmentally sound mining technologies.
- d) Mobilise Communities for mined land reclamation activities/programmes.
- e) Observe land use regulations to ensure that mining is not done in disaster prone areas.
- f) Develop man power for mined land reclamation.
- g) Organise and support public awareness activities on mined land reclamation.
- h) Organise and support seminars/workshop on mined land reclamation.

## GOVERNMENT

### 256. LOCAL

- a) Inventorise all abandoned mining sites in the local government for the purpose of rehabilitation/reclamation.
- b) Embark on public enlightenment campaigns to sensitize the public on the hazard of the use of abandoned mining sites.
- c) Embark on the reclamation of abandoned mining sites.

### 257. STATE

- a) Inventorise all abandoned mining sites in the state for the purpose of monitoring for safety and for reclamation.
- b) Embark on public enlightenment campaigns to sensitize the public on the dangers of the use of abandoned mining sites.

## 258. FEDERAL

- a) Legislate and ensure that reclamation of mined areas becomes the responsibility of mining companies and individuals.
- b) Evolve import duty incentives for equipment imported for the purpose of reclaiming mined land.
- c) Incorporate into mining policy automatic mining licenses for companies that comply with reclamation of mined sites.
- d) Strengthen the capability of enforcement outfits through adequate provision of equipment funding, for effective monitoring and enforcement.

## **MANAGING HAZARDOUS AND TOXIC WASTES, CHEMICALS AND RADIOACTIVE WASTE.**

### 259. Mission statement

Achieve 100% compliance with both international and national regulations, standards and guidelines on hazardous/toxic chemicals and waste management.

### 260. Justification

Nigeria has national regulations on hazardous/toxic chemicals and wastes and is also involved in the implementation of some of the International Convention, Procedures and Protocols on Hazardous/Toxic Wastes and Chemicals, Radioactive Waste Management. By the year 1998,

Nigeria shall develop national regulations on Basel Convention on Transboundary Movement of Toxic Wastes; Procedures/Protocols on “Prior Informed Consents” on Hazardous Chemicals in International Trade, etc.

## **Managing hazardous wastes**

### 261. Strategies

- a) Require and assist industries to change to cleaner production methods and adopt preventive and recycling technologies.
- b) Encourage the phasing out processes that produce high risks because of hazardous waste generation
- c) Carry out environmental audits of existing industries to improve hazardous waste management.
- d) producers to be responsible for the environmentally sound disposal of the hazardous wastes they generate.

- e) Establish public awareness and training programmes for industries and government workers on hazardous waste issues, especially waste minimization.
- f) Build treatment centres for hazardous waste either at national or state level. Industries should treat, recycle, re-use and dispose of wastes at or close to the site where they are created.
- g) create alert systems to detect illegal traffic in hazardous wastes.

### **Management of toxic chemicals**

#### 262. Strategies

- a) Control chemical hazards through pollution prevention, emission inventories, product labelling, use limitation procedures for safe handling and exposure regulations.
- b) Phase out/ban high risk chemicals that are toxic persistent and bio-accumulative and whose use cannot be adequately controlled or monitored.
- c) Develop policies which will be based as principle of producer/polluter liability.
- d) Emphasize the use of biological control methods for pest-control.
- e) Provide information on chemical hazard in local languages.
- f) Establish emergency-response centres including poison-control centres.
- g) Control the importation of banned or restricted chemicals/pesticides.
- h) Adopt community right-to-know programmes that provide information on accidental releases and annual routine emissions of toxic chemicals.

### **Management of radioactive waste**

#### 263. Strategies

- a) Promote ways to minimise and limit the generation of radioactive wastes.
- b) Develop/Acquire technology for safe handling of radioactive waste.
- c) Develop policy, which will make it mandatory for used radioactive materials to be returned to suppliers.
- d) Prohibit unauthorized storage or disposal of radioactive wastes.

### **ACTIONS AND RESPONSIBILITIES**

#### 264. CITIZENS

- a) Participate actively in promoting market based efforts in phasing out high risk facilities by patronised goods from low risk facilities (i.e. Environment – friendly

facilities).

- b) Participate actively in public Hearings of EIA of Hazardous Waste Treatment plants.
- c) Cooperate with regulatory bodies in the operation of alert systems for the detection of illegal traffic in hazardous wastes.

## 265. BUSINESS/NGO

- a) Participate in promoting interest in cleaner production method and adopt preventive and recycling technologies.
- b) Adopt environmentally sound technologies that produce low risk in hazardous waste generation.
- c) Support public awareness and training of staff of industries on hazardous waste issues especially on waste minimisation.
- d) Cooperate with the implementation of Hazardous material Alert Network to detect illegal traffic in hazardous wastes.
- e) Producers to be responsible for environmentally sound disposal of the hazardous waste generated.

## GOVERNMENT

### 266. LOCAL

- a) Organise awareness campaign on the dangers of hazardous and Radioactive waste.
- b) Create at the local government level, comprehensive alert system to detect illegal traffic in hazardous wastes.

### 267. STATE

- i. Strengthen the State Environmental Regulatory Bodies to participate in management of hazardous and radioactive waste.
- ii. Carry out public awareness on chemical hazards in local languages.



- c) Implement the “Community Right-to-Know” programme.

268. FEDERAL

- a) Enhance the capacity of FEPA to assist industries to change to cleaner production method.
- b) Establish Guidelines for adoption by industries for preventive and recycling technologies.
- iii. Demand on periodic basis (2 yearly) Facility Environmental Audit Report (FEAR) for all facility generating wastes.
- d) Establish a center for training of workers on hazardous waste issues.
- e) Construct Hazardous waste Treatment facilities.
- f) Develop regulations for alternative treatment technology such as reuse, recycling and disposal option for toxic and hazardous wastes.
- g) Establish a National HAZARDOUS WASTE ALERT NETWORK (HAZMAT-ALERT-NET) for the EARLY detection of illegal traffic in hazardous wastes.
- h) Develop a computer-based lock into the Internet for the EARLY detection of illegal traffic in hazardous wastes and radioactive waste.
- i) Cooperate with the international community for bilateral and multilateral establishment of a “SHIP LINKED CONSENT” (SLC) for reporting movements of vessels in involvement of transportation of toxic, hazardous and radioactive waste.

EMERGENCY PREPAREDNESS AND MANAGEMENT

269. Mission statement

Be able to mitigate promptly the negative impacts of natural and man-made disasters on human settlements, national economy and the environment.

270. Justification.

Nigeria has had a number of emergency situations arising from disasters - natural and man-made. The natural phenomena include tropical storms, land erosion, windstorms, floods, drought, desertification, human diseases, coastal erosion, livestock diseases, crop pests and diseases, wildfire, harmattan haze and landslides. Other potential hazards include earthquakes and volcanoes. The major man-made hazards include civil strife; road, water and air traffic accidents; and technological episodes such as oil spills, hazardous wastes dumping and industrial accidents. All of above call for urgent action for the strengthening of our emergency

preparedness to reduce our peoples' vulnerability and cushion the impact of disasters on our settlements, economy and environment.

#### 271. Strategies

- a) Prepare comprehensive hazard maps and vulnerability analysis for the country by;
  - i. compiling historical data of disaster occurrence.
  - ii. analysis of meteorological, seismological, agricultural and environmental records.
  - iii. employing satellite imagery and the GIS system to plot the hazard maps.
- b) Establish very effective early warning systems for meteorological, geophysical, biological, social and industrial hazards by;
  - i. enhancing the meteorological services.
  - ii. effective monitoring of pests and disease epidemics.
  - iii. resuscitation of seismographic stations and the existing seismological centres.
  - iv. development of reliable biological indicators.
  - v) building of a viable network for early warning information dissemination.
- c) develop and maintain prompt emergency response mechanisms and contingency plans by:
  - i. making an inventory of all existing resources for emergency response for easy marshalling at times of disasters.
  - ii. establishing a body to coordinate emergency response to reduce duplication of efforts and enhance accountability.
  - iii. formulating a national emergency policy and an emergency plan.
- iv. Mount a sustained public awareness and education programme on hazard preparedness by:
  - i. engaging military and Para-military forces as well as voluntary organisations in drills on emergency response including search and rescue etc.
  - ii. preparing and integrating emergency preparedness into school curriculum.

## **ACTIONS AND RESPONSIBILITIES**

### **272. CITIZENS**

- a) Understand the hazards to which your locality is vulnerable.
- b) Participate in emergency preparedness drills and training.
- c) Master some survival techniques.
- d) Maintain at all times, some emergency supplies of first aid, food and water.
- e) Volunteer to help at times of disaster.

### **273. BUSINESS/NGO**

- a) Integrate emergency preparedness into corporate policy.
- b) Prepare and occasionally update emergency contingency plans.
- c) Organise and support public awareness activities on disaster management.
- d) Observe land use regulations and building codes.
- v. Render material and logistics support at times of disasters.

## **GOVERNMENT**

### **274. LOCAL**

- a) Mobilise communities for emergency preparedness.
- b) Establish Emergency Preparedness Committee.
- c) Formulate Emergency Plans and maintain strategic reserves of food, drugs, blankets, etc.
- d) Organise simulation exercises and drills in emergency response.
- f) Install and maintain communication equipment for effective early warning.
- f) Organise specialized training for emergency workers.

### **275. STATE**

- a) Establish/strengthen State Emergency Response Agency.
- b) Formulate a State Emergency Plan.
- c) Establish early warning communication system.
- d) Implement the Land Use Act and Building Code.
- e) Undertake disaster prevention schemes such as construction of embankments along urban streams and rivers prone to flooding.
- f) Train disaster management personnel.

#### 276. FEDERAL

- a) Upgrade the National Emergency Relief Agency to become the National Emergency Management Authority.
- b) Formulate a National Emergency Policy and a National Emergency Plan.
- c) Establish a multi-disciplinary National Technical Committee on Disaster Management.
- d) Undertake the preparation of a hazard map of Nigeria.
- vi. Establish an effective national communication network for early warning and emergency response.
- vii. Sponsor, through the Ecological Fund, disaster prevention projects such as river dredging, river and coastal levies, shelterbelts, pest control, control of human disease epidemics, etc.
- g) Strengthen the Nigerian Security and Civil Defence Corps to adequately participate in emergency preparedness.
- h) Cooperate with and coordinate the activities of international relief agencies.
- i) Establish and adequately equip a Search and Rescue Unit.
- j) Strengthen agencies responsible for forecasting and early warning, such as the Federal Meteorological Services.

### FLOOD MANAGEMENT

#### 277. Mission Statement

Achieve effective management of urban, river and coastal flooding.

#### 278. Justification

Flooding in one form or other affects at least 20% of the nation's population. It cuts across the society from the urban residents to the rural dwellers. Flooding is a threat to physical infrastructures, including residential accommodation, commercial, and industrial properties, roads, rail lines, bridges, port installations etc. It also destroys farmlands, including standing crops. Losses due to flooding run into many billions of Naira per year.

279. Strategies

- a) Enforce compliance with town planning/urban laws/edicts.
- b) Build embankments and levies along rivers and coastline prone to flood.
- c) Establish rainstorm early warning system.
- d) Establish and monitor weather stations, river and tidal gauges.
- e) Ensure appropriate management of dams.
- f) Ensure proper maintenance of existing drainage channels.
- g) Enforce environmental sanitation laws in towns and cities.

ACTIONS AND RESPONSIBILITIES

280. CITIZEN

- a) Abide by the building code and land use regulations.
- b) Avoid siting of residence, farm or working place along drainages and flood plains.
- c) Understand the flooding history of your area.
- d) Avoid dumping refuse in waterways and sewers.

281. BUSINESS/NGO

- a) Comply with land use regulations and the building code.
- b) Support public awareness activities on flood management.
- c) Prepare flood contingency plans.
- d) Participate in flood disaster response activities.

GOVERNMENT

282. LOCAL

- a) enforce land use planning and building codes.
- b) construct and maintain township drainages.
- c) include flood management in Local Contingency Plan.
- d) enforce environmental sanitation.
- e) establish and maintain flood early warning system.

283. STATE

- a) supervise the implementation of land use plans.
- b) construct and maintain river levees and small check dams along streams and rivers prone to flash floods.
- c) draw up flood emergency plans.
- d) install and monitor river and tidal gauges.
- e) mount public awareness programme on flood management.

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#### 284. FEDERAL

- a) update national land use regulations and launch the Building Code.
- b) upgrade the national network of meteorological and hydrological stations.
- c) strengthen the Federal Meteorological Services to effectively provide reliable weather forecasting.
- d) sponsor through the Ecological Problems Fund, flood control projects such as river dredging and coastal dykes.
- e) prepare and periodically update flood emergency plans.
- viii. control the construction of dams and ensure the synchronization of their operations and maintenance.

### CONTROL OF THE INFESTATION OF WATER HYACINTH AND OTHER INVASIVE WEEDS

#### 285. Mission statement

Eliminate the water hyacinth and other invasive plant in all water systems.

#### 286. Justification

Water hyacinth and other invasive weeds menace currently hampers normal economic activities in the riverine areas where the spread of the weeds has been established. They also impend free river communication in waterways and above all, the spread of the weed obstructs fishing activities and degrades water quality.

#### 287. Strategies

- a) Inventorise the spread of water hyacinth and other invasive weeds in all the river systems.

- b) Develop an infestation index map to determine control options.
- c) Adopt an appropriate integrated control option to ensure that the weeds are no longer menace.
- d) Encourage sub-regional cooperation.

## ACTIONS AND RESPONSIBILITIES

### 288. CITIZEN

- a) Endeavour to know the menace of water weeds.
- b) Participate in control activities.

### 289. BUSINESS/NGOs

- a) Sponsor environmental awareness programme on the menace of the weeds.
- b) Provide financial and technical assistance to government in the control of the weeds.
- c) Carry out pilot programmes on control of weeds infection.

## GOVERNMENT

### 290. LOCAL

- a) Develop and implement awareness programme on water hyacinth and other invasive weeds control.
- b) Collate and collect on the infestation, spread and control of the weeds.
- c) Mobilize the communities to clear weeds in the local waters.
- d) Implement relevant government legislation on water weeds control.

### 291. STATE

- a) Collaborate with the effected States management of water weeds control.
- b) Implement laws and regulations on prevention of water weed infestations.
- b) Employ the use of environmentally sound methods of water weeds control (e.g. biological and mechanical entry methods).

### 292. FEDERAL

- a) Assess the extent of water hyacinth and other invasive weeds in our water systems.
- b) Build capacity of institutions and agencies involved in water weeds prevention and

management.

- c) Invest in research into beneficial use of the weeds.
- d) Evolve effective legislation against infestation and spread of the weeds.
- e) Encourage international and sub-regional cooperation in the control of weeds.

## **STRENGTHENING, IMPROVING AND COORDINATING IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT**

293. In order to build on the gains so far achieved in environmental protection efforts and ensure that environmental protection programmes are anchored on solid foundation, the following should be implemented as part of the necessary pre-requisites for the achievement of sustainable development in Nigeria:

- (a) Integrating environment into development planning and decision making.
- (b) Strengthening the legal basis for sustainable development.
- (c) Creating and improving capacity for Sustainable Development.
- (d) Harmonizing Federal, States and Local Governments responsibilities for environmental management.
- e) Adopting and promoting the use of existing environmentally friendly technology.
- f) Promoting Research and Development of environmentally Sound Technologies.
- (g) Forging Viable Partnership among various Stakeholders and Interest Groups both at National and International levels.
- h) Managing Environmental Information and education to generate adequate public awareness for Decision Making.
- i) Internalizing Environmental Costs Through the use of Economic Instrument in the management of Natural Resources.
- j) Alleviating Poverty.
- k) Improving the funding for Sustainable Development.

## **STRENGTHENING THE LEGAL BASIS FOR SUSTAINABLE DEVELOPMENT**

294. Justification:

Towards achieving sustainable development, it is necessary to enhance the capacity of FEPA and other responsible organizations to enforce environmentally friendly practices.

295. Strategies



- (a) Expand the fundamental objectives and state policy in the constitution to include the clause on sustainable development as a national goal.
- (b) Government to adopt the “Polluter Pays Principle” as an instrument of environmental protection policy and management strategy.
- (c) Ensure speedy translation of international agreement protocols and conventions on environment and conservation into national laws and regulations and their enforcement.

## ACTIONS AND RESPONSIBILITIES

### 296. CITIZENS

- a) Imbibe the culture of responsible practice towards the environment.
- b) Comply with the provisions of national legislation and international instruments on environmental protection and natural resources conservation compliance.

### 297. BUSINESS/NGO

- a) Promote awareness on the National laws, regulations and international conventions and protocols.
- b) Comply with the provisions of the environmental laws generally and particularly those relating to the private industrial sector.

## GOVERNMENT

### 298. LOCAL

- a) Make and enforce bye-laws on matters relating to environment upon which the local Government has competence to legislate.

### 299. STATE

- a) Make an inventory of state environmental laws and regulations and review/update them to include the “Polluter Pay Principle”.
- b) Enforce the environmental laws and regulations at the state level.

### 300. FEDERAL

- a) Amend the relevant chapter of the Nigerian Constitution on the fundamental objectives and principles of State Policy to include a clause on sustainable development as a national goal.
- b) Integrate the “Polluter Pay Principle” into the National Policy on Environment.
- c) Review/update existing environmental Law and regulations to include the “Polluter Pay Principle” as part of remedy for environmental damage.
- d) Enact national legislation to implement the provisions of international conventions, protocols and agreements on environment and conservation to which Nigeria is a signatory.
- e) Embark on institutional strengthening and capacity building of Federal Environmental Protection Agency and other relevant organisations and agencies to be able to enforce the various regulatory or instruments and render technical input to other bodies.

## INTEGRATING ENVIRONMENT INTO DEVELOPMENT PLANNING AND DECISION-MAKING

### 301. Mission Statement

To integrate environment into economic and sectoral policies, planning and decision-making processes.

### 302. Strategies

- (a) Improve the provisions of the Environmental Impact Assessment (EIA) Decree 86 of 1992, and ensure its proper implementation.
- (b) In line with the current practice at the Federal level, State Governments should establish Sustainable Development Units (SDU) in their Budget and Economic Office with the same responsibility and function as the S.D.U. in the National Planning Commission and the Urban and Regional Planning Department of the Ministry of Works and Housing to enable land use management for sustainable development.
- (c) Adopt the system of national accounting to adequately reflect the extent to which economic development activities have increased or decreased environmental pollution and natural resources on which future economic and social development depend.

## ACTIONS AND RESPONSIBILITIES

### 303. BUSINESS/NGO

- (a) Ensure compliance with Environmental Impact Assessment Decree 1992.
- (b) Embark on Public awareness campaigns on the need to maintain equilibrium between development and environmental protection.
- (c) Ensure internalization of environmental cost of resources depletion and use.

### GOVERNMENT

#### 304. LOCAL

- a) Ensure appropriate land use practices.
- b) Strengthen relevant units in the local government for environmental management.

#### 305. STATE

- a) Create an alert/early warning system on projects that are not environmentally sustainable.
- b) Establish Sustainable Development Unit in the Budget and Economic Office.

#### 306. FEDERAL

- a) Review/strengthen the EIA Decree No. 86 of 1992.
- b) Strengthen institutional capacity of FEPA to evaluate the environmental impacts of proposed policies and programmes.
- c) Integrate into decision-making processes the concept of sustainable development in all sectors.
- d) Provide support to the states in establishing Sustainable Development Units.

### **HARMONIZING OF FEDERAL AND STATES RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT**

#### 307. Justification

To ensure optimum use of our limited technical and financial resources

and to achieve optimum results in meeting the national goals and guidelines for environmental protection and sustainable development, the following should be the role of the Federal, State and Local Governments in Environmental Management.

### 308. Federal Responsibilities

The Federal responsibilities and functions should include:

- (a) the establishment of environmental quality standards and regulatory guide-lines and procedures for implementing, enforcing and evaluating them;
- (b) the establishment of guidelines and procedures for project and policy environmental assessment screening and environmental impact assessment as well as the necessary capacity to initiate and review them;
- (c) the establishment of a Federal Environmental Action Plans for execution by Federal Institutions;
- (d) the establishment of consistent guidelines for state environmental management plans and action programs and the coordination of national and inter-State programs, projects and exchanges of information on environment;
- (e) the review of federal policies which might have significant adverse impacts on the environment or natural resource base;
- (f) the collection, analysis and distribution of data of relevance to environmental impact assessment policy analysis and environmental monitoring within the country as well as the preparation of periodic national reports on the state of the environment.
- (g) the allocation and evaluation of the use of Federal funds for special environmental restoration, protection and improvement programs and projects;
- (h) the establishment and coordination of exchanges of environmental information and expertise with relevant international agencies and international non-governmental organizations;
- (i) the development of special training programs for upgrading knowledge and skills in the various disciplines required for environmental management.

### State and Local Governments Responsibilities

State responsibilities should include the following;

- (a) the monitoring and enforcement of environmental quality standards and regulations as may be designated by FEPA to states;
- (b) the regular assessment of environmental conditions and trends in rural areas and identification of programs and actions needed to reduce or avoid further environmental degradation and pollution;

- © the application of the national environmental assessment guidelines and procedures for all development policies and projects likely to have adverse environmental impacts within the State;
- (d) the development of a State environmental management plan with priorities for action to reverse environmental degradation, protect human health and the environment and accelerate progress towards environmental improvement and sustainable development;
- (e) the development of contingency plans and capabilities to respond quickly and effectively to environmental emergencies such as natural disasters or major industrial accidents;
- (f) the collection, analysis and distribution of data of relevance to environmental impact assessments, policy analysis and environmental monitoring within the State and Local governments;
- (g) the preparation of periodic reports on the state of the environment in their State or community for submission to the National Council on the Environment.

## **CREATING AND IMPROVING CAPACITY FOR SUSTAINABLE DEVELOPMENT**

### 309. Justification

The ability to develop more sustainably depends on the capacity of Nigerian citizens and institutions to understand the complex environment and development issues so that they can make the right development choices. Citizens need to have the expertise to understand the potential and the limits of the environment. This will require scientific, technological, organizational, institutional and other skills. There is also the need to increase the sensitivity of the Nigerian populace to, and involvement in finding solutions for environmental and ethical awareness, values and attitudes, skills and behaviour needed for sustainable development.

### 310. Strategies

- a) By 1998, develop a blueprint for environmental education and public awareness;
- b) By 1999, ensure that environmental education is a core ingredient of the educational system at the primary, secondary and tertiary levels of education.
- c) Make environment and development education available to **people of all ages**.
- d) Involve school children in local studies on environmental health, including safe drinking water, sanitation, food and the environmental and economic impacts of resource use.
- e) Encourage all sectors of society, including industries, universities, governments, non-governmental organizations, and community organizations to train people in environmental management.

- f) Work with the media, theatre groups, entertainment and advertising industries to promote a more active public debate on the environment.
- g) Train decision-makers on the basic tenets of environment and sustainable programmes for different strata of the environment on a continuing basis.
- h) Develop and implement tailor-made environmental education and awareness programmes for different strata of the environment on a continuing basis.
- i) Institutionalize environmental responsibility through regular competitions and awards such as cleanest village in each local government, cleanest local government in each state and cleanest state in the Federation, as well as environmentally-friendly industries on a sectoral basis.

## **ACTIONS AND RESPONSIBILITIES**

### **311. CITIZENS**

- a) Participate in environment and development education programmes.
- b) Participate in community activities aimed at developing environmental awareness at the local level.
- c) Promote public debate on environment issues through drama/theatre plays and local entertainment.
- d) Participate in regular competitions on environmental issues and awards at the individual/village level.

### **312. BUSINESS/NGOs**

- a) Develop man power through training of personnel
- b) Establish environmental departments
- c) Provide scholarship awards to individuals and institutions
- d) Organise seminars and workshop on environment and development.
- e) Sponsor awareness programmes on environmental conservation/protection.
- f) Participate in environmentally - friendly industry award competitions.

## GOVERNMENT

### 313. LOCAL

- a) Participate in the cleanest Government in the state award competitions.
- b) Carry out public awareness campaigns on the environment
- c) Sponsor drama, television sports documentaries on the environment.
- d) Train personnel on environmental management.

### 314. STATE

- a) Participate in cleanest state in the Federation award competitions.
- b) Carry out public awareness campaigns on the environment.
- c) Sponsor programmes through the electronic and print media on the environment.
- d) Train state Government personnel on environmental management.
- e) Encourage/facilitate the teaching of environmental conservation/protection in state schools and colleges.
- f) Provide scholarships for state indigenes to study environmental management.
- g) Organize seminars/workshops on environmental issues.
  
- h) Finance research projects/studies on the environment.
- i) Encourage/facilitate the publication of magazines, bulletins, newsletters on the environment.

### 315. FEDERAL

- a) Develop a master plan for the teaching of environmental education on public awareness by the year 1998.
- b) Integrate environmental education into curriculum for formal and informal education.

## **INTERNALIZING ENVIRONMENTAL COSTS THROUGH THE USE OF ECONOMIC INSTRUMENTS IN THE MANAGEMENT OF NATURAL RESOURCES**

### 316. Justification

Environmental laws and regulations are important but cannot alone be expected to deal with the problems of environment and development. Prices, markets and governmental fiscal and economic policies also play a complementary role in shaping attitudes and behaviour towards the environment. There is the tendency by the market to treat the resources of the atmosphere, internal waters, the oceans etc as free goods. It “externalises” or transfers to the broader community, the costs of air, water, land and noise pollution and of resource depletion. The broader community shoulders the costs in the form of damages to health, property and ecosystems. At the national level, these various forms of damage including declining human, industrial and agricultural productivity translate into drastic reduction in the GNP.

### 317. Strategies

- a) incorporate environmental costs in the decisions of producers and consumers so as to reverse the tendency to treat the environment as ‘free goods’ and to stop passing these costs on to other parts of society or to future generations;
- b) move more fully towards integration of social and environmental costs into economic activities so that prices will appropriately reflect the true and total value of resources and contribute towards the prevention of environmental degradation; towards this end, are the following scheduled implementation. Study and campaign 1998 – 1999. Phased implementation 2000 -2005 Full reflection of cost 2010.
- c) include, wherever appropriate, the use of market principles in the framing of economic instruments and policies to pursue sustainable development, in particular, to consider gradually building on experience with economic instruments and market mechanisms by undertaking to reorient policies, keeping in mind national plans, priorities and objectives.
- d) Achieve full compliance of the “Polluter Pays Principle” by 2010.

## **ACTIONS AND RESPONSIBILITIES**

### 318. CITIZEN

- a) Patronise only environment-friendly consumer goods.

### 319. BUSINESS/NGO

- a) Adopt green accounting and integrate environmental costs in financial and economic reporting.



- b) Pay assessed emission/effluent discharge fees.
- c) Invest in pollution abatement and take advantage of tax reliefs and improved corporate image.
- d) Support awareness campaigns to expound the morality of the polluter-pays-principle.

## GOVERNMENT

### 320. LOCAL

- a) Reflect environmental costs in economic analysis of projects.
- b) Assess and include resource use charges in commercial tax.
- c) Evolve incentive system for compliance and environment-friendly practices.

### 321. STATE

- a) Review appropriately prices of resources such as stumpage, water rates, land compensation, fishing permits, etc.
- b) Charge realistic emission/discharge rates.
- c) Develop and implement an incentive system for clean production.
- d) Reflect environmental costs in economic analysis of projects.
  - e) Organise training workshops on environmental economics.

### 322. FEDERAL

- a) Establish an Environmental Economics Unit and promote environmental accounting at the national level.
- b) Elaborate a compendium of economic instruments and incentive system for environmental management.
- c) Support studies and research in the economics of resource use and environmental economics.
- d) Train adequate personnel for the administration of the economic instruments and incentive system.

## ALLEVIATING POVERTY

### 323. Justification

There is an inextricable link between poverty and environmental degradation. Poverty can be the cause and/or the effect of environmental degradation. Poverty itself is a complex multidimensional problem with origins in both the national and international domains. While managing resources sustainably, an environmental policy that focuses mainly on the conservation and protection of resources must take due account of those who depend on the resources for their livelihoods. Otherwise it could have an adverse impact both on poverty alleviation and on chances for long-term success in resource and environmental conservation. Equally, a development policy that focuses mainly on increasing the production of goods without addressing the sustainability of the resource base will sooner or later run into declining productivity, and thereby aggravating poverty. A specific anti-poverty strategy is therefore one of the basic conditions for ensuring sustainable development. The long-term objective of enabling all people to achieve sustainable livelihoods should provide an integrating factor that allows policies to address issues of development, sustainable resource management and poverty eradication simultaneously.

#### 324. Strategies

- a) Provide all persons with the opportunity to earn a sustainable livelihood;
- b) Implement policies and strategies that promote sustainable adequate levels of funding and focus on integrated human development policies, including income generation, increased local control of resources, local institution strengthening and capacity-building and greater involvement of non-governmental organizations and local levels of government as delivery mechanisms;
- c) Develop all poverty-stricken areas through integrated strategies and programmes of sound and sustainable management of the environment, resource mobilization, poverty eradication and alleviation, employment and income generation;
- d) Creating a focus in national development plans and budgets on investment in human capital, with special policies and programmes directed at rural areas, the urban poor, women and children.
- e) Establishing appropriate infrastructure and support system to facilitate the alleviation of poverty by implementing projects, programmes, enterprises and life styles sustainable at grass roots level.

### ACTIONS AND RESPONSIBILITIES

#### 325. CITIZENS

- a) Participate in economically viable and sustainable livelihood.
- b) Participate in cooperative and monetary schemes.
- c) Provide necessary security to infrastructures and support systems which facilitate implementation of project, programmes, enterprises and life styles for the improvement of the lives of the people.

#### 326. BUSINESS/NGOs

- a) Provide and increase employment opportunities for sustainable income generation.
- b) Establish factories and small scale industries in rural communities.
- c) Encourage establishment of local associations which aim at improving the lives of the people (e.g. youth/women farmers' unions).
- d) Organize awareness programmes to enhance participation in socio-economic ventures.

## GOVERNMENT

### 327. LOCAL

- a) Implement policies to raise education standards in elementary schools.
- b) Identify and improve support structures (e.g. financing, marketing, transportation and information) for effective rural development.
- c) Implement the FSP and FEAP programmes.

### 328. STATE

- a) Establish farming communes to mob up unemployed youth and accelerate food production.
- b) Implement policies, which enable the poor easy access to credit facilities for financing economically viable small scale enterprises.
- c) Ensure implementation of FSP FEAP programme.
- d) Implement national developmental plans particularly those directed at rural areas, the urban poor women and children.
- e) Provide appropriate infrastructure and supports systems (e.g. road, market, storage facilities) to facilitate poverty alleviation.
- f) Empower women for economic independence.

### 329. FEDERAL

- a) Create enabling environment which ensures sustainable livelihood.
- b) Establish or strengthen financial mechanising such as People's Bank, Community Bank, Agricultural Loan Scheme, which provide levels credit for small enterprises.
- c) Evolve policies to ensure income generation, increase local control of resources, local institutions strengthening, capacity building and greater involvement of NGOs at all level.
- d) Put in place relevant infrastructures and support systems to facilitate implementation of poverty projects.
- e) Develop conservation based empowerment strategy to sustainable alleviate poverty.

## **PROMOTE RESEARCH AND DEVELOPMENT OF ENVIRONMENTALLY SOUND TECHNOLOGIES**

### 330. Justification

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

### 331. Strategies

- a) ensure access to scientific and technological information, including information on state-of-the-art technologies;
- b) promote, facilitate, and finance, as appropriate, the access to and the acquisition of environmentally sound technologies and corresponding know-how;
- c) facilitate the maintenance and promotion of environmentally sound indigenous technologies that may have been neglected or displaced, paying particular attention to their priority needs and taking into account the complementary roles of men and women;
- d) support local capacity-building so as to assess, adopt, manage and apply environmentally sound technologies. This could be achieved largely by:
  - i. Human resource development;
  - ii. strengthening of institutional capacities for research and development and programme implementation;
  - iii. integrated sector assessments of technology needs, in accordance with our national plans, objectives and priorities;
- e) promote long-term technological partnerships between holders of environmentally sound technologies and potential users.

## **ACTIONS AND RESPONSIBILITIES**

### 332 CITIZEN

- a) Participate in activities of non-governmental - organisations with emphasis on dissemination of information on environmental sound technologies.

333. BUSINESS/NGO

- a) Participate in activities geared towards ensuring access to information on environmentally sound technology.
- b) Organize Technology Exhibition/fair to promote public awareness and disseminate information on environmental technology.
- c) Invest in the promotion of research and development for the acquisition of environmentally sound technologies and corresponding know-how.
- d) Support the maintenance and promotion of environmentally sound indigenous technologies.
- e) Collaborate with Researchers and inventors of environmentally sound technologies.

GOVERNMENT

334. LOCAL

- a) Participate in gathering information on indigenous environmental technologies.

335. STATE

- a) Strengthen Institutional capacity to participate in research and development of environmentally sound technologies.
- b) Assist industries to adopt, manage and apply environmentally sound technologies.
- c) Encourage local initiatives to improve upon indigenous technologies.

336. FEDERAL

- a) Organising activities (Trade fairs, symposium, Business - Government Round tables) to ensure access to scientific and technological information.
- b) Establish a funding mechanism (such as soft loans, and market based incentives) to promote, and facilitate access to environmentally-sound technologies.
- c) Promote a national compendium of indigenous technologies and establish a national framework of programs toward its maintenance and promotion.

- d) Build capacity of relevant institutions for research and development of environmentally sound technologies.
- e) Establish a national framework and action programs for promoting long term research partnership with the private sector.

## **FORGING VIABLE PARTNERSHIP AMONG VARIOUS STAKEHOLDERS AND INTEREST GROUPS BOTH AT NATIONAL AND INTERNATIONAL LEVELS**

### **337. Justification**

Government might be well committed to the objectives, policies and mechanisms for achieving sustainable development, but it will take the commitment and genuine involvement of all groups in society to make these goals a reality. It requires the forging of a partnership of not only shareholders, but the stakeholders in environmental issues as well. Broad public participation in policy development combined with greater accountability is essential to achieving sustainable development. Individuals, groups and organizations need to know about and participate in environment and development decisions, particularly those that can affect their communities.

For people to make informed decisions, they must have access to all relevant information on environment and development issues. This includes information on products and activities that have or are likely to have significant impact on the environment, and information on environmental protection measures.

Considering the transboundary nature of environmental problems and the fact that no nation on its own can achieve sustainable development, there is also the need to foster bilateral and multilateral cooperation to facilitate exchange of ideas and the transfer of sound environmental technologies and concerted global action affordable and adaptable to local needs.

### **338. Strategies**

- a) Mount very effective machinery to enhance environmental awareness through public enlightenment and environmental education at all levels of the society.
- b) Establish environmental data banks and information networks.
- c) Create fora for building consensus and for exchange of information among all stakeholders and interest groups on sustainable development decisions.
- d) Strengthen/establish mutually beneficial relationship with bilateral and multilateral environmental bodies including regional and international NGOs.

## **ACTIONS AND RESPONSIBILITIES**

### **339. CITIZEN**

- a) As stakeholder in the environment take interest in all matters of the environment.
- b) Cooperate with other stakeholders and appreciate their right to a healthy environment.

340. BUSINESS/NGO

- a) Participate in environmental fora for information exchange at national and international levels.
- b) Cooperate with government environmental agencies at state and federal levels in pursuit of environmental management.
- c) Form sectoral environmental associations.

GOVERNMENT

341. LOCAL

- a) Organise environmental management workshops for the various segments of society.
- b) Involve various interest groups including women, youth, farmers, etc. in environmental policy implementation.
- c) Establish an environment liaison desk to coordinate environmental CBOs and NGOs.

342. STATE

- a) Create an inventory of environmental organisations and establish a network for information exchange.
- b) Organise periodic consultative meetings with stakeholders in the environment.
- c) Co-opt NGOs and CBOs in environmental sanitation task forces.

343. FEDERAL

- a) Encourage the formation of umbrella bodies for environmental groups.
- b) Involve stakeholders in national workshops and conferences including the National Council on Environment meetings.
- c) Establish a National Sustainable Development Network to enhance information exchange and consultation amongst the various interest groups.
- d) Create a desk in FEPA for liaison with national and international NGOs.

**MANAGING ENVIRONMENTAL INFORMATION FOR SUSTAINABLE DEVELOPMENT**

344. Justification

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

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

#### 345. Strategy

- a) By 1998, establish a functional data management and information systems capable of managing environmental trends over time;
- b) By 1999, develop a baseline database on the state of urban air, freshwater, forests and rangelands, desertification, soil degradation, biodiversity, industrial pollution, oil pollution;
- c) Monitor the state of the Nigerian environment on a continuous basis and publish regular bulletins to guide policy formation and decision-making processes;
- d) Acquire and/or seek necessary assistance for direct access to information systems such as data from satellites;
- e) Create greater harmonization among different environmental data gathering organizations;
- f) Develop inter-sectoral framework and infrastructure for sharing of data, expertise and resources on environmental information;
- g) Promote standardization of data formats, and minimize and/or eliminate duplication of efforts in environmental information management;
- h) Develop an information access and use policy, including copy- right issues for environmental information;
- i) Develop a core of indigenous professionals for the efficient management of Geographical Information Systems and other spatial information technologies.

### **ACTIONS AND RESPONSIBILITIES**

#### 346. CITIZENS

- a) Co-operate fully with individuals, organisation and agencies involved in data collection.
- b) Cooperate to ensure safety of facilities for data collection and processing located



in their localities.

347. BUSINESS/NGOS:

- a) Integrate data management plans and policies in their activities.
- b) Sensitize the public on the importance of data acquisition for environmental management.
- c) Participate in collection of credible data.
- d) Acquire appropriate technology for data collection for submission to National Data Centre.
- e) Train staff on data management.

GOVERNMENT:

348. LOCAL:

- a) Establish a focal point for environmental data gathering.
- b) Liaise with business communities and NGOs to harmonise activities in data acquisition.

349. STATE:

- a) Implement data management plans and policies.
- b) Establish functional data management and information system units in all relevant departments by 1998.
- c) Co-ordinate and harmonize data formats to minimize duplication efforts.
- d) Implement policies on copy right issues for environmental information.
- e) Train staff in data acquisition and processing by 1999.

350. FEDERAL:

- a) Build capacity in data management and information system for continuous monitoring of the environment.
- b) Develop baseline database on all components/sectors of the environment (e.g. air, soil, land, flora and fauna) by 1999.

- c) Establish contact with other organs of the society for direct access to their information systems to promote inter-sectoral sharing of data, expertise and resources and environmental information.
- d) Develop standards of data formats
- e) Establish a National Database Centre (GIS)
- f) Train indigenous staff to manage the centre.
- g) Put in place appropriate legislation on accessing information and use, integrating citizens right to know including copyright issues for environmental information.

## **FINANCING ENVIRONMENTAL PROTECTION AND NATURAL RESOURCES CONSERVATION THROUGH NATIONAL AND INTERNATIONAL FUNDING MECHANISMS**

### 351. Justification

Huge financial investments are needed to implement the various programmes and activities for Environmental Protection and Natural Resources Conservation. The cost of inaction far outweighs the financial implication of ensuring a safe and healthy environment for the present and future generations. A World Bank Report in 1990 estimated the cost of ameliorating only six out of the numerous environmental problems in Nigeria at about US \$5 billion annually which is the equivalent of the National budget. At present, this estimated cost has more than doubled. With the increasing pressure on the environment and natural resources, the cost of inaction would rise exponentially and manifest in the expansion of desertified areas, loss of our agricultural and natural resources, declining agricultural productivity, impaired health of the citizenry, polluted surface and underground waters, expansion of coastlines into prime property and agricultural areas, etc.

While appreciating government, non-governmental, international and individual efforts at providing current financial requirements for environmental protection and natural resources conservation, there is the need to streamline the current funding mechanism to make them more efficient and responsive to the core objective of environmental protection and natural resources conservation. Also, in view of the magnitude of environmental problems and the rising cost of amelioration, there is need to provide new and additional financial resources that are both adequate and predictable to halt and reverse the current menace of environment and natural resources degradation and seek full use and continuing improvement of current funding mechanisms.

The 2% Ecological Funds is a welcome development, but not adequate. The Fund should be promptly disbursed for the amelioration of ecological problems beginning this fiscal year.

### 352. Strategies:

- a) ensure adequate annual budgetary provision for policy formulation and implementation of the National Policy on Environment;
- b) include, in particular, the amelioration of key environmental problems;

- c) There is a need to create a Fund for FEPA to administer rapid response to industrial accidents with significant adverse environmental impact;
- d) Devote greater resources to the alleviation of the critical ecological problem in the oil producing areas;
- e) Take full advantage of bilateral and multilateral technical and financial assistance in environmental protection and ensure maximum benefits from the financial mechanisms for the implementation of the Conventions and Protocols ratified by Nigeria;

#### ACTIONS AND RESPONSIBILITIES:

##### 353. CITIZEN

- a) Support community environmental enhancement projects.

##### 354. BUSINESS/NGO

- a) Support community initiative in community programmes.
- b) Explore the possibilities of technical cooperation with international NGOs and technical partners for environmental projects.

#### GOVERNMENT

##### 355. LOCAL

- a) Make adequate budgetary allocation for environmental programmes
- b) Set aside a certain percentage of the annual budget for environmental projects.

##### 356. STATE

- a) Make adequate budgetary allocations for environmental protection and resources conservation.
- b) Compliment and support international assistance.
- c) Encourage private sectors and NGOs to contribute towards environmental projects.

##### 357. FEDERAL

- a) Create a rapid response fund to handle industrial accidents.
- b) Explore opportunities provided by international conventions and protocols on environmental issues.
- c) Secure foreign aid and loans for environmental protection.
- d) Explore the feasibility of Debt for Nature Swap (DNS).

## **CHAPTER FOUR**

### **CONCLUSION**

#### **A. SPORTS**

358. In order to realise Nigeria's Vision Statement in Sports by 2010, the following actions will be taken:

- a. Provide facilities for training our sportsmen to be one of the leading sporting nations in the world.
- b. Each state capital to build and/or maintain a stadium, including indoor games facilities.
- c. The seven stadia under the control of the government should be up-graded to improve Nigeria's chances of hosting international sporting events and facilitate training.

- d. Sports have been categorized for priority attention according to the country's skills endowment in these sports (see main report)
- e. The administration machinery for sports should be made efficient, stable and consistent.
- f. Proper rewards and welfare schemes will be created for sportsmen while sports will be adequately funded (the strategies for doing this are enumerated).
- g. Sports will be used as an instrument of development, diplomacy and national unity.

## B. ENVIRONMENT AND ECOLOGY

359. For Nigeria to develop within the context of sustainable environment, the Vision Committee proposes that strategies and policies be built around the following issues:

- a. Forest protection;
- b. Erosion control;
- c. Municipal solid wastes;
- d. Desertification and drought;
- e. Oil pollution;
- f. Protection and managing water resources;
- g. Industrial and air pollution management;
- h. Bio-diversity conservation;
- i. Sustainable human settlements;
- j. Managing mining sites and restoring mining wastelands;
- k. Managing hazardous and toxic wastes, chemicals and radioactive waste;
- l. Emergency preparedness and management;
- m. Control of the infestation of water hyacinth and other invasive weed;  
and
- n. Environmental planning.

## **APPENDIX I**

### **MEMBERS OF THE SPORTS GROUP**

- i. Brig. Gen. S.O. Ogbemudia. (rtd) Leader

ii.	Air Commodore Anthony Ikazoboh (rtd)	Member
iii.	Air Commodore Sampson Emeka Omeruah (rtd)	“
iv.	Col. Abdulmumuni Aminu (rtd)	
v.	Alh. R.A. Adejumo	“
vi.	Alh. Yusuf G. Ali	“
vii.	Chief F.C. Okonta	“
viii.	Alh. Buba Ahmed	“
ix.	Alh. Ibrahim Galadima	“
x.	Mr. Adegboyega Ojora	“
xi.	Chief N.O. Idowu	“
xii.	Mr. Islay Rhind	“
xiii.	Mrs. Violet Odogwu-Nwajei	Member
xiv.	Mr. P.C. Chigbo	“
xv.	Mrs. O. Abisogun Alo	“
xvi.	Mr. Patrick Ekeji	Scribe.

## APPENDIX II

### ENVIRONMENT AND DEVELOPMENT

#### INDICATORS

CAPITAL:	Abuja	TOTAL AREA:	923,773 Sq. Km
POPULATION (1991)		TOTAL:	88.5 million.
	MALE:		44.5 million
	FEMALE:		44.0 million
	Under 15 YEARS:		43%
	URBAN:		30%.
	RURAL:		70%
	LAGOS:		5.7

CITIES > 500,000            12  
BIRTH RATE:                    49/1,000.  
  
DEATH RATE:                    16/1,000  
  
INFANT MORTALITY:            82/1,000  
  
LIFE EXPECTANCY:              48 Years.

#### CLIMATE.

RAINFALL:    SOUTH:        1,000mm,  
                  NORTH:        500-1,000mm.  
MIN. TEMPERATURES:    20<sup>0</sup> - 25<sup>0</sup>C.  
MAX. TEMPERATURE:    28<sup>0</sup> - 32<sup>0</sup>c

#### ECONOMY

GNP:                            US\$23.7 billion. GPN Per Capital: US\$268.  
GDP Structure (%):    Agriculture: 31.6%, Petroleum: 29.8 %  
Services:                      26.3 %, Manufacturing  
  
Indirect taxes:              2.3%, Construction: 1.4%  
External Debt:                US\$33.4 billion (1991).

#### FOREIGN TRADE AND INVESTMENT

MAIN Imports:                Medicines, vehicles, sugar, stock fish, cement.  
MAIN Exports:                Crude petroleum, cocoa, palm kernel, tin metal, rubber.  
TERMS OF TRADE:            Declining. NET Flow of Public external  
Capital:                        Negative  
NET Flow of Private external Capital: Negligible.  
NET Direct Private investment: Negligible.

#### GOVERNMENT EXPENDITURE

Total:                            US\$4.1 billion, Defence: 5.42%  
Education:                      8.3 %, Housing and Social Services: 14.8%  
Economic Services:            11.8%. Others: 1.4%

## ENERGY

Consumption per Capita: 263kg coal equiv.

## EMPLOYMENT.

WORKING AGE (15 - 64 years): 57%

AGRICULTURE:

60% DISTRIBUTION:

17 % INFRASTRUCTURE.

ROADS: 150, 000Km.

RAILWAY: 3,013KM,

RADIOS: 10 million.

Television sets: 2 million.

TELEPHONES: 483,496 Lines (1989)

## EDUCATION

Net enrolment:

Gross enrolment ratio (1990);	Primary:	72.0%
Secondary: 20.0%		
Tertiary: 3.55%		
Female: 41.0%		
Male: 63.0%		
Overall: 54.1 %		

## HEALTH

Infant mortality (1992) 84/1000

Life expectancy at birth (1993) 50.6 year

Access to safe water (1990 - 95)

Urban: 63.0%

Rural: 26.0%

Overall: 40.0%

Access to sanitation (1990-95)

Urban 40.0%

Rural: 30.0%

Overall: 35.0%



Access to health service (1985-93)

Urban: 85.0%

Rural: 62.0%

Overall: 66.0%

Population/Doctor ratio (1988 - 91): 5,8825

Population per hospital bed: 1,3046

## AGRICULTURE

Cropland: 34%. Pasture: 23% Forest and Woodland: 16%.

Settlements and Infrastructure: 17 %.

## FORESTRY.

Forest and Woodland: 9.6 million ha.

Annual Deforestation, 1980s: 350,000 ha.

Annual Fuelwood and char-coal Production: 55 million m<sup>3</sup>

Annual roundwood production: 8 million m<sup>3</sup>

Protected areas:

National Parks: 4.

Special Reserves: 35

Biological Diversity.

Plant species: 4,600. Mammals: 274.

Birds: 839. Frogs and Toads: 109

Snakes: 110. Insects: 20,000. Endangered plants: 484.

Endangered animals: 20

SOURCES: Nigerian Government and World Bank reports and UNDP, Human Development Report, 1995 and 1996.

ENVIRONMENT AND ECOLOGY TEAM

i)	Chief P. C. Asiodu	Leader
ii)	The Hon. Minister of Works & Housing	Member
iii)	Maj. Gen. O. S. I. Nwachuku (red)	“
iv)	Dr Bukar Shuaib	“
v)	Prof. Gadzama, V.C. University of Maiduguri	‘
vi)	Mr. Brian Anderson	“
vii)	Dr Adegoke Adegoye	“
vii)	Dr Maiwada Omar	Scribe