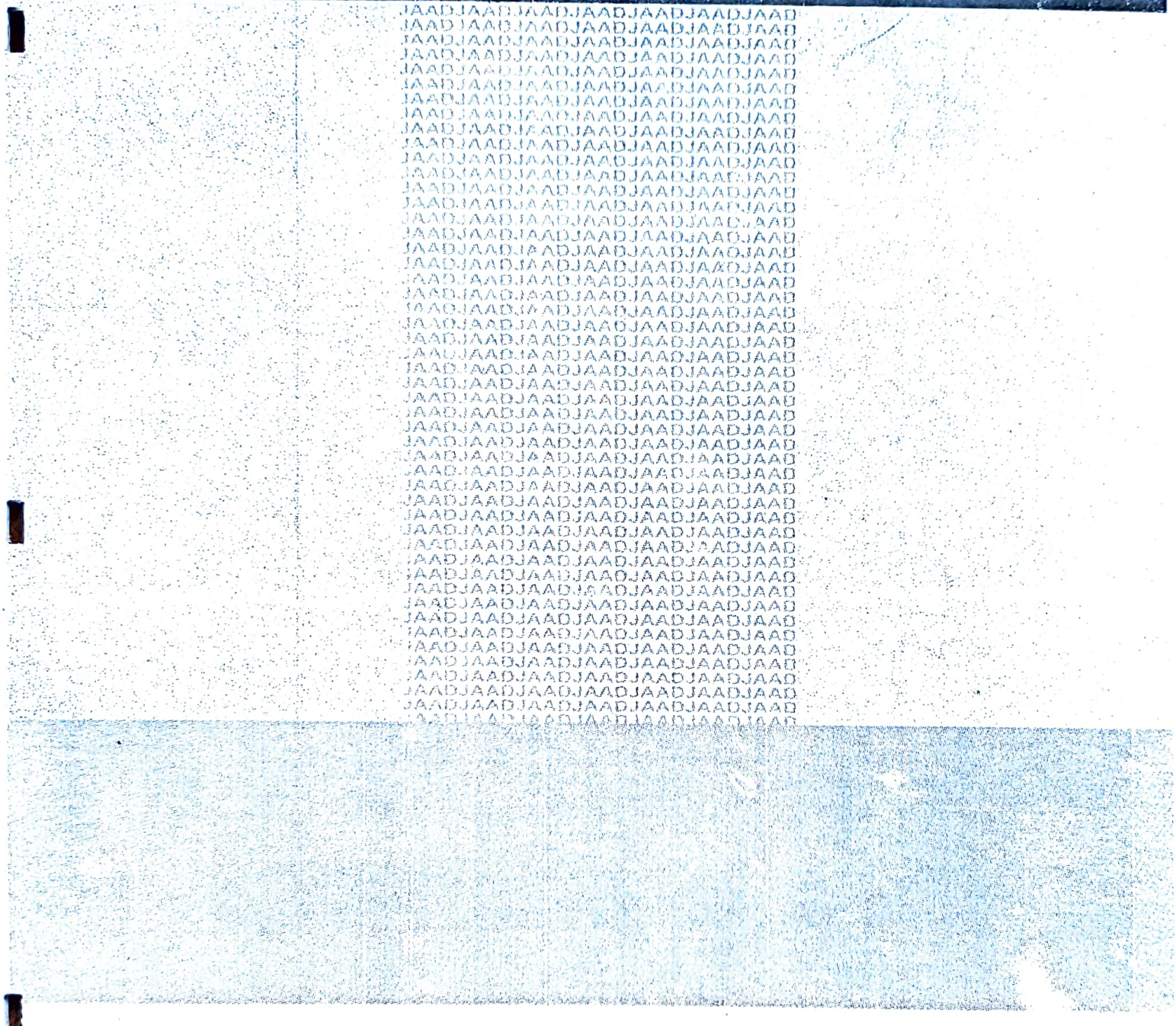
JOURNAL OF ACADEMIC ADVANCEMENT

Vol. 1, No. 1, August., 2009



ACADEMIC RESEARCH ASSOCIATES
Abuja, Nigeria

CONTENTS

	ARTICLE	PAGE
1.	Impact of Cooperatives on Poverty: Lesson from Rural Farm Households in Ogun State, Nigeria, Idowu, A. O. & Ologbon A. C.	1 -13
2.	Safer Design of Agro-Processing Equipment used in Oyo State, Nigeria, Adebiyi K. A. & Oladeji J. T.	14-22
3.	Refractive Indices of Materials: The Effects of Volume and Concentration, A. S. Ogungbe et al	23-30
4.	Fuel Characterization of Briquettes Produced from Corncob and Rice Husk Residues, Oladeji J. T.	31-36
5.	Development of Motorized Lawn Mover, Oladeji J. T. & Olafimihan, E. O.	37-40
6.	Towards Enhanced Nigerian Built Environment: Tripartite Partnership for Effective Re-Afforestation Strategy, Olaniyan, Sule Adeniyi	41-49
7.	Political Parties and Sustainable Democracy in Nigeria: An Appraisal of Opposition Parties, Danjuma Aku	50-59
8.	Effect of non-Convectional Culture – Media on Growth and Survival of Clarias garepinus fry raised in homestead concrete tanks, Oyin Olukunle and Agbola, G. O.	60-64
9.	Appraising the Trend of Policy on Poverty Alleviation Programmes in Nigeria with Emphasis on NAPEP, Ugoh C. Samuel	65-75
10.	Adult Education and the Attainment of the Millennium Development Goals in Nigeria, Zuofa, C. C.	76-82
11.	Efficacy of Intrasound on the Early stage of Achilles Tendon Healing in crush injury, Akinbo S.R.A et al	83-90
12.	Citizens' Political Education and its Roles in Development of Democracy and Good Governance, Esuola, Olukayode Segun	91-100

TOWARDS ENHANCED NIGERIAN BUILT ENVIRONMENT: TRIPARTITE PARTNERSHIP FOR EFFECTIVE

RE-AFFORESTATION STRATEGY

BY
OLANIYAN, Sule Adeniyi
Department of Architecture, Faculty of Environment Sciences,
Ladoke Akintola University of Technology, P.M.B. 4000, Ogbomoso. Oyo State, Nigeria.

ABSTRACT
The elastic demand of mankind in satisfying his daily needs impacts adversely on the constituents of the Built Environment and this necessitates the need to devise appropriate means to maintain a sustainable healthy environment. As such, against the backdrop of various re-afforestation strategies put in place to checkmate the menace of deforestation in Nigeria which have proved rather in-effective, this paper makes case for an inclusive policy option involving the Government at the high level of the Federal Bureaucratic Structures, the Public especially at the Grassroots where the actual policy implementation is carried out as well as the Private Sector which sometimes acts in-between. It begins with review of the extent of the problem in the country to emphasize its seriousness. It then appraises the efforts so far in respect of the existing legislations as well as other strategies adopted to address the problem with a view to identifying such factors responsible for their in-effectiveness. The paper then concludes by suggesting a tripartite approach involving the Government, Non-Governmental Organisations (NGOs i.e. the Private Sector) as well as the Public to address the problem

Key word: Deforestation, Desertification, Forest, Re-afforestation, Built Environment

INTRODUCTION

The built Environment refers to everything humanly made, arranged or maintained to fulfill human purposes and mediate the overall environment, with results that affect the environmental context (Bartuka, 1994). Components of the built environment emerge form human needs, thoughts and actions. However the substance of human actions are sometimes grand but are shortsighted, creating uncomfortable situations that are less fit for healthy human activities and negatively impact the environments that surround us, with which we are in constant interaction (Stephanie, 2006). Once basic human survival needs became less pressing, people turned their attention beyond survival and continued to modify the environment, (through domestication and genetic alterations of animals and plants; manipulation and management of forests and wildlife etc.), shape landscape and cities, and manage regions and the Earth at an accelerating rate to make their lives safer and more comfortable, productive and enjoyable. However in doing these, mankind is faced with dangers when there exists, an imbalance between his demands and the available natural resources. For example, within this context, when forests are lost, (Stephanie, 2005), we loose far more than just the trees that they contain. Forests provide a large number of goods and services, homeland for indigenous people, recreational areas, food, medicines and environmental services such as soil stabilization. Beyond these, as forest areas are reduced, pressure on the remaining forests, increases. As such creating a sustainable built environment is essential to enable people to live within environmental limits whilst maximizing quality of life. Thus the need for an effective restoration process, re-afforestation strategy within the built environment cannot be over-emphasized.

Re-afforestation refers to the act of planting new trees in an area where there used to be a forest (Oxford Advanced Dictionary). This is a direct opposite of deforestation (in forested South) or desertification (northern part) which either indicates drastic reduction in number of trees without adequate corresponding mechanism in place for their replacement. While the former results usually from bush- burning, intensive logging, despoliation from mining, a more pronounced similar phenomenon, 'desertification' arises usually from interaction of intensive land use, recurring droughts and heavy biotic pressure.

Re-aforestation is now a subject of global discussion. Edmundo (1983) writes 'whereas before, forests were thought to be so vast and so dense that it would probably take centuries before they could be exhausted, now many have come to realize that these resources are actually fragile and that if wasteful methods of forest use continue, it would take less than fifty (50) years for us to finish off most of the world's unconsumed original woodlands. This otherwise personal opinion was later accentuated statistically during the 1990s by the United Nations report (the Guardian) that 2.4 percent of the world's forests were destroyed. Almost all in tropical regions in Africa and Latin America. The estimated total areas destroyed- 220million areas, is larger than size of Venezuela.

BACKGROUND TO THE PROBLEM

The total land area of Nigeria is approximately 92.4 million hectare (Johnson, 2005). About 20 percent of this is in the humid to sub-humid forest zone with annual rainfall ranging from over 3000mm in the coastal South to

51

1150mm in the North and three months of dry season. The remaining 80 percent of the country is Savannah subdivided from South to North into Guinea, Sudan and Sahel Savannah. Land use area measurement by side-looking airborne radar (SLAR) gives further details of the cover of the country by vegetation types, water and built up areas over three successive decades (tables 1,2 and 3). Thus 34 percent of the total area may be regarded as cropland, 14 percent as permanent pasture and 43 percent as forests and Savannah woodland. The balance of land is assigned to other uses which include settlements, water bodies etc (Federal Ministry of Agriculture report, 1989; Bamidele (2005), Gasu and Fadare (2005), Nwachukwu (2000).

However, 10 percent of the land area of the country is set aside as forest reserves. This comprises 7.2 million hectare of savannah and 2.4 million hectare of sub-humid to humid forest. The reserved include 150,000 hectare of plantations mostly of exotic species, established over the past two to three decades mainly in the forest zone. The 2.4 million hectare of high forest constitutes the main productive forest estate supplying the build of the country's timber requirement. The Savanna reserves serve mainly for protection but also provide fuel wood, poles, edible fruits, leaves and other materials. They are also intensively used for grazing by nomadic herdsmen. The reserved forest area is inadequate to meet current let alone projected increased demands for forest product. Much fuel wood comes from farm lands but timber supplies from unreserved areas which hither to supplemented production from reserved forest have rapidly dwindled (Refer to tables 4 and 5 for proper illustration). According to the Nigerian Minister of environment, Alhaji Muhammadu Kabir (2002), the projected level of demand for wood in the year 2000 was 180 million metric tones as against a sustainable level of supply of less then 100 million metric tones. The recent 35 per cent deforestation rate per year translated into an average loss of 350,000 to 4000,000 hectares of forest on annual basis.... (The punch, 2002). Hence, the need for a policy option which aims to expand the reserved area from 10 to 20 percent of total land area to meet current and future needs for forest products and enhanced environmental protection. This policy objectives must however be seen against the mounting pressure from farming, grazing, fuel wood gathering, illegal logging and general encroachment for urban development. Records show that pressure from communities and vested interests led in recent times to deforestation of 3-5 percent of the reserves of Kano State, 9-14 percent in Kaduna, 11-15 percent in Bauchi, 16-21 percent in Sokoto and over 18,000 has in Bendel and 20,000 in Kwara State. (FAO survey, 1980 and Daura, 2000).

In addition, rapid economic, social and political changes have stimulated urban development and expansion of the associated infrastructure. By 1985, 30 percent of Nigerians lived in urban settlements. The urban population is projected to rise by 6 percent between 1985 and 1990 (Federal Ministry of Agriculture Report, 1989). About 1.3 percent (12,000 sq km) of Nigeria's total land area is built- up urban settlements and there were over 122,000km of roads of all types in the country by 1980. Urban settlements and infrastructure have expanded greatly since the above estimates were made. The Federal Directorate for Food Roads and rural Infrastructure (DFRRI) alone added 10,000km of feeder roads and over 2000 wells or boreholes for water supply in just three years between 1987 and 1989 among many others. Refer to table 4 and 5 for statistical representation of wood consumption rates in northern Nigeria in 1979 and 1980. Thus, in view of the potential and manifested dangers posed by the trend defined above, the following objectives underscore the need for a well-planned and well implemented participatory re-afforestation policy in Nigeria:

- To safeguard areas that are exceptional in terms of health, natural beauty and cultural significance as sources of inspiration and irreplaceable areas:
- To benefit local and national economics and act as models for sustainable development.
- To maintain the diversity of ecosystem, species, genetic variations and ecological processes that guarantee the existence of life as illustrated in figure 1.
- To protect species and genetic varieties that mankind, needs (citizens of Nigeria) especially for food and medicines.
- To provide a home for human groups with traditional cultures and knowledge of nature.
- To protect those landscapes that reflect the history of human interaction with nature:

Efforts So Far: Achievements and Challenges

Within this context, a significant landmark was made by the promulgation of the Federal Environmental Protection Agency (FEPA) Act Cap. 131, LFN, 1990 (as amended) by Decree No 59 of 1992 which touches on issues such as National Environmental Standard, Water quality, Air quality, Atmospheric Protection etc. The Decree was necessitated following the dumping of 4000 tons of toxic wastes by Italian ship at Koko, Nigeria in 1988. For its effective operation, the Decree provides for the establishment of State and Local Government Environmental Protection Bodies across the country and this has indeed recorded considerable achievements (Adeyinka 2005).

Also, the Nigerian Urban and Regional Planning Land Decree No 88 of 1992 as amended by Decree No 18, 1999) was another thrust in dealing with the issue of Environmental quality (Umah L.C and Ucheghu, 1997). The Decree realized that sustainable development cannot be achieved without due consideration for the quality

52

and preservation of the environmental consideration with development at the initial stage. Section 33 of the Decree, inter alia, states that;

> *"A developer shall at the time of submitting his application for development submit to an appropriate Control Department a detailed environmental impact Assessment...." (Federal Republic of Nigeria, 1992).*

Other statutes and laws relevant to the Nigerian Environmental resources includes Natural Resource Conservation Council Decree No 50 of 1989, Environmental Impact Assessment (EIA) Decree No 86 of 1992; National Briefing on the implementation of Environmental Impact Assessment (EIA) in Nigeria, November, 1994 etc. All these play no less significant roles in enhancing Environmental quality (Akindele, 2003 and Adeyinka 2005).

At the Global level, Nigeria is a signatory to many international conventions or treaties relating to Environmental matter. Akindele (2003) and Olayode (2005) document the following.

(a) The 1992 UN conference on the Human Environment. This conference which was the first United Nation's conference on International Environment Issues was held in Stockholm in 1972 and agreed upon a Declaration containing 26 principles concerning the Environment and Development; an Action Plan with 109 recommendations spanning six broad areas (human settlements, natural resource management, pollution, educational and social aspects of the environment, development and the environment, and International Organizations.

(b) 1992 Rio Declaration on Environment and Development.

The UN General Assembly in 1989 decided to convene an 'Earth Summit' in Rio de Janeiro in 1992 to promote and develop sustainable development. The Rio Declaration proclaims 27 general principles to guide action on environmental development. They include principles relating to: national responsibilities and international Co-operation on environmental protection; the need for development and eradication of poverty etc. (Owen Greene 1997).

Other conventions include;

- African convention on the conservation of nature and natural resources of 1969 (Acceded to in 1971)
- Convention on the conservation of migratory species of wild animals of 1969:
- Convention for the protection of the world cultural and natural Heritage of 1972 (Acceded to in 1975).

Nigeria is intrinsically affiliated to so many institutions, organizations and agencies globally which directly or indirectly shapes the future of its environment amongst which include: NASAR, WMO, Global Environment Facility (GEF), UNDP, World Bank, World Conservation Union (WCN), etc, just to name but few. All these institutions work in partnership with Non-Governmental Organizations, Government Institutions and Universities to ensure sustainable management of the Nigerian Environment. (Gasu and Fadare, 2005). These international conventions are clearly of direct significance to environmental protection (Imevbore and Okorodudu- Fubara, 1991).

However, Masilingi (1994) observed that inadequate capacity on the part of the Government, in terms of financial resources, man power and equipment contribute to unsuccessful enforcement of environmental protection related legislation. Akindele (2003) corroborated this opinion that in spite of the conventions of which Nigeria acceded to, the country is yet to comply with the obligation of taking appropriate legislative measures at the national level to implement the objectives of many of the conventions. The 1999 constitution of the Federal Republic of Nigeria section 12 (1) even states that: *"No treaty between the Federation and any other country shall have the force of law except to the extent to which any such treaty has been enacted into law by the National Assembly"*. The deduction from here is that the benefit accruing from these treaties cannot be fully reaped at the national or individual level (Imevbore and Okorodudu- Fubara, 1991).

Another major constraint is the high level of illiteracy which makes reading and interpretation of laws difficult.

Proposed Policy Option: A Tripartite Approach In view of the seriousness of the problem vis-à-vis the existing legislation and their challenges as stated above, a tripartite approach involving the Government, the Private Sector as well as the General Public is suggested as follows:

(A) **THE ROLES OF THE GOVERNMENT**

These are to be considered as follows:

(1) **Political Commitment**

53

- All existing legislation should be updated and harmonized to conform with the present realities. People should be empowered to participate more fully in regulating the quality of their built environment using approaches like community-based action planning and capacity-building for professional staff (a sine-qua-non for successful implementation of environmental protection legislation). In such an exercise, new knowledge, new skill and new attitude would be acquired to make them more efficient;
- Reckless utilization of the natural resources as if they are inexhaustible should be discouraged. Public enlightenment campaign should be intensified to sensitize the people on the effects of environmental pollution and the need to integrate environmental concerns into all aspects of human actions in order to reap the benefits of sustainable urban development;
- Government should as a matter of urgency, set in motion, necessary machinery for the implementation of all international conventions she had acceded to with a view to keeping tract with the new global order and stiff penalties should be imposed on contraveners of the provisions of all environmental legislation, be they are individuals, communities, public or private organizations to serve as deterrents to others. In the area of inter-state cooperation, there is need for more coordinated efforts between Nigeria and its neighbors particularly Niger Republic and Chad to halt the rapid advancement and effects of desertification in the Sahelian region. Since the problem cuts across the three countries, any action plan undertaken in one country needs to be implemented and enforced in other countries. A joint commission constituted by members from the three countries may be established to implement such action plans like illegal felling of trees and bush burning. Also a joint action on massive afforestation project that would see to the establishment of wood lots and, institutional and amenity planting of tree seedling should be established by the three countries (Olayode 2005).

2. **Assessment of the needs of the indigenous communities:** - Any policy formulation and implementation in this context must adequate reflect the needs, aspirations and problems of the people. Through identification of their needs in consultation with people themselves, decisions on such Action programmes must fit into the bio-physical environmental conditions of the locality like climate, soil, vegetable, land use etc, and those that will bring maximum benefit to the greatest number of people within the scope of the resources available. A survey of the existing forest related resources, wood use and wood needs, market prospects and the social systems, land tenure, feeding habits etc of the community in context is needed. In all such surveys, people should be encouraged to participate and communicate their needs, problems and their solutions, as they visualize them themselves which will help reassure them that the programme drawn up are relevant to their needs and will thus give then a sense of responsibility towards ensuring success.

3. **Appropriate Technical Solutions.**
Indigenous technology should be taken as a part of the rural re-afforestation in which Technical Aspects have assimilated with experience gained by people gradually over the decades. It is important that the technical solutions are worked out with the people and not just for them. The principle is to modify existing land management for production of various combinations of crops, both food crops and multipurpose tress. The following guideline might be adopted:

(a) Where the output from conventional tree species will meet needs, plant fast growing multipurpose tress that can give some early returns. Also provide financial support during the establishment period, through grants, subsidies or low interest loans;

(b) Where there is lack of tradition of tree growing, provide all required technical guidance and inputs through extension of service and grass root training.

4. **Incentives**
With poor rural farmer or communities who cannot invest land, time or money in tree planning activities which provide returns only after some few years because of their pressing need for income, incentives must be provided for them for the period till the trees are harvestable like supply of seedlings, including transport cost, either free or at a normal price. Provide irrigation, schools, village roads as social inputs or promoting rural and cottage industries directly linked to tree farming or could be other forms of incentives.

5. **Rural Institutions**
Adoption of new practice or technology progress does not trickle down automatically to the rural areas. Hence to improve on this, new rural institutions like farmers associations, youth clubs and such

other non-governmental organizations should be encouraged at an early stage to promote their interest, support and collaboration for tree planning activities. (Forest Co-operatives should be encouraged).

6. Organising And Training Staff For Re-Afforestation.

A special branch of forest services at various levels concerned with social forestry Extension and Training must be put in place. Fundamental training is needed in forest services in order to orient their activities more towards the needs and aspirations of rural people and communities. Providing appropriately for management of re-afforestation is very important as tree planting activities are less of a technical problem than of institutional and social ones.

As responsibility for management of re-afforestation has to be gradually transferred to rural communities, they should be trained in essential aspects of re-afforestation through short courses, field visits, practical demonstrations and other means to effectively impact the message on them.

7. 'Extension' Service Delivery

Staff engaged in re-afforestation particularly at lower levels should acquire required skills in communication and extension as they are to act as messengers to carry technology aspects of three planting to the farm and bring farmers' problems to the attention of the technocrats or researchers as the case may be.

To promote awareness among people, a whole range of extension methods can be used. However, of the lot, 'visual aid' proves to be more effective that other types of extension methods particularly when working with mostly illiterate rural people. For optimum effectiveness, 'Film' or 'Slide' show presentations could include in sequence, the following events:

(a) Forest and tree groves and their beneficial influence on villager's lives;
(b) Negative consequence of Deforestation or large scale felling of farm trees:
(c) Response of the villagers to the deterioration situation with emphasis on people oriented solutions.
(d) In a simple way; illustrate methods of raising seedlings, planting and protecting them as well as the benefits from such planting like supply of fuel wood.

(3) Research Supports

Since re-afforestation programmes are constantly evolving to adopt themselves to different needs and situations, there should be continue research and development support to generate technology appropriate to changing time and condition. Specifically, this Research and Development (R-and-D), should be carried out to enhance conservation of existing natural resources and environment; proper reforestation of cut-over as well as unproductive lands; development of wood-based industries and their respective products and; research thrusts on fast-growing tree species for fuel wood.

(B) INVOLVEMENT OF THE PRIVATE SECTOR.

In most developing nations like Nigeria, environmental issues are still largely the prerogative of Governments while the involvement of private sector is very minimal (Olayode, 2005). Unlike in the developed countries, where plethora of environment oriented organizations thrives, there are a few organizations that are committed to environmental issues in Nigeria. Thus, issues related to the environment are largely decided, implemented and enforced by the Government. There is the need therefore for citizens to take the initiatives in the formation of non-governmental organizations that would act as pressure groups on environmental issues. In this regard, formation of private enterprises should be encouraged to take advantage from a large number of forest activities and employment opportunities such as timber cultivation, honey and fruit production and collection, plantation works etc. The establishment of such enterprises is to be accompanied by an adult education scheme (Ehi-Ebewele, 1991) to sensitize the population on the potential benefits and the mechanism for a successful operation. An innovative tax collection mechanism less susceptible to corruption should be put in place to levy fees agreed upon on forest related activities. In addition to this, it is proposed to create a National Bureau for management (NBM) to be assisted by a group of recognized experts to conceive, analyse and control the implementation of private forest management plans. A regional commission must also be created to examine, discuss and approve or disapprove of these plans. It is recommended that those companies which volunteer to manage their concessions in a sustainable manner which management plans are approved by the proper authorities, be registered for recognition and possible rewards or privileges to be granted (including a guarantee for longer concessions of 25-50 years and eligibility for donor assistance).

(c) PUBLIC PARTICIPATION

Public involvement in environmental policy formulation and implementation is now recognized world wide as a fundamental instrument in the search for sustainable development (Martins 1996). In fact, part of Rio 1992 Agenda reads; *Broad participation in policy development combine with grater accountability is essential to achieving sustainable development...Individuals, groups, and organizations need to know about and participate in environment and development decisions, particularly those which can affect their community.*

Since Rio in 1992, recent developments around the world, such as the Mexico's new environmental laws, the October 1996 Declaration of the European Environmental ministers in Sofia, Bulgaria and the December 1996 SUMMIT of the Americas on sustainable development, point to the fact that nations are increasingly defining 'incorporation strategies' for public involvement in all aspects of environmental decision making into their planning and administrative machineries. (Tairu,1998 and Adeboyejo, 1998). Even in Nigeria, there is no doubt that the need for public participation is recognized in official circle. For instance, a section of the national environmental policy devoted to public participation reads"..... *action will be taken to raise public awareness and promote understanding of the essential linkage between environment and development and to encourage individuals and community participation in consensus*...(Adeboyejo, 1998).

Generally speaking, public participation approach could be in forms of;

(i) Individual approach, which involves largely the building professionals such as the Architects, Planners, and other allied professionals who through their profession sensitize the public through individual approach (i.e. their clients) or with incorporation of more green areas, trees etc. in their design proposals on one part and organizing of public lectures on the basis of their respective associations on the other and;

(ii) Joint Approach, which may involve community based societies, organizations etc, that come together for a common goal.

However, irrespective of the approaches, their level of participation may include.

(i) Request the concerned Authorities to protect an area close to where he/she lives or goes walking or practices sports, or even nature- watch or simply just because of its love

(ii) Report any act which threatens conservation in a protected area and;

(iii) Organise fund-raising for projects that cannot be financed in any other way.

FACILITATING FACTORS

The following factors would facilitate formulation and successful implementation of the policy definitions given so far:

- There should be continued dialogue between the project Administrators, the co-financiers and the decision makers in government.
- Credit reimbursement- there is the need to devise a monitoring mechanism inciting farmers to honour their debts;
- The project (i.e. re-afforestation) must be allowed for legislative reforms to improve agro forestry revenues and capacity building of local communities to know and question the management plans of the state forest resources.
- The government should as a matter of urgency renovate and adequately equip forestry schools.

MILILITATING FACTORS

There are a few number of factors which may threaten successful implementation of the policy. The immediate and pressing problems of poverty and the institutional problem of resource ownership is vital in this regard. However, the most fundamental one is the strong tradition of Agriculture in most rural areas without appreciation of the real value of trees and wood lots which are most often taken for granted. Agriculture within the rural setting is preferred as returns come quickly.

On the part of the government, the overall production capacities of systems such as farm forestry are generally not known or not fully appreciated by those able to influence or decide on overall land use planning, coordination, staffing, organizing, implementation, evaluation and follow up. There is a compelling need for this to be addressed right from the onset.

CONCLUSION

The huge wealth of Nigerian natural resources especially forest if not conserved may be lost to unsustainable anthropogenic as well as human induced environmental problems. Non-strategies, arbitrary and inadequate efforts on environmental management would no doubt have both future and present negative impacts on economic development and quality of life. However to bring its benefit to all, natural resources especially forest must be valued and preserved. Its over-exploitation needs to be seriously addressed by reconciling environmental and developmental objectives. In doing this,

various re-afforestation policies in the past which often proved defective on the basis of persistent institutional gaps which existed between the implementation teams or Agencies located at high level of the Federal Bureaucratic Structures and the very local level where the actual implementation is required needs to be consolidated with involvement of NGOs and the public especially the local communities among others to redress the necessary balance. Their inclusion in the implementation strategies as suggested is recommended for overall successful re-afforestation policy formulation and implementation with a view to maintaining a sustainable healthy Built Environment in Nigeria.

Table 1: **Land use in Nigeria 1960**

Land Use Type	Area in thousands of hectares	Percentage of total
Farm crops	7603	8.3
Tree crops	502	0.5
Forest Reserves	8405	9.1
Settlements etc.	408	0.4
Residual	72,825	78.8
Swamps	2699	2.9
Total	92,447	100%

Source: (Allen S Shinde (1981)
Forestry Division (1981)
Iloeje (1981) in Federal Ministry of Agriculture Report of 1989.

Table2: Nigeria Cultivated land in 1970

Land Use Type	Area in thousands of hectares	Percentage of total
Grain crops	16552	75.6
Root crops	1859	8.5
Export crops (Annual)	2656	12.1
Tree crops (small holdings)	756	3.5
Tree crops (Plantation)	69	0.3
Estates and Ranches	6	.....
Total	2898	100%

Source: Federal office of statistis (1972)
Laurent et al (1969)
Agboola (1979) in Federal Ministry of Agriculture Report of 1989.

Table 3: Land use in Nigeria in 1980

Land Use Type	Area in thousands of hectares	Percentage of total
Grass land	12,821302	14.2
Grass Transition	1,779,382	1.96
Shrubs and thicket	2,288311	2.52
Shrubs and transition	23,747,396	26.13
Wood land	4,197,209	4.42
Forest	8,874,255	9.77
Farmland	35,870552	39.47
Plantations	276,500	0.20
Water and Build up Area	1,024,231	1.31
Total	90,879,13.8	100%

Source: Allen and Shinde (1981) in Federal Ministry of Agriculture Report of 1989.

Table 4: Losses of Trees..... Forest Reserves and Yields and wood consumption Rate in Northern

State	Area thousand of square kilometer	Populati on millions 19080	Forest reserves thousan ds of square kilmoter es"	Mean Annual increament of forest (millions of cubic meters a years)	Consu mptio n
Sokoto	95	4.3	15.3	1.5	3.3
Kaduna	70	6.2	7.3	0.8	4.7
Kano	42	8.8	1.1	0.1	6.6
Bauchi	63	3.7	4.7	0.5	2.8
Borno	117	4.3	7.4	0.7	3.2
Total	387	27.3	36.0	3.6	20.5

Source: FAO survey documents prepared during the Arid zone Afforestation Programme AZAP, by Nigerian Government in 1980

Note

a. Excludes game reserves which account for about 3% of the area

b. The means annual increment assumes 1.0 cubic meter a hectare a years for forest and wood and reserve. This is though to be high since over 80 percent of the reserves are unmanaged and are in the sahelian and sudanina belts. Some estimates are as low as 0.4 cubic metres a hectare a years.

c. The wood consumption estimate assume 0.65 cubic meters per capital a year of which 90% is for fuel and the rest or other uses and a population increase of 15% between 1980 and 1985. The assumption is conservative, for example, the estimates by Nautyal (1979) are closer to 1.0 cubic meters per capital year

Table 5: 1981 Land Use Distribution

Item	Wood land and farmland	Fallow	Forest Reserves	Total of average
Area (thousands of hectares)	3,145.0	646.0	118.0	3,909.0
Number of trees per hectare	3.0	n.a	24.0	.....
Vol of wood cubic meters per hectare	5.4a	9.0	12.0a	6.2
Total Vol (millions of cubic meters)	17.0	5.8	1.4	24.2
Total volume (percent)	70.0	24.0	6.0	100.0
Yield (mean Annual Increament cubic meter per hectare a year)	0.2	0.2	1.0	0.2
Total yield (thousands of cubic meters a year)	629.0	129.0	118.0	876.0
Total yield (per cent)	72.0	15.0	13.0	100%

Note

..... not applicable

n.a not available

a free standing trees on farmland are generally mature tress with significantly higher volume per tree than trees in forests

(Source: Based on unpublished field report by Fishwick- 1981 in Economics of Afforestation page 32-33).

REFERENCES

1. A.S. Hornby (2001) Oxford Advanced Learners' Dictionary. Oxford University Press. (6th Ed.)

2. Abdel-Hamid Mahamat Ali (1996) 'Forest Resource Management To Sustainably Satisfy National Household Energy Requirements' *African Forest Policy Forum* Simon Rietbergen and Jumana Farch (ed) African Region Environmental Group, Germany pp 8-9
3. Adeboyejo A.T. (1998) 'An Holistic Approach to Environmental planning and Management in Nigeria' In Current Issues in Nigerian Environment Akinjide O.(ed). Jayola G raphics, Ibadan. pp 60-71
4. Adeyinka S.A (2005) The Challenge Of Global Planning Legislations For Sustainable Urban Development In Nigeria In Globalization, Culture And The Nigerian Built Environment Wale Fadare et al (eds) Faculty of Environmental Design and Management, Obafemi Awolowo University, Ile-Ife pp 309
5. Akindele S.O (2003) "Environmental Laws And Their Effectiveness In Nigeria". EBAN'S 11th Annual Conference Proceedings, FUTA, Akure
6. Constitution of Federal Republic of Nigeria, 1979 (amended 1983).
7 Daura, A.S.Z. (2000) "Keynote Address" Nigeria Conservation Foundation (NCF) 20th Anniversary .Public Series No 2, NCF
8. Edmundo V. Cortes (1983) 'Management of National Forests' Proceedings Of The First ASEAN Forestry Congress BK II, vol2. Paragon Printing Corporation, Manila. Philippines pp205
9. Ehi-Ebewele E.E (1991) 'Wildlife Conservation In Nigeria' Environmental Education Workshop And Seminar Proceedings Lawal, M.B and Mohammed, A.A. (ed) Mariam Ajibola Enterprises Lagos Vol. 1.
10. FAO Survey Documents (1980) prepared during the Arid Zone Afforestation Programme (AZAP) by Nigeria Government in 1980.
11. Federal Environmental Protection Agency (FEPA) Decree 58, 1988.
12. Gasu M.B and Fadare, Oluwale (2005) Globalization And Environmental Conservation In Nigeria In Globalization, Culture and the Nigerian Built Environment Wale Fadare et al (eds) Faculty of Environmental Design and Management, Obafemi Awolowo University, Ile-Ife pp381
13. Greene Owen (1997) 'Environmental Issues' In The Globalization Of World Politics. Baylis John and Smith steve (eds). Oxford University Press, Oxford.
14. Gustave Doungoube (1996) 'Agro forestry As A Tool To Improve Natural Resources Management' In African Forest Policy Forum Simon Rietbergen and Jumana Farch (ed) African Region Environmental Group, Germany. pp 6-7
15. Imevbore, A.M.A and Okorodudu-Fubara, M.T. (1991): 'Review Of Existing Laws And Statement On The Environment In Nigeria' In The Making Of The Nigerian Environmental Policy Aina, E.D.A and Adedipe, N.O (eds) FEPA monograph 1. pp35-69
16. Johson Bade Falade (2005) 'Globalization, Culture and the Nigerian Built Environment; Problems, Challenges and Benefits' In Globalization, Culture and the Nigerian Built Environment Wale Fadare et al (eds) Faculty of Environmental Design and Management, Obafemi Awolowo University, Ile-Ife pp15.
17. K.O. Olayode (2005) 'The Politics Of International Environmental Issues: Problems And Challenges For The Nigerian Environment' In Globalization, Culture and the Nigerian Built Environment Wale Fadare et al (eds) Faculty of Environmental Design and Management, Obafemi Awolowo University, Ile-Ife pp316.
18. Martial Me Kouame (1996) 'Collaborative Management of State-Owned Gazetted Forests' In African Forest Policy Forum Simon Rietbergen and Jumana Farch (eds) African Region Environmental Group. Germany pp 10-11
19. Masilingi, W.M.K. (1994): Socio-Economic Problems Experienced In Compliance And Enforcement In Tanzania. 3rd International Conference On Environmental Enforcement Vol.2 pp. 63-73 (http//www.inece.org/3rd vol 2/ masilingi.pdf.
20. Matins B. (1996) 'The Private Sector In Sub-Saharan Africa-Is It Able To Take Up The Challenge Of Sustainable Forest Management' In African Forest Policy Forum Simon Riebergen and Jumana Farch (eds) African Region Environmental Group. Germany Pg 13-14.
21. Nigeria Environmental Study Action Team Publication (1992): Nigeria's Threatened Environment
22. Nwachukwu, I (2000) Nigeria Environment In The 21st Century. NCF-20th
23. Strategies for Development of Social Forest in Nigeria (November 1989) - a report by Federal Ministry of Agriculture, Water Resources and Rural Development.
24. Tairu T.T. (1998) 'Towards Protection of the Environment and Ecology' In Current Issues in Nigerian Environment Akinjide O.(ed). Jayola Graphics, Ibadan. pp 8-17.
25. The Guardian. Monday August 26, 2002 pp 51, col. 5.
26. The Punch. Friday September 20, 2002 pp6,col.4
27. Umeh, L.C and Uchegbu, S.N. (1997) Principles and Procedures of Environmental Impact Assessment (EIA). Computer Edge Publishers, Lagos.
28. UNEP (2002) Africa Environment Outlook; Past, Present and Future Perspective. Earth Print Limited, England
29. United Nation Forestry Extension Organization (1986) pp 31-45.