CLIMATE CHANGE, NON-TIMBER FOREST PRODUCTS AND THE RESILIENCE OF LOCAL INITIATIVES IN POVERTY REDUCTION IN NIGERIA

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Abstract
There is a universal ring to conflict of interests in forests. Environmentalists, job seekers (farmers, lumbermen and hunters) and government claim justification for their actions. Industries such as pharmaceutical, paints, sawmills, etc. have been relying heavily on forests to source their raw materials. Consequently, tropical forests are disappearing at accelerating rates and this is contributing significantly to climate change. The exclusion of the stakeholders such as (local community dwellers, hunters, farmers, timber contractors and other non-timber resources users) in the administration of forests directly or indirectly has led to poor forest management in Nigeria. This paper uses the Institutional Analysis and Development (IAD) framework to analyse the missing links between governments and local people in the management of forest resources. It demonstrates how local people use people-designed and informal institutional arrangements that rely on local initiatives in coping with economic hardships through NTFPs. This paper argues that the inclusion and mainstreaming of local people in policy formulation will undoubtedly enhance forest conservation and preservation. The locals are the custodians of forest resources and are in the best position to preserving these resources because the resources constitute the fulcrum of their survival. The paper charts a course of action that can be taken in order to mainstreaming the local people and thereby overcoming the problem of free riding among stakeholders (forest guards, farmers, lumberers, local harvesters). Consequently, an African Polycentric Forest Management Model (APFMM) is designed to use local initiatives as building blocks for preserving and sustaining forest resources. It is believed that if these suggestions are taken into consideration, a responsive policy on forest management would emerge and a shared community of understanding among the stakeholders necessary for forest management would lay the foundation for sustainable forest management and poverty reduction in Nigeria and Africa.

Keywords: Climate Change, Non-Timber, Forest Products, Local Initiatives, Poverty

Introduction

The world's total forests - at just over four billion hectares or 31 percent of the total land area – play an important part in climate change mitigation. Forests store a vast amount of carbon. When a forest is cut down and converted to another use, carbon is released back into the atmosphere. In order to ensure environmental sustainability, countries across the globe have been challenged to better manage and conserve the forests in their areas as one of the commitments to the Millennium Development Goals (MDGs), an internationally recognised blueprint to alleviate poverty by 2015.

A survey of 233 countries between 2000 and 2010 shows that some 13 million hectares of forests were converted annually to other uses, such as agriculture, or lost through natural causes, down from 16 million hectares per year during the 1990s. This reduced rate of deforestation is accomplished due to ambitious tree planting programmes in countries such as China, India, the United States and Viet Nam. In addition, Brazil and

Indonesia, which had the highest loss of forests in the 1990s, have significantly reduced their deforestation rates. "Not only have countries improved their forest policies and legislation, they have also allocated forests for use by local communities and indigenous peoples and for the conservation of biological diversity and other environmental functions" (FAO, 2010; Afrol News, 25 March, 2010).

The developing countries in the post independent period like Nigeria has witnessed significant growth in the nation's economy through effective exploitation of the resources it is naturally endowed. With the increasing earning from the petroleum resources particularly during the 1970s both industrial and commercial activities have been further stimulated. Forests resources have also contributed immensely towards survival of the industries and the nation's economy through the foreign earning from exportation of teak and some other related wood materials. Some industries have been relying heavily on the forests to source their raw materials. Nigeria has so many sawmills that are felling trees indiscriminately everyday to make their livelihoods without actually making any effort to plant a single tree. The tropical forests are disappearing at accelerating rates and that this is contributing significantly to the country's climate change.

Within developing countries, there is a growing awareness among educated elites of the many interrelationships between deforestation and land degradation, floods, drought, famine and rural poverty. Political leaders and policy makers have been aware that rapid deforestation may be prejudicing the country possibilities for sustainable development in the future. The problem of deforestation has drawn attention of federal, state and local governments of recent, Similar attention has been drawn to this problem by the public who have equally expressed grave concern about the problem through newspapers, radio and television.

International concern about deforestation has been articulated through the United Nations system in many ways, of which the 1972 Stockholm conference on the environment and the subsequent creation of the United Nations Environment Programme (UNEP) are examples. The United Nations system took the lead in organising the global Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil in June 1992. This "Earth summit', as it was called, coincided with UNEP's twentieth anniversary. Deforestation issues received a high priority in preparatory discussion as well as in the UNCED proposed plan of action, known as Agenda 21. This declaration stated:

Deforestation is a result of many causes; some natural, but mainly due to human development, such as inappropriate land tenure systems and incentives, expansion of agricultural areas, increasing forest product demand and lack of information and understanding on the value of forests (UNCED, 1992:58).

Many reasons for concern about tropical deforestation have been widely publicised. The livelihoods of nearly 500 million forest dwellers and nearby residents or settlers depend directly on food, fibre, fodder, fuel and other resources taken from the forest or produced on recently cleaned forests soils (World Bank, 1991, p. 24). Many millions more live from employment in forest based crafts, industries and related activities.

There is a universal ring to conflict of interests in forests. Environmentalists, job seekers (farmers, lumbermen and hunters) and government claim justification for their actions. The administration of forest reserves in Nigeria leaves much to be desired especially when one considers governments' decisions and policies on utilization of forest resources

in meeting the needs and aspirations of citizens. For the past forty years, the administration of forestry had been monopolized by the state government within the federal structure in Nigeria. The exclusion of the stakeholders such as (local community dwellers, hunters, farmers, timber contractors and other non-timber resources users) in the administration of forests directly or indirectly has led to poor forest governance and the consequent crises in forest reserves in Nigeria (Akinola 2007).

National policy makers are constantly sensitised to the deforestation hazards and potential dangers the problem poses to nature and survival of grassroots people. Advocates of forests protection have called for appropriate legislation and regulation to control and protect our environment from further deforestation. Governments in Nigeria have initiated some programmes at the federal, state and local government level. Operation plant a free was launched by government and there is law that prohibited indiscriminate felling of timber trees in the bush. Some state governments have spent a lot of money on aforestation by establishing boards and authorities to handle forests problem especially on timber. Government have largely concentrated on preservation of timber alone as if it is only resource in the forest.

There are other resources (non-timber resources) that form economic basis for some people especially at the grassroots level. Non-timber resources like bush meat, chewing stick (Garcinia mannii, Massularia acuminata), miraculous berry (Ewe-Eran), honey, etc. constitute sources of livelihoods for local people. But these have been seriously hampered as a result of decreasing in number, quantity and quality of forests due to indiscriminate fallen of trees. The lack of sufficient interests on non-timber resources by the government has affected the survival of grassroots people. Consequently, the non-involvement of the grassroots in the administration of forests is a major factor militating against effective administration of forests. The failure of government structures to reduce the problem of deforestation has called for more attention to study the issue of forest resources and survival of grassroots level.

The paper examines how the negative impacts, associated with deforestation, on the livelihoods of different social groups and their natural environments can be prevented or offset. This implies not only analysis of interacting deforestation processes in various specific local contents but also consideration of linkages with other processes, institutions and constraints, such as policies, markets, social relations, economic and demographic structures and changes, not only at local levels but also at regional, national and global ones.

The fundamental questions this paper raises are: (1) In spite of the negative consequences of deforestation, how are local people that depend on forest resources surviving socio-economically? (2) To what extent have forest resources contributed to the survival of people at grassroots level? (3) What strategies are the locals using in conserving these resources? (4) Do the various control mechanisms on the ground factor in grassroots input? (5) What are the roles of stakeholders under the existing forest management framework? (6) What is the appropriate approach to manage forests resources? (7) What could be done nationally and internationally to encourage and support more equitable and sustainable alternatives to undesirable deforestation?

This paper uses the Institutional Analysis and Development (IAD) framework to analyse the missing links in forest management demonstrate how local people use people-designed and informal institutional arrangements that rely on local initiatives in preserving NTFPs and coping with economic

hardships through NTFPs. This paper argues that poverty reduction should be a collective effort because the rich cannot sleep with their eyes closed in the midst of barrage of the poor. The inclusion and mainstreaming of local people in policy formulation will undoubtedly enhance forest conservation and preservation. The locals are the custodians of forest resources and are in the best position to preserving these resources because the resources constitute the fulcrum of their survival and economic prosperity.

It is hoped that lessons derived from this study will contribute to the body of knowledge on local initiatives, environmentalism and coping strategies adopted by local people and set modalities on how to use local initiatives as building blocks for liveable and sustainable forest resources and environment as well as poverty reduction in Nigeria, Africa and beyond. The paper charts a course of action that can be taken in order to mainstreaming the local people and thereby overcoming the problem of free riding among stakeholders (forest guards, farmers, lumberers, local harvesters). Consequently, an African Polycentric Forest Management Model (APFMM) is designed for preserving and sustaining forest resources. It is believed that if these suggestions are taken into consideration, a responsive policy on forest governance would emerge and a shared community of understanding among the stakeholders necessary for good forest governance would lay the foundation for sustainable forest management in Nigeria and Africa.

Methodology

This paper reflects the findings of longitudinal studies on non-timber forest products (NTFPs) and their environmental and economic impact on both rural and urban households in Nigeria. The first set of data were collected on producers/harvesters of and traders in NTFPs between 1999 and 2000, while the second set in 2005 was mainly on consumers of the products across six (6) states – Lagos, Oyo, Ondo, Osun, Ogun and Edo. In all a total of 181 respondents were administered with questionnaire. The third set of data focused on traders of the products in three cities – Osogb, the state capital, Ilesa and Ile-Ife in Osun State of Nigeria in 2013. The first and second sets were qualitative data, while the third set focused on socio-economic and institutional aspects of NTFPs. The NTFPs are: (1) bush meat, chewing stick and miraculous berry. Secondary data consist of literature review on the subject matter. Data were analyzed using simple frequency distribution and cross-tabulation.

Problematics of Forest Protection and Conservation

In Africa as elsewhere, population growth was only one factor among many contributing to destructive deforestation. It was a minor one during the early colonial period when population in many regions was stagnant or declined. Some areas such as Machakoo district in the Kenyan highlands, increasing populations were associated with afforestation and more sustainable development patterns (Tiffen, Mortimore and Gichuki, 1994). Forest clearance in developing countries has been greatly influenced by the evolution of the world system. There are, of course, many new developments that have to be considered in the modern world, but they should be analysed taking into account this historical background of colonial expansion.

The government's various efforts at effective forests administration in a sustainable manner are yet to solve the problem of deforestation. This may be ascribed to several factors. First, various government policy towards preservation of forests failed to involve the stakeholders in decision making and implementation. Second, the lackadaisical

attitude of the people toward an effective forest management is connected with inadequate public enlightenment. A situation where a centralised kind of educative programme is pursued without taking cognisance of the crucial role of community leaders in the effective dissemination of information to the people is useless. Third, the poor quality and numerical strength of the personnel involved and their attitude to work can also be considered. Dearth of qualified personnel combined with political undertone has greatly contributed to the poor management of forests. To worsen the situation, corrupt practice by most of the officials has had a more grim impact. Finally, and more fundamentally, serious forest damage caused by excessive logging, wood-gathering for both domestic and commercial purposes, livestock grazing, as well as natural events such as changing climate, fire from lightning, storms, tornadoes, hurricanes, floods, earthquakes, volcanoes and prolonged droughts have seriously affect forest development.

The aforementioned factors have combined together to aggravate the poor state of forests resources and survival of grassroots people, especially in developing countries. Moreover, the top-down approach of the formal structures of government (the State) has failed to provide possible solution to forests resources preservations. Day-in-day-out people are felling timbers in the bush without necessary approval from the relevant authority. The forest reserve of some State government e.g. Osun State government is facing a lot of problem. During the Ife-Modakeke crisis, government lost millions of Naira to some people who use the crisis situation to perpetrate a lot of atrocities at the reserve areas. As a result of the failure of the centralised state therefore, an enquiry into an approach that makes for the involvement of the stakeholders along with the government and for its agencies in decision making, and implementation as it affects grassroots people survival is indispensable, and this will be the focus of our investigation in this study.

The Agrarian Problem and Deforestation

Current deforestation processes in developing countries should be seen in their broader social context. This includes a livelihood crisis of staggering dimensions confronting important portions of populations in societies that until recently have been largely self-provisioning. Commercialisation of agriculture tends to be associated with the expulsion of the rural poor from their lands (Pearse, 1980). Commercialisation of agriculture, industrialisation and urbanisation in these countries was invariably associated with new forms of social stratification, the alienation of traditional peasant rights of access to forests and by social tensions in rural and urban areas. It was usually accompanied by extensive deforestation.

In the late twentieth century, deforestation was rampant in Western Europe where the industrial revolution was born and incubated and which for a long period was the only core area of the emerging world capitalist system. Japan's remarkably rapid industrialisation after the mid-nineteenth century was associated with many acute social and environmental problems (Dore, 1959). The same was true of South Korea and Taiwan (Bello and Rosen Feld, 1990: Huizer, 1980).

The destruction of Brazil's Atlantic coastal forests, mostly to make way for exports crops such as sugar and coffee during the colonial period. Deforestation in the Brazilian Amazon is estimated to have been occurring at a rate of two to three million hectares annually during the 1980s. This forest clearance was largely concentrated in southern and south-eastern peripheral sub-regions such as Matto Grosso, Goias, Rondonia and Para. Much of it

took place in transitional zones from drier woodlands and scrub to dense rainforests, but within these zones there was a tendency to clear the more heavily forested areas associated with better rainfall and soils.

Nearly, half of Tanzania's 94.5 million hectares of total land area is forested. FAO estimates deforestation to be taking place at about 0.3 percent annually, but at twice this rate in the remaining humid tropical forested areas and the mangroves. The forest in Nigeria is characterised with tall trees galleries – the layers of trees, climbers, copper, shrubs, ropes etc. The trees are very useful for construction and for export especially Iroko and mahogany. African Timber and Plywood industry (ATP) and Nigeria Romania Wood Industry (NIROWI) are known to be important in this regard (Tofade, 2000).

According to Okafor (2010), Gbile, et. al. (1981) compiles a list of 484 species in 112 families out of 4600 species in Nigeria. About 205 of the Nigerian species are known to be endemic in the region, implying that their loss will result in extinction from the earth (Okafor 1991). Furthermore WWF (1989) also estimated that 90% of the natural vegetation in Nigeria has already been cleared and lost while up to 350,000 ha of forest and vegetation is still being lost annually over the country due to deforestation (NEST, 1991).

Morakinyo (1994) observed that the Ekori Community in the support zone of Cross River National park in southeastern Nigeria identified five principal non-forest timber forest products that are of great commercial importance and they are Gnetum Africana, chewing sticks (Garcinia mannii, Massularia acuminata), rattan (calamus spp., Laccosperma spp, Oncocalmus spp., and Eremospatha spp.) and bush mango (Irvingia gabonensis).

Isichei (2010) observed that about 300 plants have been listed as being of medicinal value in western Nigeria alone (Adjanahoun et al. 1993) and publishing on the use of plants for medicines is one of the most active in the life sciences today (Sofowora 1993 and Odugbemi, 2008). Many species that were not known to be of commercial value some years ago are now exploited as sources of oils, condiments and other pharmaceutical products for example Allablankia floribunda and Parkia biglobosa (Isichei, 2010). Okafor and Ham (2003) identified 55 plants as being of medicinal value in southeastern Nigeria while Anwana and Obot (2003) reported that 67 plants species in 38 families are used for treating 18 categories of ailments by people living inside and within the support zone of the Cross River Park, OKwango Division, in Cross River State (Isichei, 2010).

The principal processes directly causing deforestation have been clearance for cattle pasture often preceded by temporary use for subsistence crops, and commercial logging. Road construction, flooding from dams built for hydroelectric projects, mining and urban growth have also directly generated some deforestation. The indirect impacts of these latter activities have been very considerable both in stimulating deforestation and in their often undesirable social consequences for many local people (Akinola and Awotona, 1997, 2008q; Akinola & Funsho, 2012; Akinola, & Adegoke, 2012).

These immediate deforestation processes are all dynamic and extremely complex, involving numerous sub-processes, interactions, feedbacks and contradictory trends. Also they have been promoted by several local, regional and national policies, trends and institutions as well as some that are international. These linkages are crucial in understanding the region's deforestation processes. Huge hydroelectric projects mandate extensive forest areas. In Para, Brazil, the Tucurui dam alone is flooding about 250,000 hectares of forest. This cause

considerable deforestation directly. Also, large forests areas have been cleared for pasture by ranchers, for crops by farmers and speculators which have contributed to deforestation of forest and global warming. Commercial logging is another leading direct cause of deforestation.

Grassroot's responses to deforestation

Excessive deforestation degrades the livelihoods of many people who traditionally depend entirely or in part on the use of forest resources. Food, fuel, fodder and construction materials from the forest disappear or become prohibitively difficult to obtain. Agricultural productivity often declines. Soil erosion accelerates while flooding and landslides intensify. Groundwater sources and streams become less dependable and micro-climates less benign. Traditional forest lands are alienated, leaving many groups landless or with reduced areas, forcing shortened crop rotations.

The individual and collective responses of people whose traditional ways of life are disrupted by deforestation is a good place to begin an analysis of its social dynamics. Sustainable systems of natural resource management have to be location specific and must involve local people. Usually the long-time inhabitants of a forest region, who have depended on it for their life support during many generations if they are provided with incentives, security and support with their experience are certainly more likely to be able to manage and use forest resources productively and sustainably than immigrants from non-forest regions, or, for that matter, than many professional foresters and government officials.

Policies, programmes and projects intended to check deforestation and its negative social impacts have to be based on a full appreciation of the dynamics of local people's livelihood systems. Responses of local people to deforestation should be studied closely to dramatise its social costs for those groups most dependent on forest-related resources for their immediate survival, but who have no influence on the policies and market forces contributing to their misery.

The responses to deforestation when it negatively affects local people can be grouped under four general headings, although in practice there are numerous variations, and they are never mutually exclusive. First, individuals and households can adapt customary production and consumption patterns to the new circumstances. Secondly, they can attempt to find alternative sources of livelihood in the locality, such as engaging in commerce, services or waged labour, often engendered by the same processes leading to deforestation. Thirdly, they can migrate temporarily to supplement family income, or migrate with their families permanently to find alternative livelihoods elsewhere. Fourthly, they can organise collectively to undertake production and investment activities that would not be feasible individually, or to protect their traditional lands by resisting deforestation politically and by demanding compensation for its ravages.

When forest-dependent people intensify production, restrict and change consumption, engage in new activities or migrate, they are changing their traditional societies in one way or another. There is the need to emphasise the opportunities for greater popular participation in natural resource management to contribute to more equitable and sustainable development (Ghai and Vivian, 1992).

Collective Responses to Deforestation

Perhaps the most important aspect of organised collective efforts by the weak to protect their lands and forests, or merely to improve their livelihoods, is that it compels the powerful to take them seriously as social actors in their own right. Without autonomous

grassroots organisation by the people most affected it is all too easy for representatives of the state, the timber industry, large landowners and others coveting their resources to regard them as mere objects of 'development'. They are treated as 'human resources' to be exploited to meet project goals and to generate profits. When forest-dependent groups become collectively organised with some degree of autonomy, they are more likely to be seen as potential allies or opponents whose interests have to be taken into account in one way or another. In many circumstances collective organisation provides the weak with greater bargaining power, although in others it may prompt harsh reprisals (Barraclough and Ghimire, 1990).

Organised collective efforts of forest-dependent local people to defend decaying livelihoods, and to construct improved ones, can be an important ingredient in altering the dynamics of deforestation (Akinola 2007i).

On the other hand grassroots-organised efforts in defence of land and livelihoods appear to be about the only way that local groups being pushed aside by expanding industrial-based resource-use systems will be recognised as social actors by the 'developers'. Conflicts over resources are inevitable as 'modernisation' advances. Without organised responses by those being prejudiced, their interests are ignored or put aside. Their cultures are obliterated along with their livelihoods and sometimes their lives.

National and International Forest Protection Initiates

There have been numerous national and international initiatives to protect the remaining forests in developing countries and to reforest denuded areas. Most national forest protection initiatives, however, are of more recent origins. They have often commenced during the last few decades when concerns about tropical deforestation together with the loss of biodiversity and climatic changes believed to accompany it have become politically significant. Forest protection measures have frequently been promoted by bilateral and international aid agencies and conservation-oriented NGOs.

Five types of forest protection initiatives have been prominent (FAO, 1988a). First, sizeable areas have been set aside as national parks, game or nature reserves and similar strictly protected areas. Secondly, national governments have established forest reserves that have supposedly been managed on a sustainable basis according to scientific forestry principles for maximum sustained yields of timber and multiple forest values. Thirdly, governments have adopted a series of regulations and incentives ostensibly designed to encourage scientific forest management, forest industries and reforestation. Fourthly, states have embarked on programmes of 'social forestry' aimed at reducing pressures on existing forests while at the same time improving the livelihoods of the rural poor and promoting sustainable forest use and management. Fourthly, there have been a few limited efforts to impose comprehensive land use planning and zoning.

The failure of forest protection policies to deal adequately with socially harmful deforestation processes can in part be attributed to inadequate resources, poor and sometimes corrupt administrations, insufficient research, and training, lack of local participation, etc. A more fundamental reason, however, is that such initiatives deal primarily with the symptoms of deforestation but not with its root causes.

Theoretical Underpinning

The theories of collective action suggest that individuals under certain institutional arrangements and shared norms are capable of organizing and sustaining cooperation that advances the common

interest of the group in which they belong (E. Ostrom, 1990). This line of thought recognizes that human beings can organize and govern themselves based on appropriate institutional arrangements and mutual agreements in a community of understanding. This is the fundamental of the Institutional Analysis and Development (IAD) framework. The IAD believes in institutional arrangement designed by people who cooperate based on rules and constitution of their choice, and thereby are able to resolve socio-economic and political problems which other people (external to their conditions) are not capable of doing for them. Since society is a system of human cooperation, people in any society should collectively relate to and deal with their exogenous variables.

The IAD considers the role of evolution, culture, learning and social norms in the discourse on collective action (E. Ostrom and Walker, 2003). Institutional structures that people have developed over the years avail individuals in the community to make inputs to development in their locality by contributing towards projects (labour, finance and materials) and decision-making in political arenas in rural settings. According to Sawyer (2005:3), institutional analysis helps us to better understand how individuals within communities, organizations and societies craft rules and organize the rule-ordered relationships in which they live their lives. To understand institutions, according to E. Ostrom (2005:3), one needs to know what they are, how and why they are crafted and sustained, and what consequences they generate in diverse settings. Understanding institutions is a process of learning what they do, how and why they work, how to create or modify them, and eventually how to convey that knowledge to others.

The debate on management of natural resources has polarized into private and state ownerships. While private ownership promises efficiency but often at the cost of community and democratic values, state ownership claims to address these values but often at the cost of efficiency, as bureaucracy takes its inevitable toll by destroying community and self-governing values. The third sector, which is the self-governing sector, focuses on common-property ownership by voluntary associations of local users. Abundance evidence confirm that local people, through self-governing institutions, can handle complex social and economic issues successfully and equitably sometimes for hundreds of years (Hawkins 1992:xi).

The commons is like a factory that produces, not a series of differentiated products, but a stream of pool of undifferentiated "product" from which individuals take a portion for their use – hence the term "common-pool resource" (CPR), or "the commons." Without coordination, individuals may in the aggregate use too much too fast, causing the rate of production to fall. Sharing without collective consumption – the commons situation – requires restraint, which in turn depends on coordination among users. Otherwise, individuals continue to consume without regard to the diminishing marginal product of the commons as a whole (Oakerson 1992:42). If a community of users is unable to work through existing arrangements to respond appropriately to changes, destructive competition or conflict may follow. Resource depletion (or degradation of facilities) results – the "tragedy of the commons." In specific cases, the consequences may be shrinking forests, soil erosion, overgrazing, impassable roads, diminishing fish harvests, disappearing species, reduction in quantity of oil, etc.

There is a critical difference between "open-access resources" and "common-property resources", a difference that turns on the very concept of property. Property is a secure claim on a future benefit stream. There is no property in an open access situation, only the opportunity to use something. A good

example of a common property regime is irrigation systems. It has a well-defined group whose membership is restricted; an asset to be managed (the physical distribution system); an annual stream of benefits (agricultural input); and a need for group management of both the capital stock and the annual flow (necessary maintenance of the system and a process of allocating the water among members of the group of irrigators) to make sure continuous flow of benefits to the group (Bromley 1992:11). Though theorists decry the "tragedy of the commons" relying on arid reasoning of the "prisoner's dilemma" to demonstrate the impossibility of long-lasting voluntary cooperation or effective collective action, evidence from contemporary findings suggests the contrary (Hawkins 1992:xi). The real problem, in many of the cases of the "tragedy of the commons", is the absence of effective group management regimes necessary to allow the sustained use of the resource base overtime. That is, an earlier situation of common property has deteriorated into one of open access (Bromley 1992:12). However, information asymmetry is a major factor that strengthens "prisoner's dilemma" and "tragedy of the commons." This the politicians do not recognize in their operations and conducts; only to predicate policy recommendations upon false definition of the problem – the so called "tragedy of the commons" (Bromley 1992:3). In order to overcome the major weakness of "prisoner's dilemma" and "tragedy of the commons", conscious efforts need to be made to ensure free flow of information – information symmetrical among participants as well as effective management.

From Tunis to Cape Town, from Cape Verde to Comoros, collective action or self-help or voluntary efforts in Africa underlining by self-governing values have produced lasting impact among participants. It has been confirmed that community institutions in Africa possessed self-organizing capabilities through which community members relate with one another in a rule-ordered relationship, sharing ideas, and using their own initiatives and institutional potentials to address problems of daily existence. Examples of local people's provision of public goods using available social capital (associations) are well documented throughout African continent (Smock 1971; Olowu, Ayo and Akande 1991; McGaffey 1992; Barkan McNulty and Ayeni 1991; IDS 2001; Okotoni and Akinola 1996; Akinola 2000; 2003a; 2004; 2005d; 2007a,f, 2008b, 2009a, 2010a, 2011a, 2012b, Akinola, et. al., 2013). Most often, economic aid to developing countries has ignored these small-scale but effective local institutions, mistakenly relying instead on privatization or state ownership to solve development and natural resource problems. Hawkins (1992:xii) shows that even in the developed world, political and economic "progress" too often seems to result in stripping creativity, power and initiative from average citizens. This needs not, and should not, happen if leaders can allow citizens or self-governing institutions to operate freely, while government facilitates and monitors to ensure justice and fairness in the operations of these people-centered institutions.

If we share with the collective action theories and CPR principles that institutions matter in terms of their influence on cooperation, then the problem of deforestation can be addressed if appropriate institutional arrangements are put in place. If such institutional arrangements can produce four fundamental imperatives of collective action – collegiality, mutual trust, reciprocity and shared community of understanding – then it is possible for governments, foresters, public officials and the people at community and local level to cooperate, especially when they perceive that the outcome of the interactions on forest resources will be beneficial to them all.

Analysis of Data On Non-Timber Forest Resources

Table 1 shows that 93 males and 88 females responded to questions on three types of non-timber forest products (NTFPs) – bush meat, chewing stick and miraculous berry (ewe eran) from the six states in relation to producers, sellers and consumers of the three types of NTFPs.

Table 1: NTFPs and Sex Distribution of the Respondents

Description	MALE	%	FEMALE	%
Bush Meat Producer	21	22.6	1	1.1
Bush Meat Seller	6	6.5	15	17.0
Bush Meat Consumer	20	21,5	6	6.8
Chewing Stick Producer/seller	10	24.7	14	16.0
Miraculous Berry Producer	8	8.6	14	16.0
Miraculous Berry consumer/User	5	5.4	25	28.4
Total	93	100.0	88	100.0

For bush meat, 22 producers, 21 sellers and 26 consumers were served with questionnaires. The sex distribution of the producers was 21 males and 1 female that of the sellers was 6 and 15 females, and while that of the consumer was 20 males and 6 females. Clearly, it can be deduced that more males were involved in producing bush meat probably because of the stress that usually accompanies it. For chewing stick, 23 producers/sellers and 37 consumers were administered with questionnaires. The sex distribution of which was 10 males and 13 females for producers, and 23 males and 14 females for consumers. This means that more males consumed chewing stick than females whereas more females were involved in producing/selling chewing stick. For miraculous berry, there were 22 producers and 30 consumers in the six states. The sex distribution also of which were 8 males and 14 females for producers, and 5 males and 25 females for consumers. This can be interpreted to mean that more females were involved in the production of miraculous berry than males. Also, more females consume this same product than male counterparts.

Table 2: NTFPs and Monthly Income of the Respondents in Naira

Description	1000	1001-2000	2001-4000	4001-6000	6001-1000	10,000+
Bush meat producer	3.6	7.5	22.2	13.8	-	-
Bush meat seller	3.6	7.5	12.9	17.2	13.3	30.0
Bush meat consumer	10.7	2.5	26.0	6.9	26.7	20.0
Chewing stick producer./seller	14.3	12.5	9.3	10.3	33.3	10.0
Chewing stick consumer	10.7	32.5	14.8	24.1	20.0	30.0
Miraculous Berry producer	46.4	17.5	-	-	-	-
Miraculous Berry consumer/seller	10.7	20.0	14.8	27.6	6.67	10.0
Total	28 (15.9)	40 (22.7)	54 (30.7)	29 (16.5)	15 (8.5)	10 (5.7)

Table 2 is devoted to the level of income of the respondents. On the whole, 28 people (15.9%) were classified as earning below N1,000 per month, 40 people (22.7%) earning between N1001 and N2000, 54 people (30.7%) earning between N2001 and N4000, 29 people (16.5%) earning between N4001 and N6000, 15 people (8.5%) earning between N6001 and N10,000, while only 10 people (5.7%) were earning above N10,000 per month. Out of the 28 people earning below N1000 per month, only 1 each of meat producer and meat seller (3.6%) were under this class. There were three people (10.7%) each of meat consumers, chewing stick consumers and consumers/users of miraculous berry. There were also 14.3% of chewing stick producers/sellers. The majority of the people under this class were producers of miraculous berry with the population totaling 13, (46.4%). This suggests that the producers of miraculous berry constitute the largest proportion of those earning below N1000 per month.

Between N1001 and N2000 income bracket, 40 respondents fall under this class. The majority of the people here were consumers of chewing stick totaling 13 in number (32.5%) of the whole. This was followed by consumers of miraculous berry. They were 8 in number (20.0%) of the whole. Others were 7 producers of miraculous berry (17.5%), 5 of chewing stick producers/sellers (12.5%). There were 54 respondents falling within the income bracket of N2001-N4000. The majority of the people here were bush meat consumers, totaling 14 in number (26%). This

is followed by bush meat producer, totaling 12 in number (22.2%). Others were 8 each of chewing stick and miraculous berry consumers (14.8% each), 5 of chewing stick producer/seller (9.3%), and none of the producers of miraculous berry.

Further, analysis shows that 29 people belong to N4001 and N6000 income bracket. The consumers/users of miraculous berry formed the majority here with 8 people (27.6%). Others were 7 of the consumers of chewing stick (24.1%), 5 of bush meat seller (17.2%), 4 of bush meat producers (13.8%), 3 of chewing stick producers/sellers (10.3%) and lastly 2 of bush meat consumers (6.9%). At the income bracket N6000 – N10,000, the number of people had dropped sharply. Only 15 people fall under here. There was none of meat and miraculous berry producers. There was only 1 of consumer/user of miraculous berry (6.67%). This was followed by 2 of Bush meat sellers (13.3%. Others were 3 of chewing stick consumers (20.0%), 4 of bush meat consumers (26.7%) and lastly 5 of chewing stick producers / sellers (33.3%). The last class concerned those that were earning more than N10,000 per month. Only 10 people belong to this income group. One each of chewing stick producer/seller and miraculous berry consumer/user (10%); two of bush meat consumers (20%) and 3 each of bush meat sellers and chewing stick consumers (30%).

Analysis of the relationship between economic activities on bush meat, chewing stick and miraculous berry on one hand and marital status on the other hand shows that 63.9% of those involved in meat production were married while 36.1% were singles. There are 90.5% meat sellers who were married against 4.7% that were singles. On chewing stick, 81% of those involved in its production and sales are married, while 72.7 % of those who produced miraculous berry were married. On the utilization of miraculous berry, it was found that while 76.7% married people consume it, 23.3% singles utilize it. The fact that majority of those involved in these economic activities were married confirms that a significant rural population of adults depend on these products for economic survival. Taking into consideration that they have financial responsibilities – children education, health care, etc. – means that these economic activities are of significant importance.

Analysis of the qualifications of the respondents shows that bush meat production is dominated by those without formal education with 59% against 36.4% of those who have primary school education, while only 4.6% have secondary school education. Those who sell bush meat without formal education constitute 28.4%; 46.6% have primary school education, while 9.4% have polytechnic and university education. On bush meat consumption, 46.2% of its consumers are graduates of university, 34.6% have polytechnic education while those without formal education and those with only primary school education constitute 11.6% of the consumers. That 95.4% of producers of bush meat those without formal education and holders of primary school certificate constitute only 11.6% of the consumers indicate that bush meat production is mainly for commercial purpose – their means of survival and livelihoods.

On chewing stick, 47.8% of those involved in its production lack formal education; 30.4% had primary school education; 17.4% had secondary school education. The greatest number of people who use chewing stick are those with secondary school education with 42.9%. It is however important to note that academic qualification has no negative effect on the use of chewing stick.

Respondents without formal education and holders of primary school educational certificates constitute 81.7% of those who produced miraculous berry. Those

who attended secondary schools, polytechnics and universities account for 9.1%, 4.6% and 4.6 respectively of its producers. Its usage is not only limited to only those without formal education. According to the findings 25% of those who use miraculous berry have no formal education; 28.6% have primary school education; 21.4 have secondary school education, while 25% have university education.

Table 3: House Ownership

	Yes	No
Meat Producer	62.5	29.2
Meat seller	42	57.9
Meat Consumer	-	
Producer/Seller	56.5	43.5
Consumer	-	50
Producer/Consumer	40.9	50
Consumer/user	-	

Table 3 shows the viability of engaging in forest economic activities – hunting, chewing stick and miraculous berry with respect to house ownership. Analysis shows that 62.5% of meat producers owned houses while 29.2% did not. Similarly, 42.1 of meat sellers owned houses against 57.9% who did not. At the same time, 56.5% of the producers and sellers of chewing sticks owned houses. On miraculous berry 40.9 of producers owned houses while 50% did not.

We can deduce that all the three NTFPs have yielded socio-economic returns by empowering the respondents in children education and house ownership. This is more spectacular when we realize that the costs of land and building materials are enormous and beyond the reach of even junior workers in public service.

Analysis of occupational distribution of the respondents shows that professional hunters constitute 68.2% of meat producers, while 31.8% are casual hunters. On bush meat sellers, 52.4% are occasional meat sellers, while 38.1% regard meat selling as their main profession. 56.5% of chewing stick producers regard the job as their main occupation. It was also discovered that 40.9% of producers of miraculous berry considered the work as their primary occupation, while 50% did as a secondary occupation. In summary, 51.1% of the respondents regard activities of dealing with bush products as their main occupation, while 44.3% that were involved in the activities see it as either their casual or secondary economic activities.

Data was also analysed on the number of children trained with these NTFPs by the respondents. Findings show that 58% of the respondents had used NTFPs to train 7-10 children in education, 24% trained 4-6%, 18% trained less than 4 children. Analysis shows that the bulk of the trained children come from the bush meat (producers and sellers) group compared with other groups. It is glaring from the table that none of the ventures is a waste of time. Chewing stick and miraculous berry constitute veritable sources of income considering the children trained with the ventures. A total of 21 children were trained by eleven respondents engaging in chewing stick business. On the other hand, a total of eleven children were trained under the auspices of miraculous berry business.

The number of years the respondents have spent in the business is considered important in this study. Analysis shows that 42.9% have spent more than 25 years in the business. This is an indication that there is occupational stability in these activities. Those who have up to 4, 6 and 7 years account for 20%, 46.7% and 40% respectively.

Institutional Analysis on 2012 data

(i) Bush meat Seller

Analysis reveals that the average meat sellers in Osogbo and Ilesa have secondary school education while in Ile-Ife, a significant proportion has no formal education. Majority of them live in rented apartment in Osogbo and Ile-Ife but in Ilesa, majority live in their own houses, which they built with the proceeds of the NTFPs. On the overall, they have been in the business for over fifteen years (15 years) and have trained an average of four children from the proceeds

of the business. Findings show that bush meat sellers in Osogbo and Ile-Ife earned an average of N30,000.00 monthly while those in Ilesa earned between N40,000.00 and N50,000.00 monthly. They all belong to an association or trade union, which offers them limited financial support, expose them to business opportunities and mediate between the members whenever they have misunderstandings. The respondents identified police harassment, old equipment, government restriction on hunting in certain forests and the nationwide economic downturn as major challenges. They desired government intervention in terms of financial empowerment and support for their vocation.

(ii) Miraculous Berry (Ewe-Eran) Seller

This business is dominated by women. Sampled respondents in Osogbo and Ilesa have an average of primary education while the average respondents in Ile-Ife have secondary education. Across the study areas, significant proportion of the respondents live in their own house or their husbands' house. Respondents in Osogbo, Ilesa and Ile-Ife have been in the business over an average of 15, 18 and 30 years respectively. They have trained an average of four children from the proceeds of the trade. They also have trade union, which helps to stabilise price, provide financial support and enhance an equitable business environment. Respondents reported challenges such as storage problems for the leaves, dwindling sales due to increasing use of nylon and plastic products, and transportation problems. They suggested palliatives such as financial assistance, rehabilitation of roads to ease transportation problems and government funded research into possible cultivation and storage of the leaves. Respondents in Osogbo, Ilesa and Ile-Ife indicated an average monthly income of N20,000.00, N35,000.00 and N30,000.00 respectively.

Chewing stick seller

Most people in this line of business are aged and predominantly women. A significant proportion has no formal education especially in Osogbo while in Ilesa and Ile-Ife, the highest qualification is secondary education. They claim that they live in their husbands' houses and have been in the business for a minimum of 20, 14, and 13 years in Osogbo, Ilesa and Ile-Ife respectively. The respondents claim to make an average income of about N50,000, N30,000 and N35,000 in Osogbo, Ilesa and Ile-Ife respectively. Findings confirm that respondents used the proceeds from the business to train their children and support their families. Challenges identified by the respondents include competition of toothpaste with their product, dwindling stock of the tree from which the product is sourced and lack of recognition by the government. Suggested solutions to the challenges include recognition by the government especially of the medicinal status on their product, financial empowerment and support.

Summary of findings

The qualifications of the respondents show that bush meat production is dominated by those without formal education with 59% against 36.4% of those who have primary school education, while only 4.6% have secondary school education. The majority of those involved in NTFPs are married confirming that a significant rural population of adults depends on these products for economic survival. Considering the fact that they have financial responsibilities – children education, health care, etc. – confirm that these economic activities are of significant importance.

Some 62.5%, 42.1%, 56.5% and 40.9% of meat producers (hunters), meat sellers, producers and sellers of chewing sticks and producers of miraculous berry owned houses built with the proceeds of the NTFPs

respectively. All the three NTFPs have yielded socio-economic returns by empowering the respondents in children education. Some 58% of the respondents had used NTFPs to train 7-10 children in education, 24% trained 4-6 children, while 18% trained less than 4 children. The bulk of the trained children come from the bush meat (producers and sellers) group compared with other groups. Analysis shows that 62.5%, 42.1%, 56.5% and 40.9% of meat producers, meat sellers, producers/ sellers of chewing sticks and miraculous berry producers owned houses respectively.

We can deduce that all the three NTFPs have yielded socio-economic returns by empowering the respondents in children education and house ownership. This is more spectacular when we realize that the costs of land and building materials are enormous and beyond the reach of even junior workers in public service.

Some 42.9% of the respondents have spent more than 25 years in the business. This is an indication that there is occupational stability in these activities. All the bush meat sellers belong to associations or trade unions, which offer them limited financial support, expose them to business opportunities and mediate between the members whenever they have misunderstandings. The respondents identified police harassment, old equipment, government restriction on hunting in certain forests and the nationwide economic downturn as major challenges. They desired government intervention in terms of financial empowerment and support for their vocation.

The sale of miraculous berry (Ewe-Eran) is dominated by women and they also have trade unions, which help to stabilise price, provide financial support and enhance an equitable business environment. Respondents reported challenges such as storage problems for the leaves, dwindling sales due to increasing use of nylon and plastic products, and transportation problems. They suggested palliatives such as financial assistance, rehabilitation of roads to ease transportation problems and government funded research into possible cultivation and storage of the leaves. Respondents in Osogbo, Ilesa and Ile-Ife indicated an average monthly income of N20,000.00, N35,000.00 and N30,000.00 respectively.

Chewing Stick Sale is dominated by aged and they are predominantly women. Challenges identified by the respondents include competition of toothpaste with their product, dwindling stock of the tree from which the product is sourced and lack of recognition by the government. Suggested solutions to the challenges include recognition by the government especially of the medicinal status of their products, financial empowerment and support.

Climate Change Mitigation, Adaptation and Planning of Conservation of Forest Resources

Forest protection is universally recognized as an indispensable task for achievement of environmental health, sustainable development and climate change mitigation. However, recent experiences across the globe are pointing to the fact that forest protection programme devoid of people's participation amounts to waste of resources on the part of government, forest depletion and deprivation of the grassroots of the resources within their environment. In Africa, lack of clear-cut institutional arrangements during colonial and post-independence eras had caused, and is still causing forest governance crises. This challenge calls for a community management approach, which presupposes the symbiotic relationship between government and the community people within a defined institutional and technical framework.

Recognition of all occupational

groups that exist within each local government area is one of the important steps to be taken. Such groups include: hunters, lumberers, farmers, fishermen etc. Leaders of these groups should be part of Forest Management Committee (FMC). The first task before the committee is to share views and values of the three major groups – government representatives, landowners and resources-users. Among the issues to be discussed are: the importance of forest to all the interest groups; the implications of forest depletion; the contribution of each group towards resources regeneration and afforestation; and tasks and responsibilities that each group should carry out for effective forest governance. Then group representatives would then pass decisions to their members and each group would have to use different methods (agreed among its members) in accomplishing tasks assigned it.

The achievement of this goal demands cooperation, which in turn, requires deliberation. That is why deliberative democracy is considered more appropriate for Nigeria and Africa (Akinola, 2010a, 2011a). For example, one of the proud inheritances of South Africa's democracy is public dialogue in the form of community forums, negotiations, and imbizo. Community forums have been part of social movements in the fight against both apartheid and post-apartheid inequalities. Negotiations proudly characterized the transition to democracy which is based on principles of nondiscrimination (Hartslief 2005:1). The equivalent of imbizo among the Yoruba of Western Nigeria is igbimo ilu (town court of legislators), Mai-angwa among the Hausa-Fulani of Northern Nigeria, opuwari among the Ijaw in Bayelsa State, mbogho among the Efik and Ibiobio of Cross River and Akwa Ibom States, and boonator among the Ogoni in the Niger Delta of Nigeria. It is high time Nigerians looked back in retrospect to learn from their roots by harnessing certain self-governing principles that are inherent in their cultural/traditional heritage to address socio-economic challenges. Interestingly, all these institutions have their working rules already, thus confirming the existence of foundations on which the new institutional arrangements can be built (Akinola 2008p, 2010i).

If we agree that institutions matter in terms of their influence on cooperation, then self-organizing and self-governing arrangements that those involved in NTFPs have adopted in cooperating mutually in responding to their common problems are imperatives as the first condition to be met for the achievement of forest protection and aforestation programme. Recent indications support the fact that the peoples of Nigeria through self-organizing and self-governing arrangements have been responding appropriately to the needs and aspirations of the citizenry. By exploring pre-colonial governance heritage and practices elsewhere, the people have been able to respond to social challenges that the state has effectively dodged over the years (see Akinola, 2000, 2005d, 2007a,f, 2008b, 2009a,b, 2010a,i, 2011a,b,d, 2012a,b). Considering the good performance of the local people through self-governing institutions across Nigeria, NTFPs groups are capable of cooperating with one another to organize people-oriented forest protection and aforestation programme.

It is this type of self-governing and self-organising arrangement that can be integrated into the formal system of government in forest protection and aforestation programme. This, invariably, would lead to effective cooperation and deliberation between and among public officials and citizens at community/ward level, thereby eliminating gaps between

governments, foresters, NTFPs groups. Pragmatic strategy for forest protection and aforestation programme is demonstrated in African Polycentric Forest Management Model (APFMM) (Akinola 2007i).

African Polycentric Forest Management Model

African Polycentric Forest Management Model (APFMM) is designed for preserving and sustaining forest resources (Akinola 2007i). As shown in the first part of Fig. 1, free riding among stakeholders (forest guards, farmers, lumberers, local harvesters) is the main factor that is endangering environmental poverty in Africa. Consequently, forest depletion, erosion, flooding, environmental poverty, global warming, etc. become the order of the day.

The second part of the model, as shown in Fig. 1, attempts at synergizing the efforts of participants (forest guards, farmers, lumberers, fishermen, local harvesters) within forest arena. The restructuring process will commence with the design of polycentric forestry mechanism (PFM) by scholars and the setting up of self-governing forestry community assembly (SGFCA) where participants through their institutions (governments with their agencies – forest guards, farmers, lumberers, fishermen, local harvesters, self-governing institutions) can operate in synergy.

It should be pointed out that forest management is best coordinated at local level. Hence, forest management programme should be decentralized to local governments. Recognition of all occupational groups that exist within each local government area is one of the important steps to be taken. Such groups include: hunters, lumberers, farmers, fishermen etc. Leaders of these groups should be part of SGFCA. The first task before the assembly is to share views and values of the three major groups – government representatives, landowners and resources-users. Among the issues to be discussed are: the importance of forest to all the interest groups; the implications of forest depletion; the contributions of each group towards resources regeneration and afforestation; and tasks and responsibilities that each group should carry out for effective forest governance. Then group representatives would then pass decisions to their members and each group would have to use different methods (agreed among its members) in accomplishing tasks assigned it.

The second step in the restructuring process is a value re-orientation among African scholars, governments' officials – forest guards, farmers, lumberers, local harvesters and other participants. This new orientation, invariably, determines: (a) the ability of African scholars to study diverse activities that are going on in the forests and identify all sorts of free-riding and exclusions; (b) the synergy between and among all participants in the forests; (c) the relevance and indispensability of community self-governing institutions in forests management; and (d) the centrality and imperativeness of community assembly for forestry.

The technical environment should provide the tools and knowledge, which define how forest resources would be used as factors of production. The institutional environment should define who controls the resources and how the technique would be applied. In this wise, the process of forest governance would

Imbizo is a word from the Zulu language in South Africa. It means a "gathering" for the purpose of discussing important matters within a group or community. Its ultimate purpose is to ensure participation of members in the process of conceptualising, making and executing decisions. The imbizo, in its traditional form, has constituted an important aspect of the indigenous African political system for many centuries, especially in Southern Africa (Hartslief, 2005:1).

involve both the government and the people in planning, utilization and management of forest resources.

Third, the participants would operate using rules that are crafted by members at the SGFCA. Rule crafting takes place at three levels – constitutional, collective choice and operational. At the constitutional level lies the system that determines how security rules are made and can be modified. At the heart of effective security is the imperativeness of constitutional reform which can be accomplished through pragmatic experience. The adoption of polycentric forestry strategy could avail the citizens the opportunities to dialogue in community assembly and jointly take decisions on forest management. At the collective choice level, rules that define and constrain the actions of individuals and citizens in forest matters have to be established. At the operational level, concrete actions have to be undertaken by those individuals most directly affected (farmers, lumberers, local harvesters), or by public officials – forest guards.

Fourth, the outcome of the restructuring is emergence of new forestry institutional arrangements, which would reflect integrative constitutional order in forest conservation and management. It is this joint action and synergy by these groups (African scholars, governments' officials – forest guards, farmers, lumberers, local harvesters) that would eventually determine how government policies on forest harvesting techniques and afforestation programmes are to be implemented.

It is important that the assembly set up a committee to decide on three main issues and they are: (a) Area of forest forbidden to enter (reserved area) for a certain period of years, say, 25 – 30 years. (b) Area of forest earmarked for cultivation for a certain period of years, say, 25 – 30 years. (c) Areas of forest designated for hunting, lumbering, fishing etc. for a certain period of years, say, 25 – 30 years. The reason for suggesting this period of years (25 – 30 years) is because most of the cash crops like cocoa, kola-nut, coffee etc. have their gestation period within this range. After this period, most, if not all, would stop yielding fruits if not die-off. At the same time, this period is also considered long enough for natural regeneration of forest.

After the expiration of the first period, say, 25 – 30 years, cultivated land should be left for fallow and other part of the reserved forest should be opened for cultivation and lumbering. The rotation will continue and by so doing, it is hoped that the interest of all the groups would be taken care of. More importantly, measures to reduce the rate of deforestation in Nigeria should include acceleration of economic growth and incomes, particularly in the rural areas, the integration of forestry with agriculture through agro-forestry, improvement of farming system with more capital input, and education of the general public on the importance of preserving forest values.

After the institutional arrangement has been designed, operational strategy for implementation of forest matters would be fashioned out in the two areas - forest harvesting and afforestation. This, would, lead to sustainable forest development. However, there is the need to set up a feedback system called cybernetics that would help in refining the operational strategies. This would be carried out from time to time (from Cybernetics – 1st …nth Level)

It is believed that if these suggestions are taken into consideration, a responsive policy on forest governance would emerge and a shared community of understanding among the stakeholders necessary for good forest governance would lay the foundation for sustainable forest management in Nigeria and Africa.

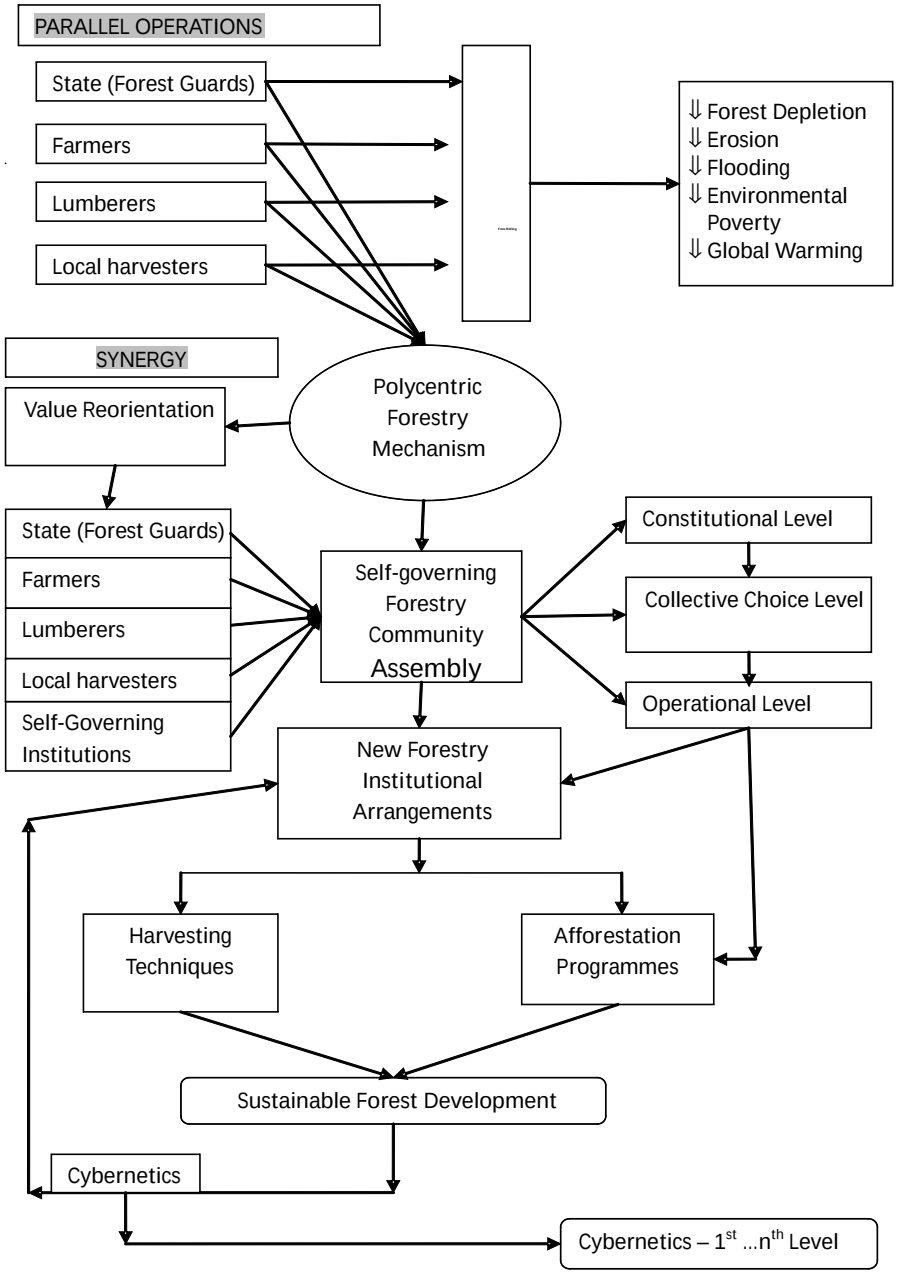

Fig. 1: African Forest Management Model (AFMM)
Source: Adapted from Akinola (2007f,i, 2010i)

Conclusion

The paper concludes that the majority of those involved in NTFPs are married confirming that a significant rural population of adults depends on these products for economic survival. Considering the fact that they have financial responsibilities – children education, health care, etc. – confirm that these economic activities are of significant importance. All the three NTFPs have yielded socio-economic returns by empowering the respondents in children education. Some 58% of the respondents had used NTFPs to train 7-10 children in education, 24% trained 4-6 children, while 18% trained less than 4 children. Analysis shows that 62.5%, 42.1%, 56.5% and 40.9% of meat producers, meat sellers, producers/sellers of chewing sticks and miraculous berry producers owned houses respectively. Findings confirm occupational stability in these activities as quite substantial proportion the respondents have spent more than 25 years in the business. All those involved in NTFPs belong to associations or trade unions, which offer them limited financial support, expose them to business opportunities and mediate between the members whenever they have misunderstandings.

This paper argues that the inclusion and mainstreaming of local people in policy formulation will undoubtedly enhance forest conservation and preservation. This is because the locals are the custodians of forest resources and are in the best position to preserving these resources because the resources constitute the fulcrum of their survival. The paper charts a course of action that can be taken in order to mainstreaming the local people and thereby overcoming the problem of free riding among stakeholders (forest guards, farmers, lumberers, local harvesters). Consequently, an African Polycentric Forest Management Model (APFMM) is designed to use local initiatives as building blocks for preserving and sustaining forest resources. It is believed that if these suggestions are taken into consideration, a responsive policy on forest management would emerge and a shared community of understanding among the stakeholders necessary for forest management would lay the foundation for sustainable forest management and poverty reduction in Nigeria and Africa.

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