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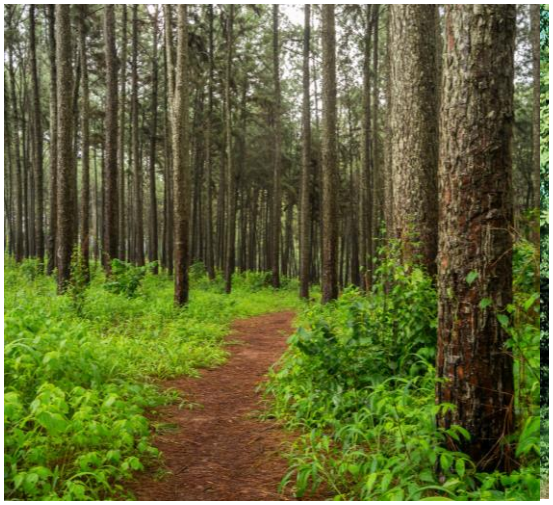

Public-private-partnerships in the forest sector and sustainable livelihood development in Nigeria

About AFF
Established in 2007 as a non-political, non-governmental, objective, independent and not for profit international organisation, the African Forest Forum (AFF) is an association of individuals with a commitment to the sustainable management, wise use and conservation of Africa's forest and tree resources for the socio-economic well-being of its peoples and for the stability and improvement of its environment.

AFF exists to voice the concerns of African forestry stakeholders, and to use science, indigenous knowledge, and experience to advocate for the increasing relevance of forests and trees outside forests to peoples' livelihoods, national economies and the stability of the environment.

In this regard, AFF provides independent analysis and advice to national, regional and international institutions and actors on how economic, food security and environmental issues can be addressed through the sustainable management of forests and trees outside forests. Operationally, AFF mobilises resources to address forestry and related issues that cut across countries and different African sub-regions with a view of enhancing the relevance and contribution of forests and trees outside forests to the livelihoods of the people of Africa and stability of their environment.

Vision
The leading forum that unites all stakeholders in African forestry

Mission
To contribute to the improvement of the livelihoods of the people of Africa and the environment they live in through the sustainable management and use of tree and forest resources on the African continent.

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Public private partnerships in the forestry sector and sustainable livelihood development in Nigeria

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
AFF	African Forest Forum
AT&P	African Timber and Plywood,
BAT	British-America Tobacco Company
CBN	Central Bank of Nigeria
CBOs	Community-Based Organizations
EC	European Commission
EU	European Union
FAN	Forestry Association of Nigeria
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GNP	Gross National Product
MDGs	Millennium Development Goals
NCF	Nigerian Conservation Foundation
NGOs	Non-Governmental Organizations
NTC	Nigerian Tobacco Company
PF	Private Forestry
PPP	Public Private Partnership
SAP	Structural Adjustment Programme
SDL	Small Diameter Logs
Sida	Swedish International Development Cooperation Agency
SMEs	Small and Medium Enterprises
SZDP	Support Zone Development Project
WSSD	World Summit on Sustainable Development
WWF	World Wildlife Fund

EXECUTIVE SUMMARY

Public private partnership as a concept has gained ground over the last few decades as a virile approach to delivering goods and services. It is a contractual agreement between a public agency and a private company or consortia of companies whereby the skills and assets of the public and private sectors are shared in delivering a service or facility. This concept has been successfully applied, particularly in infrastructure, as medium to long term arrangements between the public and private sectors in the provision of some service obligations of the public sector by the private sector, with clear agreement on shared objectives for delivery of public infrastructure and/ or public services, as well as benefit sharing.

The forest sector had for a long time operated as a public sector concern, with sporadic private involvements. However, in recent years, public-private sector forestry development has emerged as a new world-wide practice for forestry development. The issuance of the World Bank Forest Sector Policy Paper in 1978 also propelled major changes in direction away from support for industrial forestry to forestry that meets local needs. This approach further opened the vistas for private participation in different parts of the world. However, in most cases, there have not been clear arrangements in terms of shared vision and objectives, co-delivery of goods and services as well as cost and benefit sharing. While some advances have been made in Europe, America and parts of Asia in this regard, same may not be said of most of Sub-Saharan Africa, and in particular, Nigeria.

The study whose results are shared in this report examined the idea and concept of public-private sector partnerships in the forest sector by identifying promising PPP models/approaches for forest compatible sustainable livelihoods development that strengthens the capacity of the industry to address both social and environmental concerns, and therefore contributing to more sustainable, equitable and effective private sector development. This study was undertaken in the High/Moist Forest, Savanna and Sahel zones of Nigeria, and more specifically it was carried out in the selected states of Lagos, Ogun, Oyo, Osun, Edo, Abia, Rivers, Cross Rivers, Niger, Kaduna, Kano and Kwara. The states were further stratified by agro-ecological as well as geo-political settings. Within these settings, study localities were selected across primary forest production, secondary forest production, (wood processing, marketing and trade) including SMEs based on all forest types in the country.

Findings show that primary forest production is essentially a government concern in all parts of Nigeria. Generally, forestry activities are unplanned and uncoordinated and timber is over-harvested, while the principles of sustainable forest management are not applied in most cases. There is little or no information on age distribution, stand volume and timber yield. However, private ownership is fast becoming a significant form of ownership (57.2%) for primary forest production, particularly in the south western zone, though the sizes of the private estates are generally small.

The private sector dominates the secondary forest production sector. In the south east and south-south zones, for instance, individual private forest ownership constitutes 85%, with partnerships among individuals making up the remaining 15%. Government involvement at this level is virtually non-existent and this is the same for public-private ownership. Private ownership also dominates in the north western region. The production activities in the secondary forest production sector range from small to medium to large scales. Small scale production is by far the largest employer of labour as well as an income provider. The activities identified in this category include: production of rattan furniture, souvenirs, baskets, wooden furniture and cabinet, cattle sticks, wooden sponge, and chew-sticks. These activities are male dominated. The furniture and saw milling segment at the secondary forest production level are also male controlled. The female gender is involved mainly in marketing and utilization aspects. Industry types in secondary forest production sector range from small to medium to large scales. Although this sector employs only very few people per firm; the number of individual jobs created by the sector is up to 500,000 across the country. Capacity utilization in the sector is also low (barely 50%). The factors identified for the low productivity were shortage of raw materials, poor power supply, high equipment cost and general economic downturn which has led to low market patronage for the products. In spite of this, the timber industry still represents a huge source of employment. In 2005, the value of the industrial round wood and woodfuel removals in Nigeria was 124 million US$ and 456 million US$ respectively (FAO 2010). The private forest sector contributes significantly to income, employment, wood energy, food, medicine and housing in Nigeria. Unfortunately, most of these contributions remain undocumented. The contributions of two segments of the wood-based industry: furniture, and pulp and paper between 1990 and 2011 were captured in the National Accounts of ECOWAS (www.ecostat.org) and reported by FAO (2014).

Overall, there is a positive perception among respondents involved in this study on the desirability of public-private-partnership in the development of the forest products industry. The respondents hinged on the ability of such partnerships to help regulate forestry activities, particularly illegal logging, as well as ensuring strict compliance with all laid down rules and regulations that will engender conservation and optimum utilization of forest resources. At the moment, there is a weak linkage between the public and private forest operators. Factors constraining effective public-private-partnerships include unclear land tenure system and in some cases tree tenure. Access to land remains tendentious due to a combination of factors, major among which is cultural. Also, the provisions of the extant forest policy regarding PPP are not very much known to the private sector, hence creating a dis-connect.

It is recommended that public-private-partnerships be encouraged through the facilitation of access to land and other incentives, as well as other productive resources; improvement of data gathering and documentation; value addition by improving existing technologies and introduction of new ones. Also, there is the need to engender innovative financing mechanisms that will make access to funding of forestry projects attractive. Equally important is the need to improve the policy environment in ways that will facilitate public-private-partnerships in the forestry sector.

1. INTRODUCTION

The concept of private forest has gained popularity, borne mainly out of individual/corporate interests and passion for tree growing. Much of this are plantation forests, which, in Nigeria, are dominated by small scale investments that appear to have limited scope for profitability and are associated with low technological development. The small and medium enterprises in this sector attract low levels of investments and engender very few innovations in the production system because of limitations imposed by relatively unfavourable policy environment (particularly relating to land tenure, and invariably tree tenure) and unclear benefit sharing arrangements. Nevertheless, a number of private individuals and organizations have embarked on private forest plantation development, as exemplified by: Sapele (Business); Nigerian Tobacco Company (NTC), Oke-Ogun Area (Community Development); BISROD, Ijebu Ode Area (Business); Royal Forest Resort and Herbal Medicinal Farm - motivated by the Onigua of Eggua Land (out of passion); Obasanjo Holdings, Ogun State - (Business and Legacy); Oba Otudeko (Heritage Resources Project-Legacy and Business), Ibadan and Odogbolu; Afe Babalola Forest Plantation Ado Ekiti (Legacy); ASK Plantations, Kaduna, and the defunct African Timber and Plywood (AT&P); in addition to many small growers. Forest plantation developments by government parastatals like the universities of Ibadan, Ilorin and Uyo, can also be regarded as private forests as they are outside the mainstream of state-controlled forests.

Generally, public-private-partnerships (PPP) in forestry would enable governments and private entities to share funding, expertise, and ways to access to technology and resources for the sector, thereby leveraging in creating innovative solutions to some of the challenges of sustainable forest management. However, and in spite of its importance, information on public-private-partnerships in the forestry sector in Nigeria is scanty.

This study seeks to examine the concept of public-private-sector partnerships in the forestry of Nigeria by identifying and promoting promising PPP models and/or approaches for forest compatible sustainable livelihoods development that could strengthen the capacity of the industry to address both social and environmental concerns, as a way to contribute to more sustainable, equitable and effective private sector development in forestry. The following activities were undertaken during the study:

- Map out the key actors and identify the gender groups' representation in primary forest production and secondary forest production (wood processing, marketing and trade), including SMEs based on all forest types in the country;
- Collect information on tree species raised/managed (their productivity and use) and distributed by area, age classes, and volume (total and merchantable), as well as plans for sustainable supply for actors in primary forest production;
- Collect information on industry type, installed capacity, products lines/types, capacity utilization, production volumes (in the last five years) and raw material types and sources for actors in secondary forest production;

- For both actors in primary and secondary forest production sector:
  - evaluate employment opportunities, policies, regulations and other factors facilitating and/or constraining the development of forest products industry, including undertaking a SWOT analysis;
  - assess and identify the gender specific inequalities;
  - assess and identify the factors inhibiting and/or promoting the full and equal participation of marginalized groups;
  - assess and analyse gender-based control and access to required assets/resources including the specific opportunities, challenges and privileges of involvement and participation in the sector;
  - evaluate marketing and trade (domestic and international) in their products including volumes, production costs, revenues and prices of products traded in the last five years.

2. THE CONTEXT

Nigeria's forest estate is mostly owned, controlled and supervised by the public sector. The State control of land and forest resources was a concept introduced and imposed during the colonial era; even where and when other traditional resource use and customary ownership systems already existed. The socio-cultural factors that prevailed among the forest communities at the time the forest reserves were created have dramatically changed. Among these factors have been population and economic value associated with forest resources. Resource depletion, misuse, over exploitation and undervaluation of forest resources, have all combined to produce an unsatisfactory picture of the forestry sector at the moment. The present management strategies employed by the public sector have not managed to contain these shortcomings.

In the last three to four decades, the Structural Adjustment Programme (SAP) and related initiatives and other factors have affected many sectors of the economy, including the forest sector (Popoola, 1998). With regard to the forestry sector, the factors include increasing costs of forest operations, high investment and replacement cost for machines, occasioned by massive devaluation of the national currency (Naira) against other major foreign currencies. With regard to the latter, virtually all the machinery and equipment (including haulage machines) have high foreign exchange components. Also, efforts towards capacity building and strengthening the sector witnessed massive decline, leading to the current sub-optimal performance of forest administrations at all tiers of government in the country. The current economic climate in Nigeria is such that government funding alone cannot adequately drive a satisfactory and sustainable development of the forest sector. Innovative funding and forestry sector management arrangements are thus required. Innovative approaches on technical, commercial, institutional, policy and financial aspects related to the sector are therefore required to accelerate the containment of deforestation and degradation of forest resources, as well as meet demands for forest products and services, through development of reforestation and afforestation programmes in the country, as well as sustainably managing the natural forest.

Sustainable forest management requires that management ensures utilization that meets present demand for forest products and services and also ensures that future generations' ability to have the products and services is not compromised. For this goal to be fully achieved, the public and private sectors involved in forestry practices have to collaborate, hence the need for public-private-partnerships (PPP).

Public-private-partnership is a contractual agreement between a public agency and a private company or consortia of companies. Through the agreement, the skills and assets of the public and private sector are shared in delivering a service or facility. In addition to the sharing of resources, each party may share the potential risks and benefits associated with delivery of the service and facility. The PPPs are specifically developed to suit the needs and circumstances of individual project. A public–private-partnership arrangement may be funded and operated through a partnership of government and one or more private sector companies. They are typically medium to long term arrangements whereby some of the service obligations of the public sector are provided by the private sector or vice versa, with clear agreement on shared objectives for delivery of public infrastructure and/ or public services.

There is a relatively long history around the world about joint public-private investments (public-private-partnerships) in other sectors, mainly for large infrastructure projects, with well-developed guidelines and risk sharing criteria. Public-private-partnerships in the delivery of public services have become a phenomenon which is spreading across the globe and generating great interest. The concept has gained increasing attention, particularly since the 2002 UN World Summit on Sustainable Development, where the need for collaborative alliance was highlighted (Jorgennsen, 2006; Sathaye et al., 2007). The World Bank (2015), emphasizes that it is crucial to mobilize private sector investments in high-quality sustainable infrastructure in order to ensure easy access to markets and basic services that will boost trade and productivity, provide jobs, and improve people's lives.
Public-private sector forestry development emerged as a new world-wide practice for forestry development, that has been promoted by FAO and Sida to help increase private sector participation in forest management and governance. In this regard, the World Bank issued a Forestry Sector Policy Paper which also indicated a major change in direction away from support that had primarily been for industrial forestry to forestry that meet local needs (World Bank, 1978). Public-private forestry could also be seen to be the extension of the state forest departments' control onto land outside their territories and also a way to reduce the pressure on the 'productive' forests to ensure the continued supply of industrial raw materials.

The Millennium Development Goals (MDGs) and the World Summit on Sustainable Development (WSSD) supported the notion of public-private-partnerships for the conservation of the environment and sustainable ecosystem management. Both claim that PPPs can, through business promotion, employment generation and poverty reduction, help achieve the Summit's desired goals and outcomes. In fact, Goal 15 of the UN Sustainable Development Goals (SDGs) that seeks to "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and

reverse land degradation and halt biodiversity loss" will require considerable private sector involvement. Suffice to add that Goal 17 that seeks to "strengthen the means of implementation and revitalize the global partnership for sustainable development" implies that PPP is an ideal which time has come.

Within the Nigerian context, the rural inhabitants are highly knowledgeable about local conditions and this is very crucial for rural development. The early colonial foresters took advantage of this scenario in the development of forestry in the country. As observed by Abe (1995), the taungya system which was commenced by F.D. Kennedy in 1925 at Sakpoba, Edo State, and W.D. McGregor at Olokemeji, Oyo/Ogun States, was an early form of the state and local people's (community) participation in forestry in the country; a public-private forestry approach. In that programme, small scale farmers were involved either as semi-skilled labourers on the government's taungya plantations or as collaborators on taungya plots. Since forestry practice in Nigeria, right from the onset, gave recognition to the rights of local communities as partners in sustainable forestry development, subsequent developments were also closely associated with this principle. Although there was a brief moment of "insanity" when the government erroneously believed that the indigenous method of forest management was archaic and retrogressive (Papka, 1995); it soon dawned on everybody that it would be difficult to achieve any reasonable level of success unless the community members were involved. Hence, several public afforestation projects sponsored and executed in the country were with components of community involvement.

3. METHODOLOGY

The study was undertaken through a combination of purposive and random sampling, covering two agro-ecological zones: High/Moist Forest, Savanna and Sahel. For more intensive studies, visits were made to the following states: Lagos, Ogun, Oyo, Osun, Edo, Abia, Rivers, Cross Rivers, Niger, Kaduna, Kano and Kwara (Fig. 1). The states were further stratified by agro-ecological as well as geo-political settings. Within these settings, study localities were selected across primary forest production, secondary forest production, (wood processing, marketing and trade), and including SMEs based on all forest types in the country.

The study was conducted through a review of relevant literature including the Forest Resources Study, Nigeria (AfDB, 1998), Community Participation in the Management of Omo Forest Reserve (Bada, 1998), Forestry Outlook Studies in Africa (FOSA) Nigeria (Arufor, 2001) and Global Forest Resources Assessment 2015 (FAO, 2015).

Also, an interview guide, comprising a checklist of questions, was prepared and forwarded to selected industries and forest estates in advance of visits made to them to solicit thresponses to the questions.

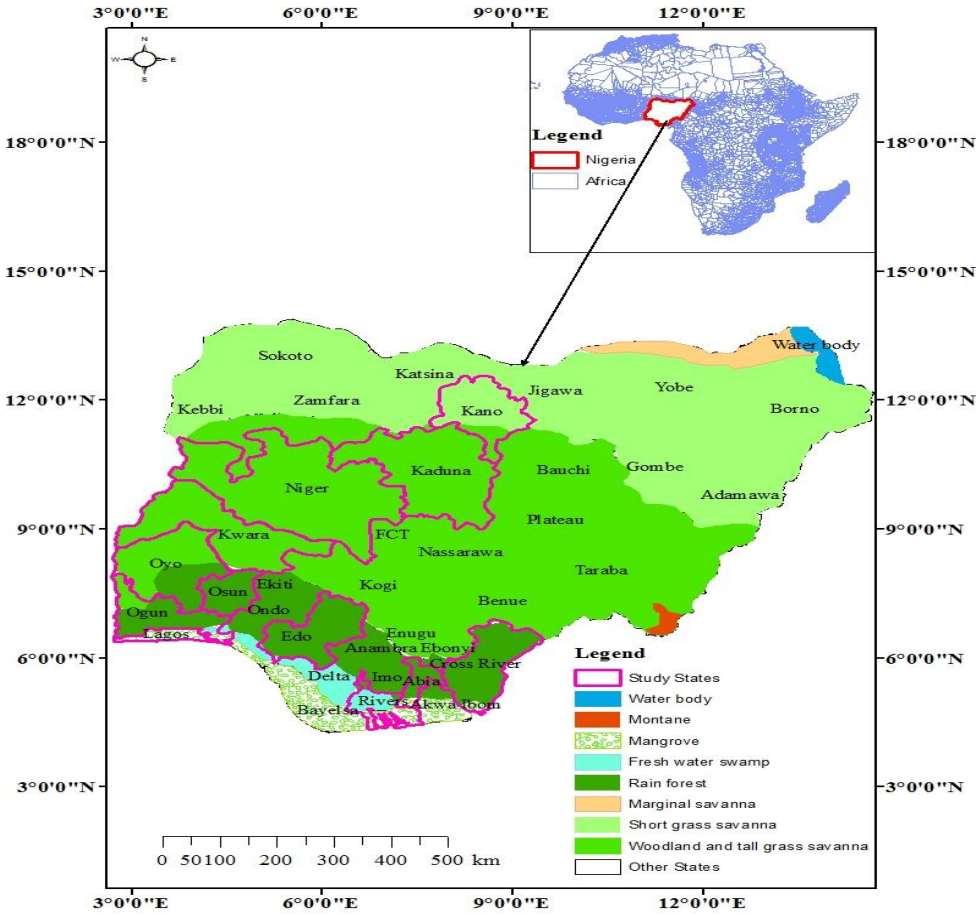

Figure 1: Agro-ecological map of Nigeria with the study states

In addition to the interview schedules, field surveys were conducted on site at the production facilities. The survey obtained information about the employment opportunities, policies, regulations and other factors facilitating and/or constraining the development of forest products industry. Specific information was collected on gender specific inequalities/opportunities; factors inhibiting and or promoting the full and equal participation of marginalised/vulnerable groups; gender-based control and access to required assets/resources including the specific opportunities. Other pieces of information obtained included: challenges and privileges of involvement and participation in the sector; marketing and trade (domestic and international) in their products including volumes, production costs and revenues and prices/ pricing policies of products traded in the last five years. Also investigated were the processes of local forest partnership models and practices undertaken in the study areas and drew lessons from them. To conclude, a SWOT/SCOT analysis was undertaken.

4. RESULTS AND DISCUSSION

4.1 Key actors and gender groups' representation in forest production

4.1.1 Key actors in primary forest production

Primary forest production is essentially a government concern in all parts of Nigeria. The largest proportion of timber in use is extracted from reserved forests and public plantations. By virtue of the National Forest Policy of Nigeria, 2006; and the Land Use Decree and later, Land Use Act of 1978, the ownership of the forest reserves is vested in the state governors who hold them in trust for the people. Thus, approval of the state governor or his delegated authority (usually, the state's Director of Forestry) is required for the extraction/withdrawal of timber from forest reserves.

Private forest ownership is growing fast; for example, in the south western region of the country this is the largest form of ownership (57.2%) (Table 1). However, the sizes of the private forest estates are generally small, with the largest proportion of forest products still being obtained from government forest reserves.

Table 1: Ownership type of forest estates in south western Nigeria

Ownership Type	Frequency	Percentage
Government	8	28.6
Private (individuals)	16	57.2
Private partnerships	2	7.1
Public-private-partnership	2	7.1
Total	28	100.0

Source: Field survey, 2015.

Some of the large private forest estates that have emerged in the south west region are shown in Table 2. Only very few large private forests exist; however, there are several small forest plantations owned by private farmers in communities such as Ikire, Ile-Ife, Osogbo, Ibadan, Abeokuta and Eruwa; with of such small woodlots ranging from 0.5 to 2.0 hectares.

Table 2: Some privately owned forest plantations in south western Nigeria

Name of Owner	Name of forest estate	Location	Area (ha)	Species composition
Chief Olusegun Obasanjo	Obasanjo Farms	Alamala, Abeokuta North, Ayetoro, Oke Odan, Ogun	1,300.0	*Tectona grandis*

Name of Owner	Name of forest estate	Location	Area (ha)	Species composition
		State		
Chief Bisi Rodipe	Evergreen Tree Plantations	Ijari, Ijebuode and Ilaro, Ogun State	1,200.0	*T. grandis, Khaya* spp.; *Cedrela ordorata, Terminalia ivorensis* and *Afzelia Africana*
Oba Otudeko	Heritage Plantations	Ibadan, Oyo State and Odogbolu, Ogun State	>50.0	*Tectona grandis*
Chief Afe Babalola	Afe Babalola Forest Plantation	Ado-Ekiti, Ekiti State	500.0	*Tectona grandis*
University of Ibadan	University of Ibadan Forest Plantations	Ibadan, Oyo State and Ile Ogbo, Osun State	10.0	*Tectona grandis*, *Terminalia* spp., *Khaya* spp and *Afzelia Africana*
Chief J.B. Odebiyi	Bola Odebiyi Ventures	Abeokuta, Ogun State	0.4	*Tectona grandis*
	Bola Odebiyi Ventures	Ilaro Road,Papa Lanto, Ogun State	4.0	*Tectona grandis*
Alhaji Atilade		Ibadan	>10.0	*Tectona grandis*

Source: Field survey, 2015

There are also pockets of private forest owners in the south-east and south-south zones of Nigeria. Species planted include those of: Gmelina, Teak, Casuarina, Eucalyptus, Irvingia, Mahogany, Mitragyna and Walnut. The size of the private forest estates ranges from 1 to 100 hectares (Table 3).

Table 3: Some privately owned forest plantations in the south east and south-south Nigeria

State	Stakeholders	Species planted	Location	Area planted (ha)
Cross River	Ajadula	Gmelina, Teak	Alifokpa	2.0
	Lions club	Teak, Ornamental trees	Calabar EPZ	1.0
	Evang. Agbor	Spondias, Teak, Gmelina	Iyamoyong	1.0
	Comprehensive Secondary School	Casuarina, Teak, Eucalyptus,Pear	Bishri	2.0

State	Stakeholders	Species planted	Location	Area planted (ha)
	Presbyterian church of Nigeria	Irvingia, Casuarina	Ugep	1.5
Edo	Edo State Timber Association	White Afara, Black Afara, Mahogany	Egberi forest reserve (B16)	100.0
		Walnut, Black and White Afara	Egberi forest reserve BC2	
			Ovia NE Ekenwa (Shell location)	50.0
			Ovia SW(utesi) BC10 Enope plantation	20.0
Abia	Chief Ikoriko	Teak, Gmelina	Ohafia	25.0
	Rev. Eguta	Nauclea, Terminalia, Gmelina	Ozuabam	1.5
	Chief Akoma	Jatropha	Akoli Umenyi	7.0-10.0
	Ohafia community	Iroko, Gmelina, Treculia, Dycrodes, Persia	Ohafia	2.0
Rivers	CERHD	Mangrove species	Ogoni land	10.0
	Biseni community	Mitragyna	Biseni	20.0

Source: Field survey, 2015

In the north-central and north-western zones of the country, there is a growing trend in privately owned forest plantations by various stakeholders, including saw-millers and furniture operators. Within the north-central region, the University of Ilorin has established over 600 hectares of teak plantation. At least 30% of the respondents encountered in this zone indicated owning private forest estates. In contrast, private forest estates ownership was found to be very low in the north-western region as only about 17% of the respondents owned private forest estates. However, about 38% subscribed to government concessions. Farmers in this zone actively engage in short term crop agriculture, and as such are not inclined to engaging in private forestry. Another important militating factor is unfavourable ecology.

4.1.2 Key actors in secondary forest production

Secondary forest production involves the transformation of forest raw materials into finished goods. In Nigeria, the secondary forest production segment is dominated by private individuals. In the south-east and south-south regions, for instance, individual private ownership constitutes 85%, with private-partnerships among individuals making up the remaining 15%. Government involvement at this level is virtually non-existent and this is the same for public-private ownership (Table 4).

Table 4: Ownership of wood processing enterprises in south east and south-south regions of Nigeria

Ownership	Frequency	Percentage
Government	0	0
Private	17	85
Private Partnership	3	15
Public- Private partnership	0	0
Total	**20**	**100**

In the north -western region ownership of forest plantations is wholly in the private sector (Table 5). The production activities in the secondary forest production sector range from small to medium to large scales. Small scale production is by far the largest employer of labour as well as a good income provider. The activities identified in this category include: production of rattan furniture, souvenirs, baskets, wooden furniture and cabinet, cattle sticks, wooden sponge, and chew-sticks.

Table 5: Ownership of wood processing enterprises in north western Nigeria

Ownership	Number encountered	Percentage
Private individual	21	100
Private partnership	00	00
Public-private partnership	00	00
Others	00	00
Total	**21**	**100**

Source: Field Survey, 2015

4.1.3 Gender group representation in primary and secondary forest production

Primary forest production activities are male-dominated. The furniture and saw milling segment in secondary forest production are also male controlled. The female gender is mainly involved in marketing and trade in forest products. The collection, marketing and utilization of firewood are activities also dominated by women. Other areas of women's involvement in forestry activities include exploitation of mangroves. Also, women are involved in non-timber forest products collection, utilization and trading. Generally, women

engagement in forest industry activities is limited in the more hazardous activities like timber harvesting and processing. Men undertake the more difficult jobs such as tree felling, climbing, beekeeping, etc.

Women are also involved in sawnwood/plank trade, small scale cottage processing of non-timber forest products such as *Irvingia gabonensis* (bush mango), *Massularia acuminata* (chew-stick), baskets and bag-weaving. They are also engaged in tending, weeding, transplanting and nursery management. They go to the forest and sawmills to collect firewood, roots and barks, off-cuts and wood wastes for domestic cooking and sometimes for commercial purposes (Plate 1).

Plate 1: Collection of wood waste for firewood at Oko Baba, Lagos, Nigeria

Women are dominate in medicinal plant collection and marketing. In all the locations visited about 90% of the actors in the medicinal plant businesses were females, ranging from 17 to 76 years of age.

4.2 Tree species raised/managed in primary forest production

The common species in primary forest production in the country are *Tectona grandis, Gmelina arborea, Eucalyptus* and *Terminalia species.* The five most important timber species in the south-west zone include *Afzelia africana* (Red Apa), which was the most preferred among the respondents. This species, found largely in the natural forest, is widely sought after because of the beauty and durability of its wood. It is, however, currently endangered in many parts of the country due to tremendous pressure on its wild population in the natural forest, and it is very rarely raised in plantations. The other species are: *Melicia excelsa* (Iroko), *Khaya spp.* (Mahogany), *Gmelina arborea* and *Mansonia altisima.* These are also very popular among users. Unfortunately, some of them (e.g. *Milicia excelsa* and *Mansonia altissima*) are equally not raised in plantations in the country. They still occur largely as wild stands in remnants of rainforest, farmlands and other protected areas such as campuses of higher education institutions and sacred groves in the southern part of the country.

Gmelina arborea exists in large scale plantations virtually in all parts of Nigeria. The plantations were established in the late 1970s up to the mid-1980s. The original goal of establishment was to supply raw materials to pulp and paper mills at Oku Iboku (South-south), Jebba (North-central) and Iwopin (South-west). Unfortunately, the plantations outgrew the pulping age before the mills could take off and they momentarily became a burden to the states owning them. It was only at the beginning of 1990s that wood processors discovered that *Gmelina* wood was quite good for various uses including: furniture, roofing, doors and windows and door frames. This sudden discovery coupled with dwindling supplies of favourite indigenous species such as *Khaya, Terminalia, Mansonia, Milicia* and *Nauclea* from the forest reserves and other areas have now put the species under pressure. Unfortunately, there is no commensurate planting to cope with the high rate of exploitation. *Tectona grandis* (teak) also faces a similar threat, which is even worse because of the great export demand pressure for its wood.

Some of the most preferred species in the north are *Khaya senegalensis, Terminalia ivorensis, Diospyros mespiliformis, Piliostigma reticulatum, Gmelina arborea*, and *Eucalyptus camaldulensis*. Species found in plantations include: *Eucalyptus spp; Azardirachta indica* and *Khaya senegalensis*. These were planted in shelter belts and city avenues, as well as roadside plantings. Unfortunately they have not been managed well; for example, there are no records of past and current yields, growth rate, standing volume or silvicultural treatments. Many of the shelter belts have been devastated by years of uncontrolled exploitation for poles and firewood.

Meanwhile, smallholder woodlots abound on private farms established mainly for the supply of poles and firewood. The average plantation size ranged between 0.5 to 2.0 hectares. Around Wudil, in Kano State, small scale Jatropha farms were also encountered. It was observed that some of these farms were being replaced with arable crops such as millet and sorghum. Farmers claimed that there was no market for the Jatropha crops.

Generally, primary forest production in Nigeria is characterized by unplanned and uncoordinated timber extraction that results in over-harvesting of the forests, implying that

principles of sustainable forest management are not applied in most cases. There is little or no information on age distribution, stand volume and timber yield. There are no concrete plans for sustainable management of the forest estates. The public forests are in a worse situation. In virtually all the zones, there have been no records of inventory, growth monitoring, harvests and regeneration in the last twenty years. In some of the private forest plantations, the stands were found in age series ranging between two and thirty years. But in others, only one or two age classes were recorded. This has implication for sustainability as the harvesting of mono-specific and even-aged stands has left a wide gap in supply trends. The consequence of this is that the country now depends on wood importation from neighbouring countries of Cameroon, Benin Republic, Togo and Ghana.

4.3 Industry types in secondary forest production

Industry types in secondary forest production sector range from small to medium to large scale. Small scale production usually involves between one and five workers including the business owner. They obtain their raw materials from suppliers from remote villages, sometimes far away as in the case of rattan canes which are obtained from suppliers from the south-south zone. Although this sector employs only very few people per firm, the number of individual jobs created by the segment may be up to 500,000 persons. Plates 3-5 show some of the small-scale secondary production activities and products.

Plate 2: Baskets produced from *Sida acuta*

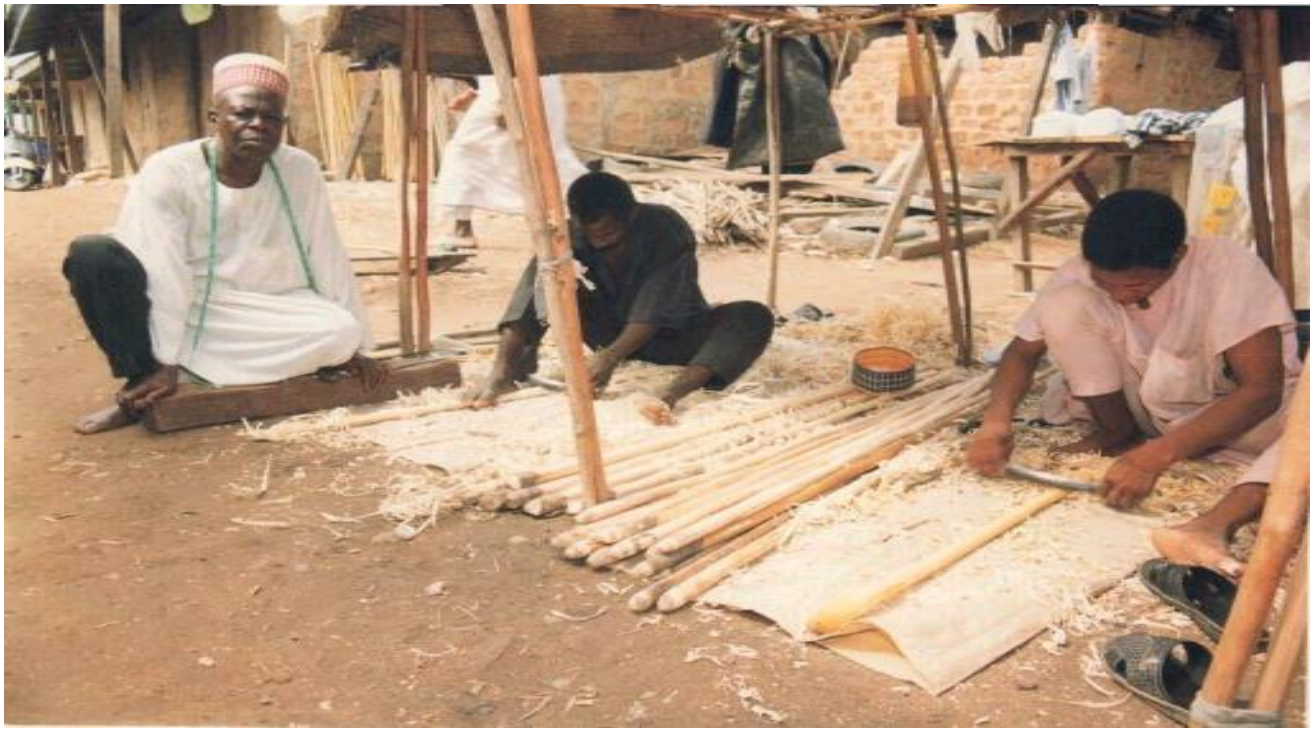

Plate 3: Processing of cattle sticks Ibadan, Nigeria

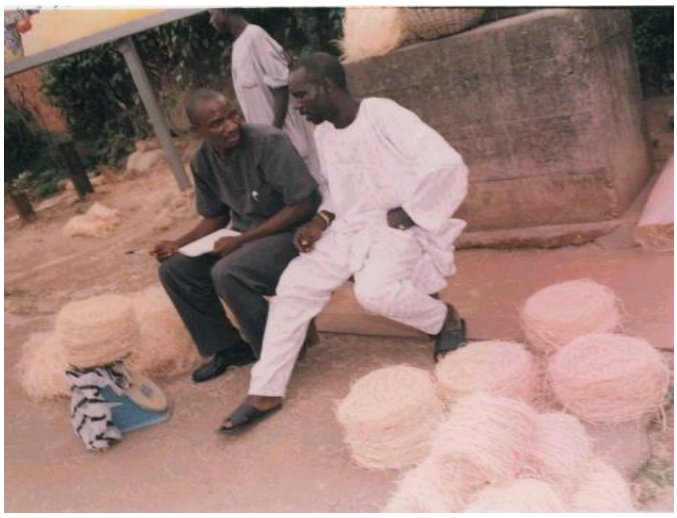

Plate 4: Wooden sponge from *Momordica anguisticephalas;* Plate 5: Locally processed game meat at Asejire, Osun State, Nigeria

Furniture and saw milling are medium scale secondary forest industry types which also contribute greatly to income and employment in Nigeria. There are over 1000 sawmills located in big and small towns around the south-west zone, with concentration around Ijebu Ode, Ijebu Igbo (Ogun State); Ikire, Ile-Ife (Osun State); Ondo and Ore (Ondo State). These

sawmills supply Oko Baba Plank market in Lagos, the biggest timber market in Nigeria, and Bodija Plank market in Ibadan. Both markets serve as the major distribution centres for planks to other parts of Nigeria, particularly, the less timber-endowed northern Nigeria. Over two million people are engaged in both formal and informal employment. Table 6 shows a generalized structure of timber/timber product market in the country.

Table 6: Structure of timber/timber product market in Nigeria

Resource's base	Market structure	Sellers	Buyers
Standing timber	Monopoly	Government	Licensed timber contractors, concessionaires / permittees
Round logs/lumber	Oligopoly	Licensed timber contractors, permittees	Sawmillers and other primary converters
Planks/flitches	Oligopoly	Primary converters, plank sellers	Secondary converters/furniture makers/joinery etc.

Source: Popoola (1998) and updated through field survey in 2015

There are few large-scale concerns in the wood processing industry and they are found mostly in the south western part of the country. These include: the agglomeration of hundreds of small firms at Oko Baba in Ebute-Meta, Lagos; Western Wood Processing Industry at Akure; and BISROD Furniture, Ijebu Ode, in Ogun State.

Chain sawmilling which involves *in-situ* timber conversion has also evolved as an important activity of the wood-based industry in the country. Over 70% of the planks in the timber markets in south-western and north-central parts of Nigeria were found, during this study, to have been produced from chain-sawmilling. This is in spite of the extant law, which allows for it only in some special circumstances because of its perceived wastefulness. This activity, however, generates a lot of rural employment ranging from tree finders, chain saw operators, loaders to sellers, and these activities cut across genders, although it has contributed also to illegal logging in all parts of the country.

There were several forest industry types in the country in the early 70s up to the end of 1980s. Table 7 shows a list of wood processing units in the country as at 1989. Unfortunately, over 80% of these have folded up as a result of poor power supply, high equipment cost and shortage of raw materials (timber). The plywood, paper products and particleboard producing segments of the forest industry are virtually no longer in operation.

Table 7: Some wood-based processing units and their locations in Nigeria

S/N	Name	Location
1	Jebba Paper Mills	Jebba, Kwara State
2	*Nigerian Newsprint Manufacturing Company	Oku-Iboku, Akwa Ibom State
3	Iwopin Paper Mills	Iwopin, Ogun State
4	African Timber and Plywood	Sapele, Delta State
5	Associated Match Industry Limited	Ibadan, Oyo State
6	*Piedmont Plywood (Nigeria) Limited	Benin City, Edo State
7	*Seromwood Industry Limited	Calabar, Cross River State
8	*Calabar Veneer and Plywood Company	Calabar, Cross River State
9	*Nigerian Romania Wood Industries Limited	Akure, Ondo State
10	*Ekiti Lumber Production Company	Ikere-Ekiti, Ekiti State
11	Ethiope River Sawmill Limited	New Benin, Benin City, Edo State
12	*Epe Plywood Industries Limited	Epe, Lagos State
13	Nigerian Wood Preservation Industries Limited	Ojota, Lagos State
14	*Nigerian Hardwood Company Limited	Abraka, Delta State
15	Woghiren Wood Treatment Factory	Forestry Road, Benin, Edo State
16	*Yinka Morenike Plywood and Wood work	Ise Ekiti, Ekiti State
17	Nigerian Hard woods	Burutu, via Warri, Delta State
18	*Agatapa Wood Treatment Industry, Abagana	Anambra State
19	Bendel Wood Treatment Factory	Ekenwa Road, Benin-City, Edo State
20	*New Nigeria Timber Company Limited	Ankpa, Kogi State

Source: Forestry Association of Nigeria-FAN (1989) and updated in 2015.

*Note: Processing units with * are no longer in operation.*

The value chain within the forest industry typically progresses from the resource base (natural and plantation forests that are controlled by the States' Forestry Departments), timber logging (that is dominated by forest concessionaires/timber contractors), chain-saw operators and the timber haulage operators, then the sawmills. From the sawmills are the plank sellers and marketers down to the furniture makers and the artisans involved in carpentry and joinery works. Basically, conversion and processing efficiency is a major issue along the chain, with recovery being as low as 40 percent in many cases. The rattan furniture value chain is not as long as what is described above, since the resource involved is completely different. The typical rattan furniture value chain progresses from cane harvesting in the forest reserves, to Maryland, Lagos Cane Village (which is the major depot for harvested rattan in the country), then to the respective cane weavers in the various states. Plate 6 and 7 show pictorial representation of value chain of rattan/cane segment.

Plate 6: Pictorial representation of value chain of rattan/cane industry

Plate 7: Pictorial representation of value chain of rattan/cane industry

The most profitable product lines in the timber trade are the hardwoods cut into various dimensions such 1" x 12" and 2" x 12". The commonly exploited timber species are *Pterocarpus erinaceus, Daniella oliveri, Afzelia africana, Isoberlinia doka, Gmelina arborea, Khaya senegalensis, Milicia excelsa, Mansonia altissima, Cordia milleni, and Terminalia spp.* Human resource requirements include mainly technical, skilled and unskilled labour. There is also an expanding managerial and supervisory cadre within the segment. On the other hand, softwoods are considered least profitable. For those in the furniture business, upholstery chairs are considered as the most profitable product line, while the least is bed making. In the rattan segment of the industry, furniture items (especially rattan chairs and tables) are regarded as the most profitable line of production, while gift items (souvenirs) and flower vases are considered the least profitable.

The product lines for sawn wood identified in the different zones includes logging; sawnwood; planks; furniture and saw doctoring. Capacity utilization in all the cases averaged 60%. The factors identified for the low productivity were shortage of raw materials, poor/erratic power supply and general economic downturn which led to low market patronage for the products. The high cost of diesel fuel to power generators for processing was also identified as a limiting factor. Average production capacity was about $10m^3$ per shift (per day), while log conversion efficiency through flitching at stump was between 36-48%. Many of the logs processed are 1.524m (5ft) girth and below. Ninety percent (90%) of the saw millers obtained supplies from government-owned forest reserves and 'free areas' (farms and farm fallows). Wood supplies from privately-owned forests were insignificant. Semi processed round logs were transported via waterways from Edo, Delta, Rivers, Bayelsa and Akwa Ibom States in the south-south zone via rafts to Oko baba at Ebute Meta, Lagos (Plate 8).

Plate 8: Logs Transported in rafts via waterway found at Oko Baba, Lagos, Nigeria

Firewood, charcoal and other non-wood forest products are largely obtained from private farms and communal lands. There was evidence of movement of charcoal from Kwara State in the North-central zone to cities in the south-west, particularly, Ibadan and Lagos. Oke-Ogun Area of Oyo State is another major source of charcoal production and supplies to Ibadan, Lagos and other locations in the northern part of Nigeria.

The most common enterprise encountered in the Sahelian zone (north western region) was fuelwood business, which constituted over 52.40% of the wood enterprises in this zone. Sawnwood, charcoal and *Gmelina arborea* pulp constituted 9.52% each. Furniture, gum Arabic, medicinal plants and poles production accounted for only 4.76% each (Table 8).

Table 8: Product types, as reported by respondents, in the Sahelian region of Nigeria

Type of product	Number encountered	Percentage
Sawnwood	2	9.52
Fuelwood	11	52.40
Gum Arabic	1	4.76
Medicinal plants	1	4.76
Charcoal	2	9.52
Gmelina plantation (Pulpwood)	2	9.52
Poles	1	4.76
Furniture	1	4.76
Total	**21**	**100.00**

Source: Field Survey, 2015

About 67% of the enterprises were of medium scale, while up to 23.81% were small scale businesses. Only 9.52% were large scale operations (Table 9).

Table 9: Scale of operation of the respondents

Scale of operation	Number encountered	Percentage
Large	2	9.52
Medium	14	66.67
Small	05	23.81
Total	**21**	**100.00**

Source: Field Survey, 2015

4.4 Factors facilitating and constraining the development of the forest products industry

The factors facilitating the development of the forest products industry in Nigeria include: availability of huge local and international markets, availability of manpower (skilled and unskilled), and favourable government policies. On the other hand, the growth of the forest products industry in the country is constrained by: shortage of raw materials, poor supply of electricity, and high cost of doing business.

4.4.1 Employment opportunities

The forest sector represents a huge source of employment in Nigeria. An estimated 500,000 young men and women are employed at all stages along the value chain of the forest products industry. At the resource base, workers are employed as forest labour in silvicultural activities, maintenance and harvesting operations. Particularly, during harvesting, in both plantation and natural forests, men are employed as tree finders, logging assistants, routers, and loaders in the haulage process. Sawmilling also employs at least 100,000 additional workers, both on part time and fulltime basis. Workers are engaged as mill operators, sawmill assistants, saw doctors and sawmill managers. Truck drivers and their mates also benefit fairly stable employment in sawmilling. Furniture makers, including small, medium and large-scale firms employ at least half a million workers at the production and marketing levels in the south-western part of Nigeria alone. The employment in forest products industry is highly skewed, with about 95% being male employees; their female counterparts are involved mainly in the marketing and trade aspects (Plates 9 and 10).

Plate 9: Employment in the forest products industry in Lagos, Nigeria

Plate 10: Employment in the forest products industry in Lagos, Nigeria

Table 10 presents a summary of employment opportunities in the forest products industry in the south-west (the hub of the forest industry in Nigeria) at both professional and technical levels. At the professional level, vacancy ranged between 33% and 71%, while it ranged between 45% and 85% at the technical level of employment. Great potentials exist in the forest products industry for employment generation, provided issues such as power supply and regular supplies of raw materials are addressed.

Table 10. Employment potential in forest products industry in south western Nigeria

Personnel type	Number of professionals required	Number of professionals recruited	Vacancy % of staff requirement	Number of technical staff required	Number of technical staff recruited	Vacancy percentage of staff requirement
Skilled	201	79	61.0	49	28	43.0
Managerial	73	52	29.0	14	12	14.3
Supervisor	195	65	67.0	10	6	40.00
Unskilled	241	141	41.0	196	90	54.1
Total	710	337	52.5	269	136	49.4
Total Female	105	54	48.6	40	20	50.00
Total Male	605	283	53.2	229	116	49.3

Source: Field Survey, 2015

In addition to timber production by the government and private individuals, thousands of jobs are generated in the informal forest sector. These include employment in hunting, collection of firewood, harvesting of wild vegetables, rattan and canes, and gathering of medicinal plants.

Over 70% of domestic energy consumption in Nigeria is derived from firewood and charcoal. The collection, marketing and utilization of firewood is dominated by women; with 87%. of firewood collectors being women. The 13% male participants operate power saws to rip dead wood on farm fallows and after crosscutting they load the wood onto pickup vans and transport to major cities, usually for sale to bakeries, hotels and city retailers who re-sell to final consumers at the household level (Plate 11).

Plate 11: Employment in firewood and charcoal in Nigeria

Overall, the forest products industry in the country is characterised by good opportunities in employment and income generation, productivity improvement potential, enhancement of women, youth and vulnerable groups' capabilities, livelihood security, and economic resilience building. However, the industry is still generally characterised by inefficiency; the dominance of uncoordinated and dispersed small-scale producers; use of inefficient/obsolete technology and the considerable reliance on human labour instead of technology; inadequate supply of electricity, poor accessibility and/or lack of access to credit facilities, underdeveloped social infrastructure such as roads and rail systems; low level of value addition; weak linkages to other industry and service sectors; and weak competitiveness for its products, especially in export markets.

4.4.2 Policies in the forestry sector in Nigeria

The policies regulating the forest industry in Nigeria have a common origin in the colonial British forest laws. The emphasis then was on controlling the exploitation of forest resources, principally timber, but also other resources like rubber and resins. The initial pre-occupation was the supervision and regulation of exploitation of forest resources, especially

from the forest reserves. The first Forestry Ordinance (Law) at the national level, was promulgated in 1901, to regulate the size of timber concessions and minimum exploitable girths (then 12 feet or 120 cm dbh for mahoganies), to impose forestry fees and exact duties on exported logs, and to require concessionaires to plant 20 economic trees at each stump site (a practice later abandoned as ineffective- Lowe, 1990; Okali, 1995).

Though the Federal Government does not own forests, all the state forest policies and laws took their origin from the national forest policies and regulations. The forest policy of Nigeria had hitherto been embedded in the National Agricultural Policy of 1988, which gave recognition to forestry as a very important component of the national wealth. The current stand-alone national forest policy, adopted in 2006, emphasizes sustainable forest management (SFM), for multiple benefits that integrate socio-economic contributions, community participation, environmental benefits and ecological stability for sustainability.

The extant national forest policy, which is becoming obsolete, is yet to be backed by any law. The policy seeks to encourage collaborative partnerships with rural communities for the sustainable management of forest resources to ensure the supply of goods and services from the forest for the present and future generations. The objective is to promote sustainable forest management in forest reserves and forest resources outside the forest reserves (free areas). Strategies for the implementation of the policy include:

- Develop a supportive legal basis for tree tenure, access rights, and sharing of benefits from wood and non-wood forest products.
- Develop both the capacity and attitude changes in government and non-governmental organizations so as to create genuine partnerships for collaboration with local community groups.
- Develop virile community institutions to ensure transparent decision-making, the adequate representation and participation of women, men, and vulnerable groups and the equitable sharing of forest benefits and responsibilities.
- Strengthen the role of NGOs and CBOs in mobilizing communities and building capacity for implementing collaborative forest management.
- Ensure resolution of conflicts relating to problem of animals around protected areas.

The strategies enunciated for forest reserves include:

- Guarantee and grant property and felling rights with regard to established plantations in forest reserves based on the principles of sustainable forest management.
- Grant tax relief and liberal financial arrangements as incentives for commercial tree growers during the gestation period.
- Formation of community or stakeholders forest committees to share management responsibilities.
- Provision of rural infrastructure and facilities e.g. roads and schools.
- Recognize and guarantee the rights of host communities to fair and equitable share of the revenue and participation in resource control and management.

- Encourage forest concessionaires, to provide rural infrastructures and facilities such as roads, schools and primary health institutions.

The extant policy on environment, therefore, does not in any way hinder public-private-partnership in the forest sector. What seems to be limiting is the absence of an Act of Parliament to back and enforce this policy. Also, would-be private participants are not readily aware of the opportunities provided by the national forest policy.

4.4.3 Forestry regulation

As is obvious from the National Forest Policy, adequate provisions for participatory sustainable forest management with the involvement of communities and the private sector have been made. It also addresses gender equity which ensures that the rights and benefits accruable from forestry are shared amicably. It also advocates for corporate social responsibility among stakeholders. Although the policy instruments highlighted above originated at the national level, forestry legislations at the other levels of government are fashioned after the national policy. Hence, the forest regulatory instruments in each of the states covered in this study agree substantially with the provisions of the National Policy. Specific regulatory activities of the states governments' forest services include the issuance of permits, licences and property hammers. Before any tree could be removed from any government reserve or even private forests or farmland, it is mandatory that a permit be issued by the state forestry department. Each log is pass-hammered with unique number embossed on the logs to certify that they were legally harvested (Plate 12).

Plate 12: Timber regulation through pass hammering

There are also regulations against forest encroachment, poaching and illegal use of firearms in forest reserves, game reserves and national parks. The control and regulation of the national parks resides with the federal government while the state governments regulate activities in game and forest reserves.

The inability of state apparatus at all levels to check corruption has indeed taken its toll on forestry development in the country. For example, recent studies have highlighted the implications of corruption on marketing and trade in forest products on the African continent as a whole (Chupezi *et al.,* 2015; Popoola, 2015). In Nigeria for instance, the revenue accruing to the forestry administration is seriously reduced due to collusion between forestry officials and timber contractors.

4.5 Forest industries of Nigeria

The Nigerian forests support a wide range of forest industries, which include both the formal and informal sub-sectors. A vast majority of the Nigerian populace depend on these industries thus placing a lot of pressure on the forest resources of the nation. The formal sector is fairly well developed and comprise mechanical wood industries, including sawmills, veneer and plywood manufactures, particle board, paper and paper board manufactures. Furniture manufacturing is also carried out at a secondary level. The informal forest products sector comprises an informal wood-based sub-sector, which is the country's largest user of wood, (most of which are burnt as fuel) and the non-wood forest products sub-sector. The forest products industry is essentially controlled by the private sector in Nigeria.

4.5.1 Industrial roundwood

Roundwood includes industrial roundwood, fuelwood and poles. Most of the roundwood in Nigeria comes from the natural high forest zone of the country, in particular from the southern states of Cross River, Edo, Ogun, Ondo and Oyo. Roundwood is no longer exported from Nigeria as this has been placed on ban since 1976. Harvesting of industrialwood is carried out by mill operators, independent registered loggers and by poachers. The mill operators are generally awarded five- or twenty-year concessions by the states and they either operate directly or subcontract to independent loggers. Illegal felling of trees, for various end uses, remains a serious problem.

The states are the custodians of the forest reserves; however, records of forest exploitation are not faithfully kept, which makes sustainable management pretty difficult. All roundwood produced in Nigeria by 1997 has been estimated at 117.694 million m^3 (Aruofor, 2001). There is a general shortage of roundwood and face veneers. The continued and sustained levels of roundwood consumption in Nigeria are indeed a threat to the forest estate and a source of deforestation which is now a serious problem. This also stresses the need to embark on an aggressive afforestation programme.

4.5.2 Sawn wood

Sawn wood is produced by sawmills in Nigeria whose annual log equivalent intake capacity has grown from 11,684,000 m^3 (Alviar, 1980) to11,734,000 m^3 in 2010 (Ogunwusi, 2012). The estimated capacity and production is shown in Table 11.

Table 11: Installed capacity and utilization (round log equivalent) in Nigeria

Year	No of sawmills	Total installed capacity (m^3/year)	Utilization capacity (m^3/year)	Capacity utilization %
1988	N/A	8,831,750	6,994,660	79
1992	910	15,793,188	6,031,922	38
1996	1252	10,900,000	4,200,000	39
2002	1259	14,684,000	5,177,700	35
2010	1325	11,734,000	3,800,000	32

Source: Ogunwusi, A.A. (2012)

The industry has a few large integrated mills among which are the African Timber and Plywood Ltd. Sapele, Piedmont at Ologbo, Premier Timber Industry Akure, Seromwood Industry Calabar, Iyayi Brothers, Benin City, and others. Most of the sawmills have been fully depreciated and are suffering from obsolescence. The estimated total output of sawnwood by 1997 rose from 2,000,000 m^3 (Aruofor, 2001) to 6,031,922m^3 (in 1992) and then down to 3,800,000m^3 in 2010 (Ogunwusi, 2012). The major immediate problems responsible for the declining capacity utilization in the sawmill industry in Nigeria include: old/obsolete equipment and severe shortage of spare parts; frequent disruption of electricity supply; a declining supply of timber in volume, size of logs and quality; illegal felling, and insecurity of tenure with respect to timber concession. It should be noted that even though the size of the forest estate is declining, it remains still substantial and thus a source of deforestation.

4.5.3 Wood-based panels

There are eight veneer and plywood plants in the country using approximately 170,000 m^3 of logs per annum. Veneer slicing operations are all integrated within plywood mills. Plywood requirements for the country were estimated at 179,000 m^3 in 1990 and this was expected to increase to 285,000 m^3 in 2000 and 450,000 m^3 in 2010 (Gen. Wood, 1994). At the same time wood raw material availability was expected to decrease from 170,000 m^3 in 1990 to 119,000 m^3 in 2010, implying that demand for veneer logs outstrips supply. Ogunwusi (2012) estimated that capacity utilization in the veneer and plywood mills to decline from 72,240m^3 in 1988 to 10,250m^3 in 2010. One important factor responsible for this decline is the dwindling supplies of wood raw material.

4.5.4 Particle board

Particle board requirements for the country were estimated at 108,000 m^3 in 1990 rising to 199,000 m^3 in 2000 (Gen. Wood 1994). Existing capacity is estimated at 70,000 m^3 and comprising four mills. Production in 1993 was approximately 39,500 m^3 which is 44% of capacity utilization and remained the same in 1997. However, Ogunwusi (2012), reports that *particle* board production had declined to 9,736m^3 in 2010, against an installed capacity of 45,000m^3. Current production is hampered by high cost of foreign exchange for new equipment, spare parts and acquisition of glue. The particle board production lines in Nigeria are integrated with sawmills and plywood mills, the residues of which they recycle.

4.5.5 Pulp and paper

These products have been the largest traditional forest products import in Nigeria. There are two pulp and paper mills operating in Nigeria are the Nigerian Paper Mill Limited (NPM) at Jebba with a pulp capacity of 32,000 M.T./year and a paper production capacity of 70,000 M.T./year, and the Nigerian Newsprint Manufacturing Company (NNMC) at Oku Iboku. This mill has a pulp capacity of 70,000 M.T./year and a newsprint capacity of 100,000 M.T./year. However, a third mill, Nigerian National Paper Manufacturing Company with a capacity of 100,000 M.T./year of pulp and writing paper is only partially completed and barely operating on imported pulp. There are in addition eight operative small size tissue-paper mills with a capacity of around 40 M.T. /day. The total existing paper capacity in the country is estimated at 50,000 M.T./year for both newsprint and printing and writing paper and 70,000 M.T./year for other papers.

4.5.6 Safety matches and wood treatment subsectors

Capacity utilization in this industry increased from 7,500m^3 in 1988 to 16,200m^3 in 1992 and 52,980m^3 in 1996 and has dropped to 11,496m^3 in 2010. The wood treatment subsector also witnessed a decrease in capacity utilization from 52,980m^3 in 1996 to 11,496m^3 in 2010 (Ogunwusi, 2012) . The decline is attributable to dwindling supply of wood, poor power supplies and high cost of maintenance of equipment and machines.

4.5.7 Other forestry products

Firewood and charcoal

The predominantly rural population depends mainly on fuelwood to meet basic energy needs for cooking and heating. Nigeria used to produce about 1 million tons of charcoal annually of which 80% is consumed in the cities (FDF, 1986); however, between 2010 and 2015 this has risen to about 4 million tonnes a year[1] . Firewood and charcoal account for about 50% of the national primary energy consumption.

[1] https://www.downtoearth.org.in/news/energy/global-charcoal-needs-are-eating-up-nigeria-s-tropical-forests-59655

Fuelwood is demanded by both household and industrial sectors in all ecological zones of the country. It is estimated that about 90% of the rural households in southern Nigeria and up-to 98% in the northern Nigeria depend on fuelwood as their source of domestic energy. Industrial uses include those by institutions, food and craft industries. Fuelwood is very important in local restaurant, bakeries, local breweries, pottery, blacksmith and burnt brick factories. Institutions such as hospitals, prisons and schools also use fuelwood for cooking. The per capita consumption of fuel wood in rural areas is estimated at 393.43 kg/annum while the urban households consume 255.75 kg/ annum.

***Non-timber forest products**:*
These are all other materials other than roundwood and derived sawn timber, wood chips, wood-based panels and pulps, which may be extracted from forest ecosystems and are utilised within households or are marketed or have social, religious and cultural significance. The list of non-timber forest products in Nigeria is inexhaustible and include such broad classes as leaves, fruits, barks, nuts, resins, honey, mushrooms, wildlife, cane, chewing sticks and medicinal plants, to mention a few. The collection, processing and marketing of these products is undertaken informally by members of the family in various communities. They constitute a major source of household income in Nigeria. The department of forestry is placing emphasis on non-timber forestry products as part of a national campaign to mobilise the public. Such programmes include: Rural and Communal Forestry, Bee Keeping, Indigenous Forest Fruit Trees Production, Fruit Orchards Establishments and Wildlife Multiplication and Domestication.

4.7 SWOT analysis of the forest products industry

Table 12 shows a SWOT analysis of factors facilitating and/or constraining the development of the forest products industry in the country.

Table 12. SWOT analysis of the forest products industry in Nigeria

STRENGTHS	WEAKNESSES
➢ **Huge employment and income opportunities in the sector.** ➢ **Large foreign and domestic markets.** ➢ **Adequate provisions for participatory and sustainable forest management in the National Forest Policy.** ➢ **Many people depend on forests and forests resources for their livelihoods.** ➢ **Large and wellspread natural forests and plantations in some of the states.**	➢ Low productivity of the processing industries. ➢ Low ownership by strategic actors as lands and forests are owned by states governments. ➢ Dominance of unorganised small-scale producers. ➢ Low technology use by small scale producers ➢ Poor economy of scale due to small scale production ➢ Extant National Forest Policy (which is

STRENGTHS	WEAKNESSES
	near obsolete) yet to be backed by any law ➢ Low-capacity utilisation in large scale secondary production/wood processing
OPPORTUNITIES	THREATS
➢ **Productivity improvement potentials at both the primary secondary production levels.** ➢ **Empowerment of youth and vulnerable groups' capabilities.** ➢ **Strengthening of forest laws in favour of better forest management.** ➢ **Livelihood security and economic resilience building.**	➢ Underdeveloped infrastructure, like roads and rails ➢ Low degree of industrialization in the sector. ➢ Weak linkages to other industry and service sectors. ➢ Non- competitive pricing of forest products in relation to their substitutes ➢ Inability of relevant authorities to check corruption.

4.8 Gender specific inequalities

There are obvious gender specific inequalities in the forest product industry in Nigeria, with little participation of women, much as they dominate the non-timber forest products segment. Marketing of non-timber forest products such as firewood, mushrooms, wild vegetables, snails, spices, wrapping leaves etc., is 95% women dominated. The arduous nature of forestry activities, particularly at the primary level and the general lack of incentives such as access to land, credit facilities and input supports (farm implements and tree seedlings) to enhance the participation of women and women groups within the sector are key issues that need to be addressed. The main factor responsible for male dominance in the sector is cultural restriction and poor access to resources by women. In some parts of Nigeria, women do not have right to land and its resources. Even, their access to land by inheritance is rare.

At the secondary forest production level, women are involved mainly in the marketing of wood products (about 10%) and non-timber products including: firewood (90%), game meat (95%), bush mango (98%), mushrooms (100%), *Gnetum (98%)* (i.e. African salad), and various medicinal plants (95%).

4.9 Factors affecting full and equal participation of marginalised groups

Unclear and/or very restrictive land tenure systems, and in some cases tree tenure, are the major factors which inhibit the equal participation of all stakeholders, including marginalised groups in forestry activities in many parts of Nigeria. For instance, in virtually all parts of Nigeria, strangers are not allowed to plant trees on land rented or leased to them. Similarly, women do not have access to land to plant trees as they are traditionally not allowed to own land. Women could only own land by purchase or through their husbands. They do not have traditional right of ownership of land in their parents' family. Although the Land Use Decree (later the Land Use Act) vests ownership of land in the government, with the state governments holding it in trust for the people, access to land is very tendentious due to a combination of factors, major among which are cultural, political, economic and bureaucracy. This is borne out of cultural gender discrimination, political patronage; and complexity and lack of transparency in the official land administration institutions.

4.10 Marketing of forest products

The structure of the forest products market in Nigeria is generally complex. Marketing of timber and timber products for example, depends on the stage of transformation of the product. The distribution of forest products from production sites until they reach the ultimate user (consumer) involves a number of processes. There are two elements in the flow of forest products in Nigeria. They are: (i) the flow of transaction (i.e. between buyers and sellers) and (ii) the flow of the physical products (wood in various forms as well as non-wood products). The two however, coincide. Fig.2 presents the structure of forest product distribution channel in previous studies by Popoola (1998 and 2014), and as confirmed in the present study.

The process commences from the producers who may be private farmers, government or timber concessionaires. They sell their raw produce to processors (mainly saw millers) who add value to the produce and sell to wholesalers who are located in major cities like Lagos, Ibadan, Akure, Ado Ekiti, Benin, Warri, Porthacourt, Calabar, Mina, Kaduna, Kano, Potiskum, Maiduguri, Yola and Jalingo. These in turn sell the products to retailers and sometimes consumers/end users. In most cases final consumers/users buy from the retailers.

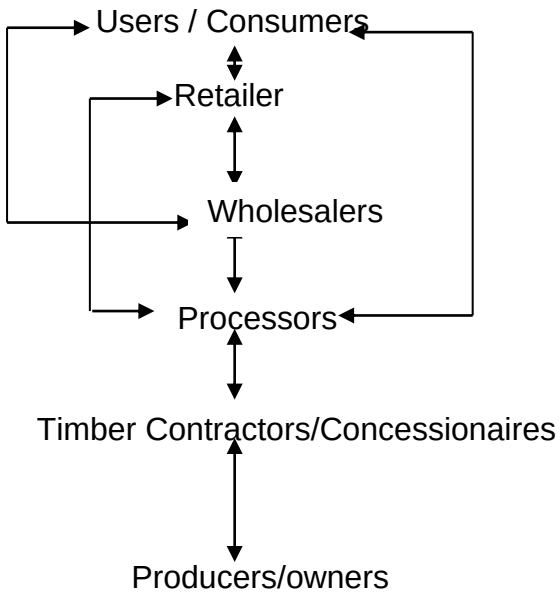

Figure 2: Structure of forest product distribution channel

Legend: ↑ *Product flow* ↓ *Flow of transaction*

Note:

- Producers/owners – mostly state governments (in Nigeria), rarely private owners.
- Timber contractors/concessionaires – formal or informal organisations.
- Processors are basically sawmillers, chain saw operators etc., could be formal or informal, large, medium or small.
- Wholesalers are usually found in major wood markets in commercial cities or mills sites.
- Retailers are usually dispersed and could also be found in major plank/wood product markets.
- Users/consumers are varied, in location, taste, incomes and needs

Source: Popoola, (1998, 2014)

4.11 Trends in wood products production and consumption in Nigeria

There are no reliable records of production estimates for wood and non-wood forest products in Nigeria. However, this section relied heavily on the study carried out by Popoola for the AfDB (1996 to 1998) as well as reports by the FAO (2010, 2014, and 2015). Tables 13 and 14 present the industrial round wood and wood-fuel removals; and total wood and wood fuel removals in Nigeria between 1990 and 2011.

Table 13: Industrial roundwood and woodfuel removals in Nigeria 1990-2005

Industrial roundwood				Wood fuel			
Total volume ('1000m^3 over bark)				Total volume ('1000m^3 over bark)			
1990	2000	2005	% from forest in 2005	1990	2000	2005	% from Forest in 2005
9,321	10,831	10,831	100	59,095	68, 172	70,427	100

Source: FAO Global Forest Resources Assessment (2010)

The increasing trend in industrial roundwood removals may be explained by the discovery that *Gmelina arborea* could be used for a lot of construction and structural purposes in the middle of 1990s. Expansive areas of *Gmelina* plantations were established in several parts of Nigeria in the early 1980s for the purpose of pulpwood production. But this goal was not met as the Gmelina plantations outgrew the pulping age while installation logistics hindered the operationalization of the pulp mills at Iwopin Ogun State and Oku-Iboku in Akwa Ibom State. *Gmelina* plantations then became temporarily useless as users did not realise their value. However, by the middle of 1990s, it was suddenly realized that the wood could be used for several purposes; hence massive logging of the species started towards the middle of 1990s and has continued to date.

The similar upward trend in woodfuel removals could be as a result of demand shift from kerosene to firewood and charcoal. This is because the prices of petroleum products like kerosene increased considerably in this period, a factor that could have pushed many rural, and even urban, dwellers that hitherto used kerosene to shift to charcoal and firewood for their domestic cooking.

This combined increasing demand on the forest for supply of wood has led to severe deforestation and degradation of virtually all government forest reserves in Nigeria. Several indigenous species such as *Mansonia altisima*, *Khaya* spp, *Afzelia* spp, *Pterocarpus* spp., *Terminalia spp*. and *Milicia excelsa* have become endangered. *Tectona grandis* has also suffered a similar fate. This calls for intensification of primary forest production through the establishment of plantations of both indigenous and exotic species to meet this growing demand for wood.

Table 14: Wood and woodfuel removals in Nigeria (1990-2011)

Year	Total wood removal (1000m^3)	Woodfuel removal (1000m^3)	Woodfuel as a percentage of total wood removal
1990	59.18	50.92	86.04
1991	60.00	51.73	86.22
1992	61.12	52.85	86.67
1993	62.29	54.03	86.74

Year	Total wood removal (1000m^3)	Woodfuel removal (1000m^3)	Woodfuel as a percentage of total wood removal
1994	63.79	55.52	87.04
1995	65.03	56.77	87.30
1996	66.15	57.67	87.20
1997	67.24	58.66	87.24
1998	67.84	58.42	86.11
1999	68.29	58.77	86.06
2000	68.77	59.35	86.30
2001	69.12	59.70	86.37
2002	69.48	60.66	87.76
2003	69.87	60.45	86.52
2004	70.27	60.85	86.60
2005	70.69	61.27	86.67
2006	71.05	61.63	86.74
2007	71.42	62.00	86. 81
2008	71.81	62.39	86.88
2009	72.21	62.79	86.96
2010	72.63	63.22	87.04
2011	72.63	63.21	87.03

Source: FAO Global Forest Resources Assessment (2015)

Table 14 shows a steady increase in total wood and wood fuel removals from Nigeria between 1990 and 2011. Again, this may be attributed to the surge in *Gmelina* harvest and shift in the domestic energy consumption from kerosene to firewood and charcoal because of the rising cost of kerosene. It is also striking to note that the wood fuel component of total wood removal was between 86.04 % and 87.04% throughout the period. This underscores the importance of woodfuel as a forest product and also the importance of forest as a source of domestic energy in Nigeria. This could have considerable negative effect on forest cover of the country, in addition to much more forest cover loss experienced due to expansion of cropland into forest land. FAO (2010) reports a total forest loss of 3.7% between 2005 and 2010.

According to FAO (2010), the value of the industrial round and wood-fuel removals in Nigeria was US$ 124 million and US$ 456 million respectively in 2005. This underscores the importance of wood-fuel in the supply of domestic cooking energy in the country. It also calls for concern about the need to direct deliberate efforts at establishment of plantations of fuelwood species by government and the private practitioners. It also presents an opportunity for public-private collaboration in forest production. Organizations such as the British-America Tobacco Company (BAT) already have private woodlots for fuelwood production. Government may collaborate with such organizations by providing them with incentives such as easy access to land, tax rebates and technical support. Table 15 presents the domestic consumption of major forest products in Nigeria from 2000 to 2020.

Table 15: Consumption of some key forest products in Nigeria ('000m^3)

Year	Sawnwood	Plywood	Poles and pilings	Firewood and charcoal
2000	87.08	219.2	2,236.77	84,546.2
2010	192.73	379.67	2,900.73	93,120.33
2020	453.23	686.59	3,809.26	100,523.46

Source: African Development Bank, 1998

The country will witness a considerable demand for firewood and charcoal in 2020 that will place a heavy toll on the natural forests if supplementary sources of supply are not catered for well in advance, like from farms. There is a much faster pace of growth in the consumption of sawnwood and plywood between 2000 and 2010. The growth in consumption of these two basic construction inputs will continue to rise even faster even beyond 2020, as exhibited by the very big demand for these products in 2020. Sawnwood will therefore remain the most highly demanded semi-processed wood product in Nigeria. This is a reflection of the high positive income elasticity of sawnwood consumption (sawnwood consumption increasing with increases in income) against the backdrop of the low range of GNP per capita. It is the most widely distributed wood product in Nigeria, partly as a result of the wide range of technology (from crude to refined products) that is adopted in its conversion and utilization. It also has high range of utilization (building construction, furniture, scaffolding, packaging, etc.) and these utilities are increasing because of rapid urbanization and improved rural housing, as well as socio-economic development at large.

A related product in housing construction is particleboard whose current demand is not very high, but it will grow in importance over time. There will be a steady growth in total and per capita consumption. This is because as the supply of round wood from the forest declines, there would be efforts to utilize wood more efficiently thereby prompting a shift in wood demand to reconstituted wood.

With respect to paper and paper products, there will be a continuous increase in literacy, public education programmes, and enrolment at all levels of educational institutions and health standards to warrant the expansion of the market for paper and other paper products. These products have a high positive income elasticity for per capita consumption of all grades of paper over the low range of GNP per capita. However, the upsurge in the use of electronic devices in communication and storage of information/documents may serve a limiting factor to this rise, but this may not be so significant.

4.12 Contributions of private forest sector activities to local livelihoods and national economy

The private forestry sector contributes significantly to income, employment, wood energy, food, medicine and housing in Nigeria. Unfortunately, most of these contributions remain undocumented. Table 16 presents an overview of the contributions of private forest sector activities to local livelihoods and national economy of Nigeria. Information on employment generated by the forest sector in 2011is also presented in Table 16.

According to the FAO (2011 and 2014), by far, the furniture segment of the forest products industry contributes more in terms of employment and gross value added, while wood processing generally, generates higher employment than the pulp and paper segment**.**

Table 16: Contribution of the formal forestry sector to employment and GDP in Nigeria in 2011

Sector	Employment (numbers)	Gross value added to GDP (million USD)
Roundwood production	30,000	906
Wood processing	33,000	14
Pulp and paper	11,000	72
All forestry sector	74,000	992
% of total country labour force	0.1	

Source: Annex 2 FAO State of the World Forests (2014)

In the northern part of the country that has about 60% of total land area of the country, firewood production generates about 30% employment during the dry season when farming activities are reduced. In addition to firewood, non-timber forest products such as gum Arabic (*Acacia senegal*), Tamarind (*Tamarindus indica*) and wild honey contribute to employment and income generation to the tune of about 5% of total employment.

The majority of the secondary forest enterprises in the northern zone were established between 2006 and 2010, much as the upsurge of forest-based small businesses began between 1996 and 2000, a period that this coincided with the time the Forestry II Project of the World Bank which supported the establishment of forest plantations in all the regions in Nigeria was being concluded. The vacuum created by the absence of the project might have stimulated the growth of these small-scale forest businesses. Also some of the tree plantations raised by the afforestation projects matured around that period and this

triggered the establishment of several small-scale privately owned forest enterprises to use this wood raw material (Table 17).

Table 17: Establishment of secondary forest enterprises in north western Nigeria

Period of establishment	Number of enterprises	Percentage
1980-1990	1	4.76
1991-1995	2	9.52
1996-2000	3	14.29
2001-2005	6	28.57
2006-2010	8	38.10
2011-2015	1	4.76
Total	**21**	**100**

Source: Field Survey, 2015

Figure 3 presents the distribution of secondary forest production enterprises in the north western zone of the country. The most common enterprise is fuel wood-based businesses which constitute about 52%. This is to be expected since firewood constitutes over 70% of domestic energy consumption in this zone.

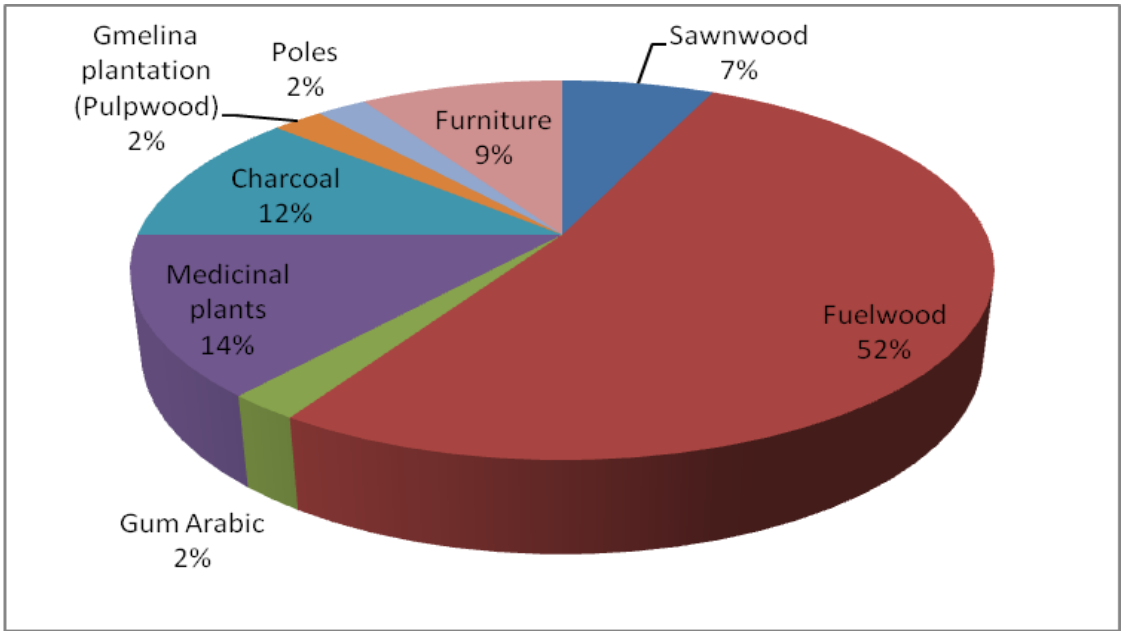

Figure 3: Secondary forest products and number of firms in north western Nigeria

Source: Field Survey, 2015

Engagement in medicinal plants, charcoaling and furniture making constitutes about 35% of the business portfolio in this region.

4.13 Relationship/linkages among actors in primary and secondary forest production in the country

In all the country zones, it is observed in this study that there is a weak linkage between the public (government) and private forest practitioners. However, there exist some relationships between the federal and the state departments of forestry. Since the federal government does not own any forests, whereas the state governments do, forest policies and regulations emanating from the federal government are not necessarily binding on the state governments. The state governments however regulate the activities of the local government agriculture and forestry departments and the private forest owners. The state forestry departments also relate with the secondary actors such as timber contractors, logging companies, saw millers and furniture makers. These governments occasionally supply seedlings to saw millers and small holder farmers for planting on their farms. At the time of harvesting, state governments through the forestry services/departments regulate harvesting by issuing permits for trees to be removed. They also grant concession, issue property hammers and permits to timber contractors and logging companies, many of whom in the country are no longer in operation due to dearth of forest blocks for allocation. The policy dichotomy has negative effect on the implementation of the national forest policy. The Federal Department of Forestry only plays a supervisory role on the activities of the State Forestry Departments.

The Federal Forestry Department has limited influence on forest management at the state level. As presently constituted, the Federal Forest Department does not have the personnel and financial resources to enforce forest laws at the state and local government levels. However, a synergy between the state and federal forestry authorities through a participatory arrangement which will also involve the private sector may be the way forward for effective forest policy implementation in Nigeria. This will of course involve a review of the extant forest policy and provide it with effective legal backing.

4.14 Scope for public-private-partnership in forestry

The idea of collaboration between the private and the public sectors started early in the history of Nigerian forestry. The taungya system was an early form of public-private collaboration. The system involved a cooperative agreement between the government forestry department and local farmers. Farmers were allocated fertile land within state government forest reserves and were also provided with seedlings of tree species such as *Tectona grandis, Khaya spp, Terminalia spp., and Nauclea diderichhii* (which belonged to the state government) to plant along with arable crops (which belonged to the farmers). After planting, the farmers maintained both the arable and tree crops, harvesting their crops as they matured, and until such a time that the crop yields declined due to canopy closure

by the trees. At that point, farmers were moved out of their current plots and allocated fresh plots which would be opened up and sowed with arable and tree crops until movement becomes imminent again, and the cycle continued.

Several hundreds of hectares of plantations of those tree species were established in various locations in Nigeria including, Sakpoba (Old Mid-West Nigeria, later Bendel State, and now Edo State); Olokemeji and Onigambari (Old South-Western Region, later Western Region, and now Oyo/Ogun States). This practice was later abandoned in some states because of some technical reasons such as poor monitoring of the plantations and lack of commitment on the part of the government. This model is still being used to raise forest plantations in such states as Osun, Oyo, Ogun, Ondo, Cross River and Kogi.

During the Forestry I and II forest plantations establishment projects (supported by the World Bank, African Development Bank and the EC now EU), community associations were used in afforestation programmes in Kaduna, Kano, Sokoto and Borno States. In each of the states, support in terms of supply of equipment, inputs, technical guidance for nursery establishment were provided to the associations and community-based organizations, while in the case of woodlot establishment, seedlings, fencing materials and technical advice were provided to both private individuals, community and corporate private tree growers. The contribution of the community in each case was in the form of provision of nursery sites and land for woodlot establishment as well as post-establishment maintenance. The woodlots reverted to the communities for supply of firewood and fencing/ building poles.

In Jigawa State in Northwest zone, the afforestation programmes recorded an impressive result. Farmers were provided with incentives to plant trees on their farms. The involvement of womenfolk in forestry projects in the state was very impressive and fruitful. It was reported that between 1992 and 1995 a total of 1,798,000 seedlings were raised under the community nursery programme; 457,000 seedlings were raised from school nurseries, 52km of roadside planting; 57 ha of various species were established as demonstration plots, 1,023 individual woodlots were established, 87 community woodlots and 509 regeneration plots including 43 model villages were also established.

In the south-south State of Edo, the Nigerian Conservation Foundation (NCF), Ford Foundation and the Edo State government jointly sponsored the Okomu Forest Research Programme, which was able to stimulate community participation in sustainable forest management and conservation. This was done through the provision of soft loans to community associations and women groups to engage in other income generating activities such as cooperative pig farming, *Garri* and cassava starch mills, livestock farming, poultry and beekeeping within the support zone.

Another remarkable effort at public-private collaboration is at the Cross River National Park, through the Support Zone Development Project (SZDP). The partnership arrangement was between the Cross River National Park, Nigeria and the World Wildlife Fund (WWF). Provision was made for community income generating activities, including craftwork, basket weaving, rattan/cane furniture-making, bee-keeping and cane-rat (grass cutter) production.

This was achieved by organizing community members into cooperative groups. The famous Ekuri Community Forestry Initiative in the state is also a good model and reference point for public-private sector participation.

In Omo Forest Reserve, Ogun State, southwest zone, Bada (1998) reported that farmers were allowed to inter crop forest trees with cocoa and kolanut in government forest plantations; while the tenure rights of the original owners of the forest reserve land were recognised by the Ogun State government. The lesson learnt from this particular programme is that, it is not technically feasible to accommodate cash crops like cocoa and kola nut in tree plantations. Farmers soon began to eliminate the forest trees to make space for their cash crops and even expanded their farms beyond the plots originally allocated to them (Plates 13 and 14). Several state governments in the south-west of Nigeria are making plans to drive the farmers out of the forest reserves. However, it has been a serious challenge to drive the farmers out of the forest reserves where they already have their cash crops such as cocoa and kola nut growing.

Plate 13: Killing of Gmelina trees by farmers in Omo Forest Reserve; Plate 14: Illegal cocoa farm in a Gmelina plantation at Omo Forest Reserve

So what happened after this realisation? Current emphasis is therefore on a temporary partnership arrangement between the forestry department and the farmers; whereby the farmers supply labour for forest plantation establishment in exchange for access to arable farmland for raising of food crops (no more tree crops like cocoa and kola nut) within the forest reserves (which are considered to be more fertile than outside forest reserves). Farmers have to move away from such land after four to five years when trees close canopy. Farmers will then be allocated fresh plots of land in a newly opened forest area. The cycle continues, leading to expansion of forest plantations with simultaneous production of arable crops such as maize, cassava, plantain and coco yam.

Two cases of public-private cooperation in forestry development were encountered in Ogun and Oyo States. These were OMO WOODS and GLOBUS Investments in Ogun and Oyo States respectively. While the OMO WOODS Company has been in operation for over ten years, the GLOBUS Investments is quite recent in Oyo State, having started only in 2015. The Omo public-private initiative involves cooperation between a Chinese private company (OMO WOODS) and the Ogun State Government. The partnership agreement involves the allocation of logging concessions to the Chinese firm which utilizes the wood locally to produce sawn-wood and splints. The wood so produced is sold to the local and export markets. The company was expected to raise 250ha of Gmelina every year over the 10-year period of the agreement. This has not been honoured by the Chinese firm and there is currently a lull in the partnership as the Ogun State Government is hesitant to renew the partnership agreement which ended in August, 2015. The challenge is that OMO WOODS was unable to meet the regeneration targets in some years due to a land-use conflict where settler farmers did not allow the company access to the allocated plots for regeneration. The Government has extended the period of agreement up to February, 2016 with the hope of being able to resolve the conflict.

Furthermore, the Ogun State Government has signed an MOU with LAFARGE Cement Company for a partnership with the Government through the State Ministry of Forestry to establish plantations of Gmelina and Teak at Aworo Forest Reserve and on some degraded sites. The Company is also expected to generate some forestry employment through this project.

In Oyo State, the partnership adopts an agroforestry approach whereby the private partner (GLOBUS Investments) is allocated land in an existing government forest reserve at Onigambari for farming purposes. By virtue of the partnership agreement the company is to plant trees on the crop farms and will vacate the land after three to four years when the trees close canopy. Based on the performance in forest regeneration, the company may then be allocated another fresh portion of the forest to open up for their crops. The company is also expected to employ specified number of graduates and other levels of personnel as part of the agreement.

5. SUMMARY OF MAJOR FINDINGS

5.1 Primary forest production

Primary forest production is essentially a government concern in all parts of Nigeria. The largest proportion of timber in use is extracted from reserved forests. However, there is a bourgeoning private ownership of forest estates for primary forest production in some parts of the country, albeit with generally small sizes. The common species in primary forest production are *Tectona grandis, Gmelina arborea* and *Terminalia species.* The primary forest production activities are male dominated.

5.2 Gender considerations

Women are involved mainly in the marketing and utilization aspects, particularly those of non-timber forest products. Women are also involved in sawn wood/plank trade, small scale cottage processing of non-timber forest products such as *Irvingia gabonensis* (bush mango)*, Massularia acuminata* (chew-stick), baskets and bag-weaving and marketing firewood.

Generally, primary forest production in Nigeria is characterized by unplanned and uncoordinated timber extraction and over-harvesting, while the principles of sustainable forest management are not applied in most cases. There is little or no information on age distribution of trees in the forests, stand volume and timber yield. The consequence of this is that yield and supply projections are tendentious. The country now depends on importation of wood from neighbouring countries of Cameroon, Benin Republic, Togo and Ghana to augment its wood requirements.

5.3 Secondary forest production

Industry types in secondary forest production sector range from small to medium to large scales. Although this sector employs only very few people per firm; the current study estimates that the number of individual jobs created by the sector is in the range of 750,000 to 1,000,000. Oligopoly is the most common form of industry type in the forest sector. There is low-capacity utilization in the sector. The factors identified for the low productivity of both human and equipment were shortage of raw materials, poor power supply, high equipment cost and general economic downturn which has led to low market patronage for the products due to significant reduction in the purchasing powers of the consumers.

Meanwhile, the timber industry represents a huge source of employment in the forest sector. A synopsis of employment opportunities in the secondary forest industry in the south west at both professional and technical levels shows that vacancy ranged between 33% and 71% at the professional level, while it ranged between 45% and 85% at the technical level of employment. This indicates that great potentials exist in the forest industry for employment generation provided the identified challenges are addressed.

Also, land tenure systems, and in some cases tree tenure, are major factors which constrain equal participation of all stakeholders and relevant groups in forestry activities in many parts of Nigeria. Although the Land Use Decree (later the Land Use Act) vests ownership of land in the government, with the state governments holding it in trust for the people, access to land is very tendentious due to a combination of factors, such as unclear or very restrictive land tenure, poor access to credit and bureaucratic bottlenecks.

According to FAO (2010), the value of the industrial round wood and woodfuel removals in Nigeria were 124 million US$ and 456 million US$ respectively. This underscores the

importance of woodfuel in the supply of domestic cooking energy in the country. It also calls for the need to raise plantations of fuelwood species both at the level of government and the private practitioners. It also presents an opportunity for public-private collaboration in forest production. Organizations such as the British-America Tobacco Company (BAT) already have private woodlots for fuelwood production. Government may collaborate with such organizations by facilitating access to land, providing them with inputs such as seedlings and technical advice.

The private forest sector contributes significantly to income, employment, wood energy, food, medicine and housing in Nigeria. Unfortunately, most of these contributions remain undocumented and available estimates are very old.

5.4 Public private partnership in the forest sector

There is a positive perception among respondents in this study on the desirability of public-private-partnerships in the development of the forest products industry. This, respondents hinged on the ability of such partnership to help regulate forestry activities, particularly illegal logging, as well as ensuring strict compliance with rules and regulations that will engender conservation and optimum utilization of forest resources.

There is a weak linkage between the public (government) and private forest operators. However, there exist some relationships between the Federal and the State Departments of Forestry. The Federal Government does not own forests. The state governments regulate the activities of the Local Government Agriculture/Forestry Departments and the private forest owners. The State Forestry Departments also relate with the secondary actors such as timber contractors, saw millers and furniture makers. The Federal and State governments occasionally supply seedlings to saw millers and small holder farmers for planting on their farms. At the time of harvesting, State Governments, through their forestry departments, regulate harvesting by issuing permit for trees to be removed. They also grant concessions, issue property hammers and permits to timber contractors and logging companies, many of whom are no longer in operation due to dearth of forest blocks for allocations.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusions

There is a bourgeoning of private ownership of forest estates for primary forest production in some parts of Nigeria. Though capacity utilization at both the production and processing levels is declining, the forest sector still offers a considerable avenue for employment in the

country. Opportunities for public-private collaboration in forest production exist, as the private forest sector already contributes significantly to income, employment, wood energy, food, medicine and housing in Nigeria. Positive attitudes among the sampled respondents in this study on the desirability of public-private partnership in the development of the forest products industry are a welcome development and these should be explored to develop the sector. The identified constraints in the sector are surmountable with the right policies and mindsets.

6.2 Recommendations

Arising from findings of this study, the following recommendations are proposed for promoting and strengthening public-private-partnerships in the forest sector for sustainable livelihood development in Nigeria:

1. State Governments should encourage private forest estates ownership by facilitating access to land, and other incentives such as tree seedlings;
2. Governments at all levels should facilitate access to resources and remove barriers to effective gender participation;
3. FAO, AFF, Federal Department of Forestry, academic and research institutions should embark on adequate data collection and information on tree species raised/managed and encourage formulation of sustainable management plan;
4. State governments should encourage the establishment of plantation of indigenous and preferred tree species, with deliberate efforts at establishment of plantations of fuelwood species both at the level of government and the private practitioners;
5. Taungya practice should be encouraged as partnership between farmers and state government for forest plantation establishment.
6. Government at the Federal and State levels should remove constraints to full realization of forest industry potentials through provision of adequate power and other infrastructure;
7. Academic and research institutions should encourage value addition and innovation within the forest sector by improving the state of technology in the production of homemade plywood, particle board, paper and paper products, among others;
8. The Federal Government should engender innovative financing mechanisms that will make access to funding of forest development projects attractive. Similarly, it is important to update the extant policy and also back it with enabling laws.

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A platform for stakeholders in African forestry



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