

# EXPLORATORY SURVEY OF TRADITIONAL FOREST INDUSTRIES IN OGUN STATE, NIGERIA: IMPLICATION FOR SUSTAINABLE FOREST MANAGEMENT

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**SOAGA JA, OLUWALANA SA & ADEKUNLE MF. 2010. Exploratory survey of traditional forest industries in Ogun State, Nigeria: implication for sustainable forest management.** Traditional forest industries, otherwise known as forest-based small-scale industries, were surveyed in some parts of Ogun State to explore their contribution to the gross domestic product of the nation. This was also to gather information on some major forest resources for these enterprises. The study identified five major small-scale industries, namely, pestle and mortar carving, canoe production, sponge making, spices processing and basket weaving. Basket weaving was common among the Yoruba ethnic group while sponge making was common among the Hausa. The Ibos were mainly involved in canoe carving. The natural forests still constitute dominant sources of supply for major raw materials of these industries. Some of the plant species used were *Milicia excelsa*, *Azizelia africana*, *Albizia zygia*, *Anogeissus leiocarpus* and *Cordia milleni*. Altogether, 35 plant species made up of trees (28 species), shrubs (2 species), climbers (4 species) and herbs (1 species) were used by the respondents. About 26% of the total species are threatened as a result of being multipurpose species. Beyond the conventional manufacturing industries, forest-based small-scale industries could contribute to the gross domestic products of the country if their potentials are properly harnessed. Thus, there is a need to manage the national forests sustainably and encourage the cultivation of the threatened plant species, which are the raw materials of these industries.

Keywords: Forest-based small-scale industries, enterprises, entrepreneurs, socioeconomic characteristics, ethnic composition

**SOAGA JA, OLUWALANA SA & ADEKUNLE MF. 2010. Survei penyelidikan tentang industri perhutanan tradisional di Ogun State, Nigeria: implikasi untuk pengurusan hutan secara mampan.** Industri perhutanan tradisional yang juga dikenali sebagai industri kecil berasaskan hutan ditinjau di sesetengah bahagian Ogun State. Tujuannya adalah untuk melihat sumbangan industri ini kepada keluaran dalam negeri kasar dan juga untuk mengumpul maklumat tentang sumber hutan utama industri ini. Kajian ini mengenal pasti lima industri kecil utama iaitu membuat lesung, kanu, span, memproses rempah serta menganyam bakul. Menganyam bakul merupakan pekerjaan utama di kalangan kumpulan etnik Yoruba sementara membuat span banyak dilakukan oleh kaum Hausa. Kaum Ibo pula banyak terlibat dalam industri membuat kanu. Hutan asli masih merupakan sumber penting bahan mentah utama yang diguna dalam industri berasaskan hutan di kawasan ini. Antara spesies tumbuhan yang digunakan ialah *Milicia excelsa*, *Azizelia Africana*, *Albizia zygia*, *Anogeissus leiocarpus* dan *Cordia milleni*. Secara keseluruhan, 35 spesies tanaman yang terdiri daripada pokok (28 spesies), pokok renek (2 spesies), pepanjat (4 spesies) and pokok herba (1 spesies) digunakan oleh responden. Lebih kurang 26% daripada keseluruhan spesies adalah terancam kerana dianggap pokok serba guna. Selain memenuhi keperluan industri penghasilan konvensional, industri kecil berasaskan hutan ini dapat menyumbang kepada keluaran dalam negara kasar jika potensinya digunakan sebaik mungkin. Oleh itu, hutan ini harus diurus dengan mampan dan penanaman spesies terancam yang merupakan bahan mentah industri haruslah digalakkan.

## INTRODUCTION

Traditional forest industries are small-scale forest-based processing enterprises, which depend largely on wood and non-wood products as their main raw materials. They constitute an important but neglected part of forestry and forest industries subsectors in Ogun State and

Nigeria as a whole. Historically, the development of traditional forest industries is age long and predates any modern system of forest resource processing enterprises with commodity trading of shea butter (*Vitellaria paradoxa*) recorded since the 14th century (Sunderland et al. 2004).

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Traditional forest industries or forest-based small-scale industries are characterised by technologically simple operations, limited skills, low capital and predominantly rural location (Fisseha 1987). These industries are very small and rely on the entrepreneur and his family for labour. The industries are seasonal in their pattern of operations and many depend on agricultural income to generate much of the demand for their products. This is because most entrepreneurs operate their forest-based activities jointly with other agricultural activities.

In spite of shortcomings in some of the features of forest-based small-scale industries, their economic importance has been cited by some authors especially in developing countries. In Jamaica and Zambia for instance, employment in forest-based small-scale industries ranges from about 14 to 29% respectively of the total manufacturing employment in the country. Specifically in Zambia, about 16% of the owners of forest-based small-scale industries maintained that they were unemployed before embarking on their forest-based activities (Fisseha 1987). These industries also provide cheap and effectively practical on-the-job technical and business training for workers. Finally, the contribution of forest-based small-scale industries to the gross domestic product in Zambia has been estimated to be between 20 and 25%. The income or return to family labour on forest-based small-scale industries ranges from USD308 in Bangladesh to USD2494 in Jamaica (FAO 1987). In certain countries, this was found to be much more remunerative than paid employment either in secular or agricultural sectors. For example, in Nigeria, income generated through processing of abura leaves (*Halea ciliata*) in Omo Forest Reserve was 309% more than the minimum wage of government employees (Momoh & Dipeolu 1999).

The importance of traditional forest industries vis-à-vis forest-based small-scale industries cannot be over emphasised in Nigeria especially in Ogun State. However, traditional forest industries can only develop with relevant and adequate information about these industries and their raw materials. The objectives of this study were, therefore, to investigate some of the traditional forest industries in some parts of Ogun State and suggest possible conservation measures for the forest and also provide data for decision

makers to understand the full potential of these industries.

## MATERIALS AND METHODS

Ogun State lies within latitude 6° 0'–7° 15' N and longitude 3° 20'–4° 37' E and administratively is divided into 20 local government areas. The people of Ogun State are predominantly Yorubas made up of the Egbas, Ijebus, Yewas, Aworis and Eguns with a total population of 2.3 million people. Details on the environment of Ogun State are available among others in Onakomaiya (1992) and Popoola (1990).

### Data collection and analyses

Multistage sampling method was adopted with 70% sampling intensity translating to 14 local government areas. Three hundred structured and pretested questionnaires were administered. A three-stage procedure was adopted with local governments representing primary units in the first stage. For the second stage, locations were randomly selected within the primary units. The third stage was the purposive selection of respondents at the locations in the study area. Questionnaires were administered to respondents in three major subethnic groups and zones, namely, Egba, Ijebu and Yewa. The questionnaires were distributed proportionately to size according to the population spread in Ogun State covering a total of 14 local government areas (Table 1).

**Table 1** Sampling plan of respondents

Zones	No. of respondents	No. of local government areas
Egba	135	6
Ijebu	99	5
Yewa	66	3
Total	300	14

The questionnaire was divided into three parts. Part A addressed issues on social economic characteristics of respondents. Part B addressed issues on types of forest-based small-scale industries and their social and economic characteristics. Finally, part C dealt with the forest species used and their ecological details such as

species, families, parts used, products made from them and their uses.

The questionnaire was analysed separately and later pooled. Variables analysed were sex, age, educational status, major occupation and ethnic leanings. Data on forest plants used in industries were also analysed. Descriptive statistical tools such as frequencies and percentages were used to analyse variables of interest.

## RESULTS AND DISCUSSION

### Socioeconomic characteristics of respondents

Gender and age distributions of respondents in the study zones are shown in Table 2. A total of 269 or 89.7% of the total respondents were males while the remaining were females. In most developing countries, most traditional off-farm activities such as basket weaving, hunting, palm-wine tapping and boat carving are mainly carried

out by men, thus, the large incidence of males (FAO 1987, Osemeobo 1990).

Table 2 also shows that forest-based small-scale industries were mostly carried out by active working age groups of between 25 and 50 years old with those within the age bracket of 36–45 years predominating and representing 42.3% of the total respondents. The low incidence of youth below the age of 25 years could be because they were still schooling. Also, hard labour does not attract youths to be involved in these industries hence, the need to modernise some of the technologies adopted in operating them.

### Educational status of the respondents

A total of 60.7% respondents had no formal education (Table 3), while only about 4.3% of them had secondary school leaving certificates. Although formal education is not necessary for the acquisition of knowledge and skill in forest-based small-scale industries, it could enhance the sustainable use of

**Table 2** Gender and age distribution of respondents according to zones

Age distribution	Egba		Yewa		Ijebu		Total	
	M	F	M	F	M	F	M	F
15–25	6	-	5	-	9	-	20 (6.7)	-
26–35	34	1	17	-	20	10	71 (23.7)	11 (3.7)
36–45	62	3	23	3	26	10	111 (37.0)	16 (5.3)
46–55	23	-	13	1	17	-	53 (17.7)	1 (0.3)
Others	6	-	2	2	6	1	14 (4.7)	3 (1.0)
Total	131	4	60	6	78	21	269	31

M = male; F = female; values in parentheses are percentages of total.

**Table 3** Educational status of respondents according to zones

Educational status	Egba		Yewa		Ijebu		Total
	M	F	M	F	M	F	
Primary school	43	-	23	3	29	7	105 (35.0)
Secondary school	1	-	-	-	12	-	13 (4.3)
No formal education	87	4	37	3	37	14	182 (60.7)
Total	131	4	60	6	78	21	300

M = male; F = female; values in parentheses are percentages of total.

natural resources and value addition to existing products and methods of processing.

**Ethnic composition and source of raw material**

Three major ethnic groups recorded in this study were Hausa, Yoruba and Igbo (Table 4). The fourth set of people is the Ghanaians from the Economic Community of West African States (ECOWAS) country. The Yorubas were predominant in basket weaving while the Hausa from northern part of Nigeria, in making sponge. Canoe or boat building was more common among the Igbos. These four ethnic groups were being employed by five (pestle and mortar, canoe production, sponge making, spices, basket weaving) major forest-based small-scale industries recorded in this study (Table 5). It is obvious that the livelihood of the majority of the people is dependent on raw materials from the forest. Thus, it is pertinent that the forest be managed sustainably so as to ensure availability of forest resources.

About 60% of the respondents were involved in basket weaving, most of them in Egba zones (Table 5). The baskets were used for packaging of agricultural products and for sale. The largest number of sponge makers was recorded in Ijebu zone, which is located close to Omo forest reserve where the raw material (i.e. *Mormodica* spp.) is abundant. Only 13 of the respondents were involved in spices processing because income from this industry was very low. Forest-based small-scale industries were carried out on part-time basis with the largest number (i.e. 135) of respondents recorded in Egba zone. This result demonstrates agreement with findings by FAO (1987) which state that forest-based enterprises are usually carried out on part-time basis especially during agricultural off-season for additional income.

**Types and characteristics of forest plants used in forest-based small-scale industries**

The forest plants used by small-scale entrepreneurs are summarised in Table 6. There were 35 plant

**Table 4** Ethnic distribution of respondents by industry according to zones

Industry	Egba				Yewa				Ijebu			
	H	I	Y	G	H	I	Y	G	H	I	Y	G
Pestle and mortal	-	-	8	-	-	-	6	-	5	-	-	-
Canoe production	-	10	4	-	-	-	-	-	-	2	5	-
Sponge making	15	-	2	-	15	-	3	-	15	-	23	-
Spices	-	1	6	-	-	-	-	-	-	1	5	-
Basket weaving	-	-	89	-	-	-	47	-	-	4	38	1
Total	15	11	109	-	15	-	56	-	20	7	71	1

H = Hausa; I = Ibo; Y=Yoruba; G = Ghana

**Table 5** Gender distribution of respondents by industry

Industry	Egba		Yewa		Ijebu		Total
	M	F	M	F	M	F	
Pestle and mortal	8	-	6	-	5	-	19 (6.3)
Canoe production	14	-	-	-	7	-	21 (6.1)
Sponge making	17	-	13	-	24	14	68 (22.7)
Spices	3	4	-	-	4	2	13 (4.3)
Basket weaving	89	-	41	6	38	5	179 (59.7)
Total	131	4	60	6	78	21	300

Values in parentheses are percentages of total.

**Table 6** Forest plant species used in forest-based small-scale industries

Family	Species	Floral type	Local name	Source	Status of availability	Parts used	Use
Meliaceae	<i>Micilia exalata</i>	Tree (hardwood)	Iroko	Free areas and forest	Not common	Sawn wood, branch, stem, log waste	Pestle and mortar, canoe
Meliaceae	<i>Khaya ivorensis</i>	Tree (hardwood)	Oganwo	Free areas and forest	Not common	Sawn wood, branch, stem, log waste	Pestle and mortar canoe
Meliaceae	<i>Azadirachta indica</i>	Tree (hardwood)	Dongoyaro	Free areas and savanna	Sparse	Branch	Canoe, medicinal use
Mimosaceae	<i>Albizia zygia</i>	Tree (hardwood)	Ayunre	Free areas and forest	Abundant	Sawn wood, branch, stem, log waste	Pestle and mortar, canoe
Combretaceae	<i>Terminalia superba</i>	Tree (hardwood)	Afara	Free areas and forest and reserved area	Scarce	Sawn wood, branch, stem, log waste	Pestle and mortar
Zingiberaceae	<i>Aframomum melegueta</i>	Shrub	Atare	Free areas and forest	Abundant	Seed	Spice in food and use in traditional medicine
Combretaceae	<i>Terminalia ivorensis</i>	Tree (hardwood)	Idigbo	Free areas and forest	Scarce	Sawn wood, branch, stem, log waste	Canoe
Combretaceae	<i>Terminalia avicennioides</i>	Tree (hardwood)	Idi	Free areas and savanna woodland	Scarce	Sawn wood, branch, stem, log waste	Pestle and mortar
Caesalpinioideae	<i>Afzelia africana</i>	Tree (hardwood)	Apa	Forest and free areas	Not common	Sawn wood, branch, stem, log waste	Pestle and mortar
Caesalpinioideae	<i>Erythrophloeum suaveolens</i>	Tree (hardwood)	Oboo	Forest	Not common	Sawn wood, branch, stem, log waste	Pestle and mortar, canoe
Bignoniaceae	<i>Blighia sapida</i>	Tree (hardwood)	Isin	Forest and free areas	Abundant	Branch, stem, log waste	Pestle and mortar

(continued)

Table 6 (continued)

	<i>Luffa cylindricum</i>										
Curcubitaceae		Climber	Kankan	Farmland, free areas and forest	Abundant	Fibrous mesh of fruit	Sponge				
Bignoniaceae	<i>Cordia millenii</i>	Tree (hardwood)	Omo	Free areas and reserved natural forest	Not common	Sawn wood, stem, branch, log waste	Pestle and mortar Canoe				
Euphorbiaceae	<i>Margaritaria discoidea</i>	Tree (hardwood)	Asasa	Free areas and forest	Not common	Stem, branch, log waste	Pestle and mortar				
Sapotaceae	<i>Vitellaria paradoxa</i>	Tree (hardwood)	Emi	Free areas and the drier types of lowland rainforest outliers	Scarce	Stem, branch, log waste	Pestle and mortar				
Papilionoideae	<i>Pterocarpus erinaceus</i>	Tree (hardwood)	Apepe	Free areas and forest	Not common	Sawn wood, stem, branch	Canoe production				
Papilionoideae	<i>Haplormosia monophylla</i>	Tree (hardwood)	Akoriko	Free areas and forest	Scarce	Sawn wood, stem, branch	Canoe production				
Palmae	<i>Elaeis guineensis</i>	Palm	Ope	Farmland, swampy areas and forest	Abundant	Leaves	Basket				
Palmae	<i>Raphia hookeri</i>	Palm	Ako	Farmland, swampy areas and forest	Abundant	Leaves	Basket				
Palmae	<i>Calamus</i> spp.	Climber	Pankere	Forest and swampy areas of farmland	Scarce	Stem	Basket				
Ochnaceae	<i>Lophira lanceolata</i>	Tree (hardwood)	Ekki	Free areas and forest	Scarce	Stem, branch, log waste	Pestle and mortar				
Ebenaceae	<i>Diospyros mespiliformis</i>	Tree (hardwood)	Kanran	Forest	Scarce	Stem, branch, log waste	Pestle and mortar				
Rutaceae	<i>Zanthoxylum zanthoxyloides</i>	Tree	Orin-Ata	Free areas and forest	Scarce	Stem, branch	Pestle and mortar				

(continued)

Table 6 (continued)

Curcubitaceae	<i>Momordica angustiseptala</i>	Climber	Kankan Aalo (red)	Free areas and forest	Abundant	Whole plant except root	Sponge
Curcubitaceae	<i>Momordica</i> spp.	Climber	Kankan Gidi (white)	Free areas and forest	Abundant	Whole plant except root	Sponge
Caesalpinioideae	<i>Daniellia oliveri</i>	Tree (hardwood)	Iya	Savanna and secondary regrowth forest	Scarce	Branch	Canoe
Combretaceae	<i>Anogeissus leiocarpus</i>	Tree (hardwood)	Ayin orindudud	Savanna	Abundant	Sawn wood, stem, branch, log waste	Pestle and mortar Canoe
Myrtaceae	<i>Psidium guajava</i>	Fruit tree	Guava	Free areas and farmland	Abundant	Stem, branch	Canoe
Zingiberaceae	<i>Zingiber officinale</i>	Herb	Ataile	Free areas and forest	Abundant	Rhizome	Spice in food and medicine
Mimosoideae	<i>Pachyelasma tessmanni</i>	Tree (hardwood)	Eru	Forest	Scarce	Stem, branch	Pestle and mortar
Mimosoideae	<i>Piptadeniastrum africanum</i>	Tree hardwood	Agboin	Forest	Scarce	Stem, branch	Pestle and mortar
Myristicaceae	<i>Myristica fragrans</i>	Shrub	Eso ariwo	Farmland and secondary regrowth forest	Scarce	Leaves	Spice in food and traditional medicine
Sterculiaceae	<i>Nesogordonia papaverifera</i>	Tree (hardwood)	Oro	Forest	Not common	Sawn wood, stem, branch, log waste	Pestle and mortar
Caesalpinioideae	<i>Brachystegia eurycoma</i>	Tree (hardwood)	Okwon	Forest	Scarce	Stem, branch, log waste	Pestle and mortar
Caesalpinioideae	<i>Distemonanthus benthamianus</i>	Tree (hardwood)	Ayan	Forest	Not common	Stem, branch, log waste	Pestle and mortar

species representing 17 families being used in various small-scale enterprises. They were made up of trees (28 species), shrubs (2 species), climbers (4 species) and herbs (1 species). Fruits, stems, branches, leaves and sometimes the whole plants were used. For example, the fruit of *Luffa cylindrica* and the stem of the climber *Mormodica anguitiseipala* were processed into sponges for domestic use and sales. For pestle and mortar carving, some of the species used were *Milicia excelsa*, *Azalia africana*, *Albizia zygia*, *Anogeissus leiocarpus* and *Cordia milleni*.

### Ecological and policy implications

Some of the species used in the forest-based small-scale industries were also used as timber, meaning that in future they might not be available for use by these industries. In fact, about 26% of the total species are threatened as a result of being multipurpose species. Currently, some indigenous species (e.g. *M. excelsa* and *Khaya* species) with low girth sizes have been prohibited for exploitation by timber contractors. Beyond the conventional manufacturing industries, forest-based small-scale industries could contribute to the gross domestic product of the country if their potentials are properly harnessed. Therefore, for sustainability of some of these industries, tree planting campaign should be stepped up especially if it concerns indigenous species. In addition, production of fast-growing cultivars should be the focus of research here. Thus, national forests must be managed sustainably and the cultivation of threatened plant species,

which are the raw materials of these industries, be encouraged.

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