



## DYNAMICS OF MARKETS AND MARKETING OF CHARCOAL IN OYO STATE, NIGERIA

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### ABSTRACT

*This study focused on both domestic and commercial purposes and assessed the changes that have taken place in the charcoal market over the past five years. Data were obtained with the aid of questionnaires, which were administered to the producers, marketers and consumers of charcoal in Oyo State. The eleven Local Government Areas used as study sites were chosen randomly to include major production areas and also to cover the urban, peri-urban and rural areas of the state. A total of 275 structured questionnaires were administered on randomly selected producers, marketers and consumers. The data obtained were analyzed using descriptive statistics and coefficient of variation models. The results revealed that 40% of the producers produced between 50 – 100 bags of charcoal per month and they obtained their raw materials from natural forest and farmlands. The average weight of one bag of charcoal is 45.5kg. women were mainly involved in the marketing of charcoal, with very few men. Most of them (46%) had been in the business between 6 – 10 years and on a multi-stage channel of distribution of charcoal. A higher percentage of the marketers, 45% obtained supply of charcoal four times per month which ranged between 1 – 100 bags. The gross market margin calculated was ₦105, while the net market margin was ₦24.86 per bag. The average prices per bag of charcoal across the state from 1996 to 2001 were ₦176, ₦187, ₦196, ₦236, ₦356 and ₦310. The consumption pattern of charcoal was seriously influenced by the scarcity and high price of kerosene. A total of 68% of the consumers have been using charcoal for about five years. It is concluded that due to the fluctuating availability and high prices of kerosene (the main substitute) the demand for charcoal will continue to rise and this will certainly have an adverse impact on sustainable forest management unless more trees are planted to replace the depleted ones.*

**Keywords:** Dynamic, market, charcoal and marketing

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### INTRODUCTION

Forest is an exhaustible but renewable natural resource with several products that are highly beneficial to man. Forest in Africa, as elsewhere, is valued first of all for wood production. There are many kinds of wood with their uses almost innumerable and they enter into practically every

sphere of human activity, in one form or another. However, to an average African, the most important utilization of wood is as fuel, principally firewood and charcoal. In studying the overall energy situation in today's world, the dependence of the greater part of the population in the Third world countries on traditional fuels,

foremost among them being fuelwood has long been recognized. Fuelwood is defined as wood and pulp materials obtained from the trunks, branches and other parts of trees and shrubs to be used as fuel for cooking, heating or generating energy through direct combustion, not only in households but also in rural industries (curing, smoking) (Mont Alembert *et al.*, 1983).

This definition of fuelwood has included charcoal. However, fuelwood which is a general term can be sub-divided into two principal groups: firewood and charcoal. Nigeria is endowed with a wide spectrum of energy sources, which are vital for the national and international economies. Yet, about 80% of the Nigerian population who are mostly rural dwellers depend solely on traditional fuelwood suppliers for their energy requirements (Adegoke, 1993). The percentage may have increased with the growing unaffordability and unavailability of petroleum products and the sharp drop in urban and rural purchasing power in the face of increasing prices of petroleum products. Popoola (1992) reported a cumulative percentage price change of 1900% for domestic cooking gas and 400% for kerosene within a decade (1983 – 1993). There is therefore more pressure on the forest for its products and the danger of deforestation and its attendant environmental degradation more pronounced (Popoola *et al.*, 1999).

In Nigeria, charcoal has been in use since time immemorial. Although its consumption has generally remained at a relatively low level, as people in the middle- and higher-income brackets depend on the more convenient and more status-charged fuels such as kerosene and cooking gas. This situation has however changed in the last 10 years due to the scarcity and the skyrocketing prices of the various petroleum products and the downturn in the economy of the country which led to low earning power. These have “pushed” more people in the middle- and higher-income classes to join the rural people and those in the low-income class in the use of charcoal as source of domestic fuel.

It is observed that charcoal is preferred to firewood especially by the elites who have been ‘forced’ to make use of it. Charcoal is preferred

because of its steady and concentrated heat, its smokeless burning and because it can easily be extinguished when the fire is not needed (National Academy of Science, 1980). Also, Poulson (1978) reports that “charcoal is vastly superior to firewood. It has a much more favourable calorie to weight ratio, or in other words the same amount of energy weighs much less in the form of charcoal than wood and is therefore cheaper to transport. The charcoal market ranges from the simple local village-level consumer markets to the sophisticated international and industrial markets. The market and marketing of charcoal is therefore an area which has to be looked into especially because of the present economic and political situations in Nigeria which have impacted on earning capacities, energy supply and hence sustainable forest management. This study is to investigate the prevailing situation as regards charcoal markets and marketing in the study area in the last five years

## MATERIALS AND METHODS

### Study Area

Oyo state is one of the thirty-six states which make up the Federal Republic of Nigeria. The state came into existence during the state creation exercise in which the western region was splatted. The present Oyo state came into existence in 1991, when Osun state was carved out of it. Ibadan, the capital, is the largest city south of the Sahara Desert with very busy commercial and industrial centers. The state consists of thirty-three local government areas which are divided into three senatorial districts. Oyo state is located on longitude 6°45<sub>1</sub> and latitude 9°30<sub>1</sub>N. It is one of the south-western states of Nigeria. Nigeria covers an area of about 923,768km<sup>2</sup> while Oyo state covers a total area of about 27,460 km<sup>2</sup> out of these. This is about 3% of the whole of Nigeria. The state is bound on the east by Osun state, on the south by Ogun state and by Kwara state on the North. It is partly bounded on the west by the republic of Benin and partly by Ogun state. The 1991 census figures put the population of Oyo state at 3,452, 720. A projected figure using 2.83% annual growth rate put it at 4,633,657 by the end of year 2001. The population is mostly made up of Yoruba speaking people with variant dialects reflected in the Oyo, Ibadan, Oke-Ogun

and Ogbomoso people. However, there is a substantial population of other tribes like Hausa, Igbos, Fulani's etc. who have settled down in various parts of the state especially in Ibadan, the capital city. Oyo state is located in the rain forest belt of Nigeria and has two main seasons. The rainy season starts in March / April and ends in October / November, and the dry season begins in November and ends in March. The average total rainfall in the state is 1248mm with the southern zone experiencing heavier rains than the northern zone. The mean maximum temperature is 37°C while the mean minimum temperature is 27°C. Its landforms are characterized by moderately undulating regions with hills and river valleys dominating. The vegetation varies from rain forests to guinea savanna. The forest is characterized by tall trees with thick canopies which are dotted with deciduous trees. Some of the species commonly found in Oyo state are *Anogeissus leiocarpus* (Ayin), *Ceiba pentandra* (Araba), *Pterygota macrocarpa* (Oporoporo), *milicia excelsa* (Iroko), *Ficus asperifolia* (Epin), *Bridelia micrantha* (Asasa), *Anthiaris toxicaria* (Ooro), *Albizia zygia* (Ayunre), *Cassia occidentalis* (rere), *Funtumia Africana* (Ire), *Cordia millini* (Omo) and *Holloptelia grandis* (Ayo).

### Status of Forestry in Oyo State

Forestry in Oyo state started as far back as 1899, when the forestry Department of Lagos colony was formed. The state forestry department has many forest reserves under its charge. These include Ijaiye, Osho, Gambari, Igangan, Lanlate, Olokemeji, Olla hills, Olaseinde and Opara (game reserve). Both the upper Ogun and Old Oyo National Parks are also located in the State, although they are under the management of the Federal Department of Forestry.

### Sampling Technique and Sampling Size

The sampling technique was based on purposive and stratified random sampling. This was used to select eleven local government areas within the state. These eleven Local Government Areas include major production areas and also covers the urban, peri-urban and rural areas of the state. From the reconnaissance survey carried out, there is no major production area in Oyo central senatorial district and the level of consumption of

charcoal is low in the rural areas of the state. This is reflected in the number of questionnaires administered in the study sites.

A total of two hundred and seventy-five (275) questionnaires were administered. Fifteen (15) questionnaires were administered to producers, one hundred and ten (110) to marketers and one hundred and fifty (150) to consumers.

### Data Collection

The data for this study were collected across the state to cover the rural, peri-urban and urban parts of the state. Three (3) sets of questionnaires were designed for the study. One for the producers, the second for the marketers and the third for the consumers. These questionnaires contained both closed and open-ended questions to allow respondents to propound their convictions and view in specific instances as they thought accurate. All the questionnaires were administered through person-to-person interviews. Some observations in addition to questions asked were made and recorded on the questionnaires.

### Data Analysis

Descriptive analyses mainly in terms of percentage and frequency of distribution were used to present the prevailing situation as regards charcoal markets and marketing in the study area (marketing strategies, channel of distribution) and the relative degree of dependence on charcoal (number of consumers, preference level, available substitutes to fuel). The price variations over time and across space and the market margin were analyzed by comparing the prices at various markets and levels.

In analyzing the variations in price in the study area the test statistics coefficient of variation (C.V.) was used. Okunmadewa, (1990) used the coefficient of variation to measure the variance in prices across space and over time. This is also used in this study as follows:

$$CV_1 = \frac{T_1}{P_1} \dots \dots \dots [1]$$

Where:

CV1 = Coefficient of variation of the price in  $i^{th}$  time period / number of markets

T1 = Standard deviation of the price in the  $i^{th}$  time period / number of markets

$P1 = \frac{\text{The mean price in the time period}}{\text{number of markets}}$

Smaller CV, less than or equal to 0.21 indicates small deviation (insignificant) from the mean value and hence greater price stability and vice versa

The study of marketing of a product includes its production in order to know the processes involved in the production of the product. For the purpose of this study, the production area visited include Ilaju-Ijaye, Ido, Alako (all in Ido local government area) and Igbeti in Olorunsogo local government area of Oyo State.

Charcoal production is an old and well-established local industry in Oyo State. The production of charcoal was started by the Oniponrin and Ogunena families in Oyo while the marketing was done by the Fatukee family. It was observed that there is a clear demarcation between the marketers and producers. It is believed that any charcoal producer is a descendant of either Oniponrin or Ogunena family and therefore not allowed to carry out the functions of the Fatukee family descendants: marketing.

The data from the producer's survey (table 1) revealed that all the 15 respondents were male, married and none is below the age of twenty-five (25years). About 27% of the respondents fall in the age class 25 – 29years; 13% in class 30 – 34years; 7% in class 35 – 39years; 13% in class 40 – 44years; 27% in 45 – 49years and another 13% in the 50years and above class. 53% had their primary education; 20% had secondary education; 7% had tertiary education while 20% had no formal education.

## RESULTS

Table 1 presents the demographic characteristics of charcoal producers. The respondents were

100% married males with highest average age of 26.67 years old within 25-29 and 45-49 ages ranges of and had 53.3% primary education. Table 2 shows that about 47% of the producers had been in the business for between 6 and 10 years; 27% for 1 – 5years, 20% for 10 – 15years; and 6% for less than 1year.

Table 3 shows the sources of fuelwood used in production. None of the producers obtained their fuelwood from plantation. This might be because there are very few tree plantations around them or that the existing forest plantations are well monitored by the forest guards / officers. The method of production used in Oyo state is the Earthen kiln method. A piece of land in the forest is cleared and the wood is brought from different parts of the forest and then arranged into a heap not higher than 4 feet. This process is termed ‘‘setting’’ by the producers. Grasses like lemon grass and desert grass are then used to cover the heap very well. Leaves can be used during the dry season when grasses are scarce. After this, sand is collected and used to cover the heap leaving a little opening called ‘‘Oju-ina’’ where fire is introduced into the kiln. The number of days it takes to complete coaling depends on: the size (length and width) of the heap/kiln; the size of the wood; the species of wood and whether the wood is fresh or dried. For fresh wood it takes an average of 15 – 17days, dried wood (which is more preferred by producers) takes between 8 – 10days while a large (long) kiln with big woods will take up to 30 days.

Table 4 showed that highest producers which was 40% of charcoal producer populace in the study area produces 50-100 bags per month, 13.3% of the populace falls within the same frequency of charcoal production while 20% produces 101-150bags per month.

**Table 1: Demographic Characteristics of Charcoal Producers**

Variable	Categories	Frequency	Percentage
Gender	Male	15	100
	Female	0	0
Age (years)	25-29	4	26.67
	30-34	2	13.33
	35-39	1	6.67
	40-44	2	13.33
	45-49	4	26.67
	50 and above	2	13.33
Marital status	Single	0	0
	Married	15	100
Level of Education	Primary	8	53.3
	Secondary	3	20.0
	Tertiary	1	6.67
	No formal education	3	20.0

**Table 2 : Distribution of producers by number of years in charcoal production**

Years	Frequency	Percentage
Less than 1	1	6.67
1-5	4	26.67
6-10	7	46.67
10-15	3	20.00

**Table 3: Distribution of producers by source of raw-materials (fuelwood)**

Sources	Frequency	Percentage
Natural forest only	6	40
Farmlands only	6	40
Plantation only	0	0
Forest reserve only	1	6.67
Natural forest & farmlands	1	6.67
Natural forest and forest reserves	1	6.67

**Table 4 : Distribution of producers by number of bags of charcoal produce per month**

Number of bags	Frequency	Percentage
Less than 50	2	13.3
50-100	6	40
101-150	3	20
151-200	2	13.3
201-250	2	13.3

**DISCUSSION**

The production of charcoal was started by the Oniponrin and Ogunena families in Oyo while

the marketing was done by the Fatukee family. Survey showed that there is a clear demarcation between the marketers and producers. It is

believed that any charcoal producer is a descendant of either Oniponrin or Ogunena family and therefore not allowed to carry out the marketing functions done by the Fatukee family descendants. The production of charcoal constituted higher percentage of males that are married and of age not less than 25 years. Majority possessed primary education while few had secondary, tertiary and non-formal education. Results revealed that larger number of males have started the charcoal production for over 6-10 years back which is more than those who started the production 15 years' back. Also, 40% among the entire populace of the producers have the capacity of producing 50-100 bags of average weight 45.5kg on monthly basis which were majorly obtained from natural forest and farmlands, only 13.3% and 20% were able to meet up with production range of 151-250 and 101- 150 bags per month respectively. Survey revealed that mostly women and few men were involved in marketing of the charcoal. From the cost analysis the present gross market margin calculated was ₦105, while the net market margin was ₦24.86 per bag, the prices was observed to vary across the state, the average prices per bag of charcoal across the state from 1996 to 2001 were ₦176, ₦187, ₦196, ₦236, ₦356 and ₦310, hence, the consumption pattern of petrol was greatly influenced by scarcity and high price of kerosene.

### CONCLUSION

Charcoal as fuel wood is obtained from different wood species dried naturally or artificially as part of the process for its availability and marketing. There was increase in the demand for charcoal as fuel wood over the past five years and serve as a replacement for kerosene and gas scarcity thus encouraging men and women of particular age bracket to venture into production and marketing of charcoal. The sources of fresh wood converted to charcoal are from natural forest and farmlands, none is sourced from plantation because of forest

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guards and this influenced the number of bags produced per month. Charcoal production as fuel wood was one of the sources of economical sustainability in the study area.

### Recommendations

Based on the findings of this study the following are recommended

- i. The charcoal market should be put under constant study in order to have good and reliable records on it.
- ii. The government through the Ministry of Agriculture and Natural Resources should recognize charcoal as one of the main products of wood and therefore monitor its production in order to have good records on the amount of wood being converted to charcoal.
- iii. Market stalls should be provided in order to improve the performance of the market.
- iv. Financial assistance should be given to both producers and marketers
- v. The export market should be improved; this will be a good source of foreign exchange to the state.
- vi. Kerosene and electricity should be available continuously and at an affordable price this will reduce the pressure on the charcoal market and in turn reduce the rate of deforestation.
- vii. The populace, especially charcoal producers, marketers and consumers, should be enlightened on the effect of deforestation and therefore be encouraged to plant trees
- viii. The state is a major producer; therefore, the government should establish woodlots and encourage taungya farming
- ix. The sector of the Ministry of Agriculture in charge of research and records should encourage marketers to keep records of their marketing activities.

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