

## Poverty Status Among Charcoal Producers In Ogun And Oyo States, Nigeria

Kolade Victoria Olufunmilayo<sup>1</sup> Adekunle Michael Femi<sup>1</sup> Adewuyi Samuel Aderemi<sup>2</sup> Soaga Jibril Akanni<sup>1</sup>

<sup>1</sup> Department of Forestry and Wildlife Management, Federal University of Agriculture, Aabeokuta, Ogun State, Nigeria

<sup>2</sup> Department of Agricultural Economics and Farm Management, Federal University of Agriculture, Aabeokuta, Ogun State, Nigeria

\*Author for correspondence: kolajide2012@gmail.com

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### Abstract

Charcoal producers are becoming more important and increasing in number among the population in Southwest, Nigeria. This study examined poverty status among charcoal producers in Ogun and Oyo States, Nigeria. Multistage Random Sampling technique was used to select three hundred (300) respondents comprising 120 and 180 charcoal producers in Ogun and Oyo States respectively. Structured questionnaire was used to elicit information. Descriptive statistics summarised the socio-economic characteristics of the respondents. Poverty line was determined with Foster, Greer and Thorbecke method. Poverty incidence (P0) and poverty depth (P1) were also evaluated. Logit regression was used to examine factors influencing poverty among the respondents in the study areas. The socio-economic characteristics revealed that the respondents were predominantly male, mean age of 43.5 years, married, 46.7%, average household size of 6 persons. Primary education was predominant (33.7%), mean years of experience -12 years and mean household annual income of N827,702.80. Method of production was earthen only, 73% and 27% operated on full time and part time respectively. Percentage of those below the poverty line (P0) was 49.67%. An average charcoal producer requires N6,086.36, (P1) to get to the Poverty line of N86,453.92 annually. The Logit analysis revealed that marital status had a positive significant relationship with poverty status ( $p < 0.05$ ). Years of experience, technical and allocative efficiencies had inverse significant relationship with poverty status ( $p < 0.05$ ). The Likelihood ratio was 128.713, significantly different from zero. Also,  $R^2$  was 0.465 while F statistics was significant ( $p < 0.01$ ). Suggestions include fiscal policy intervention to accommodate producers with minimum collateral for loan facility and forest policy to promote conservation through extension services.

**Keywords:** Poverty, Efficiency, Charcoal production, Logit regression, Conservation

### Introduction

One of the central issues of development economics that government and policy makers focussed on is how to improve the socio-economic well being of the people and consequently reduce poverty. The concept of poverty including its measurement is contested (Apata et al 2010).

Thus, it has been defined using various indices. Schiller (1980) classified poverty into "absolute" poverty whereby a section of the population cannot meet their minimum standard of living in terms of basic needs like food, clothing and shelter due to lack of economic wherewithal. "Relative" poverty on the other hand is a situation whereby income earned by a person is significantly less than the average income of the population.

In Nigeria, poverty among the rising population in communities has been established by previous studies (FOS 1999; Etim and Edet 2007; Kolade 2010) and is prevalence in rural areas. Thus, Ogwumike (2002) noted that poverty levels vary across the country, with higher concentration of

the poor living in the rural areas and urban fringes. Rural poverty refers to a situation in which rural inhabitants, groups, communities and societies at a given point in time experience a level of income below what is needed to provide a desirable minimum living standard (Rahji 1999).

Taking into consideration the poverty level of developing nations, occasioned by unemployment and low per capita income, traditional charcoal production has become a means of livelihood. Its production provides a considerable amount of employment in rural areas and allows for a quick return on investments and is often practiced in conjunction with agriculture (Delmas et al 1991). The production of charcoal is so important that Ezzati et al (2005) considered charcoal as a valuable cash product in most developing countries. Hence, many rural dwellers in tropical Africa have taken to charcoal production at alarming proportion as their means of economic survival. This underscores the importance of this study with the following objectives:

- describe socio- economic characteristics of the respondents in the study area;
- determine poverty line among charcoal producers;
- identify factors influencing poverty among charcoal producers in the study areas.

### Literature Review

Poverty is a complex phenomenon which cannot be wholly described by a single factor (Kamgnia and Timnou 1998). It has broad and narrow definitions, because it is a physical matter as well as relative. It is physical because one can note its effects on those afflicted by it and relative because a poor person in one country may not be perceived as such in another country. According to Bradshaw (2006), poverty is the lack of basic necessities of life such as food, shelter, medical care and security, which are thought necessary based on shared values of human dignity.

Okunmadewa (1999) noted that poverty line is expressed as a predetermined or well defined standard of income or consumption, which is made to represent the minimum required for a productive and active life and even survival. Two types of poverty lines exist:

(a) an *absolute poverty line* defined as the equivalent of US\$1 (i.e. ₦168) income per head per day; and

(b) a *relative poverty line* defined by two-thirds of the mean per capita household income among all the study respondents.

But for the purpose of this study relative poverty line was used. There are two approaches to determining poverty line, the per capita household income approach (PCHHI) and the per capita expenditure approach (PCHHE). However, in this study, the per capita income approach was used to determine the poverty line, because PCHHE requires reliable data not readily available in most developing countries. The poverty line was taken as the two thirds of the mean value of per capita household income of the respondents in the study area. This approach was used by

Aromolaran et al (2002) and Kolade (2010). This was done to categorize the respondents into poor and non-poor groups using the two-third mean per capita household income, using IFPRI (2004) as the bench mark. Mean Household Income/Mean Household size.

## Methodology

### The Study Area

The study was carried out in Ogun and Oyo States in the Southwest, Nigeria. Charcoal is produced in almost all the States in Nigeria, but for the purpose of this study Ogun and Oyo States were chosen because charcoal production is more pronounced among the rural communities, based on literature and ecological advantage for tree species used for charcoal production.

**OGUN STATE:** Its capital is Abeokuta, the largest urban centre in the State. It is located within Latitudes 6°0'-7°15'N and Longitudes 3°20'E- 4°37'E. It shares boundaries in the north with Oyo and Osun States, in the east it is bounded by Ondo State, in the south by Lagos State and the Atlantic Ocean, and in the west by Benin Republic. The state covers a land area of 16,762Km<sup>2</sup>. Politically, it is divided into 20 LGAs with a population of 3,751,140 people (NPC 2006). The State is blessed with rich soil that is dominated by swamp forest in the south and forest savanna in the north which supports the growth of forest trees, cash crops and many other arable crops.

**OYO STATE:** The capital is Ibadan, the most populous city in black Africa. It is located within Latitudes 7°3'- 9°12' N and Longitude 2°47'E. It is bounded in the north by Kwara State, in the east by Osun State, in the south by Ogun State and in the west by the Republic of Benin. The State covers a total area of approximately 27,249Km<sup>2</sup>. Politically, the state has a total of 33 Local Government Areas with population of 5,591,589 people (NPC 2006). The State has good fertile loamy soils and endowed with high forest and derived savanna vegetation which supports the growth of trees, plantains, cocoa, kolanuts, oil-palm, citrus, sugar-cane and many other arable crops such as rice, yam, cassava and maize.

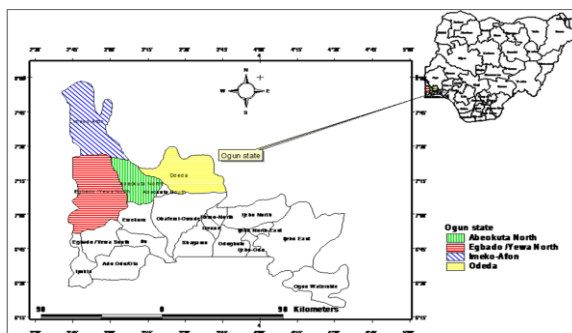


Fig. 1a: Map of Ogun State indicating selected Local Government areas (The shaded portions are the selected Local Government study areas)

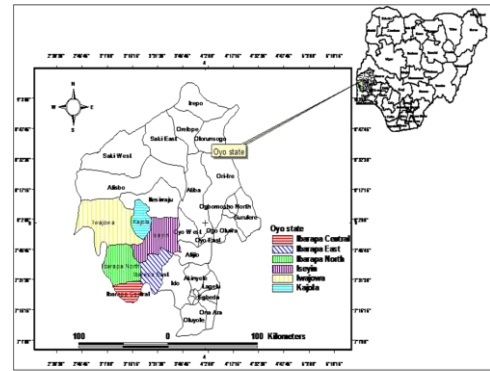


Fig 1b: Map of Oyo State indicating selected Local Government areas (The shaded portions are the selected Local Government study areas)

### Sampling technique and data collection

A Multistage sampling technique was adopted to select 120 and 180 respondents from Ogun and Oyo States respectively making a total of 300 respondents for the study. This was carried out in four stages as follows:

The first stage was selection and division of Ogun and Oyo States into two strata. The second stage involved purposive selection of four (4) and six (6) Local Government Areas noted for charcoal production based on reconnaissance survey for Ogun and Oyo States respectively, making a total of ten Local Government Areas.

Five (5) villages were purposively selected from each Local Government Area, making a total of fifty (50) villages, this was the third stage. The fourth stage was the simple random selection of six (6) respondents from each village, making a total of 300 respondents.

Primary data were collected by the use of well structured questionnaire with interview guide.

### Data Analysis

The data collected were summarized with descriptive statistics. Foster, Greer and Thorbecke (FGT) poverty index (1984) was used to determine poverty line.

The Foster, Greer and Thorbecke poverty index:

$$P_{\alpha} = \frac{1}{N} \sum_{i=1}^q \left( \frac{Z - Y_i}{Z} \right)^{\alpha}$$

Where

Z = poverty line. ; q = the number of respondents below the poverty line.

$\alpha$  = FGT parameter, which takes the values 0, 1, and 2, with different implications.

$\alpha = 0$ ,  $P_0$  measures poverty incidence, (the head count ratio) the proportion of those that are impoverished;

$\alpha = 1$ ,  $P_1$  measures poverty depth, (poverty gap) the proportion that an average poor will require to attain the poverty line;

$\alpha = 2$ ,  $P_2$  measures severity of poverty, giving more weight to the poorest.

N= total number of respondents;  $Y_i$ = Per capita household income

Logit model was used to identify factors affecting poverty status among charcoal producers.

**Results and Discussion**

**Socio-economic characteristics of the respondents in the study area**

The socio-economic characteristics of the respondents are summarised in Table 1.

Table 1 - Socio-economic characteristics of respondents (N = 300)

Variables	Frequency	Percentage	Mode	Standard deviation	P <sub>0</sub> (%)	P <sub>1</sub>	P <sub>2</sub>
<b>Age (Years)</b>							
25 – 34	16	5.3			49.5	0.051	0.055
35 – 44	136	45.3	35-44	7.333	-	-	-
45 – 54	114	38.0			53.7	0.073	0.070
≥ 55	34	11.3			0.050	0.047	
<b>Sex</b>							
Male	300	100.0	Male	NA	49.7	0.074	0.104
<b>Marital Status</b>							
Married	140	46.7			54.5	0.062	0.063
Divorced	83	27.7	Married	0.826	22.2	0.078	0.060
Others	77	25.6			22.2	0.092	0.089
<b>Household size</b>							
≤ 4	30	10.0			44.8	0.106	0.055
5 – 8	231	77.0	5-8persons	1.588	50.2	0.065	0.065
>8	39	13.0			-	-	-
<b>Level of Education</b>							
No formal education	52	17.3			26.9	0.068	0.067
Primary education	101	33.7	Primary	1.72	30.7	0.065	0.061
Secondary education	114	38.0	education		59.1	0.069	0.061
Tertiary education	33	10.9			77.1	0.082	0.084

<b>Years of experience (years)</b>							
5 – 9	36	12.0			50.0	0.087	0.034
10 – 14	186	62.0	10-14years	2.759	52.2	0.077	0.070
15 – 20	78	26.0			43.6	0.064	0.061
<b>Technology</b>							
Earthen	300	100.0	Earthen	N.A	49.7	0.074	0.104
<b>Mode of operation</b>							
Full time	218	72.7			48.6	0.079	0.126
Part time	82	27.3	Full time	N.A	52.4	0.058	0.050
<b>Annual income (₦)</b>							
624,000 - 724,000	22	7.3			22.7	0.055	0.038
724,001 - 824,000	113	37.7			58.4	0.071	0.068
824,001 - 924,000	107	35.6	724,001-824,000	N.A	48.1	0.055	0.060
> 924,000	58	19.4			56.2	0.094	0.089

Source: Field survey, 2013 N.A- Not Applicable  
 P<sub>0</sub> = percentage of those that are poor within each group, P<sub>1</sub> and P<sub>2</sub> are poverty depth and poverty severity respectively.

**Determination of Poverty Line among the Respondents**

Table 2 - Poverty incidence, depth and severity among the Respondents (Pooled)

Category	Ogun	Oyo	Pooled
<b>Poverty incidence</b>	59	90	149
(P <sub>0</sub> )	(49.2)	(50.0)	(49.67)
<b>Poverty depth</b>	0.066	0.073	0.07
(P <sub>1</sub> )	(6.6)	(7.3)	(7.04)
<b>Poverty severity</b>	0.0058	0.013	0.0104
(P <sub>2</sub> )	(0.58)	(1.3)	(1.04)

Figures in parentheses are percentages  
 Source: Field survey, 2013

Poverty incidence (P0) estimated as 49.67% that is 149 respondents of charcoal producers fell below the poverty line of N86,453.92 per annum (N236.86 per day), while 50.33% were above the poverty line. This is in contrast to NBS (2005) that reported poverty incidence in 2004 as 54.4%. Also, on poverty depth, (P1) an average charcoal producer requires 7.04% of N86,453.92 (N6,086.36 i.e N16.68per day) to reach the poverty line. Poverty severity (P2) was 0.0104. This indicates that poverty was not severe among charcoal producers in the study areas because the value is far from 1.

#### Factors affecting poverty status among the respondents

Factors affecting poverty among the respondents were determined using Logit model and the result summarised in table 3.

Table 3 - Factors affecting Poverty among Charcoal Producers in the Study Areas (pooled)

Variable name	estimated coefficient	t-ratio	marginal effect
Constant	845.23	22.114	
Age	-0.17784E-01	-0.83805	-0.43559E-02
Marital status	0.91951	2.0464 **	0.22522
Household size	0.18547	10.255	0.45430E-01
Educational level	0.11199	0.97795	0.27430E-01
Year of Experience	-0.11961	-2.1245**	-0.29297E-01
TE	-852.10	-2.1911**	-208.71
AE	-831.05	-2.1304**	-203.56
EE	836.06	2.1035**	204.78
Log-likelihood function	-143.58		
Likelihood ratio test	128.713		
R <sup>2</sup>	0.46516		
F- ratio	50.425*		

\* Significant at 1%; \*\* Significant at 5%  
Source: Field survey, 2013

Marital status had a positive significance on poverty status ( $p < 0.05$ ). The implication is that a unit increase in marital status would increase the probability of being poor among married respondents by 0.2252. This might be due to the shift of responsibility to cater for family needs. Years of experience had a negative significant relationship with poverty status ( $p < 0.05$ ). However, years of experience had a positive relationship with technical efficiency (*ceteris paribus*) because there was effective utilization of inputs, hence increased productivity which in turn increases income leads to poverty reduction as the respondents were able to meet the basic necessities of life. Also, technical and allocative efficiencies had negative significant relationship with poverty status ( $p < 0.05$ ). Thus, an increase in allocative efficiency reduces poverty because the more the allocative efficiency of a producer, the better his ability to operate under cost minimization of inputs combination and revenue maximization of output. The likelihood ratio was 128.713, significantly different from zero. Also, the R<sup>2</sup> estimated at 0.465 indicated that the predictor variables explained 46.5% of the variation in poverty status of charcoal producers. Other factors not mentioned accounted for the 53.5% of the variation in the poverty level of the respondents. The F statistics significance ( $p < 0.01$ ) implied that the explanatory

variables jointly determined poverty status of the respondents in the study areas.

#### Conclusion and recommendations

This study reveals that charcoal production reduces poverty among the respondents in the study areas. However, charcoal production is male dominated due to the strenuous nature of production. Furthermore, all the respondents depended on earthen method of production under the traditional system and therefore rely on indigenous knowledge of producing charcoal.

Kiln method was absent due to lack of knowledge of modern system of charcoal production. Consequently, with a poverty line of N86,453.92 per annum (N236.86per day), 49.7% of charcoal producers fell below the poverty line and thus categorized as poor. However, they were not too poor because severity of poverty (P<sub>2</sub>) 0.0104, indicates that poverty was not severe because the value is very far from 1.

Suggestions include raw material availability through forest policy to promote reforestation that will enhance sustainability along with strict adherence to allowable cut level for the forest as well as fiscal policy intervention to accommodate producers with minimum collateral for loan.

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