



SOCIO-ECONOMIC ANALYSIS OF CHARCOAL PROCESSING AMONG HOUSEHOLD IN IBARAPA NORTH LOCAL GOVERNMENT OF OYO STATE, NIGERIA

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ABSTRACT

The study was carried out to investigate the processing of charcoal in Ibarapa North local Government Area Oyo State. The study also investigated the processing techniques and socio economic characteristics of the respondents. The primary data used in this study were obtained by structure questionnaire which were administered to three (3) villages in Ibarapa North local Government Area includes Ayete, Igangan and Tapa, Ninety (90) questionnaires were administered to the three villages. Data were analyzed using the descriptive analysis such as frequency tables, percentage and regression analysis. About 88% were married, while 53% of the respondents had primary school certificate. It was also shown that 41.1% of the respondents' source their capital from bank loan, 36.3 % of the respondents use scale as means of measuring the quantity of charcoal and the factors affecting charcoal processing was in-adequate finance which is about 91.1%. The result also shows that charcoal business is not a capital intensive business, very cheap to embark on, but where the producers encounter a lot of problem were transportation, labour, and equipment which stampede effective flow of products to the market. Therefore, it is recommended that there is need to improved processing to make charcoal more efficient, cheap and readily available to generality of Nigerian populace by looking into the problems associated with the charcoal processing in the study area.

Key words: Socio-economics, processing, charcoal, household

INTRODUCTION

Household fuels constitute energy sources used for domestic cooking space heating and lighting, but, according to Energy Sector Management Assistance Programme (2003) this excludes fuels for transportation. Different types of household fuels used in developing countries come under the category of traditional which includes animals dung and agricultural residues, as well as wood fuel. Wood fuel, in the view of world resources comprises of charcoal, firewood and other wood derived fuel, and also constitutes the most important form of non fossil energy used in household. William and Pinto (2008) In the rural areas, a wide selection of household fuels and equipment is available for use of all sector, the household sector experience the most pronounced changes in its pattern of fuel use over time

In Africa over 90% of the wood taken from forest is wood fuel (Amours, 2000) ,this majority is

consumed directly as fuel, substantial amount of this wood is transformed into charcoal processing. Pereira *et al.*(2001) claims that more than 80% of it is used in rural area making charcoal the most important sources of household energy in most African cities. It is projected that approximately 2.5 billion people in developing countries depend on biomass fuels to meet their household energy needs. For many of these countries, over 90% of total household fuel is biomass and will increase to about one third of the world's population because of growth (International Energy Agency, 2006).

The successful production of any commodity can only be sustained if there is a link between the site of production and the market thus ensuring that what is produced get to the final consumer. It is common thing in Ibarapa to see charcoal production by individual, group of people and cooperative societies in an attempt to generate a

neater easy to package and transport source of hydrocarbon for domestic and industrial uses. Charcoal conveyed in different sizes of vehicle ranging from small cars to heavy truck, in most cases conveyed from Ibarapa to Northern State, South east and to other neighboring towns To buttress this, (Kalu and Izekor, 2007) submitted that charcoal enterprise has been adopted to meet some socio-economic benefits and energy of the people. Also (Alemu *et al.*, 2009) estimated to be around 1.6million tons and household are consuming between 350 to 600kg annually , and estimate that about 2million people are economically dependent on charcoal production, transportation and trade. A synthesis of and socio – economic a study on household energy supply and demand in developing countries has been carried out. (Amours, 2000) identify income and price as the most predominant and significant factor. (Guptilla and [Kohlin](#), 2003) observe that increase in population, family size, economic activities in household, often lead to increase in the use of fuel. In their view, increasing economic activities and to increasing incomes and a better quality of life for the members of the households. Growth in population and income of the household stimulates the socio – economic transformation that moves household to more diverse and intensive use of household fuel. This shows that as people move up the income ladder, they adopt energy – intensive lifestyles for instance, (Olubusola, 2007) claims that the choice between firewood and charcoal among rural families seems to be dictated ,to a large extent , by poverty with charcoal having the highest figures.

Despite a major shift in the use of household energy, many households rely solely on charcoal as their primary source of cooking energy, especially in rural areas. The popularity of the transition to charcoal was brought to the force following the acute scarcity of firewood and kerosene as well as the exorbitant prices (Uzoma, 2006) invention of Abacha coal pot - a locally made stove that use charcoal over the years, the cooking technology of the coal pot became widely It therefore reasonable to inter that biomass (mainly charcoal) will remain key source of energy for most of the population in sub African continent for several decades to come. This observation is shared by various institutions including the world energy council. (World

energy countries in it statement in 2000), the food and agricultural organization (FAO) (Gustatson, 2001), and the UND (2000).Charcoal was used during the world was to power commercial road vehicle usually buses, where oil was search completely unavailable. In North Korea, such vehicles are still in use till today. Beside its housed hold use charcoal has industrial applications, as well as a in metallurgical operation as reducing agent (FAO, 1983). Even in developed countries, there is increasing demand for charcoal barbecue fuel. This heavy reliance on charcoal characterize energy consumption in much of the rural household in developing countries like Nigeria, seems to be tied to socio – economic characteristics of the households and as well as some factors that propel its choice Many studies had been carried out on various source of energy generation and their contribution to the national economy. Type of energy used is related to the level of income and its availability. Low income earner use dirty energy sources like fuel wood, household on transition use both dirty and clean energy depending on their income at a particular time and can switch to any enegy source (Hoiser and Dowd, 1987; Barnes and flour, 1999, Heltberg, 2005). According to the IEA (2006) village households and subsistence farmers depend mainly on biomass fuels than those in the city, more than half of household in sub-sharan Africa cities rely mainly on fuel, wood charcoal, or wood waste to meet their cooking needs. Urban women interviewed during household energy survey in Ethiopia, Chad, Madagascar, Mali, Niger and Senegal dislike cooking with wood, because it is difficult to kindle, dangerous for children, smoky and messy (Mardon, 2006). Charcoal is believed to lack most of these adverse effects and the priced is lower than LPG and kerosene.(Foster, 2000).The objective of this study is to assess the socioeconomic analysis of wood charcoal processing among rural household of Ibarapa North Local Government Area, Oyo State

MATERIALS AND METHODS

Study Area

This study was carried out in Ibarapa North Local Government Area of Oyo State, Nigeria. Ibarapa area falls within latitudes 70.15' N and 70.55' N and longitudes 30E and 30.30' E It was created in 1996 from old Ifelaju Local Government. Its

headquarters is the town Ayete, other notable towns in the local government are Ayete, Tapa and Igangan. Each of the towns has quite a number of villages. The wards under Ibarapa north local government are Ayete 1, Ayete 2, Igangan 1, Igangan 2, Igangan 3, Tapa 1, Tapa 2. The major markets within the local government include Ajise, Obada, Alagbaa alabi, Akoko, Oja isale, among others. Their predominant occupation is charcoal processing, although few of them practice subsistence farming. The climate in the

area favours the cultivation of crops like Maize, Yam, Cassava, Millet, Plantains, Cocoa, Palm produce, Cashew, Watermelon, etc. It has an area of 1218km² and a population of 101,092 at the 2006 census. Ibarapa north local government share boundaries with Ibarapa central, Igbo ora between Idere and Ayete also with Ibarapa east between Alabi market and Ayete also with Iseyin local government, Obanese Tapa and with Ogun state Imeko Afon local government. Each of the town has quite a number of villages.

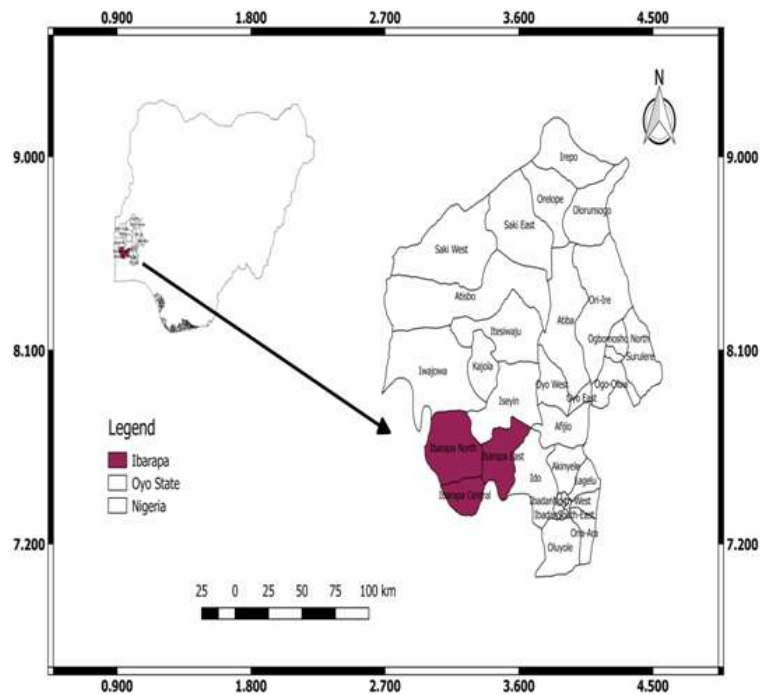


Figure 1: Map of Nigeria, Oyo State and Ibarapa in North Local Government Area

Sampling Technique

Ibarapa north was purposively selected because of high concentration of charcoal processing in the area. After which three wards were randomly selected from Ibarapa north local government which are Ayete1&2 (Ayete), Igangan1&2 (Igangan) and Tapa1&2 (Tapa). From those wards 30 villages and 3 charcoal processors were purposively selected base on the high concentration of charcoal processors. 90 questionnaires were administered. 30 questionnaires were distributed in each ward.

Data analysis

Socio-economic characteristics of the respondents were analyzed using descriptive analysis such as frequency tables, percentage and inferential statistics e.g multiple regression analysis.

Model:

$$Y = f(x_1)$$

$$Y = (X_1 + X_2 + X_3 + \dots + X_5 + U)$$

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$$

X_1 = Marital status
 X_2 = Academic qualification
 X_3 = Household size
 X_4 = Years of experience
 X_5 = Quantities of charcoal
 B = constant
 U = Error of term

RESULTS

The table 1 reveals the socio-economic characteristics of the respondents. 100% of the respondents were male, 88% were married, most of the respondents were within ages 45-52yrs and 37-44yrs with 37.8% and 30% respectively. Majority of the respondents had primary school certificate

(53.33%).34.44% were Muslims 40.0% were Christians and 14.4% traditionalist. It also shows that 45.6% of them had the household size of 2-6, 28.9% of 1-3 and 25.6% of 2-10 household .The result shows that 46.7% of the respondents had been in the business with experience of 6-10 years,

52.2% of the total respondents' practices farming as a secondary occupation. 23.3 % were Artisans, also 20% were into trading and 4.4 % engaged in security as a secondary occupation.

Table 1: Socio-Economic Characteristics of Respondents

Variables	Frequency	Percent
Gender		
Male	90	100.0
Total	90	100
Marital status		
Single	10	11.1%
Married	80	88.9%
Total	90	100%
Age respondent		
21-28	11	12.2%
29-36	10	11.1%
37-44	27	30%
45-52	34	37.8%
53-57	8	8.9%
Total	90	100%
Academic qualification		
Primary	48	53.33%
Secondary	31	34.44%
No formal edu	11	12.22%
Total	90	100%
Religion		
Muslim	41	45.6%
Christian	36	40.0%
Tradition	13	14.4%
Total	90	100%
Household size		
1-3	26	28.9%
4-6	41	45.6%
7-10	23	25.6%
Total	90	100%
Years of experience		
Less than 5	9	10.0%
6-10	42	46.7%
11-15	16	17.8%
16-20	17	7.8%
21-25	90	17.8
Total	90	100%
Secondary occupation		
Trading	18	20.0%
Artisan	21	23.3%
Security	4	4.4%
Farming	47	52.2%
Total	90	100%

The table 2 shows the processing activities of charcoal producers. It shows that 41.1% of the respondents sourced their capital from bank loan, 36.3% from cooperative and 21.1% from personal savings. Majority of them used scale as the means of weighing the quantity of charcoal(46.7%), 28.8% used bags and 24.4% used container .Also 71.1% of then do not produce charcoal throughout

the years, only 28.9% produced throughout the year and 92.2% of respondents revealed that charcoal business was not less capital intensive. Table reveals that 88.9% of charcoal production was not hazardous to human's health. Majority of the respondents used two weeks to produce their charcoal 32.2%, 23.3% used three weeks, 16.67% used four weeks and 1.1% for others.

Table 2: Level of Activities Participants Involved in Charcoal Processing

Variables	Frequency	Percent
Source of capital		
Bank	37	41.1%
Personal	19	21.1%
Family friends	1	1.1%
Cooperative	33	36.7%
Total	90	100%
Quantity of charcoal		
Scale	42	46.7%
Container	22	24.4%
Bag	26	28%
Total	90	100%
Produce Charcoal		
No	64	71.1%
Yes	26	28.9%
Total	90	100%
Less capital		
No	83	92.2%
Yes	7	7.8%
Total	90	100%
Hazardous		
No	80	88.9%
Yes	10	11.1%
Total	90	100%
Week produce		
One week	13	14.4%
Two week	29	32.2%
Three week	21	23.3%
Four week	15	16.67%
Five week	11	12.2%
Other	1	1.1%
Total	90	100%

The table 3 shows that household size, and marital status were positively significant at 1% level, this indicate that as the household size and the charcoal processor will have more of family labour to work with and thereby increase their

level of profit. R^2 was 0.55 which means 55% level of variation in the charcoal processing could be explain while 45% could be captured by the error term.

Table 3: Determinant of Charcoal Processing in Ibarapa, Oyo State

Mode	Coefficients	Std. error	T. Value
Com (constant)	5.867s	4.051	1.448
X ₁ =MAR/STA	14.582 _{xxx}	2.169	6.724
X ₂ =ACA/QUA	0.140	0.502	0.279
X ₃ =HOUD/SIZ	3.615 _{xxx}	1.130	3.199
X ₄ =YRS/EXPR	0.400	0.644	0.621
X ₆ =QUA/CHA	0.065	0.759	0.085

Note: xxx = significant at 1% level.

The table 4 shows the perception statement on factors affecting charcoal processing. 75.6% of the problem of the respondents accounted for labour. 80.0% Government policies had no strong effect on the respondent's activities. 91.1% of the respondents faces the majority of the factors affecting their activities was inadequate finance.

74.4% of the respondent revealed that lack of experience do not contribute to the problem facing them. 53.3% of the respondents accounted factors of nearness to market. Insecurity had no influence on their activities with 82.2% of the total respondents. The study also revealed that 81.1% of the factor affecting the activities of the respondents accounted to transportation factor.

Table 4: Factors Affecting Charcoal Processing in Ibarapa, Oyo State

Variables	Frequency	Percent (%)
Labour-influencing		
Affected	68	75.6%
Unaffected	3	3.3%
Strongly Affected	19	21.0%
Strongly Unaffected	0	0%
Total	90	100%
Government affected		
Affected	9	10.0%
Unaffected	72	80.0%
Strongly Affected	7	7.8%
Strongly Unaffected	2	2.2%
Total	90	100%
Finance problem		
Affected	82	91.1%
Unaffected	8	8.9%
Strongly Affected	0	0%
Strongly Unaffected	0	0%
Total	90	100%
Season and weather affected		
Affected	27	30.0%
Unaffected	3	3.3%
Strongly Affected	59	65.6%
Strongly Unaffected	1	1.1%
Total	90	100%
Competition affected		
Affected	4	4.4%
Unaffected	35	38.9%
Strongly affected	6	6.7%
Strongly unaffected	45	50.0%
Total	90	100%
Lack of experience		

Affected	2	2.2%
Unaffected	18	1.1%
Strongly affected	3	3.3%
Strongly unaffected	67	74.4%
Total	90	100%
Nearness to market		
Affected	36	40.0%
Unaffected	1	1.1%
Strongly affected	48	53.3%
Strongly unaffected	5	5.6%
Total	90	100%
Security influence		
Affected	1	1.1%
Unaffected	12	13.3%
Strongly affected	3	3.3%
Strongly unaffected	74	8.2%
Total	90	100%
Transport influenced		
Affected	13	14.4%
Unaffected	3	3.3%
Strongly affected	73	81.1%
Strongly unaffected	1	1.1%
Total	90	100%

DISCUSSION

This result shows that charcoal processing was dominated by male in the study area, agreeing with Eniola *et al.* 2018 when he stated that male were more involved male were more involved in charcoal production to socio economic activities of rural dwellers in Rain forest ecological zone. It was further revealed that old or middle aged people were mostly involved in the processing of charcoal. This could be due to the fact that younger one have migrated to urban centers in pursuit of greener pasture(better economy) with the hope of improving the level of income and living standard, this was attributed to the concentration of factories at peri-urban centers and the unpredictable weather and seasonal nature of production,(Babatunde *et al* 2005).

The results show that charcoal processing did not require high level of education. The low level of education could be attributed to the primitive nature of the processing, its rural and crude nature thus agreeing with finding of Fakoya and eniola(2002) that mental horizon of marketers is low, so also their capital outlay. All members of the society embraced charcoal processing as a means of job creation but dominated by married men

probably to increase their house hold income, this result is in line with the findings of Babatunde, *et al.*, (2005) who found out that married people dominate rural subsistence businesses.

The result showed there is no religion barrier (taboo) against charcoal processing, it is generally embraced for sales and use by all religions.. The result showed that majority of the respondent realized their capital from bank loan disagreeing with the findings of Babatunde and Kehinde (2019) who found out that charcoal producers used their personal savings as source of initial capital to start their business. The result agreed with the findings of Babatunde (2019) when he asserted that the amount of working capital for business enterprises often varies and determines the level of output and accruable profit margin. It was observed that charcoal processing was dominated by rural

CONCLUSION

The findings from this study show that charcoal processing was dominated by male. The findings show that. Majority of the respondent had primary school leaving certificate with household of 2-6 and 6-10 years experience in the business and engaged in farming as their secondary occupation

apart from charcoal business. It was further revealed that majority the respondents sourced their capitals from bank (bank loan.) In addition, it can be concluded that labour, season and weather condition, transportation, and finance were the major constraints affecting the activities of charcoal processors in study area.

Recommendations

Based on the findings and conclusions from this study the followings recommendations were made

Government should provide the charcoal processors in the study area with sufficient capital to help them in their business activities. Access to credit facilities should be improved upon by encouraging the respondents to form a cooperative society so that they can mobilize sufficient working capital for new businesses. Government should repair all roads linking the process areas.

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