

ECONOMIC ANALYSIS OF EUCALYPTUS PRODUCTION IN MOKWA LOCAL GOVERNMENT AREA OF NIGER STATE NIGERIA

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ABSTRACT

This study was carried out to investigate the economic analysis of Eucalyptus products on the livelihood of rural dwellers in Mokwa L.G.A. of Niger State. A purposive sampling technique was used to draw up 75 respondents. The data were obtained with the aid of questionnaire and interview schedule. Data obtained were analyzed using descriptive statistics such as frequency distributions, percentages, and farm budgeting model. It was found that, majority of the respondents who were engaged in (eucalyptus business are of middle age brackets (31-40 (26.67%) and 41 – 50 (22.67%), and also of men folk (80%). It was found that, in spite of the positive effect of Eucalyptus business, its sourcing impose dangers to those directly involved in the business (drudgery, scarcity of Eucalyptus, snake bites, inadequate preservative measure, problems of climbing and falling etc). The introduction of improved Eucalyptus seedlings and good preservative measures should be encouraged extensively. There is therefore, need for government, private as well as Non-government organizations to invest in Eucalyptus business, so that rural dwellers in Mokwa L.G.A of Niger State, Nigeria will have increased productivity, generate higher income and better standard of living.

INTRODUCTION

Agricultural sector of Nigeria has various sub-sectors namely Crop Production, Animal domestication, Agricultural Economics, Agricultural Extension, Fisheries and Forestry. The Forestry sub-sector encompasses timber forest products and Non-timber forest products (NTFPs). Forest provides a range of ecological, economic and social services to mankind including protection of water and soil resources. It also acts as a store for carbon, which if released into the atmosphere, build up into green house gases. In addition, they are the main reservoir of terrestrial biological diversity and a vital resource for millions of local commodities (Ndoye, 1996 and Onunju, 2006). Tropical forests provide a range of other benefits from ecosystem services, such as water flow, quality maintenance and carbon storage to non-timber products sold in local markets and used in houses. Non-timber forest products (NTFPs) are products of biological origin/materials (other than industrial roundwood and derived sawn timber, wood chips, wood –based panels and pulp) that may be extracted from natural ecosystem, managed plantations, etc and utilized within the households, marketed or have social, cultural or religious significance (Andel, 2000, and Onunju, 2006). Today, over 150 NTFPs are significant as commodity in international trade, with Nigeria having comparative cost of advantage in the production of most.

NTFPs are an important element of the forest resources as a whole. Recently, insufficient attention has been devoted to ensure sustainable

management and use. Non-timber forest products (barks, leaves, flower, seeds, fruits, resins, honey, fungi and animal products) play important roles in the communities. Bush meat, bush mango, the barks and fruits of *garcinia cola*, palm nuts, colannts and the African pear are among the cash suppliers. The trade in these commodities is an important source of income for farmers. Non-timber forest resources like Eucalyptus play a crucial role as source of basic necessities in local communities and also as a major source of revenue generation to the dwellers. Despite the significant contribution of NTFPs to rural economies, there is no empirical analysis on the socio-economic variables that affect the revenue in this sector of the economy. This paper is motivated by the need to fill the information gap.

During the last decade, people have become increasing aware of the important role that NTFPs can play in improving the rural livelihood. However, various systems of managing and harvesting non-timber forest products have been shown, to be able to provide people living near the forest with their basic needs such as firewood, valuable raw materials, food, shelter and water (UN, 1997). The forest can also help to improve crop yields and utilization of available labour and land (especially in agroforestry farming systems), in addition to maintaining the environment in good condition (FAO, 1995).

Eucalyptus commonly called *Turare* in Hausa language, is a NTFP. It belongs to the family Myrtaceal, and originated from Australia, New

Guinea, Indonesia and Philippines. They are ever green woody trees and the leaves have aromatic smells. Eucalyptus was introduced to Northern Nigeria in 1916, when they were planted as bare root transplant. The main Eucalyptus planted in Nigeria includes: *Eucalyptus camaldulensis*, *Eucalyptus Oocarpa*, *Eucalyptus torrelliana*, *Eucalyptus toreticonsi* and *Eucalyptus deglupta*. Its uses ranges from timber, poles, fuelwoods, pulps, environmental amelioration and an important afforestation tree. Also tannin is obtained from its leaves and barks. In addition, it is used as building material in thatched and temporary houses and so on (Etukudo, 2003).

People need to recognize that unless developing countries are helped to realize the importance of the NTFPs in terms of income and employment generation, the problem of brain drain, political instability, mass unemployment and other social vices will not be solved completely (Max, 2002). NTFPs are more important forest resources than timber. Several million households worldwide depend heavily on NTFP subsistence and income (Andel, 2000). However, the collection and harvesting of these NTFPs from the natural forest is difficult (Casparry et al 2001). It is even more difficult to quantify national trade, which may be very substantial to globalization, because a very important international traded NTFP rarely appears in statistics. Furthermore, it is common to find unemployed villagers stealing these forest products and effort in stopping these social menaces is very difficult, as government do not show keen interest in protecting the forest from over-exploitation. Even though many studies have been undertaken to appraise NTFPs in Nigeria, very few have taken into account the effects of Eucalyptus in the livelihood of rural programmes wanting to address the effects of Eucalyptus in the livelihood of rural dwellers. More so, the effects of Eucalyptus is one of the NTFPs forms one of the development process and the paper is aimed at empirically addressing this issue of development significance.

The broad objective is to assess the effects of Eucalyptus in the livelihood of rural dwellers in Mokwa Local Government Area of Niger state, Nigeria. The specific objectives are: to determine the socio - economic characteristics of harvesters/processors of Eucalyptus products in the study area; to identify various products realized from Eucalyptus production, to estimate the revenue from each of the Eucalyptus products in the study area; to identify the employment opportunities in Eucalyptus business and identify problems encountered among the Eucalyptus harvesters/processors in the study area.

METHODOLOGY

The study area was Mokwa Local Government Area of Niger State. The population of the people in the area according to the figures for the 2006 National Population Census is 242, 858 (N.P.C., 2006). Because of the consistent rainfall, which commences mid-march and terminates mid-October annually, the Local Government has a large expense of rainforest, which favours forest trees like Eucalyptus, Tamarinds, Leucaena, Meliana, Raffia Palm, timber tree species, etc. The people of this area are predominantly farmers and fishermen. Fifteen communities were purposively selected from the LGA because Eucalyptus tree is commonly found in the area. Five respondents were randomly selected from each community giving 25 respondent in each community. A total of 75 respondent, were therefore selected from the study area. Data collection was done via a set of pre-tested and structural questionnaires, oral interviews and direct observations while secondary data were collected mainly from available journals (published and unpublished materials) of relevance to the study. The data were analyzed using descriptive statistics and Farm Budgeting Analysis. The Farm Budgeting tool has been widely used in Farm Management and Production Economic Studies. The Farm Budget tool is an operation leading to the determination of costs and revenue for a given production period (Olayide and Heady, 1982). According to Olukosi and Erhabor (1988), NFI (The budgeting technique) is expressed as:

$$NFI = GI - TVC - TFC$$

Where: NFI = Net Farm Income
 GI = Gross Income (Total Revenue)
 TVC = Total Variable Cost, and
 TFC = Total Fixed Cost

However, for this study, the mode is specified as:

$$GM = TI - TVC$$

$$NI = GM - TFC$$

Where:
 GM = Gross Margin
 TI = Total Income of the respondents.
 TVC = Total Variable Cost of the Respondents
 TFC = Total Fixed Cost of the Respondents
 NI = Net Income Per Annum of the respondents.

$$\text{Total Revenue} = \sum IEO + \sum IEL + \sum IER + \sum IEP + \sum IEL$$

Where:
 TI= Total Income of the respondents
 $\sum IEO$ = Sum of income derived from Eucalyptus oil
 $\sum IEL$ = Sum of income derived from Eucalyptus Liqour
 $\sum IER$ = Sum of income derived from Eucalyptus Ropes
 $\sum IEP$ = Sum of income derived from Eucalyptus Poles

Σ IEL = Sum of income derived from Sales of Eucalyptus leaves.

TC = TFC + TVC

Where:

TC = Total Cost incurred by the respondent per annum

TFC = Total Fixed Cost incurred by the respondent per annum.

TVC = Total Variable Cost incurred by the respondents per annum.

Where:

TFC = Sum of cost of Eucalyptus trees + Sum of Cost of extracting liquor (Sap) and oil.

TVC = Sum of cost of Tapping Eucalyptus

RESULT AND DISCUSSIONS:

The socio-economic characteristics considered in this study is largely that of age, gender, marital status, educational background and household size of the respondents in the area. Table 1 shows the age, gender, marital status, educational qualification and household size of the respondents in the study area. Analysis revealed that 26.67% and 22.6% of the respondents fall in the age group of 31 – 40 years and 41 – 50 years of age respectively, while only 2.67% falls within the range of 11-20years. This is an indication that Eucalyptus business is mostly carried out by the middle aged and active labour force men. This could mean that lots of skills and energy are needed in the business.

The gender distribution shown in table 1 also revealed that most of the respondents in Eucalyptus business were men while only 20% were women. This means that majority of the properties in the business were men, which is an indication that confirms the popular belief about the study area that, farming and or other related business is an occupation for the male folks while the female folks are only to prepare food for the males while working on their farms. It also confirms that religious belief that women in purdace are not to leave their homes for any outside activities. Table 1 also revealed the marital status of respondents. It was indicated that 68% of respondents were married, while 5.33% were single, others were either widowers (20%), divorced (4%) or separated (2.67%). This indicates that this business is mostly dominated by married men and women. Married entrepreneurs with large family size may have ready supply of family labour to work on the forest, especially during school vacations. The level of educational qualification as shown in the analysis indicated that 73.33% of the respondents have first school leaving certificate from primary education while only 6.67% had secondary education. It is implied that majority of the respondents are not well educated. However, education is important

amongst the entrepreneurs of Tamarind business because it enables them adopt innovations for improved productivity, skills development and allocative abilities. More often than not, unemployment problem in the country, has forced some unemployed secondary school holders to engage in the business.

The distribution of respondents according to their household/ family size; the importance of a large family size in traditional agriculture and agribusinesses was expressed by Olufe (1988) in his study of resource productivity in food production in Kwara State of Nigeria. According to the author, family labour accounted for a significant proportion of large hectarage of farm lands and reducing the cost of hiring labour for farm operations. From table 1, 64% of the respondents, have household size of 11-15 persons.

The distribution of respondents according to the forms of enterprises involved in Eucalyptus business is revealed in table 2. The result of the table shows that most respondents (33.63%) who are mostly from poor household are gainfully employed in the sale of poles mostly used for electricity distribution networks and construction works because modern construction now make use of modern scaffolding material for construction and other purposes. It is followed by ropes (23.89%) that are also scaffolding materials used for modern construction works. Least are those who sell leaves which are used for medicinal herbs and as raw material for physiotherapy in the pharmacognosy units of drug producing industries.

Result from the income analysis shows that Eucalyptus business in the study area is highly profitable because the net income was positive (table 4). The result also revealed that the highest revenue from the Eucalyptus business in the study area was realized from poles with 80.19% of the total revenue, while the revenue from sales of oil, liquor, ropes and leaves were 0.31%, 0.13%, 0.83% and 18.53% respectively. However, in terms of cost of tapping the Eucalyptus products, as shown in the result of the analysis, the cost of logging poles (N2,987,500.00) was the highest, accounting for 43.315 of the total cost of production, this cannot be unconnected with the cost of transportation resulting from the high cost of petroleum products, consequent of the deregulation of the downstream sector of the petroleum industry (Ndanitsa, 2005). Meanwhile, cost of liquor extraction (sap) which is a raw material for gums and adhesives industry was the least, with 0.27%.

All the respondents sampled encounter one problem or the other in exploiting Eucalyptus products, from the forest. Some complained that

they encountered more than one problem, while tapping Eucalyptus products. The various problems they encountered resulted to multiple responses recorded in the study area. The result of problems encountered by most respondents is presented in table 4. The major problem encountered by most respondents is lack of extension education as most respondents (40) sampled stated strongly that they have no extension contact (13.83%). Lack of access road is another major problem, which accounts for 13.54%. Urbanization has caused the removal of economic trees from the forests leading to scarcity of these trees including Eucalyptus, this account for 8.93% of the sampled respondents problems of exploitation. Problem of climbing the trees especially for the sap tapers due to old age also was a major complain of 11.82% of the respondents. The least are those who complained of insect bites, snake bites and drudgery, and they are represented by 2.59%, 4.61% and 3.46% respectively.

Table 1: Distribution of respondents according to socio – economic characteristics.

Socio-Economic Characteristics		
Age Distribution (Years)	Frequency	Percentage
1 – 10	1	1.33
11 – 20	2	2.67
21 – 30	8	10.67
31 – 40	20	26.67
41 – 50	17	22.67
51 – 60	19	25.33
61 - 70	6	8.00
Above 70	2	2.67
Gender		
Male	60	80.00
Female	15	20.00
Marital Status		

Married	51	68.00
Single	4	5.33
Widower	15	20.00
Divorced	3	4.00
Separated	2	2.67
Educational Background		
Non-formal education	14	18.67
Primary School Education	55	73.33
Secondary Education	5	6.67
Tertiary Education	1	1.33
Household (Family) Size		
1 – 5 Members	48	64.00
6 – 10 Members	23	30.67
11 – 15 Members	3	4.00
Above 15 Members	1	1.33

Source: Field Survey, 2010

Table 2: Eucalyptus enterprises (Eucalyptus business)

Eucalyptus	Frequency	Percentage
Eucalyptus Oil	20	17.70
Eucalyptus Liqour (sap)	16	14.16
Eucalyptus ropes	27	23.89
Eucalyptus poles	38	33.63
Eucalyptus leaves	12	10.62
Total	113	100.00

* Multiple responses recorded

Source: Field Survey, 2010

Table 3: Estimated Revenue and Cost From Eucalyptus in Naira

Products	Revenue (N)	Activity Operation	Cost (N)
Eucalyptus Oil	72,969.00	Cost of Oil Extraction	24,760.00
Eucalyptus Liqour (sap)	31,450.00	Cost liquor extraction	18,702.00
Eucalyptus ropes	194,655.00	Cost of removing ropes	63,280.00
Eucalyptus poles	18,725,600.00	Cost of logging poles	2,987,500.00
Eucalyptus leaves	4,327,200.00	Cost of harvesting leaves	1,365,200.00
		Cost of Eucalyptus tress	2,439,000.00
Total Revenue	23,351,874.00	Total Cost	6,898,442.00

Source: Computed from research study data, 2010

Income Analysis of Eucalyptus Products:

$$\begin{aligned}
 \text{Gross Margin} &= \text{N}23,351,874.00 - \text{N}7,555,046.00 \\
 &= \text{N}15,796,828.00 \\
 \text{Net Income} &= \text{Gross Margin} - \text{Total Fixed Cost} \\
 &= \text{N}15,796,828.00 - \text{N}2,439,000.00 \\
 &= \text{N}13,357,828.00
 \end{aligned}$$

$$= \text{N}13,357,828.00 \text{ per annum}$$

Table 4: Distribution of respondents according to problems encountered in Eucalyptus business.

Problems encountered in the Eucalyptus business	Frequency	Percentage
Conflicts with crop farmers	26	7.49

Lack of access road	47	13.54
Drudgery (working through long distance to convey the product)	12	3.46
Snake bites	16	4.61
Insect bites	9	2.59
Scarcity of Eucalyptus due to urbanization	31	8.93
Problems of climbing the tree due to old age	41	11.82
Fear of spoilage if not sold	13	3.75
Problems of falling from the tree, especially during the rainy season	16	4.61
Poor price of products/lack of market incentives	27	7.78
Facilities	42	12.10
Problem of land tenure	19	5.46
Lack of extension education/contact	48	13.83
Total	347	100.00

* Multiple responses

Source: Field Survey, 2010

CONCLUSION AND RECOMMENDATION

The study revealed that the age range between 31 - 40 years and 41 - 50 years are actively involved in the Eucalyptus business with 26.67% and 22.675 respectively, majority of them being male folks (80%). The result also shows that 68% of the respondents were married, while only 5.33% were single. The result also revealed that Eucalyptus business was dominated by the respondents that acquired primary school education (73.33%). The result from the analysis also shows that Eucalyptus business enterprise is a profitable one; it has a Gross Margin and Net profit of N15,796, 828.00 and N13,357, 828. 00 respectively. Result from the study also shows the lack of extension contact, lack of access roads, scarcity of Eucalyptus tress and problem of climbing the tress especially durig raining season are the major problems of Eucalyptus business in the study area. Therefore, it is recommended that both the government, private and non-governmental organization should invest in this business to enhance agricultural and rural development, which will have a positive impact in the livelihood of the rural dwellers in the area, and curb rural - urban migration. One of the identified problems also include inadequate capital and lack of credit facilities, thus, government involvement in the area of assisting Eucalyptus farmers or processors/marketers should be in the provision of *micro-credit facility which will enable them acquire all the necessary inputs that will be used for processing and storage of their products.* The present tempo of micro-finance and Fadama projects should be sustained for a long period of

time. Government should also ensure adequate protection and preservation of the forest and its products from over-exploitation. Legislative laws must be enforced by the Principal Forest Officers (PFOs) against deforestation/desertification. Rural feeder roads should be constructed to ease transportation problem of the products to the selling points. Research institutes should make available Eucalyptus seedlings of contrasting characters to the farmers. Extension officers should extend their services to Eucalyptus farmers/marketers by advising them on the benefits of raising and establishing Eucalyptus plantations using improved Eucalyptus seedlings. Finally, farmers are encouraged to diversity in Eucalyptus business and adopt modern innovations that will translate to increased productivity higher incomes and better standard of living.

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