

CONTRIBUTIONS OF MADRID (PTEROCARPUS ERINACEOUS, POIR) TO COMMUNITY LIVELIHOODS IN TAKUM, TARABA STATE

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Abstract

Pterocarpus erinaceus (Poir) also known as Madrid has been identified to contribute to community livelihoods. Such contributions are people as well as site specific and may be short-lived if continuous availability cannot be guaranteed. Information on the contributions of *Pterocarpus erinaceus* to community livelihoods is crucial to their sustainable management in Takum. However, this contribution has not been properly documented in the study area. Therefore, contributions of *Pterocarpus erinaceus* to community livelihoods in Takum Local Government Area of Taraba State were investigated. A total of 160 semi-structured questionnaires were distributed to generate data for this study with only 154 retrieved. Data generated was analyzed using descriptive statistics and the results were presented in frequency tables, Percentages, Bar chart and Pie chart for easy comprehension. Most of the respondents are youths and males who are singles with few that are married with moderate family size. *P. erinaceus* can both be found on mountains and lowland areas. Loading, skidding, felling and debarking are major activities associated with the harvesting of *P. erinaceus* in the study area. Similarly, a minimum amount of N1,000.00-N10,000.00 could be generated from the harvesting of *P. erinaceus* while problems such as bad roads, injuries from machine, accidents, fire out break militates against the harvesting of *P. erinaceus*. Also, parts of *P. erinaceus* such as seeds, leaves, branches, barks and roots are used by the respondents in the study area. The major contributions of *P. erinaceus* to community livelihoods in the study area are food, income, medicine and employment respectively (Table 1.1- 1.7 and Figure 1-6).

Key words: Community livelihoods, Contribution, Madrid, *Pterocarpus*, Takum

INTRODUCTION

“Community livelihoods” as defined by Loubser (1995) is the totality of the means by which people in a community secure a living, have or acquire in one way or another, the requirements for survival and satisfaction of needs, as defined by the people themselves in aspects of their lives. Community livelihoods are therefore different from job, which is a specific piece of work or activity performed in exchange for payment. While communities work to obtain money, communities engage in a livelihood to support life; as such

community livelihoods may or may not involve money. However, there are instances where a job is a means of livelihood. From the forgoing, livelihoods are the activities people undertake to meet basic needs and to generate income. The concept embraces not only the present availability of the means for making a living but also the security against unexpected shocks and crises that threaten livelihoods. The term “Sustainable” livelihood is different from environmental sustainability. Sustainable livelihoods in this sense refers to the nature of the ways in which livelihood

is secured. Thus, according to Loubser (1995), sustainable livelihood must be considered in several dimensions including physical, social, economic, spiritual, ethical and environmental. The connotations of the dimensions are:

Physical: Does it provide physical security, protection of health and other safe conditions of work?

Social: Does it allow balance and is it in consonance with social responsibilities and ties within the family and community?

Economic: Does it provide adequate reward or return for the effort expended?

Spiritual: Is it free and does it respect human dignity, self-esteem and identity?

Ethical: Is it fair, equitable, just and respecting of human rights?

Environmental: Is it inter-generationally equitable and does it allow the regeneration of resources?

Livelihoods are dynamic and can be changed by either internal or external stressors. The strength of a given livelihood is not only measured by its productive outcomes but equally it's resilience to shocks. Livelihoods can only be sustainable if the natural resources are sustained. Sustainable livelihoods therefore describe the variety of ways in which people in different societies make a living or secure a livelihood. Livelihood is a system of live maintenance which can either be monetary or non-monetary in reward. The non-monetary activities include fetching of firewood and water for domestic use, collection of NTFPs such as snails, mushrooms, wild vegetables and herbs for family utilization. Monetary activities include harvesting of NTFPs such as snails, mushrooms, wild vegetables, fruits, nuts, seeds, medicinal plants and others for sales. The forest of West Africa is well endowed with abundant forest resources. One of the important forest resources is *Pterocarpus erinaceus*, also commonly referred to as African teak and also known as "kumn" in Kuteb language. The tree species belongs to the rosewood family, which are mostly deciduous legume of the

African savanna and dry forests. According to Burkii (2004), *P. erinaceus* is a deciduous tree with high, open, few-branched crown, usually growing 12-25m tall. It is widespread in the savanna areas of Senegal to Gambia and from Chad to the Central African Republic. The plant has been reported in most parts of the North West, North East and North Central States of Nigeria. In Taraba State, high densities of the plant species are found in the Central senatorial district. The tree species has also been reported in the South West, most especially, in Ekiti, Ondo and Ogun States (Akinsola, 2016). *Pterocarpus erinaceus* is native rosewood specie distributed to the semi-arid Sudan Guinea savannah forest of West Africa. It has slight buttress and when old is up to 75cm in diameter. The tree produces one of the finest woods in the region, where it is grown. The wood is for both local and international utility (Global Time Magazine, 2017). The tree is grown as live fence, wind break as well as shade bearer to some extent in some house hold (Bosu, 2013). Incomes from environmental sources play an important role in rural livelihoods in developing countries. In particular, products from forest environmental sources contribute significantly to rural house-holds' economic wellbeing (Getachew *et al.*, 2007). Trees are important in the livelihoods of local people in most developing countries. Local people depend on forests resources for various products such as fuel wood, construction materials, medicine, and food. Globally, it is estimated that between N1.095 billion and N1.745 billion naira generated by people who on forests for their livelihoods (Vedeld, 2007). Moreover, 350 million people who live adjacent to dense forests depend on them for subsistence and income (Langat, *et al.*, 2016). It is estimated that 20-25% of rural peoples' income is obtained from environmental resources in developing countries and act as safety nets in periods of crisis or during seasonal food shortages. China import of *Pterocarpus erinaceus* from West Africa increased by more than 300 fold in value from 21,350 U.S Dollars

to 63,943,732 U.S Dollars total Chinese imports during the first quarter of 2015 (Evans, 2012). This import increased by more than 1,700 in volume from 50m³(Total Chinese import during the first quarter of 2015 During the first quarter of 2015, nearly 30% of the total value of China's import of rosewood came from West Africa. West Africa is now competing with the Southeast Asia as the main exporting region of rosewood to China. Available information indicates that Chinese imports of rosewood from West Africa are in fact presently focused on a single species *Pterocarpus erinaceus* (Nadro and Modibbo, 2014). Nigeria leads in this trade in rosewood as from 2011 to date (Adam, 2012). *Pterocarpus erinaceus* trees are currently one of the most commercial trees in Taraba State as it stands. It generates a huge sum of revenue for the state government and it is also a big source of livelihood for most of the people involved in its business but yet little is known about how it contributes economically to the rural livelihood in the study areas. Therefore, this study provides information on the economic contribution of *Pterocarpus erinaceus* to the rural people of Takum Local Government Area, Taraba State.

Materials and Methods

Takum local government area is one of the 16 local governments in Taraba State which was created in 1976. and it is located in the southern part of Taraba State. Takum lies between latitude 6°30' and 8° 30'N and longitude 9° 10' and 11° 10'E of the Greenwich meridian. The local government area has a tropical climate marked by dry and rainy seasons. It has 20°C to 32°C (minimum and maximum daily temperature). Takum is within the guinea savannah sub-region, characterized by forest trees and tall grasses; it receives an average annual rainfall of 1020mm distribution over the districts (Taraba State Agriculture Development Program, 2009). Districts within Takum are Gahwetun, Kwambai, Dutse, Rogo, Shibon, Tikari, Kashimbila, Bete, Janchanji, Many, and Fete respectively (Taraba State Diary, 2001). The area is inhabited by a number of ethnic groups viz. Kuteb. Kpanzon, Chamba, Tiv, Ichen and Hausa who are predominantly farmers and engaged in different type of activities such as local craft, hunting, fishing, and tailoring among others (Taraba State Diary, 2001). It has approximate land area of 2,503km² (Taraba State Diary, 2001) with a population of 135,349 (NPC, 2006).

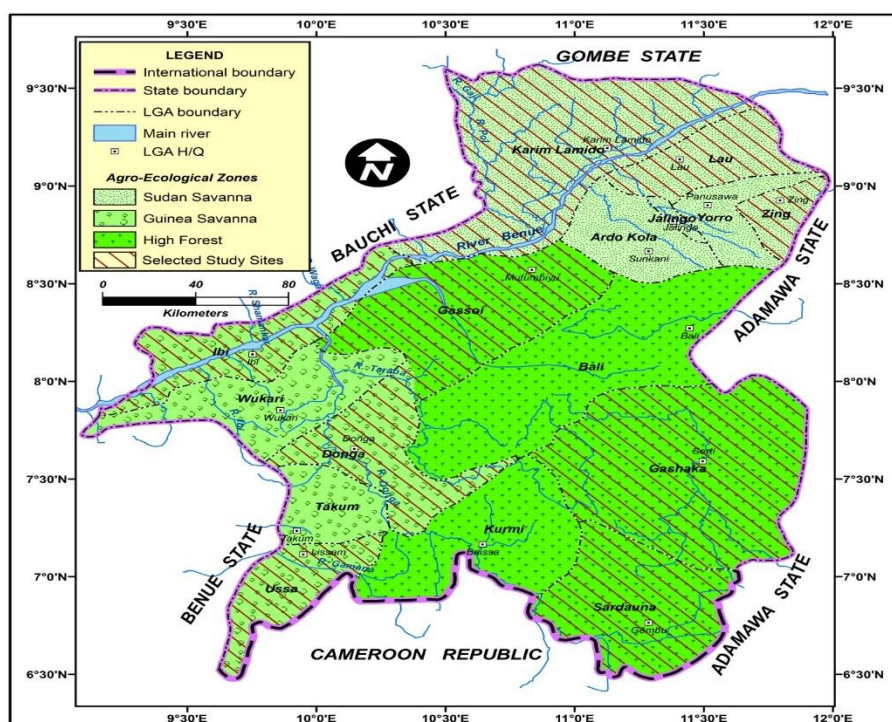


Fig. 1: Map of Taraba State showing the study areas. Source: Zaku, (2021).

Sampling procedure and sample size

Four wards out of eleven wards in Takum Local Government Area were purposively selected for this study due to the availability of the species (Madrid), involvement of the people in harvesting activities of the species (Madrid) and their proximity to the forested areas. The wards selected are: Kashimbila, Yukuben, Bete and Fete ward. The method employed in data collection for this study was the use of semi-structured questionnaire. A total number of 160 semi-structured questionnaires were distributed to four wards in the Local Government Area for data collection and only 154 were retrieved.

percentages in tables and charts. The percentage was calculated using the equation 1 below while the amount generated from the harvesting and processing of Madrid was calculated using equation 2 below

$$M = \frac{X}{n} \times 100 \dots\dots\dots \text{Equation (1)}$$

M = result or percentage
 n = number of respondents
 N = total number of respondents in all the selected ward

$$A = NL \times a \dots\dots\dots \text{Equation (2)}$$

Where:
 A = is the total amount generated (Result)
 NL = number of logs handled per month
 a = amount paid per log

Table 1.1 Distribution of questionnaires

| Names of Wards | Number allocated | Number retrieved |
|----------------|------------------|------------------|
| Yukuben | 40 | 38 |
| Bete | 40 | 40 |
| Kashimbila | 40 | 37 |
| Fete | 40 | 39 |
| Total | 160 | 154 |

Source: Field Survey (2020)

Data Analysis

Simple descriptive statistic was employed in the data analysis; using frequency and

RESULT AND DISCUSSION

Socio-Economic Characteristics of the Respondents

The result on socio-economic characteristics indicated that, 14 of the respondents constituting 9.1% within the ages 20-25 years, 19(12.3%) are 26-30 years, 36(23.4%) are 31-35 years, 43(27.9%) are 36-40 years, 19(12.3%) are 41-45 years, 10(6.5%) are 46-50 years, 7(4.6%) are 51-55 years and 6(3.9%) are above 56 years.

Similarly, the result on gender shows that, 149(96.8%) are males while 5(3.2 %) are females.

The result on marital status indicated that, 66(42.9%) are married, 83(53.9%) are singles while 5(3.2%) are divorced. The result on educational level of the respondents shows that, 4(2.6%) had non-formal education, 21(13.6%) primary education, 58(37.7%) secondary education,

36(23.4%) ND/NCE while 35(22.7%) had degrees respectively. Similarly, the result on occupation of the respondents indicated that, 23(14.9%) are civil servants, 52(33.8%) are farmers, 26(16.9%) are traders while 53(34.4%) are applicants.

The result on family size shows that, 116(75.3%) had family size of 0-4, 26(16.9%) had family size of 5-9 while 12(7.8%) had family size of more than 10.

Table 1.1 Socio Economic Characteristics of the Respondents

| Variables | Frequency | % |
|-----------------------------------|------------|------------|
| Age | | |
| 20-25 | 14 | 9.1 |
| 26-30 | 19 | 12.3 |
| 31-35 | 36 | 23.4 |
| 36-40 | 43 | 27.9 |
| 41-45 | 19 | 12.3 |
| 46-50 | 10 | 6.5 |
| 51-55 | 7 | 4.6 |
| 56 above | 6 | 3.9 |
| Total | 154 | 100 |
| Gender | | |
| Male | 149 | 96.8 |
| Female | 5 | 3.2 |
| Total | 154 | 100 |
| Marital status | | |
| Married | 66 | 42.9 |
| Single | 83 | 53.9 |
| Divorce. | 5 | 3.2 |
| Total | 154 | 100 |
| Level of education | | |
| Non formal education ⁴ | | 2.6 |
| Primary | 21 | 13.6 |
| Secondary | 58 | 37.7 |
| ND/NCE | 36 | 23.4 |
| Degree | 35 | 22.7 |
| Total | 154 | 100 |
| Occupation | | |
| Civil servant | 23 | 14.9 |
| Farming | 52 | 33.8 |
| Trading | 26 | 16.9 |
| Applicant | 53 | 34.4 |
| Total | 154 | 100 |
| Family size | | |
| 0-4 | 116 | 75.3 |
| 5-9 | 26 | 16.9 |
| 10 above | 12 | 7.8 |
| Total | 154 | 100 |

Source: Field Survey (2021).

The high number recorded on age grade of 36-40 years implied that, they are the youths and are the ones that are involved in the harvesting, processing and marketing of *Pterocarpus erinaceus*. This is due in part because of the energy or the strength they possess which is needed in the harvesting and processing of *Pterocarpus erinaceus*. Similarly, the high number recorded on gender for males implied that, the males are the ones that are mostly involved in the harvesting, processing and marketing of *Pterocarpus erinaceus*. Also, the high number recorded on marital status for singles implied that, most of the harvesters of *P. erinaceus* are not married. The high number recorded on educational status for secondary education implied that, most of the respondents had lower education. The high number recorded on family size 0-4 implied that, most of the respondents had moderate family size. The findings agreed with the submission of Ahmed *et al.* (2016) and Peter *et al.* (2020) respectively.

Availability of *Pterocarpus erinaceus* (Madrid) in Takum

The result on availability of *Pterocarpus erinaceus* (Madrid) revealed that, 90.3% of the total respondents agreed that,

Pterocarpus erinaceus(Madrid) are available in the forest in their community while 9.7% of the respondents are indifferent.

Table1.2:Availability of Madrid in Takum

| Variables | Frequency | % |
|--------------|------------|------------|
| Yes | 139 | 90.3 |
| No | 15 | 9.7 |
| Total | 154 | 100 |

Source: Field survey (2021).

The high number recorded on the location of *P. erinaceus* in Takum Communities indicated that, *P. erinaceus* are available in Takum communities. The findings agreed with the submission of Ahmed *et al.* (2016) and Peter *et al.* (2020) respectively.

1.3. Activities associated with the harvesting of *Pterocarpus erinaceus*

The result on activities associated with the harvesting of *P. erinaceus* had Loading 34.4%, Skidding 20.8%, Felling/Debarking 23.4% with 21.4% as timber producers/ land owners.

1.3 Activities Associate with Harvesting of *Pterocarpus Erinaceus* (Madrid)

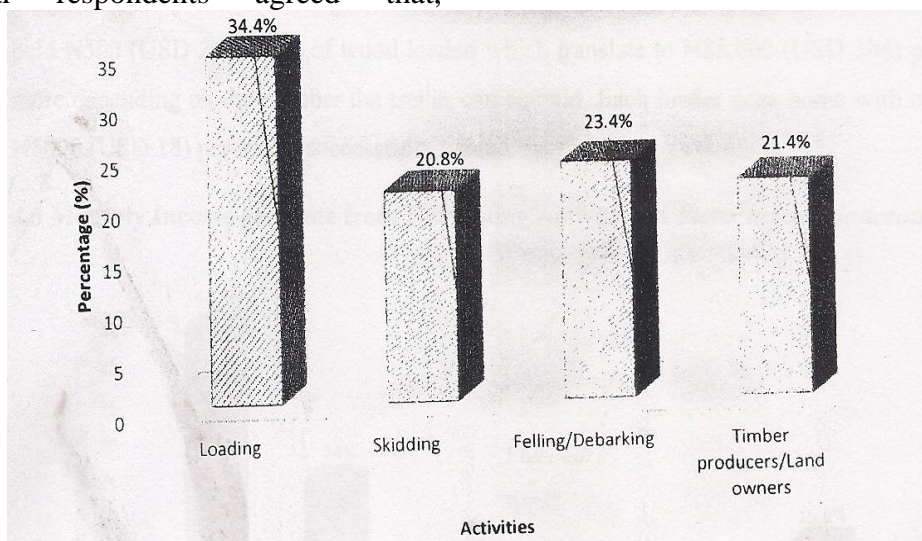


Figure2. Activities associated with the harvesting of *Pterocarpus erinaceus* in the study area.

The high value recorded on activities associated with the harvesting of *P. erinaceus* for loading implied that, majority of the respondents are loaders of *P.*

erinaceus. The findings corroborates with the submission of Ahmed *et al.* (2016) and Peter *et al.* (2020) respectively.

1.4. Monthly income generated from P. erinaceus

The result on monthly income generated from P. erinaceus shows that, 44.8% of the respondents generated N1, 000.00-N10, 000.00,

24% generated N10,100.00-N20,000.00, 10.4% generated N20,100.00-N30,000.00, 2.6% each of the respondents generated both N30,100.00-N40,000.00 and N40,100.00-N50,000.00 respectively while 15.6% generated well above N50,000.00 respectively.

1.4 Monthly Income generate from Harvesting Activities oil Pterocarpus erinaceous (Madrid)

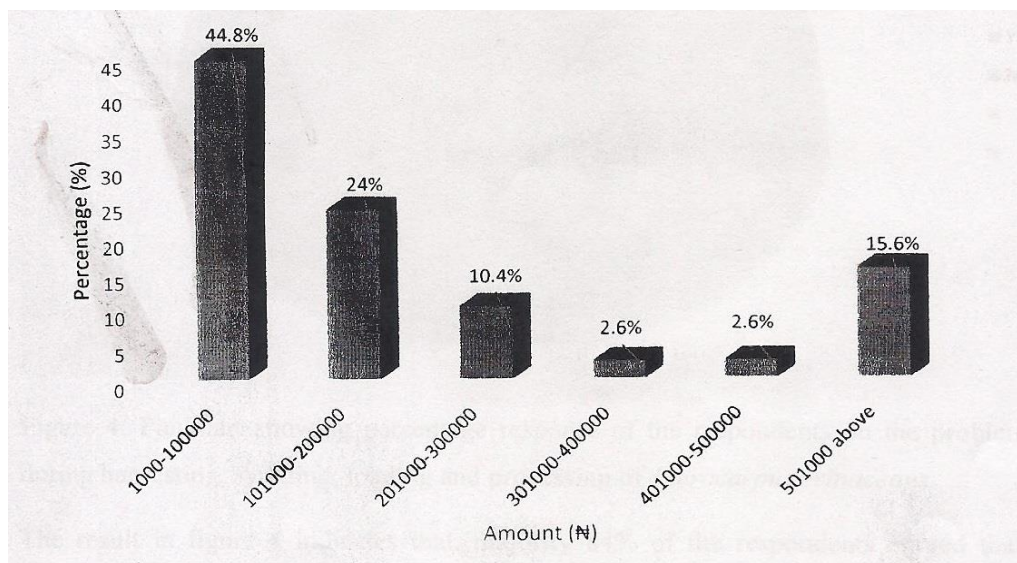


Figure 3: Income generated by the local people from the harvesting of Pterocarpus erinaceus in the study area.

The high amount recorded of N1, 000.00-N10, 000.00 implied that, majority of the respondents generated a minimum of the amount from P. erinaceous in the study area. The findings agreed with the submission of Ahmed *et al.* (2016) and Peter *et al.* (2020) respectively.

1.5. Problems encountered during Harvesting, Skidding, Loading, Processing and marketing of Pterocarpus erinaceous (Madrid)

The result on problems encountered indicated, 84% of the respondents agreed that, majority they have series of problems while 16% are indifferent.

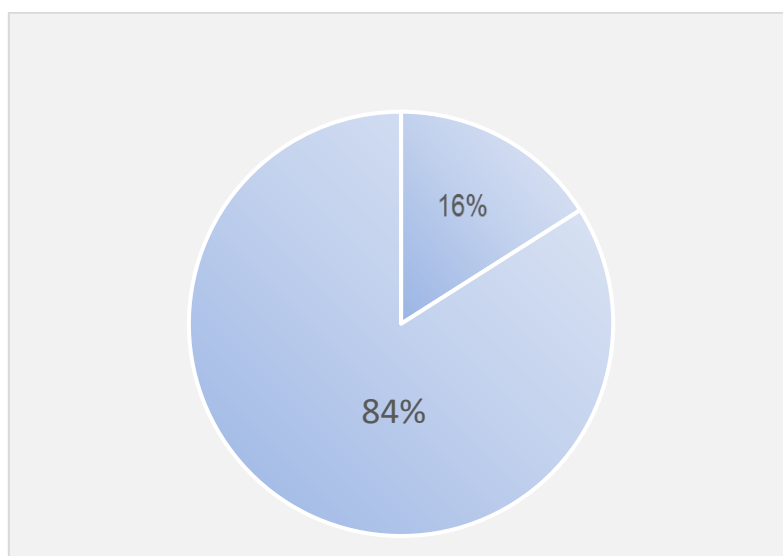


Figure 4: Problem encountered during harvesting, skidding, loading, processing marketing of *Pterocarpus erinaceus*.

The high number recorded on problems encountered implied that, series of problems abound in the business. These problems may range from bad roads, long distance from felling sites to the main road, pushing from bush to the road site. Others include, Accidents from rolling of log from hilltop down slope can result in trampling and triggering of rock fall that could injure people and vehicles parked at the foot of the hill, Injuries from chainsaw cutting as a result of the hardness of the tree especially for people handling the machine for the first time, Outbreak of fire from generators. Some of the operator's smoke cigarette or hemp while working and fuelling the chainsaw machine, which in some cases have cause outbreak of fire and burnt, there are incidences of tree falling on the operators as a result of poor knowledge of the techniques of felling the trees and Accidents from loading can result from log wood falling on individual because of the relative weight of the log etc. The above corroborate Ahmed *et al.*, (2016) and Peter *et al.* (2020).

1.6. Parts of *P. erinaceus* used by the respondents in the study area.

The result on parts of *P. erinaceus* used by respondents in the study area indicated that, 102 (66.2%) of the respondents agreed on the usage of Parts of *P. erinaceus* while 52(33.8%) are indifferent.

Table 1.6. Parts of *P. erinaceus* used by the respondents in the study area.

| Variables | Frequency | % |
|-----------|-----------|------|
| Yes | 102 | 66.2 |
| No | 52 | 33.8 |
| Total | 54 | 100 |

Source: Field Survey (2021).

The high number recorded on *P. erinaceus* parts used by respondents in the study area indicated that, many parts of *P. erinaceus* are being used in the study area. Parts such as seed, leaves, branches, barks and roots of *P. erinaceus* are used by the respondents in the study area. This corroborates the findings of Ahmed *et al.* (2016) and Peter *et al.* (2020).

Table 1.6: Part of *Pterocarpus erinaceus* used by respondents in the study area

| | Uses |
|----------|---|
| Seed | The seeds used as soup but need to be treated. Properly. It is also a means of raising seedlings |
| Leaves | The leaves are used for medicinal purposes; when added with other tree species, are used for infection treatment. The leaves also serve as fodder for livestock |
| Branches | The branches of the species are good sources of fuel to the livelihoods of the people in the study area. It is used as firewood for cooking. It can also be used for making nets and local fences as well as roofing thatch houses. |
| Bark | The bark of the species is also used as medicine for treatment of oral infection and the resin can regulate the amount of blood in the body system. |
| Roots | The roots are also used as medicine to fight against worms when 'cooked together with other species. It's also enhances the activeness of manhood |

Source: Field Survey (2021).

1.7. Contributions of *Pterocarpus erinaceus* (Madrid) to Community Livelihoods

The result on the contributions of *P. erinaceus* to Community Livelihoods indicated that, 4.5% of the respondents enjoyed food, 64.9% enjoyed income, and 19.5% enjoyed medicine while 11.1% enjoyed employment respectively.

1.7. Contributions of *Pterocarpus erinaceus* (Madrid) to Community Livelihoods

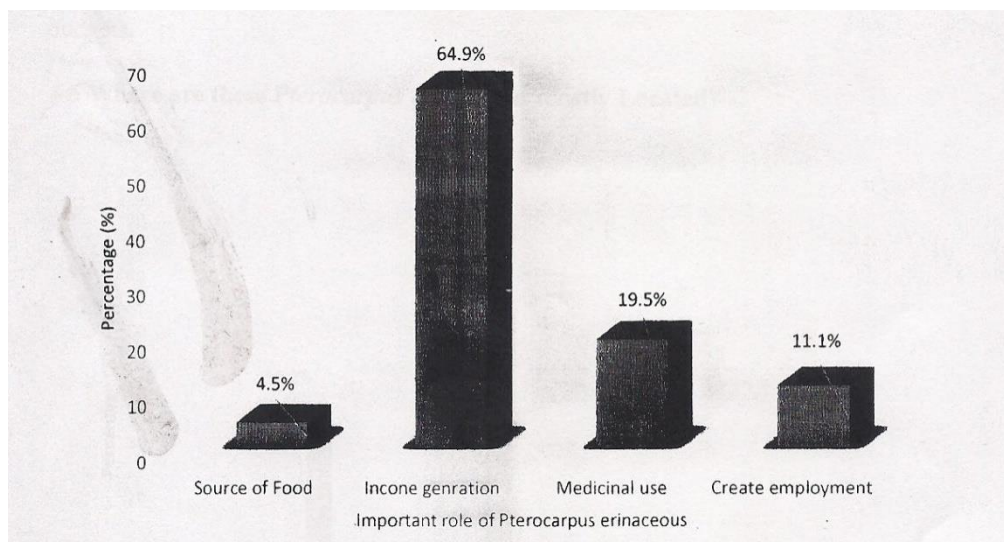


Figure 5: Contributions of *Pterocarpus erinaceus* to Community Livelihoods.

The high number recorded on the contributions of *P. erinaceus* of income implied that, the highest contributions of *P. erinaceus* to community livelihoods are income. This is because harvesting of *P. erinaceus* is a money spinning venture. This agrees with the findings of Ahmed *et al.* (2016) and Peter *et al.* (2020) respectively.

1.8. Location of *Pterocarpus erinaceus* (Madrid)

The result on location of *P. erinaceus* indicated that, 31.2% of the respondents are of the opinion that, *P. erinaceus* are found in lowland areas while 68.8% agreed that, *P. erinaceus* are found in Mountainous areas

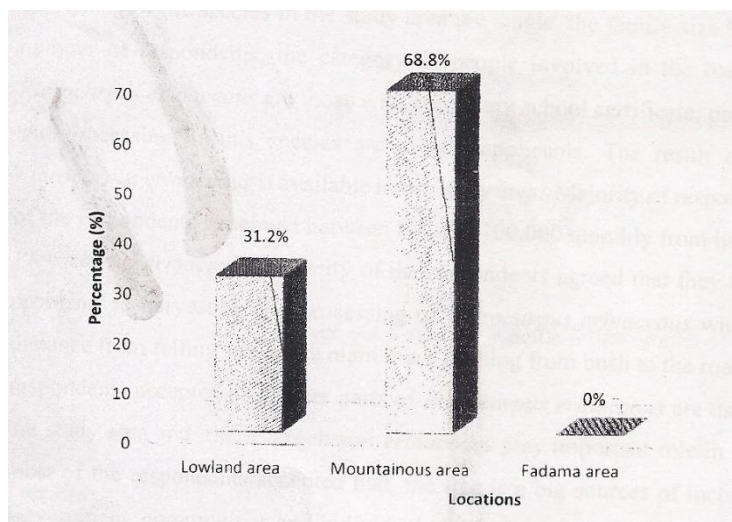


Figure 6: Location of *Pterocarpus erinaceus*

The findings above implied that, *P. erinaceus* can both be found on lowland and mountains respectively. This corroborates Ahmed *et al.* (2016) and Peter *et al.* (2020) respectively.

Conclusion

Most of the respondents are youths and males who are singles with few that are married with moderate family size. *P. erinaceus* can both be found on mountains and lowland areas. Loading, skidding, felling and debarking are major activities associated with the harvesting of *P. erinaceus* in the study area. Similarly, a minimum amount of N1,000.00-N10,000.00 could be generated from the harvesting of *P. erinaceus* while problems such as bad roads, injuries from machine, accidents, fire out break militates against the harvesting of *P. erinaceus*. Also, parts of *P. erinaceus* such as seeds, leaves, branches, barks and roots are used by the respondents in the study area. The major contributions of *P. erinaceus* to community livelihoods in the study area are food, income, medicine and employment respectively.

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