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Research Article

Monetary Valuation of Selected Forest Products in Andoni

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Abstract: Forest products are materials gotten from forest for direct consumption or commercial use, as timber and non-timber forest products. The exploration and consumption of forest products in Andoni are carried out without a proper valuation of the consumption or commercial value of these products. However, this study attempts to determine the value of identified forest products in Andoni. Therefore, this study relied on questionnaire, focus group discussions, field survey and other related materials. The focus group discussions analysis shows that forest products are of much value to the people; hence community dwellers were mostly involved in the discussion. Forest product were identified and categorized into wildlife species (wild animal) and plant species. Their usefulness is influenced by socio-external factor, economical factor and livelihood security factor. It is very important to state here that the economic value of forest product in a study area is ₦532, 351,300.00, while the expected value is ₦865,648,300.00. Therefore, the government at all levels should provide indiscriminate exploration of premature forest product policy on forest management. These should be made to effectively reflect and enhance forest protection and improvement of livelihood of the people.

Key words: Value, Valuation, Forest Products, Forest.

Introduction

In most developing nations, forests are very important in the livelihood of the local people. Forests are part of the ecosystem that is characterized by dense and extensive tree cover, which often consists of stands that varies in character such as species, composition structure, age, class and associated process and commonly includes Meadow, stream, fish and wildlife (Cote, 2003). Forest products are materials derived from forestry for direct consumption or commercial use such as timber and non-timber forest products. Forest is still the only component of the biosphere that provides all the necessary ingredients for the existence of the people of Andoni. Forest products are very important resources; hence they are useful to socio-economic development of the Andoni people. A lot of human population that lives in the rain forest, especially the Andoni communities depends on these forest resources to survive.

Literature Review

There are many timber and non-timber forest products in our community forest. The word "timber" is easily understood, but NTFPs refers to any other forest resources other than timber. Most communities in the Niger Delta lie within the rich lowland area of the ecosystem. This readily classes our forest among one of the many different shades of lowland tropical forest. The pioneering concept about NTFPs is due to some of the blurred boundaries between timber and non-timber products, which make it difficult in defining a forest and the evolving nature of the concept (Ahenka and Boon, 2011).

However, the India Act (1927), section 2(4) defines forest products in legal state to include timber, charcoal, wood oil, resin, natural varnish, bark, myrobalan, mahua flowers (whether found inside or brought from a forest or not), trees and leaves, flowers and fruits, plants (including grass, creepers, reeds and moss), wild animals, skins, tusks, horns, bones, cocoons, silk, honey, wax, other parts or produce of animals, and also includes peat, surface oil, rocks and minerals, etc when found inside or brought from a forest, among other things (India Forest Act, 1927). This is due to the increasing recognition that NTFPs can contribute significantly to the livelihood of forest dependent communities bringing about household food security and nutrition, generate additional employment and income, and offers opportunities for NTFP based enterprises (FAO, 2006; Ahenkan and Boon, 2008; 2010; Subedi, 2006). NTFPs are more accessible to the poor to extract, contributing to foreign exchange earnings and support biodiversity and other conservative objectives (Andel, 2000; FAO, 1995; Charlie and Sheona, 2004) which can be harvested with relatively low impact on the forest environment (FAO, 2008; Newmann and Hirsch, 2000).

In recent times, forest and NTFPs has been increasing recognized as rich reservoir of many valuable biological resources (Ibrahim, 2016). It constitutes important and cheap sources of vitamin, mineral, protein, carbohydrate and fat, which contribution to the diet of humans cannot be quantified (Etukudo, 2000). Thus, the contribution of forest in terms of diet to improve nutritional status of human is enhanced by their availability. Consequently, rural dwellers rely heavily on NTFPs as a means of reducing poverty level of the people (Odebiyi and Ogunjobi, 2003). Forest provides wide range of benefits at the local, natural and global (Agbogidi and Eshegbeyi, 2008).

Economically, forest ecosystem serves as a source of important NTFPs to the people, in form of poles and timber for building houses, firewood, charcoal, etc. It also gives cultural services like, aesthetics, recreation, food as well as medicine herbs (Walsh, 1994). When forest products are conserved and utilized sustainably they have economic value. Hence, it is very important for forest products to be valued in monetary

terms so that when they are cleared for any reason compensation can be paid adequately.

Definition of Value

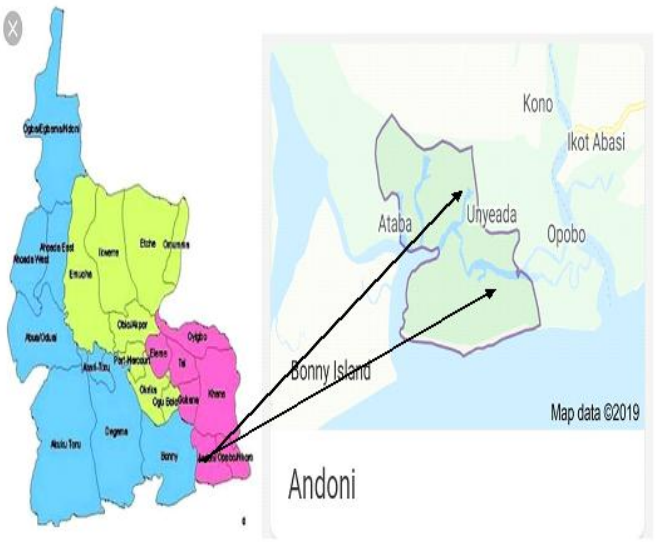
Value has different meaning to different people. However, the appropriate meaning can best be obtained from the situation in which it is being used. Therefore, value is the measure of the relationship between demand and supply. On this note, when the word value is being used by a valuer, it means market value.

According to Royal Institute of Chartered Surveyors (2016), market value is defined as the estimated amount of money for which an asset or liability should exchange on a valuation date between a willing buyer and willing seller in arm's length transaction after proper marketing and where the parties had each acted knowledgably prudent and without compulsion (RICS).

The Study Area

The study areas are selected communities in Andoni. Andoni is a Local Government Area in Rivers State in Nigeria. It has an Island with an area of over 90sgm (233km^2) and a population over 311, 500 as at the last census (Nigeria 2006 census). The Andoni people speak Obolo language as their mother tongue. Their traditional occupation is fishing, hunting and farming because of their geographical location in the coastal area. Andoni is located on latitude N4^{0}32'57 "W.N7^{0}26'47 "E and longitude 4.54917^0 N7.44639^{0}E. It is a coastal community with low lying land in the tropical rainforest, mangrove and nypa palm forest region of the Niger delta. It is located in the Sothern part of Rivers State and bounded in the North by Ogoni, East by Opobo/Nkoro and Akwa Ibom State, in the West by Bonny Island and in the South by the Atlantic Ocean.

Fig. 1: Map of Rivers State showing the study area.



Source: Google Map 2018.

Research Methodology

In making sure that the aim of this research work is achieved, the methodology taken commenced with the collection of data (primary and secondary) and after that, analyzing the data collected. The study area was visited in February 17, 2018 through March 3, 2018. Within the period of visiting the area, data were collected, using direct observation, questionnaire (for face to face interview) and focus group discussion. During the focus group discussions, questions such as what kind of animals were hunted, the forest product harvested, their prices and the usefulness, etc. The respondents include the hunters, farmers, herbalists and others. In making sure that unimportant information are excluded from other sources of data collection, the focus group discussions (FGDs) was employed. The focus group discussions which began at 3pm and ended at 6pm, saw different types of people gathered, especially the forest users which includes the hunters, farmers, forest dependents and the dwellers of the communities at a point in the study area to discuss the forest products collected, market prices and others uses.

Below are the tables showing the results of the values of the various forest products, using the farm gate price and city market price.

Table 1. Showing selected animals and estimated farm-gate price

S/n	Local Animal List		Farm-Gate Price (₦)
	Name (local)	Name (English)	
1.	NkpiyongAbako	Mona Monkey	10,000.00
2.	Ikpobia	African Civet	4,000.00
3.	Iquie-Orong	Bush-Tailed Proserpine	3,000.00
4.	Ikpobia	Red-Legged Sum Squirrel	2,500.00
5.	Ikwi-Orong	March Cane Rat	1,200.00
6.	IkwutOrong	Black Forest Turtle	6,000.00
7.	Asukwut	Dwarf Crocodile	35,000.00
8.	Ogahn	Antelope	15,000.00
9.	Abakabak	Monitor Lizard	5,000.00
10.	Ifah	Alligator	25,000.00
11.	Onyiyan-Orong	Bush Cat	5,000.00

12.	Ekpe	Snail	1,000.00
13.	Ejero	Rabbit	2,500.00
14.	Akwanakwa	Hawk	2,000.00

Source: Field Survey 2018

From the focus group discussions the participants indicated that the range of animals consumed and sold in the market includes the above mentioned in table 1. Its shows that the proximity of the forest to the people, enables the hunters to hunt these animals and it plays a significant role in the local economy in terms of income generation from hunting activity and sources of diet.

Table 2: Estimated farm-gate prices of selected plants

S/n	Plants		Farm-Gate Price (₦)
	Name (local)	Name (English)	
1.	Uti-Okpor	African rubber	2,000.00
2.	Esoko	Ukazi (small bag) 5kg	400.00
3.	Ughoro	Raffia palm (buddle)	1,200.00
4.	Koo	Palm kernel (bag) 10kg	12,000.00
5.	Efen-Orong	Bush (native) pear (bag) 10kg	1,500.00
6.	Efen	Avocado peer (bag) 10kg	5,000.00
7.	Udan	Cherry (bag) 5kg	1,000.00
8.	Ikang-Orong	Mushroom (small bag) 1kg	300.00
9.	Alilip	Bush mango (bag) 10kg	2,500.00
10.	EshipEbeke	Coconut (bag) 10kg	2,500.00
11.	Iye	Firewood (head load)	1,500.00

Source: Field Survey 2018

Participants in the focus group discussion indicated that some plants are used as medicinal plants, timber, log, electric poles, canoes, industrial wood, fuel wood (fire wood), charcoal, scaffolds, etc, as shown in table 2.

Table 3.Annual Quantities of Selected Forest Products Collected

Forest products	No of household	Average collection per year	Quantity	Period of collection
Firewood	59	1.880(kg)	110,920(kg)	Annually
Honey	5	6,750(cl)	33,750(cl)	Seasonal
Bamboo	58	5,200	301,600	Annually
Mona monkey	10	18	180	Annually
Bush tailed porcupine	14	10	140	Annually
Red-legged sun squirrel	8	22	176	Annually
March cane rat	10	10	100	Seasonally
Black forest turtle	12	8	96	Annually
Dwarf crocodile	5	2	10	Annually
Antelope	5	4	20	Annually
Monitor lizard	10	5	50	Annually
Alligator	5	3	15	Annually
Bush cat	12	12	144	Seasonally
Snail (small basket)	28	168	4,704	Annually
Rabbit	20	24	480	Annually
Hawk	6	4	24	Annually
African rubber	7	88	616	Annually
Ukazi (bags)	20	204	4,080	Annually
Raffia palm (bundles)	43	233	10,019	Seasonal
Bush (native) pear (bags)	15	65	975	Seasonal
Cherry (bags)	25	55	1,375	Seasonal
Mushroom (bags)	8	55	440	Seasonal
Bush (native) mango	5	45	180	Seasonal
Coconut (small bag)	11	28	308	Seasonal

Source: Field Survey 2018

Table 3: reveals the quantities of forest products collected by the forest users. One of the key informants stated that" I have earned a lot of income to sustain my family and trained three (3) of my children in school through medicine plants (roots, leaves and barks) collected as forest products for treatment of various ailment".

Table 4. Economic Value of Forest Product

Forest products	Average Collection Per Year	Quantity	Average Price	Actual price (₦)
Firewood	1.880(kg)	110,920(kg)	1,500	166,380
Honey (bottle of 75cl)	6,750(cl)	37,750(cl)	1,000	33,750
Bamboo (head load)	5,200	301,600	1,000	301,600,00
Mona monkey	18	180	10,000	1,800,000
African civet	10	140	4,000	560,000
Bush tailed porcupine	10	140	3,000	420,000
Red-legged sun squirrel	12	176	2,500	440,000
March cane rat	10	100	1,200	120,000
Black forest turtle	8	96	6,000	576,000
Dwarf crocodile	2	10	35,000	350,000
Antelope	4	20	15,000	300,000
Monitor lizard	5	50	5,000	250,000
Alligator	3	15	25,000	375,000
Bush cat	12	144	5,000	720,000
Snail	168	4,708	1,000	4,704,000
Rabbit	24	480	2,000	960,000
Hawk	4	24	2,500	60,000
African rubber	88	616	2,000	1,232,000
Ukazi (bags)	204	4,080	400	1,632,000
Raffia palm	233	10,019	1,200	12,022,800
Palm kernel				
Bush (native) pear (bag)	65	975	1,500	1,462,500
Cheery (bag)	55	1,375	1,000	1,375,000
Mushroom	55	440	300	132,000
Bush mango	45	180	2,000	360,000
Coconut	28	308	2,500	770,000
			TOTAL	**532, 351,300**

Source: Field Survey 2018

Table 4: reveals the economic value of forest product given its average price and the actual price. In the above table, the quantity of forest products collected is multiplied by the average price to get the actual price. Each forest products actual price is summed up to get total actual price of ₦532,351,300.00.

Table 5. Expected Values of Forest Products

Forest products	Average Collection Per Year	Quantity	Average Price (₦)	Actual price (₦)	Actual Value (₦)
Firewood	1.880(kg)	110,920(kg)	1,500	3,000+5%	349,398,000
Honey (bottle of 75cl)	6,750(cl)	33,750(cl)	1,000	1,500	53,156,250
Bamboo (head load)	5,200	301,600	1,000	1,300	411,684,000
Mona monkey	18	180	10,000	12,000	2,268,000
African civet	10	140	4,000	5,000	735,000
Bush tailed porcupine	10	140	3,000	3,500	514,500
Red-legged sun squirrel	12	176	2,500	3,000	554,400
March cane rat	10	100	1,200	1,500	157,500
Black forest turtle	8	96	6,000	6,500	655,200
Dwarf crocodile	2	10	35,000	38,000	399,000
Antelope	4	20	15,000	17,000	357,000

Monitor lizard	5	50	5,000	6,000	315,000
Alligator	3	15	25,000	27,500	433,125
Bush cat	12	144	5,000	5,800	816,960
Snail	1680	47,040	3,500	4,800	10,644,480
Rabbit	24	480	2,000	2,500	1,260,000
Hawk	4	24	2,500	3,000	75,600
African rubber	88	616	2,000	2,800	1,811.040
Ukazi (bags)	204	4,080	400	800	3,427,200
Raffia palm	233	10,019	1,200	1,500	21,039,900
Bush (native) pear (bag)	65	975	1,500	2,000	2,047,500
Cheery (bag)	55	1,375	1,000	1,500	2,165,625
Mushroom	55	440	300	500	231,000
Bush mango	45	180	2,000	2,500	472,500
Coconut	28	308	2,500	3,000	970,200
				TOTAL	**865,648,300**

Source: Field Survey 2018

Table 5: reveals the expected values of forest product annually when profit and overhead is added to city market price of forest products. In the above table the actual price (city market price plus 5percent of the actual) is multiplied by the quantity of the forest products collected, to get the actual value. Each forest product actual value is summed up to get the total actual value of ₦865,648,300.00.

Discussion of Findings

The study made some major findings using the focus group discussion (FGDs) to ascertain monetary valuation of selected forest products in Andoni. The findings are as follows:

Table 1 reveals that the range of animals consumed and sold in the market includes; antelope, monitor lizard, mona monkey, snail, rabbit, squirrel, dwarf crocodile etc. Table 1 also indicated that the proximity of the forest to the people enables the hunters to hunt these animals and it plays a major role in the local economy. It generates income from hunting activities and it is a major source of diet.

Table 2 reveals the range of plants that are consumed and sold in market such as African rubber, Ukazi, Raffia palm, Bush pear, Avocado pear, mushroom etc. It also indicated that some of these plants are used as medicinal plants, timber log, electric poles, canoes, industries wood, fuel wood (fire wood), charcoal, scaffold, etc. It also indicates the farm gate prices of the forest products.

Table 3 reveals the average collection of forest products; firewood (1,880kg), honey (6,750cl), bamboo (5,200), alligator (3), African rubber (88), raffic palm (233), native pear (65) etc. It also indicates the quantities of forest products collected by the forest users; firewood (110, 920kg) honey (33,750cl), bamboo (301,600), alligator (15), African rubber (616), raffia palm (10,019), bush pear (975) etc.

Table 4 reveals the economic value of the selected forest products. It shows the average price of each of the forest products and the actual values. The table indicates that the average price of firewood is ₦1,500.00 per kilogram and ₦166,380.00 as actual price. The same goes for the rest of the products in the table. It also reveals that the economic value of the selected forest product is in the sum of ₦532,351,300.00.

Table 5 reveals the expected values of the selected forest products annually, when profit and overhead is added to city market price of the forest products. The table also shows that the total expected values of the selected forest products are in the sum of ₦865, 648, 300.

Recommendation

Based on the findings of this study, the following recommendations are made:

1. There is an urgent need for the decision makers to work with registered Estate Surveyors, Valuers and other professionals, so as to provide base value of forest product that should be incorporated into the existing law.
2. The government at all levels should provide indiscriminate exploration of premature forest product policy on forest management. It should be made to effectively reflect and enhance forest protection and improvement of the livelihood of the people.
3. Inventory of forest products should be conducted in the same forest (as it was done in this case study) to identify more valuable forest products and to enable extension workers and other forest stakeholders acquire the local knowledge of forest products from the communities around the forest that is to be used.

Conclusion

The specific objectives of this study is to identify the type of forest products, ascertain the market price of the identified forest products, determine the prices of the identified forest product and professionally determine the values of these identified forest products.

Generally, the selected forest products were found to be the most valuable resources useful to the communities in the study area. These forest products were categorized as wild life animals and wild plants. The most identified useful forest products were firewood, honey, tuber logs, snails, wild fruits, wild vegetables, wild mushrooms, wild animals, bamboo, raffia, etc. These forest products are among the most useful forest products in Andoni communities.

The purpose of valuing these forest products in the study area

is to determine their values in monetary terms. After the valuation of the forest products, it was observed that the annual value of the forest products was ₦532, 351,300. And the expected value of forest products in the study area when compared to the city prices with 5% profit and overheads was ₦865, 648,300. Therefore, it will not be out of place to state here that Andoni L.G.A has a rich forest product value.

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