

# Impact of Unmitigated Rosewood Exploitation in Nigeria

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## Abstract

The forest estate in Nigeria has been under serious threat occasioned by deforestation prior to independence. The public forest estate which was acquired between 1900 and 1970 embraces 100,000km<sup>2</sup> or 11% of the total land area. This has reduced significantly to less than 6% of the land area. Despite this, the forest estate is still under unmitigated exploitation. The latest onslaught is caused by the uncontrolled exploitation of *P. erinaceus* popularly known as Madrid tree. *P. erinaceus* is highly demanded in China for production antique furniture and other exotic items. The trade has the backings of the Chinese government in view of the high revenue generation and employment. To sustain supply, the Chinese importers have combed the forests in Senegal, Gambia, Ghana and are now in Nigeria after exhausting the *P. erinaceus* resources in these areas. Today, Nigerian exports is about 45% of the total requirement to China and this has decimated the forests in Kogi and Taraba States and have moved to some other States most importantly, Cross River State. While this is empowering the emergency businessmen in different communities, it is fast decimating the forests through the methods being use to cut and gather the trees in dumps. The selective logging has also led to reduction in the number of available plant species as some of the unwanted species are logged over to get to the required one.

**Keywords:** antique furniture, over exploitation, log, rosewood Madrid.

## 1.0 Introduction

The present public forest estate which was acquired between 1900 and 1970 embraces 100,000km<sup>2</sup> or 11% of the total land area of the country. Only about 26% of this, is in the high forest area while additional 90,000km<sup>2</sup> of high forest is available outside the forest reserves. In spite of their importance, the tropical forest resources have diminished very rapidly. Hunter *et al* (2005) and Kio, (1990) observed that most humid tropical forestland area in Africa have been transformed into unproductive land. In Nigeria, despite the application of the principles of sustainable forest management, there have been significant changes in the structure of the forest sector. The forest resources survey 1996 – 1998 revealed that the forest estate has decreased significantly by about 20%. According to Adeyoju (2001), the total forest estate which stood at 10% of the country's land area in 1996 is now less than 6%. Ola Adams and Iyamabo (1977) estimated that about 26,000 ha of forestland are destroyed annually in the rainforest zone during the conversion of natural forests to plantation and other forms of land use. Also, the World Wildlife Fund, estimated that over 90% of the natural vegetation in Nigeria had been cleared, and that over 350,000 ha of forest and natural vegetation are lost annually (WWF, 1989). According to EUROPA (2008), illegal logging is one of the major drivers of deforestation in Nigeria.

This make sustainable forest resources management in Nigeria to face increasingly complex problems. Some of these problems results from high demand for forest products by the increasing number of stakeholders. In the 60's the major stakeholders in the sector are loggers and the saw mills who produce mostly for the wood and wood product industries, the building industry and the exporters. During this period, wood was a major exported commodity by the country and generated substantial foreign exchange earnings. As far back as 1989, forestry is one of the major sectors relied on for perspective planning for economic development (Adeyoju, 1975). The export revenue from forestry grows at 4.1%, 8.0% and 28.8% between 1950 – 1960, 1960 – 1970 and 1970 – 1980 respectively.

Among the major economic wood species exported were *Milicia excelsa*, *Khaya grandifoliola*, *Khaya ivorensis*, *Mansonia altissima*, *Nuclea diderichii* and *Pterocarpus macrocarpa*, etc. Most of these species are now dwindling in availability and are being replaced by non-economic wood species in different applications. Despite the dwindling availability of the nation's forest resources and the accompanying environmental problems, there is currently a massive exploitation of *Pterocarpus erinaceus*, popularly known as African teak, rosewood, Madobiya or Madrid in Hausa for export. The manner of exploitation and its impact on forest degradation has been a major source of discussion in Nigeria in recent times. The export of rosewood is fuelled by its increasing demand in China. The onslaught on *P. erinaceus* species in Nigeria is premised on two major reasons. These include the economic recession which turned a number of Nigerians including the youths, farmers, etc into loggers, and hunters of *P. erinaceus* in all the ecological zones where the plant species is endemic. The timber merchants working for Chinese businessmen are moving from one State to the other, depleting rosewood resources in these forests, leaving blighted and raped landscapes behind. The second, which is closely related to the first is that Chinese businessmen are exploiting a lax regulating and enforcement environment, loopholes in existing laws and unwillingness of government to give bite to existing policy on illegal trade in the export of the country's forest resources (Akinsola, 2016). These have culminated in the

harvesting and export of 000<sup>3</sup>m<sup>3</sup> of *P. erinaceus* logs to China since 2013. The trade which gulped more than \$1.3 billion dollars in West Africa alone, is decimating forests and heightening tension as governments find it difficult to control. While most West African countries have placed embargo on export of rosewood, an umbrella term for more than 30 species of the red-hued hardwood, the practice continue unabated. According to Akinsola (2016), to circumvent bans, logs are smuggled across borders or cut into blocks and labelled as generic lumber. This accounts for the hugely volatile import data and a 350 percent surge in exports from Ghana since 2015 (Akinsola, 2016). Along the major roads in the ecological areas where rosewood is found in-situ, logs can be seen kept by the roadside, waiting to be transported. This paper examine the factors aiding unmitigated exploitation of rosewood in Nigeria and its impact on forest resources and forest industry sustainability in the country.

### 1.1 Distribution, Properties and Indigenous Utilisation of *Pterocarpus erinaceus* in Nigeria

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. The tree species belongs to the rosewood family, which are mostly deciduous legume of the African savanna and dry forests. According to Burkil (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 (PROTA, 2017). 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 *spp* 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). The plant is of widespread occurrence in Kogi and Cross River States where it has been gregariously exploited. *P. erinaceus* bears dark, scaly bark and yellow flowers. The fruits are winged pods. According to Wikipedia (2017), the wood of *P. erinaceus* varies from yellowish to rosy red and rich brown. It is widely valued for its wood working properties and it is also good for making charcoal and for use as fuelwood. The tree exudates a red sap called kino, which is used as dye in cloth making (Wikipedia, 2017). The red dye is also used for body and hair dyeing. The bark is used for tanning. *P. erinaceus* produces leafy fodder high in protein, which makes an excellent animal feed, crucial for the survival of livestock, most especially, during the dry season. The crude protein content (dry matter basis) decreases from 13.4 – 16.9% in young leaves to 10.3% in dry leaves. The digestible nitrogen varies from 5.8% to 10.78% while the feed value ranges from 0.79, 0.74 and 0.51 forage unit/kg dry matter for young, green and dry leaves. The tree produces golden yellow flowers and have considerable potential for use as ornamentals (Ahmed *et al.*, 2016).

The heartwood is yellowish-brownish to reddish brown, often with purplish streaks and distinctly demarcated from the 2 – 5cm thick, yellowish pale or cream coloured sapwood. The grain is straight to interlock with fine to moderately coarse texture (PROTA, 2017).

The wood is moderately heavy with density varying from 560 – 800kgm<sup>3</sup> at 12% moisture content (PROTA, 2017). Ogunwusi (1991) reported the basic density of *P. erinaceus* growing in the savanna region as 670kg/m<sup>3</sup>. The wood dries slowly with little risk of deformation (PROTA, 2017). The shrinkage properties are moderate, ranging from green to oven dry, 3.0 – 3.5% radial direction and 5.2 – 7.4% tangential direction (PROTA, 2017). At 12% moisture content, the modulus of rupture is 137 – 198N/mm<sup>2</sup>, modulus of elasticity 11,500 – 15,700N/mm<sup>2</sup>, compression parallel to grain 62 – 80N/mm<sup>2</sup>, compression perpendicular to grain 2.5N/mm<sup>2</sup>, shear 7 – 10N/mm<sup>2</sup> and cleavage 20N/mm<sup>2</sup> (PROTA, 2017). The wood accepts stains, polishes well and not permeable to preservatives. The rings within the trunks provides good decoration and finishing in furniture, thus, providing aesthetic values in finished furniture. The wood is also used for heavy construction including waterworks, parquet flooring, stairs, implements, turning, sculpturing and sliced veneer. It is also suitable for joinery, interior, mortals and pestles, house posts, mine props, ship and boat building, vehicle bodies, sporting goods, toys, and precision equipment.

The resin is commonly used in traditional medicine formulation in Africa. The bark exudate contains 30 – 80% kino tannic acid which is a strong astringent. The bark extracts have shown in-vitro antibacterial and antifungal activities against several human pathogens. The bark extracts through anti-gonadotropic activity had been observed to block ovulation and oestrus circle. It also has anti-malaria activity against *Plasmodium falciparum*. The bark is an effective healing agent of wounds in view of the phenolic compounds it contains that have effect on the immune system. The resin is astringent and haemostatic. It is used to treat dysentery, fever, gonorrhoea and intestinal infections. Infusions of the bark have also been applied to treat bronchial infections, toothache, dysentery, menstrual complaints, post-partum haemorrhage, leprosy, etc. The leaf decoction is used to treat fever, syphilis and also used as aphrodisiac. The tree is a source of food nectar for bees and increases soil productivity through its Nitrogen fixing abilities. The leaves are eaten as vegetables while the seeds after being thoroughly cooked, are also eaten in parts of Africa.

## 1.2 Current Industrial Application of *P. erinaceus*

With the increasing clashes between the herdsmen and farmers, *P. erinaceus* may have increased industrial utilisation potential in the different agro-ecological zones where it is found in Nigeria. The plant provides good fodder for animals in different parts of the country where it is found in-situ. With current incessant clashes between herdsmen and farmers, a virile grazing corridor can be created and populated with the trees. In 2015 – 2016, more than 50 clashes were recorded between herdsmen and farmers in Nigeria leading to more than 100 deaths. A policy directed at deliberate development of the plant species along grazing corridors may reduce the infractions. Thus, grazing reserves may be created by deliberate government policy at State and Federal levels and populated with kino to provide a way out. This is more important during dry seasons. The approach will eliminate the need for foreign exchange expenditure on fodders importation.

The greatest industrial potential of *P. erinaceus* is embed in its wood properties. The demand for luxury furniture made of rosewood has soared among the burgeoning middle class in China at an unprecedented rate, particularly since 2010 (Ahmed *et al.*, 2016). Rosewood is converted in China, the world largest consumer of the wood, to antique-looking furniture with intricate carvings, fashionable among the middle class consumers. The rosewood timber is also exported for making musical instruments, furniture and decorative items such as chess pieces.

## 1.3 Pterocarpus erinaceus Exploitation in Nigeria

The high demand for rosewood has led to its illegal and unsustainable logging on an alarming scale in some of the world's most endangered forests in South East Asia, and, increasingly in Africa and Latin America (Ahmed *et al.*, 2016). Since 2011, the Chinese traders have moved from one West African country to the other in search of rosewood. It started with the Gambia which becomes largest exporter of rosewood from the sub-region to China. Nevertheless, supplies have dwindled from Gambia following an export ban, making traders to exploit Guinea Bissau, Togo, Benin, Ghana and more recently, Nigeria (Bosu, 2013). In 2014, more than 30,000 Chinese companies traded in rosewood products, generating domestic retail revenues of over \$25 billion (Ayetan, 2016). Currently in Nigeria timber merchants are moving from one State to the other depleting rosewood trees and leaving blighted and raped landscapes without minding the enduring effects of unrestrained harvesting of the product on the Nigerian environment (Ayetan, 2016). Nigeria thus, has become the first in the list among China's seven biggest suppliers of rosewood logs by volume in Africa (Akinsola, 2016). According to Akinsola (2016), smart Chinese business men are exploiting a lax regulatory and enforcement environment, loopholes in existing laws, lack of government policy and direction, as well as corruption by government officials to drive an illegal trade in the export of the country's forest resources. The Chinese government supports the growth and extension of Hogmu wood industry in order to generate employment and tax revenue.

Concerns about illegal harvesting and export of rosewood to China is already given African countries cause for concern. The matter was at the forefront of discussions at a meeting of INTERPOL in February 2015 with representation from Bukina Faso, Togo, Ghana, Cote de Voire, Mali and Senegal, specifically to fight the menace (Ayetan, 2016). However, the trade has continued unabated. By 2011, rosewood exports from West Africa to China were negligible, but by 2014, the sub-region rivalled South-East Asia, constituting more than 40% of import to China with a total volume of 738,772m<sup>3</sup>, worth nearly half a billion dollars (Ayetan, 2016). By the end of 2014, rosewood export from Nigeria was about 242,203m<sup>3</sup>. By 2015, Nigeria has become the largest single exporter, accounting for 45% of total imports to the country with the hub located in Shagamu in Ogun State and increasing activities mounting up in Ikorodu, Lagos State. The Lagos/Ibadan Expressway and the Lagos/Shagamu/Ore road are littered with deposits where hundreds of thousands of rosewood and other logs are prepared for export. Its effect is also felt in communities, many of whom rely on rosewood for fuel, medicine, fodder and income even as they are induced by traders to harvest and transport the logs (Ahmed *et al.*, 2016). A major problem is also the method of gathering the cut trees in dumps. In Taraba State where the tree is mostly found on hilltops, the trees are cut and rolled down hill, causing extensive damage to the vegetation and the environment (Ahmed *et al.*, 2017). According to Muhammed (2016), activity of rosewood exploiters is devastating within two watersides of two major tributaries of River Benue (the Taraba and Faro) in Taraba State and it is threatening the existence of watersheds, the adjacent National Parks (Gashaka-Gumti in Nigana and Faro in bordering Cameroon Republic). Initial investigation shows that log of about 1.2m length or less cost between ₦5,000.00 to ₦7,000.00 (Akinsola, 2016) and in periods of shortages, the same size of logs can be sold for as much as ₦12,000.00. Felling of trees are carried out at any location, irrespective of accessibility. The selective logging of *P. erinaceus* has led to depletion of almost all the mature tree stands in the local community where it is produced. This has posed serious threat to the physical environment and human population within the country. One of the other State that has suffered from this ignoble exercise is Kogi State. Gregarious harvesting of rosewood has devastated the Kogi State. Evidence of the illicit trade is visible in many communities. Along Taketa-Effo Anuro road in Mopa Moro Local Government, hundreds of felled timbers can be seen wasting away. After depleting the Kogi forests, the merchants have moved on to other States, one of

which is the Cross River State. In Cross River State, logging activities is predominant in a number of Local Governments. These include Ikom, Boki, Etung and Ogoja. Government of the State imposes ₦260 on any trailer. This underestimated cost have assisted in gregarious exploitation of the plant species leading to Cross River Anti Deforestation Task Force in 2011, which, was later disbanded as a result of corruption.

In the early days of the illegal activities, a trader in Kogi State need about ₦1.3 million to get a trailer load (about 200 logs to Shagamu or Ikorodu where he could sell for as much as ₦3million). In Taraba State, nine (9) out of the 16 LGA's currently affected by rosewood exploitation constitutes 62.8% (37,668.13km<sup>2</sup>) of the total land mass and 53.1% of the population of the State (Ahmed *et al.*, 2016). Presently, about 30 trailer loads of the log wood are transported from a single site at Mayo, locally, translating to approximately 2,250 stands that are felled weekly (Ahmed *et al.*, 2016). According to Ahmed *et al* (2016), not less than 400,000 stands of *P. erinaceus* trees have been felled in the site in the last 3 years. Also, Ahmed *et al* (2016) observed that over 100 trailers of *P. erinaceus* can be loaded in one day.

#### 1.4 Impact of Rosewood Exploitation on the Nigerian Environment

The present onslaught on the nation's *P. erinaceus* trees in Nigerian forests is a continual and deliberate effort by investors to further decimate the resources that have been under siege prior to independence. Available statistics evidenced that Nigeria's forest resources have served as engine of growth and have propelled economic activities in the country as far back as 1792 when pit sawing operation commenced, followed by the establishment of a power sawmill in Delta area in 1902 (Aribisala, 1993). These led to substantial increase in wood exploitation in the country. Wood export picked up in 1950's with log and sawn wood and subsequently, veneer and plywood (Ogunwusi, 2010; 2012, 2013, 2014, 2016). This trend was maintained and sustained in the 1960's and early 1970's. However, by mid-1970's, the toll of intensive exploitation has started showing and volume of wood export which peaked at 700,000m<sup>3</sup>, in 1964, decreased steadily to 290,000m<sup>3</sup>, in 1970 (Aribisala, 1993). These developments have significant impact on the operations of the forest industry, leading to decline in the contribution of the industry to national industrial development. Recent statistics (RMRDC, 2009), indicated that the total volume of usable wood down to 30cm cutting diameter in the forest reserves is 239,775,500cm<sup>3</sup>. This is not significantly different from 437,507,205.9m<sup>3</sup> reported by Akindele *et al.*, (2001) and according to Blackette and Gardette (2008), Nigeria is now an importer of timber.

The present isolation of *P. erinaceus* trees for export is taking its toll on the remaining national forest estate. The Chinese demand, coupled with extensive and intensive timber extraction is dwindling the availability of the highly valued rosewood (Ahmed *et al.*, 2016). Pterocarpus family of which rosewood is part belongs to the Hogmu (meaning rosewood in Chinese) wood family which refer to the range of exotic, high worth hardwood highly sought after by the elite and royalty in China. Ownership of such exotic furniture and art works are considered as worthy investments by the very rich in China.

Closely allied with this is the constant destruction of the habitat of wildlife species. According to Bosu (2014), the noise of chainsaw activities, felling of shade and foraging trees contribute to scaring the animals away. The indiscriminate exploitation of rosewood also has the potential of reducing the carbon sequestration capacity of forests, increasing carbon emission and reducing carbon sinks, thereby exacerbating the problem of climate change already being experienced in Nigeria. In developed economics, the burning of fossil fuels is the major contribution to atmosphere carbondioxide. However, International Panel on Climate Change (IPCC) has identified deforestation as African major contribution. Forests are natural sinks of Co<sub>2</sub> due to the process of photosynthesis. It also reduces surface albedo and increases the generation of currents responsible for rainfall in the tropics. *P. erinaceus* is also very attractive to bees. The current reduction in bees' population globally has led to low yield of wheat. The most critical environmental problem of the activities of forest industry that require urgent attention is the destruction of the forest cover. The current unbridled exploitation of the resources has led not only to scarcity of *P. erinaceus*, it has resulted in the logging over of most of the forest resources, depleting both economic and non-economic resources.

The Chinese demand, coupled with both extensive and intensive timber extraction, is not only threatening the extinction of the tree species, it has also given rise to organised crime networks that operates with impunity. The trade involves a complex web of actors and trade value chains, coupled with weak forest regulatory frameworks as well as weak monitoring and enforcement regimes, evidenced in most West African countries and Nigeria in particular (Bosu, 2013). Its effects are also felt in surrounding local and indigenous forest communities, many of whom rely on rosewood for fuel, medicine, and income even as they are induced with money by traders to harvest and transport the logs.

#### 1.5 Potential Impact of Rosewood Exploitation on the Nigerian Forest Industry

Since the 1990's, Nigeria's wood and wood products industry has been facing highly uncertain times. This is mainly due to decreasing availability of economic wood species, obsolete equipment and general problems pertaining to recession in the economy. The industry is gradually declining in performance, efficiency and



productivity. The shortage of domestic supply of wood is a constraint to the production of high quality final products that are competitive in international markets.

Ogunwusi (2012) extensively reviewed the situation in the wood and wood products sector. According to Ogunwusi (2012), the installed capacity and capacity utilisation of sawmills in Nigeria rose from 8,831,750m<sup>3</sup> in 1988 to 15,793,188m<sup>3</sup> in 1992. It then decreased to 10,900,000 in 1996 and subsequently increased to 14,684,000m<sup>3</sup> in 2002 and 11,734,000m<sup>3</sup> in 2010 (Table 1). Capacity utilisation within these periods was 6,994,660m<sup>3</sup>, 6,031,922m<sup>3</sup>, 7,069,145 and 3,800,000m<sup>3</sup> respectively (Table 1). These represented 79%, 38%, 39%, 35% and 32% capacity utilisation respectively.

**Table 1: Installed Capacity and Utilization (round-log equivalent) in the Sawmill Industry**

Year	No. of Sawmills	Total Installed Capacity M <sup>3</sup> /Year	Utilization Capacity M <sup>3</sup> /Year	Capacity Utilization %
1988	N/A	8,831,750	6,994,660	79
1992	910	15,793,188	6,031,922	38
1996	1,252	10,900,000	4,200,000	39
2002	1,259	14,684,000	5,177,700	35
2010	1,325	11,734,000	3,800,000	32

Likewise the report shows that the capacity utilisation in the furniture industry which is strategic in the use of planks from the saw mills was 217,700m<sup>3</sup> in 1988. This increased to 250,714m<sup>3</sup> in 1992. In 2010, capacity utilisation of the industry was 326,172m<sup>3</sup> of round log equivalent (Table 2).

**Table 2: Installed Capacity and Utilization (round log equivalent) in the Furniture Industry**

Year	No. of Furniture Industries	Total Installed Capacity M <sup>3</sup> /Year	Utilization Capacity M <sup>3</sup> /Year	Capacity Utilization %
1988	5,000*	N/A	217,700	N/A
1992	7,500*	N/A	250,714	N/A
1996	10,000*	N/A	N/A	N/A
2002	10,000*	N/A	N/A	N/A
2010	810,000*	N/A	236,172	N/A

\*estimate only

Also, the ply mills total installed capacity in 1988 was 126,000m<sup>3</sup>. This decreased to 106,000m<sup>3</sup> in 2002 and further to 96,000m<sup>3</sup> in 2010 (Table 3). Capacity utilisation in this sub sector has also been fluctuating. It increased from 67,340m<sup>3</sup> in 1988 to 72,240m<sup>3</sup> in 1992. Since 1992, capacity utilisation and number of industries operating within the subsector have been on decrease. Capacity utilisation decreased from 72,240m<sup>3</sup> in 1992 to 54,600m<sup>3</sup> in 1996 and 14,900 and 10,250m<sup>3</sup> in 2002 and 2010 respectively. The number of plywood mills increased from 8 in 1988 and 1992 respectively to 10 in 1996 (Table 3). This decreased to 4 in 2002 and to 2 in 2010.

**Table 3: Installed Capacity and Utilization (round log equivalent) in the Plywood Mills**

Year	No. of Plymills	Total Installed Capacity M <sup>3</sup> /Year	Utilization Capacity M <sup>3</sup> /Year	Capacity Utilization %
1988	8	126,000	67,340	53
1992	8	126,000	72,240	57
1996	10	126,000	54,600	43
2002	4	106,000	14,900	14
2010	2	96,000	10,250	11

Likewise, the particleboard mills had an installed capacity of 85,000m<sup>3</sup> in 1988, in 2010 capacity utilisation was a mere 11,496m<sup>3</sup> (Table 4). Capacity utilisation in 1992, 1996, 2002 and 2010 were 34,290m<sup>3</sup>, 54,600m<sup>3</sup>, 12,900m<sup>3</sup> and 11,496m<sup>3</sup> respectively (Table 4). The number of particle board mills in the country remained constant at 4 from 1992 to 2010 (Table 4).

**Table 4: Installed Capacity and Utilization (round log equivalent) in the Particleboard Mills**

Year	No. of Particleboards Mills	Total Installed Capacity M <sup>3</sup> /Year	Utilization Capacity M <sup>3</sup> /Year	Capacity Utilization %
1988	2	85,000	N/A	N/A
1992	4	85,000	34,290	40
1996	4	67,150	54,600	81
2002	4	67,150	14,900	22
2010	4	45,000	11,496	26

The major problem militating against the performance of the industry is the absence of optimal quality of wood. Deforestation occasioned by several factors coupled with non-replacement of the desired wood species have seriously depleted wood availability. The overexploitation of *P. erinaceus* may likely place constraint on

the development of the wood products sector of the economy. It is unfortunate that in Nigeria, *P. erinaceus* is regarded as a lesser used wood species. However, the development in technology and adequate understanding of the properties of the species has made it a veritable raw materials in the wood products sector. Thus, it has become important that Nigerian wood technologists and silviculturists understand the new initiatives and use them for the development of the forest industry. This can be done by the assistance of government. This could be achieved by sending Nigerian technicians to China to understudy the conversion and processing of this important species as sustainable development of forest industry in Nigeria will eventually depend on optimal development and utilisation of all available wood resources.

## 1.6 Conclusion

The wood raw materials in the nation's forest reserves is presently not sustainable for industrial use. Presently, Nigeria import lumber and a number of raw materials for use in its wood products industry. Although, *P. erinaceus* is not a popular wood species in Nigeria's forest industry, development of appropriate processing technology has made it a prime raw material in China. The exploitation of the plant species for use in China is boosting the Chinese economy through provision of employment, business opportunities, etc. while causing a lot destruction to the Nigerian environment.

In the light of this, it is imperative that Nigeria conserve the remaining species for the development of a new set of industries targeted towards product export to China. This can be achieved if government and the private sector expend resources on human and technology development. This could be achieved with the cooperation of the Chinese government.

To stop export of *P. erinaceus* wood to China, it may be necessary that government seek the cooperation of the Chinese government for action to be taken at the consumer side. Most actions taken by State Governments on the ban on illegal cutting of *P. erinaceus* are not implementable as a result of the sheer number of the people in the community involved in the illegal trade. Also a number of State Governments have imposed levies on the cut wood species and on lorries transporting them to final dumps. The collaboration of the Chinese government in this initiative may assist in ensuring effectiveness of the ban. Chinese companies processing *P. erinaceus* wood can be encouraged to establish in Nigeria. This is to promote value addition and job creation locally. Also, the State governments can increase the number of protected areas in order to protect this highly valued species.

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