

## PAPER 155 – BAMBOO AVAILABILITY AND LAND USE PATTERN IN THE SURROUNDING SIX LOCAL GOVERNMENT AREAS TO IBADANLAND METROPOLIS, NIGERIA

W. B. Adebosin<sup>1</sup>; N. A. Adewole<sup>2\*</sup> & A. O. Olorunnisola<sup>2</sup>

Ogun State Forestry Plantation Project, Area J4, Ogun State, Nigeria  
Department of Wood Products Engineering, Faculty of Technology, University of Ibadan, Oyo State, Nigeria

\*Email: [nureniadedapoadewole@gmail.com](mailto:nureniadedapoadewole@gmail.com)

### ABSTRACT

Quests for mitigating wood scarcity in Nigeria is further promoting the use of bamboo as substitute in the production of wide range of products while its short gestation period is a cash-in for its sustainable uses. This study investigated bamboo status cum land-use patterns in six of the eleven Local Government Areas 'LGA' outside Ibadanland metropolis in Oyo State, Nigeria to generate baseline data. With Graphics Peripheral Interface Standard 'GPIS' tool, Landsat imageries for year 2000, 2015 and 2020 were generated for the study locations. Bamboo species identification, characteristics cum sample collection were carried out during on-the-spot assessment. The common land-use in the six LGAs are built-up-areas, thick-vegetation, farmlands and sparse vegetation. In year 2000, 2015 and 2020 the built-up-areas, thick-vegetation, farmlands and sparse vegetation covered 20.02%, 30.07% and 30.39%; 10.74%, 25.72% and 19.19%, and, 30.78%, 12.19% and 30.39%, respectively, while bamboo covered 1189.59 km<sup>2</sup> (36.46%), 990.49 km<sup>2</sup> (32.02%) and, 1003.63 km<sup>2</sup> (32.45%), respectively. Open farmland exists for bamboo cultivation across the six LGAs while existing bamboo stocks, grows naturally, matured, intact, harvested with little royalty payment or free. This study established that a species of bamboo: *Bambusa vulgaris* Schrad grows in abundance with wide distribution across Akinyele, Egbeda, Ido, Lagelu, Oluyole and Ona-Ara LGAs in Ibadanland.

**KEYWORDS:** Bamboo species, Availability, Distribution, Land-use pattern, Ibadanland

### 1. INTRODUCTION

Anthropogenic activities have contributed in no small measure to the dwindling of forest resources globally (FAO, 2010; Mmom and Mbee, 2013). It appears an un-ending growth in the world population cum technological advancement are stimulating conversion of more forest land to meet provision for shelter, agricultural and commercial activities requests of the world population. These needs of man were found to be major drivers in forest depletion by plethora of literature (Gadallah *et. al.*, 2019; Taylor, 2019; Zar *et. al.*, 2017). Nigeria's experience is not difference in that Fasoro and Ajewole (2019) reported that Nigeria's natural forest has, over the past years, experiencing a remarkable degradation and depletion. The forest land encroachment for the identified needs of man is increasingly posing considerable challenge to retaining forest land for sustenance of economic tree species in Nigeria. Also, scarcity of reserve land cum long gestation period required to raise economic tree species plantation have also been identified as critical bane to the regular supply of wood from these categories of trees to wood industrial sector in Nigeria (Damenortey, 2018; Fasoro and Ajewole, 2019).

The worsening scarcity of wood of economic tree species has encourage indiscriminate logging of lesser known trees species, so much so, that fruit trees are now been sourced for their wood. To mitigate this critical gap in wood supply to Nigeria wood industries, attention has been shifted to promotion of cultivation and use of bamboo, a presumably abundant Non-Timber Forest Products (NTFPs) in Nigeria because of its suitability for replacing wood ( Omiyale, 2003; Onilude, 2006). Adewole (2009), Ladapo *et. al.*, (2017), Damenortey (2018) noted that dwindling in supply of wood raw material to industry has encouraged promotion of bamboo as a suitable alternative/complementary raw material. Other factors that have endeared bamboo as a replacement for wood in Nigeria are un-ending population increase, depletion of natural forest resource and its short harvesting period on marginal land (Adewole, 2019). In fact Bamboo is a hard, strong, flexible and renewable grass with growth rate of about 1metre/day (Scurlock *et. al.*, 2000; Igbokwe *et. al.*, 2016). It includes over 1000 species of woody perennial grasses in more than 100 genera and can be managed on marginal agricultural land. (Sewanon *et. al.*, 2015)

The culm been suitable for conversion into various modern and specialized intermediate products to replace wood but still mostly used *in-situ* for scaffolding, as column, pedestal bridge, farm structure material, poultry feed trough among other in traditional ways of using its culm (Adewole and Olayiwola, 2011; Adewole and Bello, 2013; Adewole and Udele, 2021). Now that Bamboo is been promoted for use as raw material for modern

products in Nigeria, there is need to validate the veracity of claim of its abundance availability vis-à-vis availability of marginal farm land with proximity to sub-urban area in Nigeria. It is for these reasons among other relevant needs that this study was initiated to generate planning prone data on bamboo availability and pattern of land uses in the six sub-urban Local Government Area 'LGA' in Ibadan, Oyo State, Nigeria.

## 2. METHODOLOGY

This study was conducted between May and July, 2021 to obtain preliminary information on bamboo type, availability, abundance and distribution at the six LGAs that lie outside the metropolis areas in Ibadanland. The study locations were purposefully selected because they host the fringe secondary forests that exist in Ibadanland. The current forest transition and land use cover maps of the respective LGAs was acquired through satellite imageries and mapping with Graphics Peripheral Interface Standard (GPIS) tool. The imageries considered were for the year 2000, 2015 and 2020, for the entire six LGAs. The imageries indicated locations, bamboo distributions and other land uses. Comparison of current satellite images of the forest depletion ratio and the rate of bamboo availability, distribution and changes availability across the six LGAs was assessed. The six LGAs fringe forest areas were visited during the on-spot assessment to ascertain the veracity of the imageries findings and to ascertain mode of bamboo stock accessibility cum bamboo culm characteristics. Culm and leaves sample specimens collected from all the six LGAs were taken to the Herbarium Unit of the Department of Botany, University of Ibadan for identification.

## 3. RESULTS AND DISCUSSION

### 3.1 Study Location: Description and Characteristics

The six LGAs selected for the study are *Akinyele*, *Lagelu*, *Egbeda*, *Ona-Ara*, *Oluyole* and *Ido*. These LGAs surrounds the five LGAs that fell within the Ibadan metropolis. The fringe forests in Ibadanland only that exists at the selected six LGAs. These six LGAs are fast growing in number of new settlement enclaves and the push from the metropolis continue to encourage large population of low income earners to migrate daily to these six LGAs contrary to the conventional rural to urban drift. There are fringe farm lands and it appears there are abundant human resources to drive bamboo plantation cultivation if relevant bodies drive policy along the line.

### 3.2 Bamboo Status in the Six LGAs and Stock Characteristics

The status in respects of bamboo availability, distribution and variation over twenty years, starting from year 2000 for the six LGAs are represented in Figure 1. It could be inferred from the yellow color indicating the bamboo abundance in Figure 1 that bamboo actually can be found in all the six LGAs with varying densities and different distribution patterns. However, the Figure 1 (a) revealed that Egbeda LGA has the lowest density of bamboo abundance while bamboo is most prevalent in Oluyole and Ona-Ara as at year 2000. The scenario has changed in the Year 2015 and 2020 in that the imageries shows that Akinyele and Lagelu has the high density of bamboo abundance while Oluyole and Ona-Ara appeared to have lost considerable density of bamboo. This observation was most of the bamboo stocks being concealed rather as undergrowth as was later found out through on-the-spot assessment as shown in Plate 1. Bamboo is very lowly patronized, even for traditional uses. The bamboo stocks that exist in all the six LGAs grow naturally and are largely remain un-tapped. Matured Bamboo culms are available in each of the six LGAs and harvesting them by any user is hardly ever charged for fee. The cost associated in procuring bamboo culm length in each of the six LGAs is determined by labour incurred in harvesting and the cost of transporting to where it will be used. Only in two occasions and in Ona-Ara LGA was there indication that a peanut royalty may have to be paid to land owner on whose land bamboo is growing before the culm can be harvested. This observation agrees with the earlier findings by Adewole (2017). The bamboo species growing in all the six LGAs considered were identified as *Bambusa vulgaris* Schrad Ex.J.C.Wendl.

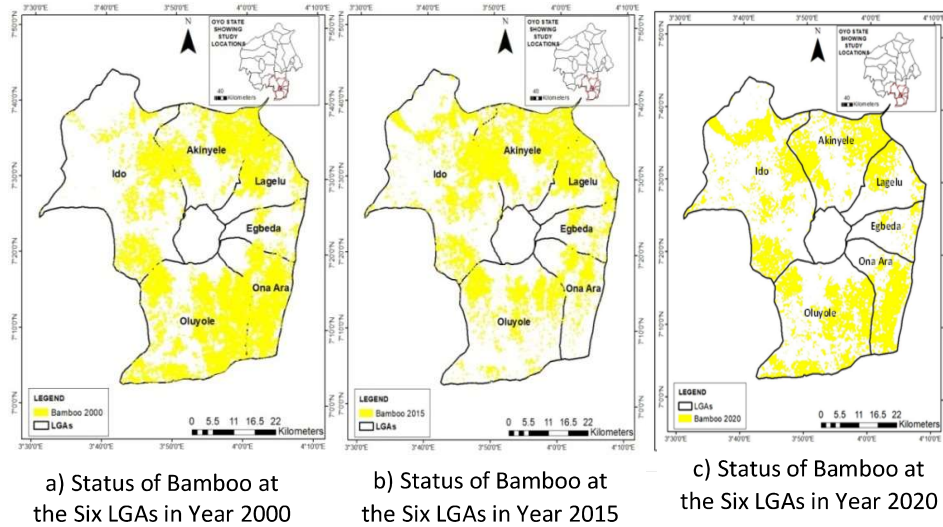


Figure 1: Bamboo Status at the Six LGAs from the Year 2000 to Year 2020

### 3.3 Land Use Patterns in Relation to Bamboo Availability in the Six LGAs

The form of land uses in relation to the portion of the land where bamboo stocks occupied in each of the six LGAs and for the years under considerations are shown in Figure 2. It was evident that the lands in each of the LGAs were partitioned into four major forms of uses: the built-up-areas, thick-vegetation, farmlands and sparse vegetation. In year 2000 the built-up-areas, thick-vegetation, farmlands and sparse vegetation covered 20.02%, 30.07% and 30.39% respectively. This implies that areas where bamboo could be found were in higher proportion in terms of land uses at the six LGAs as at the Year 2000. In the Year 2015 and 2020 respectively, the land use distributions among these four critical use components: the built-up-areas, thick-vegetation, farmlands and sparse vegetation are 10.74%, 25.72%, 19.19%, and, 30.78%, 12.19% and 30.39%, respectively. The areas designated built up area appears shrink in Year 2015 but with Year 2020 the statistics was clearer that there have been considerable encroachment into the fringe forest areas in all the six LGAs due to continuous growth of emerging settlement. The low cost of acquiring landed properties for shelters must have attracted many of the hitherto residents in the most of the metropolis LGAs to migrate to actualize the dream of owning personal houses within the enclaves of the six LGAs in Ibadanland.

Meanwhile the portion of the land covered in each of the six LGAs relative to other four critical land uses over the period considered by this study is presented in Table 1. There are fluctuations in the areas covered by bamboo but with further growth in Year 2020. The study noted that that the vast areas of farm lands and sparse vegetation that exist in all the six LGAs can serve as veritable sites for bamboo plantation. Ido LGA is particularly mostly blessed with expanded farm land cum sparse vegetation when compared with other LGAs considered for the study. Since the soil readily supports bamboo growth and the turnaround time for raising bamboo plantation is less than 5 years for the culms that are even suitable for processing, the findings of this study suggest that exploitation of bamboo culms for modern application can be practiced with assured sustainability.

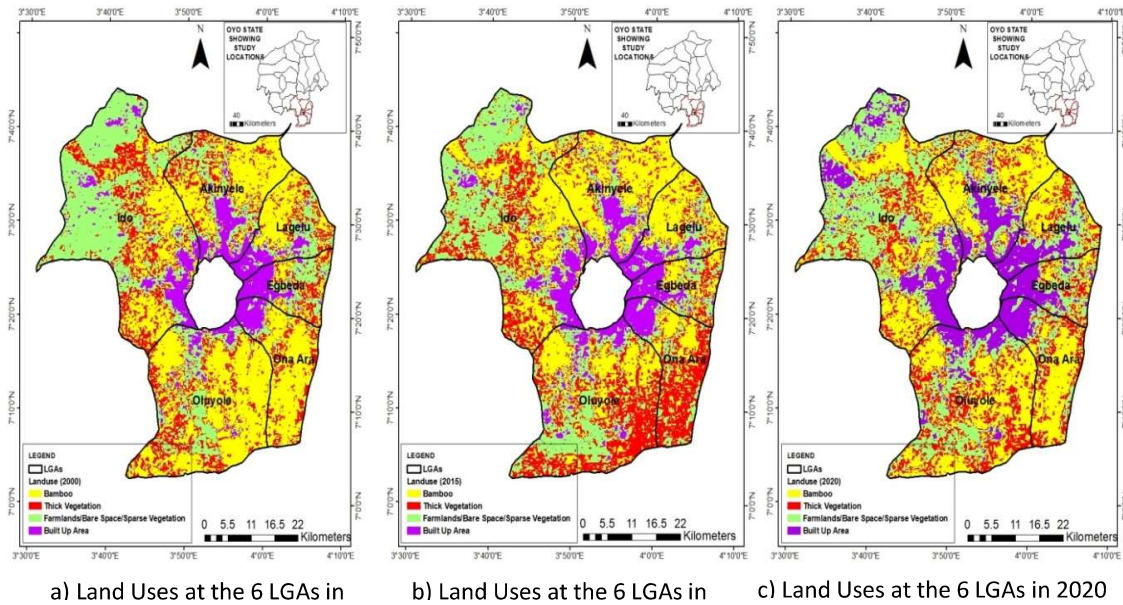


Figure 2: Patterns of Land Uses in Relation to Bamboo Availability in Each of the Six LGAs

Table 1: Landuse Spatial Pattern in 2000, 2015 and 2020 for the Six LGAs

Landuse	2000		2015		2020	
	(km <sup>2</sup> )	(%)	(km <sup>2</sup> )	(%)	(km <sup>2</sup> )	(%)
Bamboo	1189.59	38.46	990.49	32.02	1003.63	32.45
Thick Vegetation	619.30	20.02	795.52	25.72	617.72	19.97
Farmlands/ Bare lands/Sparse Vegetation	952.10	30.78	930.08	30.07	939.93	30.39
Built Up Area	332.26	10.74	377.16	12.19	531.97	17.20
<b>Total Landed Area</b>	<b>3093.25</b>	<b>100.00</b>	<b>3093.25</b>	<b>100.00</b>	<b>3093.25</b>	<b>100.00</b>

#### 4. CONCLUSION AND RECOMMENDATION

This study confirmed that bamboo exists in Akinyele, Lagelu, Egbeda, Ona-Ara, Oluoyole and Ido Local Government Areas of Ibadanland. It grows easily on the six LGAs soils and naturally too. Though bamboo is widely available, but it is in relative abundance in respect of the six LGAs with Oluoyole and Ona-Ara LGAs having the highest density. The bamboo stocks were largely matured, resources remain intact and can be harvested by stranger free most of the time and occasionally with little royalty payment to land owners. This study established that a species of bamboo: *Bambusa vulgaris* Schrad grows in abundance with wide distribution across Akinyele, Egbeda, Ido, Lagelu, Oluoyole and Ona-Ara LGAs in Ibadanland. The species of bamboo that grows in all the six LGAs is the same: *Bambusa vulgaris* Schrad Ex.J.C.Wendl. Land resources in all the six LGAs were shared among four main uses: the built-up-area, thick-vegetation, farmland and sparse vegetation. The areas covered by bamboo have not significantly changed over the space over the past 20 years. The Ido LGA was noted to have the largest land areas that can be exploited for bamboo plantation for sustainability purpose.

Arising from this finding, it is recommended that a critical appraisal of the characteristics properties of the bamboo resources in the six LGAs should be investigated. Also that appropriate bodies in Oyo State gear-up to harness the potentials of the abundance bamboo resources for modern application and to mitigate wood supply shortage while enunciating appropriate policies that will encourage bamboo plantation cultivation to plan for its sustainable uses.

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