ASSESSMENT OF AFFORESTATION AND REFORESTATION EFFORTS BY FORESTRY DEPARTMENT, MINISTRY OF ENVIRONMENT, IMO STATE.

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ABSTRACT

The study examined Afforestation and Reforestation Efforts by the Department of Forestry, Ministry of Environment with the use of data collected from both primary and secondary sources. Seventy copies of well structured questionnaire were administered to respondents in 11 charges in the Department to elicit information on afforestation and reforestation efforts by the department. Data were analyzed with the use of descriptive statistic of frequency, percentage and inferential statistic using ANOVA. Results showed that 100% of the respondents affirmed the existence of afforestation and reforestation in the State. There were significant difference (P<0.05) among afforestation and reforestation activities, where the dominant activity was raising of seedlings. Permanent and temporary nurseries accounted for 61.43 and38.5% respectively. Gmelina arborea dominated the five timber species raised in the nurseries between the year 1985 and 2013. About 42.9% of the respondents were aware that deforestation had negative impacts on afforeatation and reforestation while 51.1% of the respondents were not aware not aware of the negative impacts. Results showed that there was significant difference (p<0.05) among the identified activities that impeded afforestation and reforestation, where agriculture was the dominant activity that impeded forest decline in the State. Results revealed that three principal forest policy objectives implemented by the State were delineation of forest reserves (DER), provision of fund (POF), and forest policy implementation which accounted for 28.59, 21.43 and 50% respectively. It is expedient that the government should fashion out policies on tree planting and establishment of a financial inducement and encouragement that will improve upon the forest status of the State.

Key: Afforestation, deforestation, forest Area, forest estates, reforestation.

INTRODUCTION

Numerous timber species have different properties and as the demand changes different products can be obtained and can be sold (Whitemore, 1999). Afforeatation and reforestation are crucial to the sustainability of timber supply and maintenance of environmental stability which to large positively affect growth of human population, food security and quality of life. The environment within which man lives continues to experience changes the world over due to the exploitation of forest resources (Udofia *et al*, 2011). This is because these types of forest establishment in Imo State like other States in Nigeria are

associated by myriad of benefits which have economic, social as well as environmental considerations. Despite the desired forest restoration, disastrous environmental phenomena occur which impact on deforestations, biotic loss and species erosion, destruction of biological diversity, loss of the fertile land, pollution, and among others. The result is recurrent incidence of drought, floods, rapid vegetation modification and famine which point to a possible breakdown in the natural environment (Oloyede, 2008 and Saliu *et al*, 2010). These call for urgent priority attention to forest conservation via adequate afforestation and reforestation which in Imo State are grossly below FAO recommendation. Imo State is not an only isolated example because Lake Chad in Northern Bornu State and Lake Saguibine in Northern Mali, were once vast lakes surrounded by vegetations have now evaporated to become arid desert (Ogukunle, 2004). The savanna dry regions are exposed to unpredictable rainfall pattern as a result of adequate vegetation cover emanating from poor forest restoration.

Among the human activities that have striking effect on the earth's environment is deforestation, which is compensated by corresponding afforeation and reforestation efforts. Nearly 50% of the earth's land surface has been transformed by direct human action, with significant consequences on biodiversity, soil and climate (Oloyede, 2008). Thus, there is urgent need to plant and grow more trees because of the numerous contributions which play significant roles in food production, medicine as well as employment and income generation. It is expedient to direct forest management to the direction that will step down the current rate of deforestation in the State. Bandy (1994) has observed that a continuous trend forest exploitation will result in diminishing the remaining tropical forest by the end of the 21st century. The value of forest estate in Imo State rests largely on the building up forest status through afforestation and reforestation on continuous basis. Generally, forest ecosystem has been constantly to strike ecological balance by trying to cope with the way in which human beings use natural resources, clear forestlands, harvest trees and contaminate the air, land and water. Thus, afforestation and reforestation form a background to the important development taking place in the forestry landscape in the State, particularly land use practices including forest and land allocation, exploitation and environmental

conservation. Sustainable afforestation and tree planting programme are imperative in Imo State like many other States in Nigeria. Afforestation efforts in the State represent a far cry to what is obtainable in most other states of the Federation. Despite the predicted global consumption increases by 25% between 1996 and 2010 of industries forest products (FAO, 1999). Forest expliotation has always been on geometric trend in most parts of Nigeria which is not ever matched by afforestation efforts especially in states like Imo State. It is a common knowledge that the forest estates in Nigeria have been very highly depleted. This trend calls for an urgent need to increase forest resource in Imo State as well as other states in Nigeria. The paper is geared to ascertain afforestation and reforestation efforts, determine nursery establishment for various timber species for the past five years and to ascertain the identified principal forest policy objectives implemented in the State.

METHODOLOGY

Study Area

The study was carried out in Forestry Department comprising the Head Quarter in the State capital and forest Area offices in most of the Local Government Areas in Imo State. The state is located approximately on 5.485^{o}N and 7.035^{o}E of the equator. It occupies the area between the lower river Niger and the upland and middle Imo River, Otamiri River to the east and the Nworie River to the south. The climate of Owerri is tropical and characterized by two seasons (wet and dry seasons) annually. Rainfall distribution is bimodal which peaks in July and September and two weeks break in august. The rainy season begins in late march and last till October or early November. Annual rainfall varies from 1500mm to 2200mm. An average temperature is above 20^{0}c (68^{0}f) which creates an annual relative humidity of 75% with humidity reaching 90% in rainy season. The dry season experiences two months of harmattan from late December to late February.

Sampling Method

Several reconnaissance visits were made to the various forest area offices and forest head quarters of the State to obtain information on the number of forest personnel, afforestation reforestation activities such as nursery establishment, various timber species planted and forest nurseries raised at different locations in the state. Seventy copies of well structured questionnaire were administered to the forest personnel in the ministry of

environment comprising of professional, technical cadre, uniformed staff, labourers. Both primary and secondary data were employed in the study; the primary data was by administration of the copies of the questionnaire to the respondents in the Department of Forestry Ministry of Environment while secondary data were obtained from the records and documents of their various offices. A total number of 70 forestry personnel were randomly selected from the 93 forestry personnel for interview and administration of questionnaire based on 66% sampling intensity.

Data Collection

Seventy copies of questionnaire were administered to 70 out of 93 personnel that make up the total staff number in the Department of Forestry to elicit information on nursery establishment, conservation activities, and species plantation in the state. These respondents were distributed among various Forest Areas and charges in the state undertaking forest operations. Augmenting questionnaire administration was the use of personal interview designed in a manner to ensure flexibility and captured all aspects of afforestation and reforestation efforts in the State. The purpose of using this method was to obtain reliable and adequate information from the respondents for the projected study.

Statistical Analysis

The data obtained from this study were analyzed with the use of descriptive statistic of frequency, percentage and inferential statistic using ANOVA.

RESULTS AND DISCUSSION

Table 1 shows that 100% the respondents affirmed that there was existence of afforestation and reforestation programmes taking place in some of the forest areas in the State. The areas identified were Abohmbise, Central Nursery, Egbema, Ihite-Uboma, Mgbidi, Nwangele, Orlu, Okigwe, Owerri and Zoo.

Table 1: State Forestry's involvement in Forest Conservation

No. of respondents	Frequency	Percentage
Yes	70	100
No	0	00
Total	**70**	**100**

These findings apparently contradicts a common knowledge and observation of absence of afforestation activities in the State. This is contrary to the conventional assumption that in a State without substantial forest plantations and/ or natural forest estates signifies absence of conscious afforestation and reforestation pragrammes. It is apparently not the true picture of the forest estates in Imo State. The observation highlights the facts that perhaps, forest conservation efforts are minimal they may become visible and significant if there is a little step up and sustained over time. This is also true if most of the nurseries of various timber species raised are planted up in the degraded and marginal land. Generally, the status of the forest is a far cry to what is obtainable in Emerging economies like India where half of the State are endorsed for forest cover and joint forest management in which forestry department and communities jointly manage forests and share rights and responsibilities which has led to more effective forest protection and also increased the rehabilitation of degraded forest from 11to 20% (Singh,1996).

Table 2 shows that there was significant difference ($p<0.05$) among the various afforestation and reforestation activities identified in the study which spanned from 1991 to 2013. Further analysis also revealed that raising of nursery and period between 2009 to 2013 date dominated other activities and other periods respectively, as considered in the foregoing analysis.

Table 2: Various afforestation and reforestation activities in forestry department

Years	RN	SS	FT	WD	F1	PC	Total	Mean
1991 – 1996	20	5	5	20	10	20	80	13.3^{b}
1997 – 2002	40	10	10	30	20	30	140	23.3^{b}
2003 – 2008	40	10	10	50	20	40	170	28.3^{b}
2009- 2013	200	30	15	80	30	60	415	69.2^{a}
Total	300	220	40	180	80	150		
Means	75^{a}	55.0^{b}	10.0^{b}	45.0^{b}	20.0^{b}	37.5^{b}		

Key: RN = Raising of Nursery; SS = Sowing of seed; FT = Fire tracing; WD= Weeding; FI = Forest Inventory; PC = Pest control

Raising of nursery is an important step in the plantation establishment. This is where seedlings are provided with growing condition so as to get healthy seedlings to

actualize afforestation efforts. Plantation of these species can be raised annually, only by sowing the seeds of the desired timber species in nursery to be planted out in the subsequent years.

Two types of Nursery were identified in the foregoing study (Table 3) the results showed that permanent Nursery dominated temporary nursery accounting for 61.43% and 38.57% respectively.

Table 3: Type of Nursery Established

Type of nursery	Frequency	Percentage
Permanent	43	61.43
Temporary	27	38.57
Total	70	100

These findings agree with Jaeniecke, H (1999) that permanent nursery involves high production of seedlings, high seedling survival rate, and suitable modern equipment favouring higher quality seedlings, minimal theft and risk of damage. The existence of permanent nursery depicts an exercise in forestry operation that will guarantee the presence of forest estate in the State.

Table 4 shows that 60% of the respondents were given free seedlings by the government, while 25.7% and 14.3% of the respondent sourced their planting material from wildlings and purchase respectively.

Table 4: **Sources of seedlings for afforestation and reforestation**

Sources	Frequency	Percentage
Wildlings	18	25.7
Donation	42	60
Purchase	10	14.3
Total	**70**	**100**

This finding agrees with Hellerman (2007) who noted that teak and Gmelina was provided by the government to support plantation establishment fast growing exotic tree species. The result showed that five identified timber were raised and distributed

between the period of 1985 and 2002 (table 5). It was revealed that there was significant difference ($p<0.05$) in the five specie raised and distributed for afforestation in the state. It was further revealed that G*melina arborea* dominated other identified specie under study.

Table 5: Timber specie raised in the nurseries

Years	Gmelina	Teak	Nauclea	Pinus	Ceiba
1985 – 90	150	100	30	20	10
1991-96	60	50	25	10	8
1997-02	50	30	5	-	3
Total	260	180	60	30	21
Mean	**86.67[a]**	**60.00[b]**	**20.00[b]**	**10.00[b]**	**7.00[b]**

Various applications of G*melina arborea* have made it important specie that is mostly raised in several nurseries across the country. These findings agree with Burkill (1985) that G*melina arborea* is used in constructions, furniture, carriages, and musical instruments. It is also used in paper making and matchwood industry too.

Table 6 shows that 57.1% of the respondents do not agreed that awareness programmes were carried out to reduce deforestation while 42.9% of the respondents had contrary view.

Table 6: Awareness of negative impact of deforestation on afforestation and reforestation

No. of respondents	Frequency	Percentage
Yes	30	42.9
No	40	57.1
Total	**70**	**100**

The findings reveal the fact that there are low awareness programmes of deforestation and its associated impacts on afforestation which spell danger in ecosystem and adverse environmental implication. This corroborates the view expressed by Udofia *et al* (2011) that all afforestation projects should carry along the indigenous people to reduce tension/friction so as to guarantee the successes of forest conservation.

Table 7 shows that 57.1% of the respondents agreed that the Department was involved in the improvement of forest conservation while 42.9% of the respondents had a contrary view.

Table 7: **Improvement on conservation efforts by forest department**

No. of respondents	Frequency	Percentage
Yes	40	57.1
No	30	4.9
Total	**70**	**100**

These findings agree with Singh (1996) that successful forest conservation depends on co-operation between forestry officials and local people. This also corroborates with the view expressed by Evans (1992) that various Taungya systems are practiced as means of plantation forestry in the tropics recognized the roles played by Forestry Department in the plantation establishment.

Table 8 Shows that 95.71% of the respondents agreed that deforestation impeded afforestation and reforestation programmes while 4.29 of the respondents had a contrary view.

Table 8: Deforestation Impedes afforestation and reforestation efforts (%)

Charges	YES	NO
Central nursery	4.29	-
IhiteUboma	10.00	-
Headquarters	10.00	-
Mgbidi	5.71	-
Abohmbaise	12.86	-
Egbema	11.43	-
Orlu	10.00	1.43
Nwangele	7.14	-
Zoo	8.57	1.43
Okigwe	8.57	1.43
Owerri	7.14	-
Total	**95.71**	**4.29**

Deforestation is one problem that affects afforestation and reforestation efforts which adversely affect sustainable forest management. This finding confirms the view that deforestation is estimated around 3.4million hectare/year in the world over (FAO, 2001 and CIFOR, 2005).

The results highlighted that agriculture dominated all other variables identified in the study that impeded afforestation and reforestation programmes and thereby accelerating deforestion and ultimate dereservation (Table 9).

Table 9: Activities that impede afforestation and reforestation

Charges	**Agriculture**	**Urbanization**	**Industrialization**
Central nursery	3	2	3
IhiteUboma	7	2	7
Headquarters	5	5	5
Mgbidi	4	3	3
Abohmbaise	7	4	6
Egbema	8	3	7
Orlu	6	5	2
Nwangele	5	3	-
Zoo	6	3	2
Okigwe	6	5	1
Owerri	5	4	-
Total	**62**	**39**	**36**
Mean	**5.63[a]**	**3.54[b]**	**3.27[b]**

Forest lands are being cleared for agricultural purposes because of the ever increasing human population. This finding agrees with the view of UNFCC (2007) that the predominant driver for deforestation worldwide is the clearing of trees to expand agriculture. This discourages afforestation and reforestation programmes.

Three principal forest policy objectives implemented by the government in an effort to improve afforestation and deforestation in the state were identified (Table 10).The results showed that 50% of the respondents affirmed that FPI was carried out in the state while 28.57 and 21.43% of the respondents affirmed that DFR and POF respectively carried out in the projected study.

Table 10: Some principal forest policy objectives implemented in the state

Charges	Frequency	Percentage
DFR	20	28.57
POF	15	21.43
FPI	35	50.00
Total	**70**	**100**

KEY: DFR= Delineation of forest reserves; POF = Provision of Fund; FPI = Forest Policy Implementation

The findings corroborate the views express by Kalu and Izekor (2006) that the urgent need for proper forest policy implementation is a strong safeguard for providing best option for forest decline and encouraging afforestation. This is apparent that the major avenue that Government influences forest operation are through sustainable forest management and the practice of forestry in line with spelt out lay down forest policy.

CONCLUSION

Generally, it was observed that there was conscious awareness on afforestation and reforestation as well as raising of seedlings of desired timber species between 1991 and 2013 which dominated all aspects of Afforestation and reforestation efforts in Imo. Other identified conservation efforts in the projected forest operations included; sowing of seeds, weeding, forest inventory and pest control. The source of seedlings for reforestation is mostly obtained through free donation from the Department of Forestry while *Gmelina arborea* dominated all the identified timber species raised in the nursery in the study under review. *Gmelina arborea* is among very few high quality hardwood species which have proved successful in plantations (Whitemore, 1999). Threats to forest estates identified are clearing of forest lands for agricultural purposes such as long term crop production, urbanization, industrialization. Dominant forest policy objective practised in the State is implementation of forest policy, while others are delineation of forest reserves and provision of fund in forestry Department. Afforestation and reforestation mitigate the adverse effects of deforestation such as increased soil erosion, flooding, siltation, plant species erosion and loss of soil fertility which reduce crop yield due severely compromised agricultural productivity that is main cause for the decline of forest estates. These to large extent highlight the friendliness of the forest estates that guarantee support for rural economic systems.

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