

URBANIZATION AND DEFORESTATION IN THE NIGER DELTA: WARRI ENVIRONS IN FOCUS

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ABSTRACT

The sustainable management of forest is key to both the mitigation and adaptation to the effects of climate change. However, the role of deforestation in promoting climate change have always been relegated with emphasis placed only on oil and gas activities. The study reveals the fact that deforestation contributes significantly to climate change by releasing carbon dioxide emissions into the atmosphere. In this research, the rate of deforestation in Warri and Environs was examined and analyzed using the rate of development of residential and commercial structures as an indicator of deforestation. From the study, it was discovered that majority of the land areas which used to be forests have been replaced with structural developments for residential and commercial purposes. The paper recommends aggressive reforestation amongst other measures to solve the problem of deforestation.

KEY WORDS: Climate Change, Deforestation, Environs, Warri, Mitigation.

Introduction

Understanding the linkages between forests and the environment is of key importance in developing policy responses to climate change which will ultimately enhance sustainable development. Climate change is the result of increases in the concentration of green house gases in the atmosphere. Of utmost concern is the increase of carbon dioxide levels in the atmosphere from deforestation activities.

Deforestation, which is the deliberate removal of forest cover for various uses, releases carbon dioxide into the atmosphere its increase with time follows an exponential growth principle (Strahler and Strahler. 2006). The buildup carbon dioxide is prompting changes in climate patterns.

Forests are a good sink of carbon and contain twice as much carbon as the atmosphere and also metabolize more than 14% of atmospheric carbon every year (Roy, Diwakar & Vohra, 1991) Naturally, carbon cycles continuously among land, atmosphere and ocean in many pathways but these flows are now influenced by human activities such as deforestation. Deforestation, therefore reduces the ability of forests to store or sequester carbon. This implies an overdose of carbon in the atmosphere.

The Eliasch review estimates that halving deforestation could result in a net global economic gain of 3.7 trillion US Dollars annually by the year 2015 which makes it one of the most cost effective climate change mitigation measures available (Brundtland. 2009).

Statement of the Problem

It is on record that close to 1% of global emissions stem from deforestation activities in developing countries and that deforestation alone accounts for 35% of carbon emissions in developing countries (Brundtland, 2009)

ii Nigeria and in the Niger Delta region, there seems to be an omission in the environmental history on the linkages between forests and climate change as emphasis on climate change risks are placed mainly on oil and gas activities bringing about a neglect on the role of deforestation in aiding climate change.

The FAO(1997), estimates that deforestation in developing countries stood at 15.5million hectares between 1980—1990 and 13.7million hectares between 1990-1995. The rate of deforestation is increasing and is more pronounced in tropical rainforests (Ndakara. 2012).

Warri and Environs is experiencing deforestation and forest degradation due to unsustainable human activities. Of growing concern is the rate of indiscriminate removal of forests for residential, commercial and industrial purposes. Uncontrolled wood mill activities, agriculture and logging are also associated problems.

The neighbouring communities around Warri which used to be rural in setting with abundance of forests are now hotspots for residential and industrial land uses. The sale of forest areas for building and infrastructures is now the order of the day. Forests are being depicted in a geometric progression. Increasing human population and high rate of unemployment is not helping matters as both the old and young resort to sales of forests allotted to them by the communities without taking any thought on (the negative impact on the environment.

Deforestation activities is raising the vulnerability of the region to the effects of climate change as cutting down these forests sends carbon dioxide into the atmosphere. Continuous unsustainable deforestation rate is also threatening the health and biodiversity in the region.

Justification for the Study

Increases in temperature which is a major effect of climate change will cause sea level to rise and low lying coastal areas like Delta State will be put at risk of flooding. Current global projections have shown that sea level will rise by 8cm — 15cm between 2019 and 2099. If such prediction prevails without adequate steps taken to mitigate and adapt to climate change. Delta State could be totally submerged (Delta State Ministry of Environment. 2014) Irregular rainfalls, low crop yields, global warming, etc are associated problems. Deforestation is a fast becoming a major contributor to climate change. This implies that a sound and effective forest control will improve the quality of air that humans breathe by trapping carbon, regulate the earth's climate and prevent excessive global warming thus mitigating climate change.

The Study Area

The study area is Warri, located between latitude 5°30'N and 5°35'N and longitude 5°29'E and 5°4'E. The study area which consists of Warri South, Uvwie and Udu Local Government Areas in Delta State. It is characterized by a nearly flat topography of less than 3 metres and of the

lowland type. The area falls mainly under the tropical rainforest with a mean annual temperature of 27.4°C and rainfall amount of 274.30 mm. Its soil, falls into the category of the hydromorphic soils characteristic of the Niger Delta region. The soil pH is moderately acidic (5.6) due to high rainfall and abundant sand particles which combine to favour leaching of exchangeable bases and losses through surface runoffs.

The main Warri which covers areas of Okumagba Avenue, Okere, Agbassa, Igbudu. Iyara, Jakpa, Ekpan, Edjeba, old Airport road, P.T.I road, Enerhen and Udu road have now grown to cover surrounding communities with rich forest resources. The communities include— Ugbomro, Okuokoko. Agbarho, Osubi, Ohore, Okpaka, Opete. Orhuwhorun. Ovwian, Aladja, Ugbuwangue, And a few others.

Vegetation

Warri and environs is located within the low land rainforest belt of Nigeria. The tropical rainforest which has been the mainstay of Nigeria's timber industry is no longer extensive as it used to be. The primary rainforest vegetation in the area has largely disappeared due to felling of trees and also agricultural purposes. Currently, the major cause of forest disappearance in the area is due to deforestation for residential and industrial land use. Forest cover is reducing at an alarming rate as a result of deforestation.

Generally, the vegetation distribution of the Niger Delta region where the study area falls under is broadly classified into three classes of forests, making it a great Store of carbon. The classes are:

Mangrove Swamp Forest — it forms a bit across the region. The rainfall here is very heavy (over 2,500mm) and temperature is high. The land in the forest is low-lying and swampy, characterized by rivers and creeks. It houses the red mangroves, reeds and many other tree species.

Freshwater Swamp Forest — Rainfall in this class is also high (about 2,000mm) with fairly high temperatures. The rivers overflow their banks during the rainy season and hood the land, making the soil marshy and waterlogged. The forest vegetation is irregular and broken. it houses mainly shrubs, climbing plants and a variety of trees.

Tropical Rainforest - Rainfall in this class is about 1,500mm with fairly high temperature. The vegetation consists mainly of trees and shrubs. Its main feature is the formation of layers. It houses a variety of important trees species including Iroko. Mahogany. Obeche, Opepe. Cedar (Akpofure 2009).

Methodology

This study aims to justify the fact that deforestation in the study area is caused mainly due to the demand for residential and commercial buildings. The study is focused on the three local government areas surrounding Warri and environs. The rate of deforestation was obtained by analysis of the rate of infrastructural developments/ housing units (residential and commercial structures) in the study area. The spread of these structures therefore serves as an indicator for

deforestation. The adoption of this indicator is the outcome of personal interviews and field work carried out in the three local government areas — Warri South, Uvwie and Udu Local Government Areas.

A reconnaissance survey and actual field investigation through personal interviews was also carried out and analysed statistically with the Pearson Product Moment Correlation to further buttress the rate of deforestation in the study area.

YEAR	WARRI SOUTH(Housing Units)	UWVIE(Housing Units)	UDU(Housing Units)	TOTAL
1985	127 HU	107 HU	68 HU	302 HU
2000	188 HU	642 HU	480 HU	1310 HU
2001	234 HU	615 HU	506 HU	1355 HU
2002	182 HU	550 HU	535 HU	1267 HU
2003	198 HU	582 HU	605 HU	1385 HU
2004	250 HU	770 HU	580 HU	1600 HU
2005	242 HU	785 HU	575 HU	1602 HU
2006	278 HU	783 HU	651 HU	1712 HU
2007	324 HU	768 HU	610 HU	1702 HU
2008	366 HU	635 HU	638 HU	1439 HU
2009	390 HU	998 HU	656 HU	2044 HU
2010	427 HU	908 HU	715 HU	2050 HU
2011	351 HU	955 HU	830 HU	2136 HU
2012	324 HU	1038 HU	679 HU	2041 HU
TOTAL	3754 HU	9829 HU	8060 HU	21,643 HU
MEAN	288 HU	756 HU	620 HU	

Table 1: development rates in warri south, uvwie and udu lga (housing units)
Source: ministry of Lands, Survey and Urban Development, 2014

From Table 1 above, it can be deduced that for the 12—year period, the rate of development in Uvwie which used to be highly forested is now higher than that for Warri and Udu. The rate of development in Uvwie, is 40% higher than that of Warri South. It can also be deduced that even Udu Local Government Area which was 95% forest has opened up and the rate of development has even exceeded that for Warri South which is the major city in Delta State. From Table 1 above, the mean number of developments for Warri South for the period stated is 288, that for Uvwie is 750 while for Udu, it is 620 respectively.

The few developments in Warri South Local Government is due to the opening up of areas like Ugbuwangue, Ubeji, Egbokodo, Jeddo communities which were all heavily forested 20 years ago. these communities were 90% forests but over 70% of the area is now built up with structures.

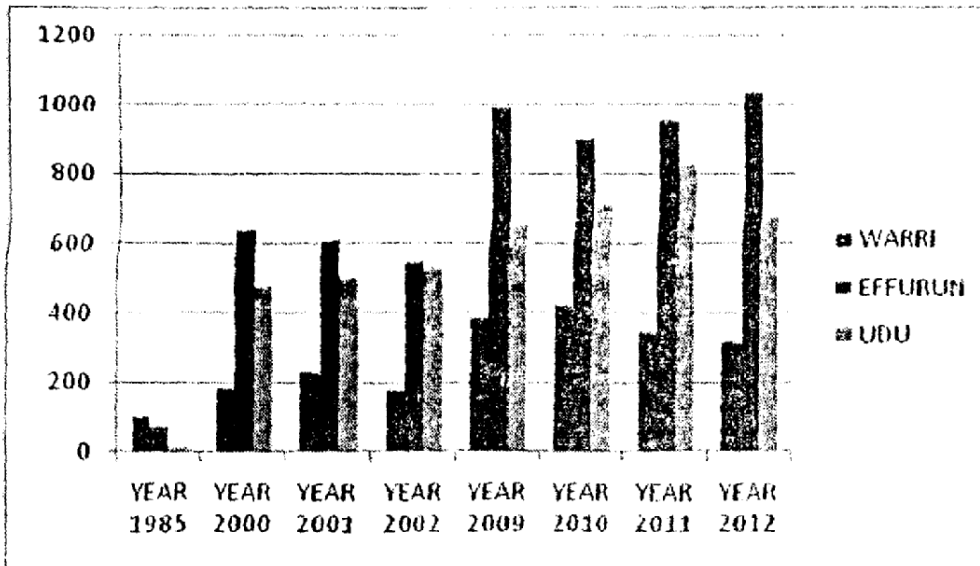


Figure 1: Rate Of Development For Selected Years
Source: field work, 2014

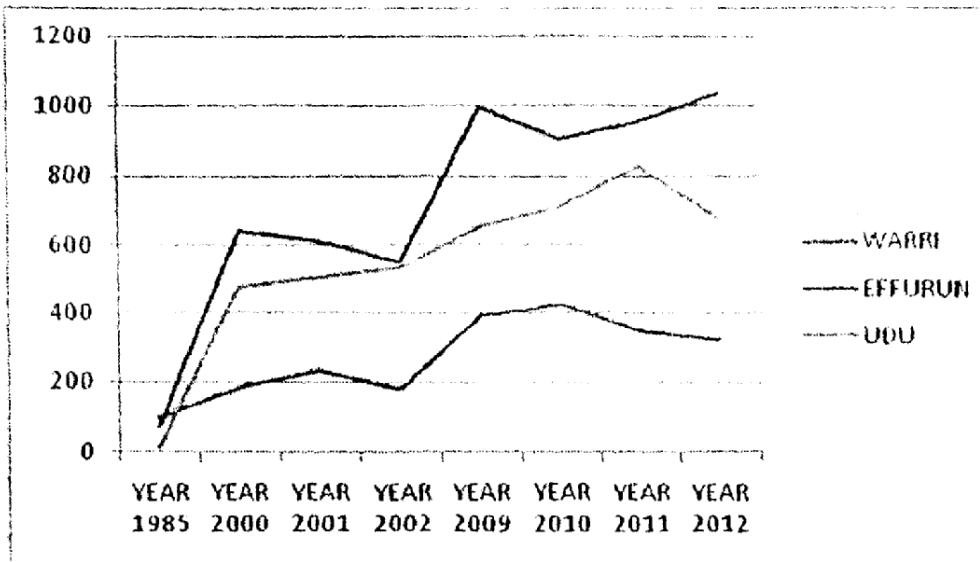


Figure 2: Development Curves For The Study Area
Source: Field Work, 2014

For the twelve year period, the total land area which is 70% forested is as shown in the Table 2 below

LOCAL GOVT AREA	LAND AREA
WARRI SOUTH	3,491,220m ²
EFFURUN	9,140,970m ²
UDU	7,495,800m ²
TOTAL	20,127,990m ²

Table 2: total estimated land area of the local government areas.
Source: Field Work, 2014

From Table 2, the total area of forests converted to structures is 20,127,990m² of forests giving us an indication of deforestation in the study area and supporting the fact that deforestation in the Niger Delta is estimated at 3.3% annually, making it one of the highest in the world.

Computing the correlation coefficient between deforestation rate in the 1980's and from 2001 till date.

VARIABLE	ΣX	ΣX ²	ΣY	ΣY ²	ΣXY
Forest cover in the 1980's higher than from 2001- date	153	23409	0	0	0
Areas used to be heavily forested now built up	150	22500	3	9	450
Significant reduction of forest resources now	148	21904	5	25	740
Greatest factor of deforestation is sales of forest areas for buildings.	136	18496	17	289	2312
Use of forests for agriculture, fuelwood and furniture has reduced significantly.	146	21316	7	49	1022
Rate of clearing of forests for building is on the increase.	151	22801	2	4	302
Specie diversity of vegetation in the areas has drastically reduced.	140	19600	13	169	1802
TOTAL	1024	150026	47	545	6628

Table 3: correlation coefficient table
Source: field work, 2014

$$\text{Pearson Product Moment Correlation} = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{n\sum X^2 - (\sum X)^2} \sqrt{n\sum Y^2 - (\sum Y)^2}} \text{ where } n=180$$

Computing the equation with the data above, the correlation coefficient of the set of variables, (r) is = 0.72

Therefore, 72% of the respondents agree that the rate of deforestation is on the increase and is majorly as a result of building developments for residential and commercial purposes.

Policy Implications

Climate change and sustainable forest management policies need to be mutually supportive. This is because sustainable forest management is an important element in the overall effort to reduce carbon emissions and ultimately climate change.

The UN has established a collaborative Programme on Reduced Emissions from Deforestation and Forest Degradation in Developing Countries. The UN-REDD Programme is designed to create structures to support developing nations in designing national strategies to reduce carbon emissions resulting from deforestation. It will also establish systems for monitoring and verification.

The role of forests in mitigating climate change was not included in the Kyoto Protocol but in Bali in 2007, governments of various countries agreed to include Reduced Emissions from Deforestation and Degradation (REDD), in the climate negotiation package. Also this was fully agreed at Copenhagen.

The World Bank has established the Forest Carbon Partnership Facility (Brundtland, 2009). This initiative will enable countries like Nigeria to address the issue of deforestation and curb it to its barest minimum.

Delta State is currently implementing a climate change programme named — Territorial Approach to Climate Change (TACC). The Memorandum of Understanding for the implementation of the TACC Programme in Delta State was signed between the United Nations Development Programme(UNDP) and the Delta State Government during the fifteenth Conference of Parties of the United Nations Framework Convention on Climate Change (UNFCCC) held in Copenhagen, Denmark. So far, the Delta State TACC programme has made some achievements in this regard which are Sensitization programmes through stakeholders forum, community meetings, jingles in electronic media, an evidence based research work on the nexus of climate change and environmental degradation, development of a five-year Integrated Territorial Climate Plan (LTCP). establishment of a Carbon Exchange Desk and the establishment of a Reducing Emissions from Deforestation and Forest Degradation(REDD) Desk to enhance forest carbon stocks.

Recommendations

To deal with deforestation effectively, we must develop a regime which creates the necessary incentives for developing countries to act in the broader interest of the global community.

To unlock the true potentials of REDD, a high level of political will and commitment is needed to adjust development paths towards true sustainable forest management. Government must create institutional frameworks for housing and development planning, forest regulation and legislations, and incentives that reduce conversion of forests for human activities.

It is also suggested that the Delta State Government employ forestry officers of various cadres towards the sustainable harnessing of her forest resources. Adoption of aggressive reforestation strategy is also recommended to solve the problem of reduced forest cover.

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