Striking a Balance: Dilemma of Economic Survival and Sustainable Forest Exploitation in Cross River State

Angioha, Catherine Ubembe

And

Ambe, Benjamin Ayua
Email: ayuambe3@gmail.com[2]

Abstract

The study was designed to examine the economic survival and sustainable forest exploitation in Cross River State. To achieve the purpose of the study, three research questions were posed and three null hypotheses formulated and tested at 0.05 level of significance. Review of literature was carried out based on the sub-variables of the study. The study adopted the correlation research design. The population of the study was 17,588. The sample of this study was eight hundred and seventy-nine (879) respondents (5% of population) drawn from the 10 villages from the 6 selected local government areas in the study area (Cross River State). The instrument for data collection was a 25-item structured questionnaire developed by the researcher. The instrument was titled Economic Survival and Sustainable Forest Exploitation Questionnaire (ESSFEQ). Face and content validity of the instrument was done by three experts in tests and measurement. Cronbach alpha coefficient was used to test the reliability of the instrument. Data collected was analyzed using Pearson Product Moment Correlation analysis. The findings of the study revealed that sustainable farming method through agroforestry is significantly related to sustainable forest exploitation in Cross River State, while organic farming and wood logging were not significantly related to sustainable forest exploitation in Cross River State. It is concluded that agroforestry method of farming should be encouraged. It was recommended that, farmers should be fully involved in agroforestry farming practice, which will go a long way in helping our forests to regenerate and the concept of organic farming should be encouraged as it has little or no negative impact on the environment and the government should inert and enforce legislation against illegal wood logging in the state.

Keywords*:* Dilemma, sustainability, forest, exploitation

Introduction

Emerging economies, have high environmental impact rate, because they are in transition with dependence on obsolete production facilities. Moreover, foreign direct investment, may be exploiting the natural resources of the country by focusing on cost minimization only, (Abbes, Mostéfa, Seghir & Zakarya, 2015). Conversely, the basic economic problem of scarcity forces every nation to look for ways to boost its economic growth. Economic growth, backed by industrialization leads to employment, higher incomes, better standards of living and more satisfying wants. Despite its importance, economic growth deteriorates the environment and thus adds to global warming

which is the basic dilemma that forms the onus of this research, striking a balance between the forest recourses and economic gains. As many developing countries are experiencing rapid economic growth there will be large carbon emissions which will eventually lead to more pollution, temperature rises, and adverse climate changes (Ahmed & Long, 2012). Furthermore, economic growth induces higher demands of energy which in turn is the leading reason for environmental degradation (Saidi & Hammami, 2016).

However, neither economic growth nor environment can be compromised. Therefore, the question before economists and policymakers, especially in developing and emerging economies is how to achieve economic growth without environmental degradation. We believe that the answer lies in planting more trees and saving the existing, thus increasing the forest cover of the earth. Forests are considered the most pivotal source to control the ecosystem and are weighed natural filters for the absorption of carbon dioxide in the atmosphere (Negar & Jean, 2014). According to Franklin D. Roosevelt "A nation that destroys its soil, destroys itself. Forests are the lungs of our land, purifying the air and giving fresh strength to our people". However, trees are disappearing at an alarming rate. According to the World Bank, 1.3 million square kilometers of the forest has been lost. The global increase in environmental crisis has brought economic activity under scrutiny. However, economists continue to believe that economic growth is inevitable for poverty elimination and achieving higher standards of living. Therefore, there is a need to look for ways in which high economic growth can be attained while protecting the environment.

Agroforestry is the intentional combination of agriculture and forestry to create productive and sustainable land use practices. These practices take advantage of the interactive benefits from growing trees and shrubs together with crops and/or livestock. Agroforestry as land use based on planted trees, provides productive and protective (biological diversity, healthy ecosystems, protection of soil and water resources, terrestrial carbon storage) forest functions that societies care about in the debate on sustainable forest management. Yet, the trees planted in agroforestry systems are excluded in formal definitions and statistics of 'forestry plantations' and overlooked in the legal and institutional framework for sustainable forest management. A paradigm shift is needed in the forestry sector and public debate to redress this oversight (Van Noordwijk, Williams & Verbist, 2013).

Organic farming is widely considered to be a far more sustainable alternative when it comes to food production. The lack of pesticides and wider variety of plants enhances biodiversity and results in better soil quality and reduced pollution from fertilizer or pesticide run-off. Organic farming is an agricultural approach that advocates healthy products free from components that may harm humans and nature. They include but are not limited to industrial pesticides, insecticides, fertilizers, clones, GMOs, chemical medications, hormones, growth-boosters, etc. (Wood, Manfred, Christopher & Sven, 2006).

Logging removes large trees that normally fall into streams and provide shelter and thermal cover, raises water temperatures and pH, and degrades the chemical and ecological conditions and food webs that fish need to survive. Logging removes large trees that normally fall into streams and provide shelter and thermal cover, raises water temperatures and pH, and degrades the chemical and ecological conditions and food webs that fish need to survive. The adverse effects of industrial

timber harvesting on the forest ecosystem have been acknowledged to include loss of biodiversity, exposure of soil to erosion and harsh weather, etc. (Obot, 2002).

It is a sustainable agriculture that meets today's needs (healthy food, quality water, employment and quality of life) without jeopardizing natural resources for future generations. And that helps feed the world's population. Thus, organic farming is one of the most known sustainable modes of agricultural production in the consumer. All organic farming systems respect the basic principles of sustainable agriculture (Wood, Manfred, Christopher, Sven, 2006). Organic farming therefore aims to be an agriculture that respects the land, the environment, products and animals in order to offer consumers a quality, healthy, unprocessed or modified production. Over the past decade, global consumption of organic products has more than tripled and this trend is steadily increasing (Edwards-Jones & Howells, 2011). Access to this market is a challenge for developing countries, but also an opportunity to export their agricultural products. Moreover, the production of organic foods seems to constitute a sustainable development path for the agriculture of these countries, since this agriculture is associated with the preservation of resources, financial stability and positive social impacts (Giovannucci, 2005). Organic farming is a means of sustaining the environmental and social economic benefits of agriculture, and this agricultural model presents a promising path for sustainable development.

Sustainability in this sense does not imply 'keeping everything as it has always been'. In fact sustainability requires a constant search for new ways to meet the overall goals, while addressing current challenges. There have been several large efforts throughout the world to identify criteria and indicators by which to gauge the progress of sustainable forest management. The Montreal Process on Criteria and Indicators for Sustainable Forest Management (SFM) (2015) identified seven criteria, of which the first six are essentially a statement of the goods and services that society derives from its forests: 1) Biological diversity 2) Wood and non-timber products 3) Healthy ecosystems 4) Soil and water resources 5) Maintaining carbon cycles 6) Multiple socioeconomic benefits 7) Legal and institutional framework Agroforestry practices and agroforests are an important category of planted forests that have the potential to provide a wide array of forest-related benefits to society, generally meeting criteria 1 – 5 of this list. There may be quantitative differences in the degree these criteria are met in 'agroforestry' compared to 'plantations', depending on tree density, species diversity of planted trees and spatial arrangement in the landscape.

This diversity can, at time, provide ecological resilience and contribute to the maintenance of beneficial ecological functions. Similar to plantation forests, agroforests are "working forests" and they can help relieve some of the pressure to harvest native forests (although their presence as such is not a sufficient condition for protection of old growth forests (Angelsen & Kaimowitz, 2001). Linked systems of upland and riparian tree-based buffer systems, designed in regards to other landscape practices and features, can optimize soil and water conservation in the watershed (Van Noordwijk, Williams & Verbist, 2013), along with other economic and social services. Much of the opportunity to store carbon through afforestation will occur on agricultural lands due to the vast land area devoted to agriculture throughout the world (Smith & Scherr, 2002).

Thus, this study will have policy implications for all countries that are struggling to achieve economic growth with no or minimum environmental damage this study contributes by providing a solution to growth – environment trade-off. We put forward a simple solution to make it possible to grow economically without degrading the environment therefore this study on striking a balance: dilemma of economic survival and sustainable forest exploitation in Cross River State**.**

Statement of the problem

This rapid degradation of forest resources globally, regionally, and locally has continued to be a subject of concern and uncertainty among scholars and development experts. At the national and state level the government had adopted policies intended to check the misuse of biodiversity, some of these measures included employing the services of extension agents to instill in the community members the practice of sustainable agricultural practices that may be considered environmentally friendly. In some areas the strategy of creating protected area has been adopted through the establishment of National Parks, forest reserves, hunting and fishing zones. These protected areas are policed by government trained armed security guards who are mandated to use force and intimidation to stop community members from exploiting their natural resources.

In Cross River State the government in a bid to address the rapid rate of deforestation in the state placed a moratorium on logging since 2008. Available data shows that from 2000-2007 before the moratorium Cross River State had a net forest loss of 39,907 hectares. Disappointingly, from 2007 – 2014, within the period of the ban, the State recorded a net forest loss of 167,382 hectares, annual rate of 23,911hectares within this period. Till date Cross River records an annual forest loss of 4%, postulated that by 2050 the entire forest of Cross River state will be gone. This is a clear demonstration that the various measures demonstrated nationally and locally, rather than solving the problem of biodiversity conservation is rather aggravating it. It is on the strength of this gap that the researcher decided to work on the topic termed striking a balance: dilemma of economic survival and sustainable forest exploitation in Cross River State.

Objectives of the study

The objective of this study is to strike a balance between the dilemma of economic survival and sustainable forest exploitation in Cross River State.

Specifically study this research seek to ascertain:

1. The relationship between agroforestry and sustainable forest exploitation in Cross River State.
2. The relationship between organic farming and sustainable forest exploitation in Cross River State
3. The relationship between logging and sustainable forest exploitation in Cross River State.

Hypotheses

1. There is no significant relationship between agroforestry and sustainable forest exploitation Cross River State.
2. There is no significant relationship between organic farming and sustainable forest exploitation Cross River State.

3. There is no significant relationship between wood logging and sustainable forest exploitation Cross River State.

Methodology

A correlation research design was used in the study. This design was chosen because it gives room for a sample of the population to be used as a representative to the entire study population. The population of the study was 17,588 consisting of 8798 males and 8790 females (2006 population census) among residence of in 10 selected communities in Cross River State. The sample of this study was eight hundred and seventy-nine (879) respondents (5% of population). Multistage sampling procedure was adopted for the study. First the purposive sampling technique was used to select various local government areas within Cross River state with tropical high forest, this is because there is concentration of forest in some areas than others in study area. Six (6) local government areas were selected. Simple random sampling technique was used to select 10 villages from the 6 local government areas. The researcher then used accidental sampling technique to select the respondents. The instrument titled, "Economic Survival and Sustainable Forest Exploitation Questionnaire (ESSFEQ)" was used for data collection. The data collected during the study were analyzed with Pearson Product Moment Correlation Coefficient (PPMCC) using package IBM SPSS Version 22.

Results

Hypothesis 1

There is no significant relationship between agroforestry and sustainable forest exploitation Cross River State.

Table 1: Pearson Product Moment Correlation Coefficient (PPMCC) of relationship between relationship between agroforestry and sustainable forest exploitation Cross River State

Variables	$\bar{x}$	SD	r-cal	Df	p-level
Agroforestry	12.335	3.2442	.132*	877	.002
Sustainable forest exploitation	16.54	2.0023			

*Significant at .05 level; p<.05.

The data analysis as indicated on table 1 revealed that agroforestry had a mean score of 12.335 with a standard deviation of 3.2442 while sustainable forest exploitation had a mean score 16.54 with standard deviation of 2.0023. The outcome further showed that, the r-calculated value of 0.132 is greater that r-critical value of 0.089 tested at .05 level of significance and 877 degrees of freedom. Also, the p<.002 is less than p<.05. In light of this, the null hypothesis which stated that there is no significant relationship between agroforestry and sustainable forest exploitation in Cross River State was rejected, indicating that there is a significant relationship between agroforestry and sustainable forest exploitation in Cross River State. This implies that for a balance to be maintained between economic survival and sustainable forest exploitation there is need for agroforestry.

Hypothesis two

There is no significant relationship between organic farming and sustainable forest exploitation Cross River State.

Table 2: Pearson Product Moment Correlation Coefficient (PPMCC) of relationship between relationship between organic farming and sustainable forest exploitation Cross River State

Variables	$\overline{x}$	SD	r-cal	Df	p-level
Organic farming (X)	9.032	3.091	.032*	877	.062
sustainable forest exploitation (y)	16.544	2.0023			

*Significant at .05 level; p<.05.

The finding revealed that Organic farming (X) had a mean score of 9.032 with a standard deviation of 3.091 while sustainable forest exploitation (y) had a mean score 16.544 with standard deviation of 2.0023. The outcome further showed that the r-calculated value of 0.032 is smaller than r-critical value of 0.089 tested at .05 level of significance and 877 degrees of freedom. Also, the p<.062is greater than p<.05. In light of this, the null hypothesis which stated that there is no significant relationship between organic farming and sustainable forest exploitation in Cross River State was accepted, indicating that there is indeed no significant relationship between organic farming and sustainable forest exploitation in Cross River State, reason being that many people are yet to be aware of the benefit' of organic farming in relation to forest sustainability.

Hypothesis 3

There is no significant relationship between wood logging and sustainable forest exploitation Cross River State.

Table 3: Pearson Product Moment Correlation Coefficient (PPMCC) of relationship between relationship between wood logging and sustainable forest exploitation Cross River State

Variables	$\overline{x}$	SD	r-cal	Df	p-level
Wood logging (X)	10.001	3.621	.048*	877	.070
Sustainable forest exploitation (y)	16.544	2.0023			

*Significant at .05 level; p<.05.

The finding revealed that logging (X) had a mean score of 10.001 with a standard deviation of 3.621 while sustainable forest exploitation (y) had a mean score 16.544 with standard deviation of 2.0023. The outcome further showed that the r-calculated value of 0.048 is smaller than r-critical value of 0.089 tested at .05 level of significance and 877 degrees of freedom. Also, the p<.070 is greater than p<.05. In light of this, the null hypothesis which stated that there is no significant relationship

between logging and sustainable forest exploitation in Cross River State was accepted, indicating that there is indeed no significant relationship between wood logging and sustainable forest exploitation in Cross River State, reason being that excessive and uncontrolled logging activities will rather degrade the environment instead of sustaining it and therefore should be checked.

Discussion of findings

Data on Table 1 ascertained the relationship between agroforestry and sustainable forest exploitation Cross River State. The result showed that **t**here is a significant relationship between agroforestry and sustainable forest exploitation Cross River State. This result is in line with the finding of Van Noordwijk, Williams and Verbist (2013), who stated that agroforestry is the intentional combination of agriculture and forestry to create productive and sustainable land use practices. These practices take advantage of the interactive benefits from growing trees and shrubs together with crops and/or livestock. Agroforestry as land use based on planted trees, provides productive and protective (biological diversity, healthy ecosystems, protection of soil and water resources, terrestrial carbon storage) forest functions that societies care about in the debate on sustainable forest management. Yet, the trees planted in agroforestry systems are excluded in formal definitions and statistics of 'forestry plantations' and overlooked in the legal and institutional framework for sustainable forest management. A paradigm shift is needed in the forestry sector and public debate to redress this oversight.

Data on Table 2indicated that there is actually no significant relationship between organic farming and sustainable forest exploitation Cross River State. This result contradicts the finding of Wood, Manfred, Christopher and Sven (2006) that stated that organic farming is widely considered to be a far more sustainable alternative when it comes to food production. The lack of pesticides and wider variety of plants enhances biodiversity and results in better soil quality and reduced pollution from fertilizer or pesticide run-off. Organic farming is an agricultural approach that advocates healthy products free from components that may harm humans and nature. It therefore means that the awareness of organic farming should be created through environmental education and agricultural extension programmes to intimate the local farmers on the benefits of organic farming to self and the environment.

Data on Table 3 indicated that there is indeed no significant relationship between logging and sustainable forest exploitation Cross River State. This result of the analysis is in line with the work of Obot (2002) who stated that logging removes large trees that normally fall into streams and provide shelter and thermal cover, raises water temperatures and pH, and degrades the chemical and ecological conditions and food webs that fish need to survive. Logging removes large trees that normally fall into streams and provide shelter and thermal cover, raises water temperatures and pH, and degrades the chemical and ecological conditions and food webs that fish need to survive. The adverse effects of industrial timber harvesting on the forest ecosystem have been acknowledged to include loss of biodiversity, exposure of soil to erosion and harsh weather, etc.

Conclusion

The smallholder agroforestry option may have been neglected so far, and remains absent from most statistics and global conventions, but in placing that on the 'mental map' we argue that balanced attention is needed, not special favours. In various parts of the world, current relationships between agroforestry and plantation forestry are perceived to be complementary, neutral or competitive. It may be difficult to judge at this stage how far we are removed from a 'level playing field', as the allocation of land to either large-scale plantations or smallholder agroforestry is essentially a political decision, with substantial economic implications. We suggest that an open-minded evaluation of the ability of (inter)national policy frameworks to provide productive and protective forest functions to society at large, through both plantation forestry and agroforestry and legislation of logging activities in the context of 'sustainable forest management'.

Recommendations

Based on the findings of the study, the following recommendations were offered by the researcher

1. Farmers should be fully involved in agroforestry farming practice which will go a long way in helping our forest to regenerate
2. The practice of organic farming should be encouraged as it has little or no negative impact on the environment
3. The government should inert and enforce legislation against illegal wood logging in the state.
4. Government on one hand should equally create alternative means of livelihood to reduce the number of people using the forest resources.
5. Communities' leaders where the forests are located should serve as agents and also curtailed forest exploitation as much as they can.

References

Abbes, S. M., Mostéfa, B., Seghir, G., & Zakarya, G. Y. (2015). Causal interactions between FDI, and economic growth: evidence from dynamic panel co-integration. *Procedia Economics and Finance*, *23*, 276-290.

Ahmed, K., & Long, W. (2012). Environmental Kuznets curve and Pakistan: An empirical analysis. *Procedia Economics and Finance*, *1*, 4-5.

Angelsen, A. & Kaimowitz, D. (2001). *Agricultural technologies and tropical deforestation*. CABI Publishing.

Edwards, J. & Howells. J. (2001). The origin and hazard of inputs to crop protection in organic farming systems: are they sustainable? *Agricultural Systems, 67*, 31-47.

Giovannucci, D. (2005). *Evaluation of organic Agriculture and poverty reduction in Asia*. IFAD.

Michon, G. & J. M. Bompard, (1987). Agroforesteries indonésiennes: Contributions paysannes à la conservation des forêts naturelles et de leurs ressources. *Rev. Ecol. (Terre Vie), 42*, 3-37.

Negar, H. & Jean, P. B. (2014). Geomorphological analysis of the drainage system on the growing Makran accretionary wedge, *Geomorphology*, *209*, 111–132.

Saidi, K., & Hammami, S. (2016). Economic growth, energy consumption and carbon dioxide emissions: Recent evidence from panel data analysis for 58 countries. *Quality & Quantity*, 50 (1), 361-383.

Smith, J. & Scherr, S. (2002). Forest carbon and local livelihoods. Policy Report. Center for International Forestry Research (CIFOR) and Forest Trends. Bogor, Indonesia.

The Montreal Process on Criteria and Indicators for Sustainable Forest Management (SFM) (2015). Montreal process.org.

Van Noordwijk, M., Williams, S. E. & Verbist, B. (2013). Towards integrated natural resource management in forest margins of the humid tropics: local action and global concerns. ASB-Lecture Notes 1 – 12. International Centre for Research in Agroforestry (ICRAF), Bogor, Indonesia. *http://www.icraf.cg iar.org/sea/Training/Materials/ASB-TM/ASB-ICRAFSEA-LN.htm*

Wood, R., Manfred, L., Christopher, D. & Sven, L. (2006). A comparative study of some environmental impacts of conventional and organic farming in Australia. *Agricultural Systems*, *89*, 324-348.