

**Linkages between Crude-oil Exploration and
Agricultural Development in Nigeria:
Implications for relevant qualitative data
collection and analysis to improve rural
economy.**

By

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Introduction

- The petroleum industry in Nigeria has brought exceptional changes to the Nigerian economy.
- The oil industry has risen to the unassailable loftiness of the Nigerian economy.
- Contributing lion share to gross domestic product.
- Accounting for the bulk of federal government revenue and foreign exchange earnings since early 1970.
- Nigeria's considerable bequest in fossil fuel has not translated into a desirable economic performance.
- The nation's mono-cultural has assumed a wobbly dimension in the past decades predisposed to the vagaries of the international oil markets.

Introduction contd.

- Before the advent of Crude-Oil exploration and exploitation in the crude-oil producing zones of Nigeria the people in the area had a thriving economy.
- This period agricultural growth is related to flourishing rural economy.
- People travelled far and near to transact businesses in these areas particularly on fish marketing.
- The discovery of petroleum in commercial quantities in 1956 and the exploitation in 1958, affected the ecosystem and the once thriving economy of the host communities.
- The consequence of this intervention in the local economy had resulted in decreasing economic activities leading to decreasing outputs of fish catch and crop, declining rural economy

Introduction contd.

- Insight into poverty incidences in Nigeria revealed poverty is on the increase in crude-oil producing States.
- Past studies attributed this poverty increase to oil pollution in the host communities that deprived the communities' profitable livelihood activities, particularly farming and fishing enterprises.
- These are also, established evidences of pollution from mineral resources explorations destroying sources of livelihood of the host communities

Introduction contd.

- There exists a relationship between decreases/ loss in agricultural livelihood, income and poverty status of the host communities .
- This assertion requires empirical quantification.
- The linkage among these variables is conceptualized within the oil exploration – oil-pollution – income generation – household poverty and livelihood diversification nexus of the rural economy.
- As the intervention of crude oil-pollution resulted to declining outputs and revenue, farming/fishing households diversified into non-farm and non-fish income sources to improve household income.
- Does this diversification to non-farm have a significant effect on household income, improving rural economy and agricultural growth?

Research Questions

- What is the relationship between oil-pollution and farming/fishing activities of the farming/fishing households in the area of study?
- What is its effect on income generation and household income?
- Is oil-pollution as form of environmental degradation the basis for livelihood diversifications ?
- What is the index of livelihood diversification strategy of the people?
- What is the significance of diversifications on household income?
- Is diversification related to improve household income and rural economy in the area of study?
- How can empirical findings in the areas aid policy response to ameliorate these problems in the areas, most importantly the development of agricultural and fishing activities?
- Answers to these questions can be obtained through an understanding of the dynamics of rural economy and its effects on household income.

Objectives of the study

- To measure the income generated from farming enterprises in crude in the area of study.
- To quantify the level of livelihood diversification employed by the household heads.
- To estimate the effects of livelihood diversification on households' income

Linkages between Agricultural Livelihood, Agricultural Growth and Rural Economy

- In most developing countries agricultural livelihood has played the dominant livelihood in rural economy.
- Literature has identified agricultural growth to flourishing rural economy.
- Linkages between agricultural growth and rural economy is that livelihood security in agriculture must be secured.
- This perspective provides a framework to assess critically sustainable livelihood by examining the adequate stocks of flows of food and income to meet basic needs of all the household members.
- Brundtland (1984) deduced that people's livelihood security is based more or less exclusively on the use of natural resources.
- Therefore, management of natural resources for the present use, while not undermining the future use of such resources becomes very important and critical.

Area of Study

- The study was carried out in Ondo State, located in Southern Western Nigeria.
- 2006 National population estimated the state population as 3,441,024. The state lies between longitudes 4.00 E and 6.00E and latitudes 5.45 N and 8.15 N.
- The occupational activities of the people include fishing, canoe making, lumbering net making, mat making, Launch building, farming and trading.
- The economy of the host communities of crude-oil producing areas of Ondo State, Nigeria experienced a thriving economy with about 90% of the population engaged productively in economic activities of agriculture and fishing.
- The setting up of Crude-oil exploitation have created a shock in the economic activities of people and destabilized the ecosystem.
- The economic activities of the people are now vulnerable to these shocks causing a significant decrease in agricultural/fishing outputs and increasing poverty.

Data collection and Sampling

Procedure

- Primary and secondary data were collected for the study.
- Primary data were obtained through structured questionnaires and were administered on farming households in both polluted and non-polluted areas.
- Secondary data were from Central Bank of Nigeria (CBN), Bureau of Statistics (BOS), Oil companies', Department of fisheries of Ondo state and local governments respectively.
- Focus Group Discussions FGDs on the perception of pollution and its effects on people's livelihood and environment were also conducted.
- Multi-stage random sampling techniques employed..
- First stage: purposive selection of the petroleum exploitation areas and also the affected areas of the State.
- Second stage: Stratification of the areas into two groups polluted and non-polluted.
- Third stage : Selection of the farming households from a list of farming households
- Fourth stage: Random selection of 300 farming households from polluted and 290 in non-polluted areas.
- 590-sample sizes were retained for subsequent analysis.
- The study covered farming households that are into cropping activity, fishing activity and non-farm activities.

Analytical Tools and Models

1. Budgetary Analysis: to measure the profitability accrues from livelihood in fishing and cropping activities in the area of study.
2. Index of Oil Exploration was computed to measure linkages between crude-oil exploration and host community livelihood in agriculture
3. Composite Entropy Index (CEI) was used to compare diversification across situations
4. 2-stage least square method to measure the effect of Livelihood Diversification index and other variables on Household income.
5. FGT method to examine poverty status of respondents

Results and Discussions

- Characteristics of the respondents' shows that 64.58% of the farmers are males with about 70% of them being married.
- Age distribution shows that those in the 41-50 years category are 35.54% while those above 50 years are 51.02% with the mean age of 48.01.
- Household size distribution revealed modal class of 7-9 household numbers with the mean of 9.6, 45.83% of the land used for agricultural activities are inherited land, this category had access to extension services and 19.15% had access to credit facilities.
- 88.98% are farmers with other job(s) with 18.47% of the respondents had no formal education and 34.24% had primary education .

Gross Margin (GM) Analysis

- Major occupations in this study were fisheries activity in the polluted areas and Cropping activity in non-polluted areas.
- The average GM, for cropping activity in non-polluted is higher than the average GM cropping activity in polluted areas by 64.24% .
- Average GM in fishing activity in polluted areas is higher than average GM in fishing activity in non-polluted areas by 44.66%.
- Majority of the farmers who were into fishing in the polluted areas were more than farmers in the non-polluted areas, with about 30% difference.
- Estimated farmers who made losses in polluted areas were 14.1% higher than farmers who made losses in non-polluted areas.
- This declining revenue in fishing activity can therefore be attributed to direct causal relation of environmental degradation from crude-oil spills incursion into freshwater that led to depletion in captured fisheries and low income generation.

Results and Discussions contd

- Computation of Index of Oil Exploitation (IOE) analysis results indicated a negative relationship (-2.202) in polluted areas.
- For every ₦1 derived from the sales of output i , ₦ 2.202 was used for the imputed cost of producing i .
- Thus justified past studies that crop farming and fishing livelihood no longer a profitable business venture.
- In non-polluted areas, for every ₦1 invested in producing output i , ₦ 1.79 were derived from the sales of output i .
- 11.33% households did not diversify and rely only on income from farming enterprise, while 88.67% households diversified with CE-Index for the whole sample come to 0.421 (CV 42).

Results and Discussions contd

- From the respondents diversification analysis revealed that 17.67% of the household heads met basic needs of the family through income from diversification activities.
- 39.00% in this category derived above 50% income from diversification activities
- 32.00% thus secured below 50% income from diversification activities.
- 85.2% of the household heads that relied only on farm income were unable to meet household basic needs compared with only 32.3% of those that diversified into non-farm activities.

Results and Discussions contd

- The results from the LDI equation indicate that diversification was affected negatively and significantly by age, and access to credit .
- The higher the age and access to credit used for production variables the lower the level of diversification.
- Others are farming/fishing income, education, number of non-farm rural activities, access to extension services and access to market, all have significant positive effects on livelihood diversification.
- Farming/fishing income was the most significant factor influencing livelihood diversification.
- Poor households struggle for additional income to meet household needs.
- Educations, NFRA, access to extension services and access to market facilities have positive significant effect on livelihood diversification, Increases in these variables will lead to increase livelihood diversification.

Results and Discussions contd

- Results of the estimated linear equation for the second stage of the two-stage least squares method reveals that diversification has a statistical and positive significant relationship on total income at 5 percent level.
- Access to credit and cost of farming inputs have significant and negative effect on income.
- This suggests that most of the times, the amount received was small and often not enough and timely to meet seasonal agricultural production, thereby using the credit facilities for consumption and social obligations.
- Similarly, money spent on farming inputs most of the times could not be met by the outputs/yield from farming and activities.
- Significant and positive variables are education, agricultural land , opportunity cost of own labour, number of non-farm rural activities and access to market facilities

Results and Discussions contd

- NFRA income was elastic for both income and LDI models
- The most important factors that significantly increase total income in order of importance included are: NFRA income, expenses on chemicals, education and LDI.
- For LDI model, in order of importance are NFRA income, cost of farming/fishing inputs and education.
- 10 percent increase in NFRA income would result in about 22 percent increase in household income.
- Increase of the same magnitude on expenses on chemical, education and LDI would lead to 5 percent, 3 percent and 2 percent increase in total income model respectively.
- For LDI model, 10 percent increase in NFRA income would result in 24 percent increase in the level of diversification with 8 percent and 3 percent increases in LDI model respectively.
- The over-all poverty profile revealed that 60 percent of the households fell below the poverty line, poverty gap of 26.8 percent and 11 percent for severity of poverty situation.

Livelihood Diversification Strategies and Poverty Status

- 88.67% households were into different livelihood diversification strategies to boost household income.
- 41.00% households were into 2 different Livelihood Diversifications mix.
- Household that did not diversify were 11.33%, and out of these figures 85.29% households were identified poor.
- Majority of the households that had multiple set of livelihood portfolios of non-farm rural activities (about 94.44% household heads in this category diversified into 3-4 Livelihood activities) were non-poor.
- This finding suggests that households in the study area are shifting from farming activities to non-farm/non-fish income generating activities. Households that diversified more to non-farm/non-fish source fare better than those who do not.

Conclusions

- Agriculture is the main source of livelihood of the people and form of thriving rural economy before Crude-oil exploitation.
- The inception of Crude-oil exploitation has brought about competition and conflicts on natural resource used, thus affecting the host communities' natural resource and livelihood in agriculture.
- Livelihood in agriculture is no longer a major source of income generation , agricultural livelihood thus relegated.
- Farmers that diversify to non-farm livelihood activities fare better than those who diversify less
- Livelihood diversification to non-farm has a significant effect on Household Income.
- Household income is link with welfare improvement. Welfare improvement can be argued to be an impetus to improved rural economy. While improved rural economy is therefore not related to agricultural growth, unlike in the 1950s and 1960s when agricultural growth is linked with flourishing rural economy.
- Thus, there is dire need for comprehensive qualitative data collection to support critical research on the linkages between agricultural development and the rural economy.