

Agricultural Development Programme and Rural Poverty in Nigeria: The Bayelsa State Experience

Audu Nathan Pelesai Ph.D.

Department of Economics, Niger Delta University,

Wilberforce Island, Bayelsa State

Abstract

The paper set out to examine the problem/impact of Agricultural Development Programme (ADP) on rural poverty and development in Nigeria using Bayelsa State as a example. The study adopted the stratified sampling method and Chi-square statistical technique on a sample of 3000 rural dwellers in Bayelsa State to establish the factors that influences the probability of rural dweller or farmer/fishermen escaping poverty. The result shows that the various components of Agricultural Development Programme (ADP) for farmers and fishermen significantly influenced their income and thus increased their standard of living of rural dwellers. The findings also reveal that ADP for farmers and fishermen significantly influenced the output agricultural products and their prices, thereby moving rural farmers/fishermen away from the poverty trap. The study also indicates that ADP extension services significantly influence the quality and quantity of basic food crops and hence improves rural poverty of Bayelsan. We therefore recommend that there is need for improve funding of the programme as well as the effective coordination of human and non-human resources for the programme to achieve maximum result.

Keywords: Rural poverty, Farming communities, ADP, Stratified sampling, Bayelsa State, Nigeria, Chi-square test.

Introduction

The rural sector is identified with the agricultural sector. Therefore, the neglect of the agricultural sector due to the emergence of crude oil has left both the rural areas and the agricultural sector seriously disorganized. Ndiyo, (2008), posits that there is a wide gulf between the thinking of agricultural economist and policy makers as well as that of town planners who tend to see agricultural policy as not too vital while agricultural economists and policy makers have been of planner suggesting that an anti-economic occult is worshipped with almost inmate depravity by the planning profession. The market for capital notwithstanding, the neglect also feels grossly reluctant to allocate funds for the agricultural sector due probably to the fact that period of gestation exceeds short-run duration as labour uncertainty is high.

This has been attributed to low productivity resulting from crude techniques, few intermediate inputs, inadequate infrastructural facilities, the marketing storage and credit system (Cashin et al, 2001). These problems or inadequacies are further attributed to poor investment in agricultural development and to the wrong development priority earlier identified (World Bank, 2001).

It is in the light of the foregoing, that this paper seeks to determine the extent to which Agricultural Development Programmes (ADP) have impacted on the rural areas as well as the rural agricultural sector

or with respect to ADP's operation, productivity and the general welfare of rural farmers (Ononona, 2000). To critically evaluate this, the broad objective of this study is to determine the extent to which the various projects or components of ADP have helped in solving rural poverty, income of rural farmers as well as improved output and prices of agricultural products. The rest part of this paper is divided into theoretical framework and review of relevant literature, methodology, analyzes and discussion of findings and lastly conclusion and recommendation.

Theoretical framework and Literature review

The proponent of vicious circle theory of poverty held that a person is poor because he is poor and may remain poor unless the person's income level increases significantly enough to pull the person in question out of the poverty trap while the classical school of thought believed that such improvement can only be real and sustained, if and only if, the population growth is checked and the *limits of growth* are eliminated (Oyeranti, et al 2005). The early classical theorists in the attempt to illuminate on the concept of poverty based their analytical tool of the law of diminishing returns which was to be universal in content even though it was improved upon by Alfred Marshall and his contemporaries when the law on increasing returns in the industries was more clearly articulated. Therefore, understanding the nature of poverty perhaps received a boost following the Marxian theoretical formulations that was largely based on the principle of exploitation of labour. This postulation, presents the economy as ultimately polarized into a few rich capitalist and the masses made up of the poor miserable workers. The Marxians believed that technological progress would be saving labour but argued that it would result in the displacement of workers to join the army of unemployed whose presence depressed the wage level.

The dualistic model or theorists divided the national economy into the traditional sector and the modern sector. The former was a static low level equilibrium conditions advanced by vicious circle of poverty are said to hold, while the latter was dominated by foreign trade, technology, investment as well as foreign management and was characterized by the beneficial values of discipline, hard work and productive creativity. These theorists believed that the subsistence life style and cultural values that are anti-these to economic growth and modernization dominates. Local ineptitude and work therefore provide explanation of poverty. This intuitively implies that the poor person is the cause of her poverty. Hence, understanding the nature of poverty became upgraded with the modern theoretical approach that considers the income dimension as the core of most poverty related issue (IFAD, 2000). Therefore, poverty may arise from changes in average income or changes in the distributed income. Equitably distributed income increases the chance of the poor to have access basic services like food, housing, clothing, etc. As a result, it is now generally agreed that even though there is positive relationship between per capita income (PCY) and the measures of well-being, it is not the level of latter that determines capabilities but how it is distributed. The argument for sustainable growth is a precondition for poverty reduction because it increases the means of income and narrows income inequality (World Bank, 2001).

The evolution of agricultural development programme (ADP) in Nigeria

The evolution of ADP in Nigeria dates back to 1972 when the Federal Ministry of Agriculture and Natural Resources in a bid to stem the catastrophic food and poverty solution that followed the end of the country's civil war started a nation-wide agricultural project identification mission in collaboration with international bank for reconciliation and development (IBRD). After detailed feasibility study and appraisals, ADP's were set up in various states of the federation including Bayelsa State Agricultural Development Programme (BYSADP). ADP is funded by the State, Federal and World Bank loan. It is designed to provide an integrated approach to improving the productivity of farmers, raising their farm incomes and improving the quality of life in rural areas through the stimulation of increased production of the country's staple food crops such as cassava, yam, rice, banana, plantain, cowpea, soya beans, vegetables, etc. In order to assist farmers achieve these targets, certain packages were given to them. These packages include: improved resistant crop varieties, fertilizers (NPK), tractor hiring (harvester, tillers, etc), information on improved method of cultivation (planting time and planting distance), pest and pesticides packages (Fedelis, 2000). These packages were meant to assist the farmers to increase their production of the aforementioned crops as well as the incomes of rural dweller and farmers.

The constraints of effective curbing of rural poverty faced by ADP in Bayelsa State

There are numerous factors that retard the progress of BYSADP and other ADPs in other States of the federation. Some of the constraints that impede the smooth progress of ADP in Bayelsa State are:

- a. Cultural belief and attachment of the rural farmers,
- b. Inadequate funding and technological backwardness,
- c. The inefficiency of the part of those to who the projects have been entrusted to,
- d. Lack of serious implementation and monitoring of the development of projects,
- e. Lack of checks and balances as well as corruption,
- f. Lack of proper planning and execution of programme,
- g. Poor access roads to rural farmers (Nwigwe et al, 2012).

Despite these shortcomings, the effective implementation of ADP's programme cannot be divorced from the governments' negligence of the agricultural sector in the light of crude oil wealth.

The impact of rural poverty on the Nigerian economy

Okafor (2004), observed that about ten thousand poor people throughout the world die every year from starvation and malnutrition. Also, infant mortality rates are high while life expectancy is very low among the poor. According to him, these are attributable to poverty because poverty leads to distortion which gives birth to crime and other social vices. This does not mean that most of the poor are criminals

but people from poverty shrinking environments are more likely to commit crimes and to be punished. Alcoholism, mental illness, etc are common among the poor because they are causes as well as the effects of poverty because there is little medication to effectively curb the situation. This is so because poverty breeds poverty. In some cases the handicap of poverty is passed from one generation to another possibly as a result of the family being caught in a poverty trap (i.e. a situation in which a small increase in income will take the family over the threshold for entitlement to benefit, thereby creating a net loss).

The consequence is that members of the household may be discouraged from seeking employment thereby losing opportunities for social advancement that such employment might afford them. Among the economic units (i. e. government, firms and household), the household is the most vital as it is on the demand side. Therefore, when the household is poor and cannot purchase the commodities produced by the firm, this would lead or give rise to some macroeconomic effect such as deflation, unemployment, underemployment, etc and these in turn would lead to instability in the economy generally (Audu, 2012; Apata et al, 2010).

Methodology

Research area and sampling techniques

The research area is Bayelsa State, one of the thirty –six States in Nigeria with eight Local Government Areas (LGAs). The State shares boundary with Delta State on the east, Rivers State on the west and the Atlantic ocean on the south. The State is mainly rural. Even the State capital, Yenagoa can be best described as a sub–urban town. For despite the availability of some basic amenities in the town, it is yet to transform into a modern city. It has an approximated population of two million people. The topography is essentially that of a typical rain forest zone with creeks and rivers of significance including River Nun. The people are predominantly fishermen, petty traders, farmers and women. However, a few are civil servants. There is no industry in the State despite its oil production status.

The study covers all the eight Local Government Areas in Bayelsa State. In determining the sampling technique to use for this study we take into consideration the fact that the technical nature of the investigation requires the responses of the subject with good and related knowledge of the subject matter. To achieve this, stratified random sampling method is used for the study. The stratification is to ensure diversification of opinion. Communities in each Senatorial District were stratified according to size and a sample of 30% was randomly selected from each Senatorial District. It is hoped that the sample size will be statistically significant for inferential purposes. This method gives a more representative sample in this case than simple random sampling because in the latter, certain strata may by chance be over– or under– represented in the sample. Therefore, stratified random sampling technique guarantees representation of a defined group (e.g. communities) that are of particular interest in the sample size. A sample of 200 was drawn, 20 per stratum (Senatorial District).

Instrumentation and data collection procedure

To collect the primary data, a carefully structured questionnaire was designed and administered by trained and experienced research assistants. The researcher distributed the questionnaire to as many Paramount Rulers, Chiefs, community development committee (CDC) members, Youths, Elders, opinion leaders, women groups and cooperative societies as possible and collected the responses from the respondents through research assistants.

The measuring instrument used by the researcher for this investigation is a two-point Likert-type questionnaire. The questionnaire was divided into two sections. Section 'A', had to do with the respondents' personal information while Section 'B' was a fifteen (15) items two-point Likert-type questionnaire to measure the performance of ADP in alleviating rural poverty in Bayelsa State. The instrument was developed by firstly, making list of phrases and words that are possible indicators of each variables involved in the study. Each response was given a degree of score, which range between one and two as shown below.

Yes	Y	2
No	N	1

Method of data analysis

Data analysis will be undertaken using qualitative as well as quantitative techniques. It is expected that the major segment of the information to be collected during the survey will be qualitative and may not be easily quantified. Quantitative techniques will be used to measure ethnographic tenets of the sample. Descriptive statistics such as frequency, percentage, mean, standard deviation, proportion, etc will be employed in most of the analysis in summarizing trends, change and comparisons across certain features. The data collected would be analyzed with relevant statistical tools such as the chi-square method, analysis of variance are used to test for differences in the behaviour of different institutions toward policy changes. Factor analysis will be used to identify policy issues in information diffusion. Final presentations will take the form of descriptions, tabulations and illustrations. Essentially, computer facilities will be needed for processing and analyzing the data. Audu, (2011) recommend the use of simple percentage and chi-square in statistical analysis of descriptive study although this is not a rigid rule. The researcher also made use of tables and charts for presentation as appropriate. Simple comparisons were also used to answer some research questions. Essentially, chi-square (x^2) test was used to analyze the data relating to the hypotheses.

$$x^2 = \frac{\sum (O_f - E_f)^2}{E_f}$$

The basic formula for chi-square is stated thus:

where x^2 = Chi-square statistics, \sum = summation sign, O_f = Observed frequency, E_f = Expected frequency.

The degree of freedom for chi-square is computed as $DF = (R - 1)(C - 1)$ where DF = Degree of freedom

Decision Rule

The chi-square (χ^2) test represents the difference between the given frequencies and the expected frequencies obtained. If for instance the calculated value of chi-square (χ^2) is greater than the value of chi-square (χ^2) given in the table, there is an association between the variables being measured. Thus, confirming the alternative hypothesis. But if the calculated value of chi-square (χ^2) is less than the chi-square (χ^2) given in the table, there is no association between the variables in the hypothesis. Thus, rejecting the null hypothesis. The rejection of the null hypothesis means the acceptance of the alternative hypothesis. In this research therefore, 5% level of significance is employed.

Assumptions

The guiding assumptions are

1. That the ADP programme in the State is relevant to the needs of the people.
2. That there is adequate provision and even spread of ADP programmes in the State.
3. That the State financing of the ADP is adequate.
4. That there are enlightened farmers in the State.
5. The population from which the sample will be drawn is normally distributed.
6. The instrument for data collection will be valid and reliable.

ANALYSIS AND DISCUSSION OF FINDING

A summary of the data used for the analysis is presented in Annex 1. The bio-data of the respondents are X-rayed in the next section and followed immediately by the empirical analysis and discussion of findings.

Gender composition

The composition of the respondents by gender reflects sex distribution between male and female respondents. Table 1, is a representation of the gender composition of the respondents in section A. Respondents in the male category represent 1020 or 34% while respondents who are female constitute 1980 or 66% of the sample. Since it is not our intention to analyze the data of this study based on the three zones, the implication of the marginal difference between the three Senatorial Zones in terms of their responses to any question of importance is high lightened throughout the analysis.

Table 1: Distribution of respondents by sex

Sex	Bayelsa Central Senatorial Zone	Bayelsa East Senatorial Zone	Bayelsa West Senatorial Zone	Total	%
Male	430	350	240	1020	34
Female	770	650	560	1980	66
Total	1200	1000	800	3000	100

Source: Field Work

There was no intention to compare responses to each question of importance that relates to this study with the gender of our respondents. Even though Table 1 shows a marginal difference between the two sexes, it has no implication on the result of the study. More so, no attempt was made to draw equal number of respondents from both sexes.

Age composition

Table 2: Age composition of respondents

Age	Bayelsa Central Senatorial Zone	Bayelsa East Senatorial Zone	Bayelsa West Senatorial Zone	Total	%
Below 20	120	80	60	260	8.67
21 – 30	180	120	110	410	13.67
31 – 40	200	190	150	540	18.00
41 – 50	380	330	260	970	32.33
Above 51	320	280	220	820	27.33
Total	1200	1000	800	3000	100

Source: Field Work

The pattern of responses in Table 2 suggests that 260 (8.67%) respondents were below 20 years of age. Meanwhile 410 respondents representing 13.67% are within the age bracket of 21 – 30 years. The results also shows that 540 respondents falls with 31 – 40 age brackets representing 18% of the sample. 970 respondents representing 32.33% were between 41 – 50 years while the remaining 820 respondents or 27.33% are within the above 50 years. We assumed that most of the experienced farmers and fishers would be found among the two last age brackets (41 – 50 and above 50 years). It is important to note that we did not intend to relate one's age with any question of importance in the research instrument. Thus no attempt was made to draw equal number of respondents from each category age was divided into.

Marital status

Table 3: Marital composition of respondents

Age	Bayelsa Central Senatorial Zone	Bayelsa East Senatorial Zone	Bayelsa West Senatorial Zone	Total	%
Single	135	50	45	230	7.67
Married	595	500	400	1495	49.83
Widows	320	250	200	770	25.67
Others (Orphan, etc)	150	200	155	505	16.83
Total	1200	1000	800	3000	100

Source: Field Work

The marital status of the respondents was also summarized and presented in Table 3. From the Table above, 230 (7.67%) of the sample were single, 1495 (49.83%) are married. 770 (25.67%) of the respondents were widows while the 505 (16.83%) of the respondents were neither single nor married nor widows but rather classified as either orphans, etc. this distribution fairly spread across the three Senatorial zones. Also, the Table shows that the Central Senatorial zone seems to have the highest number of married and unmarried farmers and fishermen.

Qualification of respondents

Table 4: Composition of respondents by qualification

Qualification	Bayelsa Central Senatorial Zone	Bayelsa East Senatorial Zone	Bayelsa West Senatorial Zone	Total	%
NECO/WAS/SSCE	243	160	116	519	17
NCE/DIP/OND	300	215	190	705	24
B.Sc./B.Ed./HND	547	531	419	1497	50
M.Sc./M.A./MBA/M.ED	90	86	70	246	8
Ph.D.	20	8	5	33	1
Total	1200	1000	800	3000	100

Source: Field Work

From Table 4, those with West African School Certificate (WASC) is composed of 519 respondents rep

representing 17%, 705 or 24% of the sample were holders of National Certificate in Education (NCE), 1497 (50%) were holders of first degree discipline in both agriculture and non-agricultural related disciplines. Also, 246 or 8% of the sample hold Master's degree in agriculture or agricultural related discipline. Only 33 (1% of the sample are holders of Ph.D degree.

Table 5: Chi-square statistical analysis of Bayelsa State ADP vis-a-vis their various components have not improved the income of the rural fishermen and farmers as well as their standard of living.

	Bayelsa Central Senatorial Zone	Bayelsa East Senatorial Zone	Bayelsa West Senatorial Zone	Total	Cal	Critical	df
YES	750 (760)	650 (633)	500 (507)	1900	0.292	0.003	2
NO	450 (440)	350 (367)	300 (293)	1100			
Total	1200	1000	800	3000			

Significance level 0.95

The dependent variable in this hypothesis is Bayelsa State Agricultural Development Programme (BSAD P) while the explanatory variable is income. The statistical analysis used is testing the hypothesis was the chi-square test. The results of the analysis as presented in Table 5 reveals that the value of 0.292 is greater than the critical value – 0.003 at 0.95 level of significant with 2 degree of freedom. This means that the –value is statistically significant. Thus, the null hypothesis was rejected while the alternative was retained. This implies that Agricultural Development Programme for farmers and fishermen significantly influenced their income and thus enhanced the standard of living of the people.

Table 6: Chi-square statistical analysis of the activities of Bayelsa State ADP has not impacted on the output and prices of agricultural products.

	Bayelsa Central Senatorial Zone	Bayelsa East Senatorial Zone	Bayelsa West Senatorial Zone	Total	Cal	Critical	df
YES	700 (716)	600 (597)	490 (477)	1790	0.289	0.003	2
NO	500 (484)	400 (403)	310 (323)	1210			
Total	1200	1000	800	3000			

Significance level 0.95

The dependent variable in this hypothesis is Bayelsa State Agricultural Development Programme (BSAD P) while the explanatory variable is output and prices of agricultural products. The statistical technique

employed in testing the hypothesis was the chi-square statistical analysis. The results of the analysis as shown in Table 6 suggested that the value of 0.289 is higher than the critical value – 0.003 at 0.95 level of significant with 2 degree of freedom. This reveals that the –value is statistically significant. Hence, the null hypothesis was rejected while the alternative was accepted. This means that Agricultural Development Programme for farmers and fishermen significantly influenced output and prices of agricultural items. Thereby reducing the rural poverty is of the people.

Table 7: Chi-square statistical analysis that Bayelsa State ADP through its extension services has not improved the quality and quantity of basic food crops.

	Bayelsa Central Senatorial Zone	Bayelsa East Senatorial Zone	Bayelsa West Senatorial Zone	Total	Cal	Critical	df
YES	600 (681)	700 (567)	402 (454)	1702	17.97	0.003	2
NO	600 (519)	300 (433)	398 (346)	1298			
Total	1200	1000	800	3000			

Significance level 0.95

The dependent variable in this hypothesis is ADP extension service while the explanatory variable is quality and quantity of basic food crops. The statistical technique adopted in testing the hypothesis was the chi-square statistical analysis. The results of the analysis as presented in Table 7 reveals that the value of 17.97 is greater than the critical value – 0.003 at 0.95 level of significant with 2 degree of freedom. This indicates that the –value is statistically significant. This shows that ADP extension services significantly influence the quantity and quality of basic food crops and hence improves rural poverty of Bayelsan.

Discussion of finding.

The paper attempts to investigate into the relationship between rural poverty and agricultural development programmes (ADP) using chi-square estimation method. Our empirical analysis of the study area with respect to the three hypotheses reveals that the Bayelsa State Agricultural Development Programme (BYSADP) has significantly impacted on agricultural activities in the State. It was observed that from the sampled communities, ADP has improved the income as well as economic status of rural dwellers through its various programmes or projects. Also, ADP has greatly enhanced the output and prices of agricultural products in rural areas. This implies that with the establishment of ADP offices at the headquarters of each Local Government Area in the State with extension officers have greatly increased the yield or outputs of agricultural products thereby decreasing the prices of the product, which in turn increasing their sales or revenue. Finally, paper opined that the BYSADP via its extension services have improved the quantity and quality of basic food crops, etc is attributable to improved seedlings and modern techniques of farming and fishing that are adopted in the State. Therefore, the policy implications from the findings are very clear.

- i. The activities of ADP should be well coordinated in order to achieve optimum objective of the programme,
- ii. ADP is a potent tool for alleviating rural poverty as well as solving the problem of rural development and urban migration. As such, government should improve on the financial and logistic support to the organization to enhance their effectiveness.
- iii. The extension officers of the programme should be given adequate training in order to enhance their effectiveness in training and retraining the rural farmers and fishermen on modern techniques.

Conclusion

We did observe that the crux of the matter between rural poverty and Agricultural Development Projects in Bayelsa State lies in the coherent nature of the dynamic relationship between the selected variables (ADP, income, output, prices, standard of living, etc.). For Bayelsa State to liberate itself from the poverty quagmires, the recommendations suggested should be pursued vigorously if meaningful standard of living is targeted.

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Annex 1: Distribution of respondents' opinion

Questions	Bayelsa Central Senatorial Zone		Bayelsa East Senatorial Zone		Bayelsa West Senatorial Zone	
	YES	NO	YES	NO	YES	NO
1	100	–	100	–	100	–
2	80	20	72	28	45	25
3	55	45	57	43	56	44
4	60	40	55	45	55	45
5	70	30	75	25	72	37
6	54	46	59	46	53	47
7	58	42	55	45	54	46
8	48	52	46	44	44	57
9	52	48	57	43	51	49
10	40	60	47	53	48	62
11	44	56	45	55	44	56
12	30	70	40	65	47	73
13	40	60	47	53	42	53
14	54	46	49	51	52	43
15	58	42	54	46	57	43
Total	843	657	858	642	820	680

Note: Some options were not marked while other respondents marked more than one option on an item.....

Source: Field Survey

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