



## ASSESSMENT OF THE IMPACT OF RURAL INFRASTRUCTURES (WATER SUPPLY AND FEEDER ROADS) BY EBONYI STATE AGRICULTURAL DEVELOPMENT PROGRAMME (EBADEP) ON FARMERS AGRICULTURAL PRACTICES AND SOCIO - ECONOMIC STATUS

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### ABSTRACT

This study determined impact of rural infrastructures (provision of water supply, and feeder roads) by Ebonyi State Agricultural Development programme (EBADEP) on farmers' agricultural practices and socio economic status. Two research questions guided the study. The study made use of survey design. The study was carried out in Ebonyi State - Nigeria. The Population for the study was 398 made up of 322 contact farmers and 76 extension agents from the three agricultural zones in the state. Questionnaire was the instrument used in collecting data for the study. The Instrument was validated by three experts. Cronbach alpha reliability method was adopted to determine the internal consistency of the instrument. The reliability coefficient of 0.67 and 0.77 were obtained for section A and section B of the instrument respectively. A total of 398 questionnaires were administered on the respondents. Three hundred and ninety-eight were retrieved and analyzed using weighted mean and impact index to answer the research questions. It was found out that the provision of infrastructures such as rural water supply and construction of feeder roads by EBADEP had great impact on the farmers' agricultural practices and socio economic status. It was recommended among others that the rural infrastructural component of EBADEP should be sustained by government, and that government should also find ways of expanding, the coverage areas of the programme so that more farmers will benefits from their services.

**KEYWORDS:** Farmer, Feeder road, Impact index, socio economic status, rural infrastructure.

### INTRODUCTION

In Nigeria, agriculture is the predominant occupation employing more than 75% of the entire labour force in rural area (Ijere 1992). The Ebonyi state agricultural development programme (EBADEP) came into existence following the creation of Ebonyi state in 1996. Before the creation of the state, the area now known as Ebonyi state was an Agrarian society inhabited by peasant farmers whose agricultural practices are at subsistence level. This was due to the fact that the area lacked basic rural infrastructures for improved agricultural productions. There were no motorable roads in the rural areas, and this affected farming operation especially movement of people and agricultural produce. There was also lack of water supply for all season cropping and other farm operations. Farmers depended on rainfall (rain-fed agriculture) which was seasonal and this also affected their level of production.

In 1996, when the state was created, Agricultural Development Project (ADP) was established with the mandate to support increased agricultural production and to raise the standard of living of the rural population. The agricultural development project (ADP) idea was conceived as a means of achieving rural development through improved standard of living and welfare of the small-holder farmers throughout the state by raising their productivity and farm income through integrated rural development. The ADP idea was born and till today they are used and have formed the vehicle for agricultural and rural development in Nigeria. The Ebonyi State agricultural development programme (EBADEP) which is the brain

child of the state (ADP) has the following objectives that to prepare and deliver the necessary improved production technologies/packages to the farmers, multiply tested high yielding seed varieties and distribute same to farmers, engage in on farm-adaptive research also engage in appropriate training for extension staff and farmers, Construct access roads, portable water supply scheme and repair such damaged facilities and to develop land/flood plains for small scale irrigation and engage in any other activities that would aid the development of agriculture in the state through the provisions of infrastructural facilities. In order to achieve these from the rural infrastructural projects, the unit divided their operations into four components one of which is road and rural water supply component. Their function included rehabilitation, improvement and maintenance of rural feeder roads to ensure all weather access roads in the agricultural production areas and market outlets. Provision of water for agricultural production, domestic and industrial use; provision and management of low cost irrigation system for all season farming. Farmers growing rice, maize, and vegetables were provided with suitable access to rural water supply through this component.

Rural infrastructure according to Ekong (1988) is a basic physical, social and institutional form of capital which enhances rural dwellers production, distribution and consumption activities and ultimately the quality of their lives. In the context of this study rural infrastructures are those facilities that promote the agricultural activities of farmers in the state as well as enhance production and social life of the farmers. These rural infrastructural

facilities not only act as basic inputs for agricultural production but serve other basic social and economic needs of the farmers

Social economic effect of a programme according to Ajayi (1996) is the ultimate change in the living conditions of beneficiaries resulting wholly or partially from a project or programme. A social economic factor as emphasized by Dunkin (1992) is a patterned social behavior and finances of individuals in the society, which is the outcome of project effects. Social status or living standards of a farmer in the context of this study is the farmers' ability to use the returns from his farms to acquire the basic needs for himself and his family which are commensurate to what his community members will value and appreciate; such basic needs include good shelter, education for his children, good health, social amenities and so on.

A farmer in the context of this study can be described as one who cultivates and tills the soil, owns and manages a farm for the purpose of producing crops and animals in order to feed himself, his family and sell the surplus in the market for income. To assess as explained by Dunkin (1992) is to make judgment about a person or situation after thinking carefully about the situation or person. Okoro (2000) saw assessment as a form of evaluation that uses collected data for estimating the worth, quality or effectiveness of a programme or a project. Olaitan, Nwachukwu, Igbo, Onyemachi and Ekong (1989) indicated that in assessing a programme, assessment efforts usually shows level of achievement of the objective of the programme and the impact it has on the beneficiaries. Ebonyi State agricultural development programme being the extension arm of the state ministry of agriculture has over the years been implementing most of the agricultural policies initiated by both federal and state government to farmers in the state. Also the rural infrastructural unit of (EBADEP) has been providing farmers with rural infrastructures such as skill acquisition, processing machine, roads, rural water supply scheme among others but the likely effect of these changes on the social economic status of the farmers is yet to be ascertained.

Interviews conducted by the researcher among the staff of EBADEP reveal that there is no impact assessment record in the rural infrastructural sub-programme. Although data available in the planning, monitoring and evaluation (PME) units show some kind of evaluation reports on extension targets, activities and achievements of the programme; there is no such records on rural infrastructural sub-programme. It is not usually feasible to determine a change that had occurred to the beneficiaries of rural infrastructures without carrying out an impact assessment of the project. Therefore, there is the need for this study to determine the impact; the provision of rural infrastructure has on farmers' socio-economic status and how it has generally improved their agricultural practices in the state.

The purpose of this study was to assess the impact that had

occurred in the farmers' agricultural practices and socio economic status as a result of contact and use of feeder roads and rural water supply provided by Ebonyi state agricultural development programme (EBADEP). The findings of the study will be of immense benefit to the Ministry of agriculture, management and staff of EBADEP as well as the farmers in that it will help for programme adjustment, improvement and sustainability.

## **METHODOLOGY**

Two research questions guided the study. A survey research design was adopted for the study. Nworgu (2006) explained that a survey research design is one in which a group of people or items is studied by collecting data through interview or questionnaire and analyzing them. Questionnaire was used to collect data for this study. The study was carried out in Ebonyi State - Nigeria. The total land area is 5935 sq. kilometers (Egwu 2002). The state is predominantly farmers and is characterized by rich fertile soils that support different types of crops. Rain fall is evenly distributed all year round, however, rainfall distribution in Ebonyi state indicate two peaks, in July and October yearly where as rain declines from November - February with heavy Harmattan wind which mostly dries up most farmlands towards the end of the year which influences agricultural practices. Simple random sampling technique was adopted to select a total of 398 respondents (contact farmers and Extension Agents) from the 3 agricultural zones in the state. A structured questionnaire was the instrument used to collect data for this study. The questionnaire was divided into two components part A and B. Part A sought to obtain information from respondents on the status of farmers on their agricultural practices before the introduction of EBADEP rural infrastructures while part B obtained information from respondents on the status of farmers after the provision of rural infrastructures by EBADEP.

The questionnaire had a four point response options of strongly agree (SA) Agree (A) Disagree (DA) and strongly disagree (SD) with corresponding values of 4, 3, 2 and 1. Nominal values ranging from 1 - 4 were assigned to each response category. I was considered strongly agree while 4 was considered strongly disagree for responses on negative item on part A (i.e. on situation of farmers' agricultural practices before the supply of rural infrastructures (supply of water and feeder road) by EBADEP. However, part B were assigned values 4 - 1 where 4 was considered the highest value and 1 was considered the least value for responses on items on situation of farmers agricultural practices after the supply of rural infrastructures by EBADEP (i.e. after EBADEP intervention). Section A of the instrument contained 6 item statements while section B contained 5 item statements.

**TABLE 1:** Impact/change Index analysis of mean ratings of the responses of respondents on changes brought to farmers agricultural practices as a result of EBADDEP rural water supply in Ebonyi state.

N = 398, (322 contact farmers and 76 Extension Agents)

S/N	PART A: Item statements	Mean Before EBADDEP Intervention (X BF) mEA	Standard Deviation STD(X BF)	PART B: Item Statements	Mean After EBADDEP Intervention (X AF)	Standard deviation (STD AF)	Impact level (X AF-X BF)	Remarks
1.	Farmers depended on rain fall for growing of their crops.	1.25	0.48	Farmers now have water from other sources in addition to rainfall to grow crops throughout the year.	3.43	0.78	2.18	P1
2.	Production of crops by farmers was seasonal and limited because of water shortage especially during dry season.	1.24	0.49	Farmers now produce crops all seasons because they have access to water throughout the year.	3.23	0.83	1.99	P1
3.	Farmers had no access to good drinking water and were prone to many water born diseases e.g Guinea-worm, Cholera which affected their production.	1.32	0.58	Farmers now have good health because of their access to good drinking water which reduces diseases infection and promoted their production.	3.61	0.64	2.29	P1
4.	Few boreholes and other water facilities where restricted to Urban Cities at the expense of farming communities which reduced farming operations in the communities.	1.42	0.66	There are now many boreholes and an irrigation scheme in the farming communities to facilitate farm operation.	3.39	0.76	1.97	P1
5.	Farmers produce crops for their families and very little for market because of lack of water for all season crops.	1.46	0.71	Farmers now produce crops in large quantities for their families and for markets because of availability of water all year round.	3.39	0.79	1.93	P1
6.	Farmers had no water for frequent laundry of their work cloths and bath which brings some ill health and reduce energy for work.	1.76	0.91	Farmers now have sufficient water for bath, and laundry of their work clothes and wears any time throughout the year to reduce dirt and ill health.	3.5	0.69	1.74	P1
OVERALL		1.41	0.29		3.42	0.53	2.01	P1

KEY: P1 = positive Impact, NI=Negative Impact.

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**TABLE 2:** Impact/change index analysis of mean ratings of the responses of Respondents on changes brought to farmers' agricultural practices and socio- economic status as a result of the construction of feeder roads by EBADep in Ebonyi state.  
N = 398 (322 contact farmers and 76 extension agents)

S/N	PART A Item statements	Mean Before EBADep Intervention (X BF) mEA	Standard Deviation STD (X BF)	PART B Item Statements	Mean After EBADep Intervention (X AF)	Standard deviation (STD AF)	Impact level (X AF-X BF)	Remarks
1.	Farmers finds it difficult to transport farm input such as fertilizers, cassava stems, seed yams,etc to their farms because of bad roads in the farming communities.	1.21	0.48	Farmers now transports farm input such as fertilizers, seed yams, cassava stems etc to their farms because of good road facilities.	3.52	0.68	2.31	PI
2.	Lack of good road network prevented farmers from moving their harvested agricultural produce to Urban markets.	1.3	0.52	Farmers now move their harvested agricultural produce from the communities to Urban markets.	3.56	0.65	2.26	PI
3.	Farmers sold their farm products at very low price at their farm gate to consumers who managed to reach their farm due to bad roads.	1.35	0.53	Farmers now find it easy to convey their produce from Rural areas to Urban areas and sold at profitable market prices because of accessible road.	3.53	0.63	2.18	PI
4.	Poor road network prevented farmers and their families from getting to health centres for treatment when they are sick.	1.45	0.67	Movement of farmers and their families to health centres for treatment had become very easy and comfortable because of good feeder roads.	3.45	0.07	2	PI
5.	Farmers did not have access to comfortable transport to attend meetings within and outside their farming Communities.	1.45	0.67	Farmers now have easy transportation to attend meeting within and outside their villages because of good network of road in the state.	3.44	0.75	1.99	PI
<b>OVERALL</b>		1.35	0.39		3.5	0.54	2.15	PI

KEY: PI= Positive Impact NI=Negative Impact

The instrument was validated by 3 experts, one from the department of Vocational teacher education, University of Nigeria Nsukka and two experts from Technical Services Unit and Extension Unit of Ebonyi State Agricultural Development Programme EBADEP Abakaliki. The experts helped to examine, modify and restructure the questionnaire items. Their judgment on the items was utilized fully in drafting the final copy of the questionnaire that was used in the study. Cronbach alpha reliability method was adopted to determine the internal consistency of the instruments. A reliability coefficient of section A yielded 0.67 while the coefficient of section B yielded 0.77; the respective reliability coefficient were positive and quite high which was an indication that the instrument was capable of measuring what it is expected to measure. A total of three hundred and ninety eight (398) questionnaires were administered and retrieved. Descriptive and inferential statistics were used to analyze the data. Weighted mean and impact index/indicator were used to answer the research questions. An item with a mean score of 2.50 and above were accepted as having an impact "agreed" while any mean below 2.50 were regarded as showing no impact (disagreed). The standard deviation was used to determine the closeness or otherwise of the responses of the respondents from the mean. Any item with a standard of 1.96 and below showed that the respondents were close to the mean which indicated that the item was valid. Any item with a standard deviation above 1.96 indicated that the respondents were not close to the mean and therefore the item was less valid. An impact index of 0, 1, 2 and 3 in positive direction were used as indicators of impact or change, where 0 was no impact, 1 was little impact, 2 was great impact and 3 very great impact. An impact indicator/index is the difference between mean ( $\bar{x}$ ) before EBADEP intervention and mean ( $\bar{x}$ ) after EBADEP intervention ( $\bar{x}_{AF} - \bar{x}_{BP}$ ). An impact indicator with minus - sign was regarded as negative impact (N1) while those without it were regarded as positive impact (P1).

## RESULTS

The results of the study were obtained from the questions answered.

### Research Question 1

What change /impact had the provision of rural water supply brought to farmers agricultural practices and socio-economic status?

The data for answering research question 1 are presented in table 1

The data in table 1 showed that the mean for the 6 items in part A (situation of farmers before EBADEP intervention) provision of rural water supply ranged from 1.24 - 1.76 and were negative. This indicated that there was no change in the farmers' agricultural practices before EBADEP intervention. The table also indicated that the mean values for the 6 items in part B (i.e. situation of Farmers after EBADEP intervention) ranged from 3.23 - 3.61 and were positive. The

data revealed that the impact indicator or index values of all the 6 items ranged from 1.74 - 2.29 and were positive. This indicated that the provisions of rural water supply had great impact or change on the farmers' agricultural practices and socio-economic status in the study area. The table also revealed that the standard deviation (STD) of the items ranged from 0.29-0.91 in part A and 0.64-0.83 in part B which was below 1.96. This indicated that the respondents were not too far from the mean and from one another in their responses. This indicated that the items were valid.

### Research Question 2

What change had the construction of feeder roads brought to farmers' agricultural practices in the state?

The data for answering research question 2 are presented in Table 2.

The table indicated that the mean values for the 5 items in part A ranged from 1.21-1.45 which were below the mean 2.50 and were regarded as showing no impact. The table revealed that the standard deviation (STD) of the items in the table ranged from 0.48-0.67 in part A and 0.07-0.75 in part B and was below 1.96 which indicated that the respondents were not too far from the mean and from one another in their responses. This means that the items were valid. The data in the table also revealed that the impact indicator / index values of the 5 items range from 1.99 - 2.31 and were positive. The mean values for the 5 items in part B (i.e. situation of farmers agricultural practices after EBADEP intervention) ranged from 3.52 - 3.56 and were also positive. This indicated that the construction of feeder roads in the state by EBADEP had great impact on agricultural practices and socio-economic status of farmers in the state.

## DISCUSSION

The result of this study indicated that the provision of rural water supply had positive impact on the socio economic status of farmers in Ebonyi State. The findings also revealed that farmers' agricultural practices were positively affected by the provision of water supply and low cost irrigation scheme by EBADEP. The findings showed that the provision of water supply impacted on the farmers' good health because they have access to good drinking water all year round which had reduced disease infection among farmers. Such disease like Guinea worm which hitherto ravaged rural farmers and prevented them from active participation in farm work has been eradicated by the provision of clean water supply. The findings also show that farmers produce large quantities of crops all year round for their families and for markets.

The following practices confirm the improvement that occurred as a result of the provision of water supply in the state by EBADEP. This is in line with Amechi (2004), whose findings revealed that the provision of rural water supply in Anambra State - Nigeria brought some changes in the agricultural activities of the rural farmers. The findings of this study is also in agreement with Igbozulike (1984) who found out that rural and irrigation water supply were

needed for profitable agricultural activities by farmers in rural areas of Imo State Nigeria. The findings of Ekong (1988) is in agreement with the findings of this study where he asserted that for a meaningful agricultural activity to take place in rural areas, there must be steady supply of water. The results of this study are in consonance with the findings of Anyakoha and Ozo (1999) in their study in Enugu State where it was found that rural and irrigation water were very necessary for farmers in the state for the growth of cereal crops such as rice, maize and fresh vegetables. The findings of this study also indicated that farmers transported farm inputs such as fertilizers, cassava stems, seed yams etc easily to their farms because of good roads which hitherto were found to be difficult. The results also revealed that farmers found it easy to convey agricultural produce from rural areas to urban areas and sold at profitable market gate prices because of accessible rural roads provided by EBADEP. Movement of farmers and their families to health centres for treatment was found to be easy and comfortable. Before now, lack of good roads prevented farmers from these operations.

The finding is in agreement with the observation of Adeniyi (1994) who stated that the provision of feeder roads to the farming communities in Kwara State - Nigeria improved farming activities and socio economic status of farmers. Also the findings of Ajayi (1996) agreed with the findings of this study when he observed that rural farmers needed good motorable roads for timely and efficient transportation of farm products to markets. The findings of this study is also in agreement with the findings of Idachaba and Olayide (1990) who identified rural infrastructure as the critical elements conducive to optimum upliftment of the socio economic welfare of rural farmers.

### CONCLUSION

The conclusion drawn here was based on the finding of this study. The provisions of rural infrastructures by EBADEP to farmers in Ebonyi state have far reaching positive effects on their agricultural activities and socio economic status. The findings has shown that there were significant positive changes on the socio economic status of farmers; hence rural farmers who would not have been able to enjoy good health now have access to health facilities because of roads provided by EBADEP in the state. Farmers can now produce crops in large quantities; sell and make good profit, have enough money to meet other social demands and commitments. The study had proved that the intervention of EBADEP and the implementation of its rural infrastructural development such as the provision of water supply and construction of feeder roads) have caused some positive changes not only in the agricultural activities of farmers and their socio economic status especially on farmers that had contacts with the project but has equally affected positively on the life of other farmers in the state. The above findings reveal that water supply and roads are central to agricultural activities/operations, productivity and welfare of farmers in any agrarian society.

### RECOMMENDATION

Based on the findings of this study, it is recommended that:-

- (1) The rural infrastructural component of EBADEP is sustained by government.
- (2) Government should find ways of expanding the present areas of programme coverage in the state so that more rural farmers will benefit.
- (3) Government should as a matter of policy provide adequate supply of farm support services to the rural farmers to improve their participation in the programme.
- (4) Information to farmers on agricultural development should be intensified because the farmers are the direct beneficiaries of the projects and are in better position to report what they feel about any innovation to be introduced.

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