



Assessment of the Impact of Dry-Season Rice Production using Bakolori Irrigation Dam on Job Creation and Poverty Reduction among People of Bakura, Maradun and Talata Mafara Local Governments in Zamfara State, Nigeria.

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ABSTRACT

This study assessed the impact of dry-season rice production using Bakolori irrigation Dam on poverty reduction and job creation among people of Bakura, Maradun and Talata Mafara local government areas in Zamfara State. To guide the researcher, three (3) specific objectives, three (3) research questions and three (3) null hypotheses were formulated. Descriptive survey design was adopted for the study. Six hundred and twelve thousand nine hundred and thirty five (612,935) rice farmers in the three local government areas formed the population of the study. Four thousand (4,000) rice farmers were selected using proportionate random sampling technique. Structured questionnaire was used for data collection. Data were analysed using descriptive statistics and Pearson Product Moment Correlation Relationship (PPMCR). All null hypotheses were tested at 5% level of significance ($p=0.05$). A significant relationship ($p=0.05$) was found between dry-season rice production and the job creation, income level, and standard of living of people in the study area. It was therefore concluded that, dry-season rice production directly affect the life of people in the study area. It was recommended among other things that, adequate inputs should be should be provided by the government to the farmers at a subsidized rate in order to boost their production and improve their standard of living there by reducing their level of poverty.

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INTRODUCTION

The Bakolori Dam is in former Sokoto State (now in Zamfara State) in the Northwest of Nigeria, completed in 1978 and its reservoir filled by 1981. It is a major reservoir on the Sokoto River, a tributary of the Rima River, which in turn feeds the Niger River. Water from the dam supplies the Bakolori Irrigation Project. The dam has a capacity of 450 million cubic meters, with a reservoir covering 23000 hectares extending 19 km (12 mi) upstream. Before construction of the dam, about 50,000 farmers in the Sokoto River floodplain practiced intensive recession farming, growing rice and sorghum in the wet season and vegetable crops such as onions, garlic and tomatoes in the dry season (Mohammed, 2002). Many farmers used the Shado of practice of lifting water from the river to pour into irrigation channels or ponds. Women in the area do not usually work the field but do have ownership rights and assist in processing. Women who are not under seclusion are active in farming. Often the land was owned communally without formal records of

ownership. Farmers in the area, living at subsistence levels, were more concerned with avoiding risk than maximizing profit. The area is subject to periodic droughts, and the desire for a stable water supply was one of the motives for constructing the dam.

In 1969 the Food and Agriculture Organization (FAO) issued a report that recommended a small dam and irrigation scheme at Talata Mafara, with further upstream dams for flood control. The FAO report emphasized the importance of a gradual approach that would have minimal impact on existing land use patterns, in part because of lack of experience with irrigation projects in the region. In 1971 the Nigerian military government invited proposals for design and supervision of the project and, in 1972, awarded the job to Impresit Bakolori Nigeria, a company owned 60% by the Nigerian government and 40% by a subsidiary of FIAT. During the 1972–1974 study periods the scope of the project expanded to cover a single large dam and a large-scale mechanized irrigation scheme (Mohammed, 2003).



Construction of the dam began in 1974 and was completed in 1978, after which it took three years for the reservoir to fill. The dam is a 5.5 km (3 mi) earth-fill embankment, with a central concrete structure 360 m long and 48 m high incorporating a small 3MW hydroelectric power plant. The irrigation pipes and canals were not completed until 1983 and covered only 23,000 hectares compared to 30,000

hectares originally planned. Water was delivered to 15,000 hectares by sprinklers and to 8,000 hectares by gravity. Sprinklers are expensive but make more efficient use of water if well maintained. After cost overruns, the irrigation project ended up as one of the most expensive per hectare in the world (Mohammed, 2003).

Table 1: Physical and Operations of the Dam

Variable	Measurement
Storage capacity	450 Million m ³
Catchment Area	4857 Km ²
Active Capacity	403 million m ³
Dead Capacity	47 million m ³
Planned Irrigation Area	23000 Ha
Operational Irrigation Area	23000 Ha
Reservoir Area	80 Km ²
Mean Annual Inflow	757 Million m ³
Length	360m
Height	48m

Source: Sokoto River Basin Authority 2014.

Rice is grown in every region in Nigeria including the semi-dry savannah of the Middle Belt and the north. Cultivation is largely by small-holder farmers who are also involved in paddy processing by means of small scale mills with average capacity of two tons per day Balogun (1986). The production and consumption levels of rice in Nigeria remain to be substantial Ugundele, (2004). It is in recognition of the enormous influence of irrigation on farm level productivity and enhanced living standard and job creation that government and development agencies embark on gigantic irrigation projects. Job creation is no doubt, a pressing topic in Nigeria. It takes center stage with policy makers at all levels of governments as stakeholders struggle with the fact that, despite several years of 7-8 percent annual growth, unemployment and underemployment remains high. Bola *et al* (2011) suggested that, jobs creation is fundamental to reducing poverty and improving standard of living in Nigeria. Standard of living refers to the level of wealth, comfort, material goods and necessities available to a certain socioeconomic class in a certain geographic area. The standard of living includes factors such as income, quality and availability of employment, class disparity, poverty rate, quality and affordability of housing, people, hours of work required to purchase necessities, gross domestic product, inflation rate, number of holiday days per year, affordable (or free)

access to quality healthcare, quality and availability of education, life expectancy, incidence of disease, cost of goods and services, infrastructure, national economic growth, economic and political stability, political and religious freedom, environmental quality, climate and safety (Wikipedia.com,2015). Bola *et al* (2011) acknowledged that, standard of living is closely related to quality of life. Standard of living is generally measured by standards such as real (i.e. inflation adjusted) income per person and poverty rate. Other measures such as access and quality of health care, income growth inequality, and educational standards are also used. Examples are access to certain goods (such as number of refrigerators per 1000 people), or measures of health such as life expectancy. It is the ease by which people living in a time or place are able to satisfy their needs and/or wants.

The issue of unemployment is a major challenge in Nigeria. It has been a burning issue as it now became a sing word among educators and policy makers in Nigeria. However, Nigeria is blessed with a vast fertile land suitable for many crops. Nigeria is endowed with a vast irrigatable land that can create millions of jobs to the Nigerian populace thereby reducing their level of poverty and improve their standard of living. This study therefore aimed to assess the impact of dry-season rice production

under Bakolori irrigation project on job creation and poverty reduction among beneficiaries of the dam.

Objectives of The Study

The major objective of this research is to assess the impact of dry-season rice production on poverty reduction and job creation among people of Bakura, Maradun and Talata Mafara local government areas of Zamfara State. The specific objectives were to:

1. Determine the relationship between dry-season rice production and job creation among people in the study area
2. Determine the relationship between dry-season rice production and the income level of people in the study area.
3. Determine the relationship between dry-season rice production and standard of living of people in the study area.

Research Questions

1. What is the relationship between dry-season rice production and job creation among people in the study area?
2. What is the relationship between dry-season rice production and income level of people in the study area?
3. What is the relationship between dry-season rice production and standard of living of people in the study area?

Null Hypotheses

1. There is no significant relationship between dry-season rice production and job creation among people in the study area
2. There is no significant relationship between dry-season rice production and income level of people in the study area.
3. There is no significant relationship between dry-season rice production and standard of living of people in the study area.

RESEARCH METHODOLOGY

The study employed descriptive survey design. The population for the comprised of 612,935 rice farmers in the three local government areas (Bakura, Maradun and Talata Mafara). A sample of 4000 respondents was selected using proportionate random sampling technique. Data collection was done using a structured questionnaire which was vetted by experts for face and content validity. Likert 4-point scale (strongly agree, agree, disagree and strongly disagree) was adopted.

This study was carried out in three local government areas of Zamfara State. These are Bakura, Maradun and Talata mafara local government areas.

Table2: Information on the study area and sample

S/N	Variable	Bakura	Maradun	T/Mafara	Total
1	Total Area	1,366km ² (527sqmi)	2,728km ² (1,053 sq mi)	1,430km ² (550 sq mi)	5524 km ² (2,130 sq mi)
2	Population	186,905	210,852	215,178	612,935
3	% Of the population	30.5 %	34.4 %	35.1 %	100%
4	% sample(% of 4000)	30.5 % of 4000	34.4 % of 4000	35.1 % of 4000	100% of 4000
5	Number of sample	1,220	1,376	1,404	4,000

Source: 2006 National Census

Data collection was done with the aid of 10 research assistants. Four thousand (4000) questionnaires were distributed but only 3981 were successfully completed and returned. Data collection phase lasted for 6 weeks. Data collected were summarized in such a way that, strongly agree and agree were considered agree, while strongly disagree and disagree were considered disagree. In data analysis, research questions were answered using percentages while null hypotheses were tested using Pearson Product Moment Correlation

Relationship (PPMCR). In answering the research questions, any question item with a total response of 50% and above ($\geq 50\%$) was considered agree while any item with the total response of less than 50% ($< 50\%$) was considered disagree. All null hypotheses were tested at 5% level of significance ($p=0.05$).

RESULTS

Research question 1: What is the relationship between dry-season rice production and job creation among people in the study area?



Table 1: Relationship between dry-season rice production and job creation

S/N	Question	Percent	
		% A	%DA
1	Rice production is my only occupation	67	33
2	Rice production is my major occupation	70	30
3	I cultivate more than a hectare of land	51	49
4	I work on my farm with the help of my family members	64	36
5	I employ other people to work on my farm	62	38
6	I employ more than 5 people to work on my farm	53	47
7	I buy rice from other farmers and sell to dealers during harvesting period	51	49
8	I partake in other businesses during the harvesting period	45	55
9	Rice farming helped me to make capital used in other business	67	33
10	I depend on rice farming as my source of livelihood	75	25
11	I raise animals using the money I earn from the rice farming	58	42

Source: Field work 2015

Table 1 presents question items 1-11 used to answer research question 1. The table shows the relationship between dry-season rice production and job creation among people in the study area. Item 10 and 2 have the highest score for agreement (75 and 70 %) followed by items 1, 9, 4 and 5 (67, 67, 64, and 62%) respectively. Based on table 1 above, respondents agreed that, there is a relationship between dry-season rice production and job creation among people in the study area. Most people in the study area depend on rice production as their source of livelihood and therefore took rice production as their major occupation as indicated by question items 10 and 2 (75 and 70%). Respondents also agreed that, dry-season rice production is their

major source of capital to run other businesses as revealed by question item 9 (67%). Respondents further agreed that, they engage their family members and hired labour for the running of their farms as indicated by question items 4 and 5 (64 and 62%). However, respondents did not agree with the suggestion that, they take part in other businesses during the harvesting period. This was showed by question item 8 with percentage score of 45% below the 50% bench mark for agree.

Research question 2: What is the relationship between dry-season rice production and income level of people in the study area?

Table 2: Relationship between dry-season rice production and income level

S/N	Question	Percent	
		% A	%DA
12	Rice farming is my only source of income	41	59
13	Rice farming is my major source of income	77	23
14	Income level depends on the size of farm of an individual	57	43
15	Income can be generated from buying and selling of rice during harvest period	68	32
16	Income can be generated from selling other goods during harvest period	67	33
17	Wealthy people of my community are those with large rice farms	83	17

Source: Field work 2015

The analysis of question items 12-17 used to answer research question 2 showed that, there is a strong relationship between dry-season rice production and the income level of the people in the study area. While the respondents disagree with the notion that, rice production is their only source of income, but however agreed that, dry-season rice production is the major source of income of the people in the study area. Respondents majorly (77%)

agreed that, rice production is the major source of income for people in the study area. Furthermore, the table revealed that, size of farm cultivated by individual determines his level of income and wealth in the study area. This was shown by question item 17 (83%). A farmer can make more income by buying rice from his fellow farmers and transporting it to the city for profit making or be involved in other businesses using money generated from his rice



farm. This is possible because of increased purchasing powers of rice farmers during harvesting period. Based on the table therefore, dry-season rice production is directly related to the income level of people in the study area since 5 out of 6 items have more than 50% response for agreement.

Research question 3: What is the area relationship between dry-season rice production and standard of living of people in the study?

Table3: Relationship between dry-season rice production and standard of living

S/N	Question	Percent	
		% A	%DA
18	My income level has increased due to rice farming	60	40
19	I buy good clothes for myself and my family with rice money	76	24
20	My income level depends on the size of land I cultivate in a year	59	41
21	I pay my children school fees with the rice money	86	14
22	I take care of my health and that of my family with the rice money	86	14
23	I owned a personal house	53	47
24	I have a television set	58	42
25	I have a refrigerator	39	61
26	I purchased a car from the rice farming	34	66
27	I purchased a motorcycle from the rice farming	55	45
28	People always invite me when there is any political meeting	56	44

Source: Field work 2015

Table 3 presents the relationship between the dry-season rice production and standard of living of the people in the study area. Standard of living indices, such as income level, housing ownership, access to good food, access to quality education and access to health care services were asked and the responses indicated that, a strong relationship existed between dry-season rice production and the standard of living of people in the study area. This is

because, out of 11 items for the standard of living, 9 have passed the 50% bench mark for agreeing. Apart from cars and refrigerators (34 and 39 &), respondents agreed to the possession of other essential goods necessary for a good live.

Null hypothesis 1: There is no significant relationship between dry-season rice production and job creation among people in the study are:

Table 4: Relationship between dry-season rice production and job creation in the study area

Variables	Mean	Std. Dev.	N	Df	r-cal	r-crit	Sig_(2-tailed)
Rice production	2.60	1.65	3991	3989	0.583	0.195	0.000
Job creation	3.11	1.73					

Source: Field work 2015

Table 4 presents the PPMC analysis of the relationship between dry-season rice production and job creation among people of Bakura, Maradun and Talata Marafa local government areas of Zamfara state. The table indicated that, there was a significant relationship ($p=0.05$) between dry-season rice production and job creation among people in the study area. This is because, r -calculated (.0583)

was greater than r -critical (0.197) at 5% level of significance ($p=0.05$). Therefore, the formulated null hypothesis of no significant relationship was rejected.

Null hypothesis 2: There is no significant relationship between dry-season rice production and income level of people in the study area.

Table 5: Relationship between dry-season rice production and income level of people in the study area

Variables	Mean	Std.Dev.	N	Df	r-cal	r-crit	Sig_(2-tailed)
Rice production	3.21	1.54	3991	3989	0.672	0.195	0.000
Income level	2.72	1.91					

Source: Field work 2015



Table 5 shows the PPMC analysis of the relationship between the dry-season rice production and income level of the people in the study area. The table reveals that, there was a significant relationship ($p=0.05$) between dry-season rice production and income level of the people in the study area. This is because r -calculated (0.672) was

greater than r -critical at 5% level of significance ($p=0.05$). Therefore, the null hypothesis of no significant relationship was rejected.

Null hypothesis 6: There is no significant relationship between dry-season rice production and standard of living of people in the study area.

Table 6: Relationship between dry-season rice production and the standard of living of people in the study area

Variables	Mean	Std.Dev.	N	Df	r-cal	r-crit	Sig_(2-tailed)
Rice production	3.01	1.17	3991	3989	0.654	0.195	0.000
Standard of living	2.60	1.71					

Source: Field work 2015

Table 6 presents the PPMC results of the relationship between the dry-season rice production and standard of living of people in the study area. The result shows that, there was a significant relationship ($p=0.05$) between dry-season rice production and the standard of living of the people in the study area. This is because r -calculated (0.672) was greater than r -critical at 5% level of significance ($p=0.05$). Therefore, the null hypothesis of no significant relationship was rejected.

The results indicated, the greater the volume of production the higher the income level. This is in line with Fabiyi *et al* (2006) who maintained that, rice farmers have two advantages of being cultivating for food as well as for cash.

The researcher also found that, dry-season rice production was related to the standard of living of the people in the study area. This finding was presented in tables 3 and 6 by both answer to research question 3 and the test of null hypothesis 3. High relationship was observed between dry-season rice production and the standard of living of the people in the study area. The test of null hypothesis further revealed that, the relationship was highly significant ($p=0.05$). This finding is in line with Ohajanya *et al* (2003) and Okunade (2002) who found that, rice farming is a lucrative business that can provide the farmers with food and income and improve their standard of living. From the finding of this research, it was shown that, farmers were able to buy most things necessary for a good live with rice farming. This work therefore agrees with akinwunmi (2014) who reported that, rice farming is most profitable in Nigeria.

DISCUSSION OF FINDINGS

The results of this study showed that, dry-season rice production in Bakura, Maradun and Talata Mafara local government areas of Zamfara State using Bakolori irrigation dam is the major source of employment of the people in the study area. This finding was presented in tables 1 and 4 by answer to research question 1 and test of null hypothesis 1. In both cases, significant relationship was observed between dry-season rice production and job creation among people in the study area. This finding agrees with Bello *et al* (1998) who opined that, rice farming is one of the major solutions to Nigeria's high rate of unemployment and concluded that, rice farming is the most profitable business enterprise in Nigeria. United Nation (2014) also reported that, Nigeria having vast irrigatable land and water resources, millions of jobs can be created through irrigation farming.

Another finding of this study revealed that, dry-season rice production is directly connected with the income level of people in the study area. This is because, answers to research question 1 shows that, dry-season rice production is related to the income level of people in the study area as presented in table 2. The test of null hypothesis further showed that, the relationship was highly significant ($p=0.05$).

CONCLUSION

Dry-season rice production using Bakolori irrigation dam is the major source of employment for the people of Bakura, Maradun and Talata Mafara local government areas of Zamfara state. Rice production is directly related to the income level of the people in the study area. Standard of living of people in the study area generally improved due to irrigated rice production.

RECOMMENDATIONS

Based on the finding of this research the researcher recommended that:



1. Government should give more attention to the regular maintenance of the dam and other facilities needed for effective irrigation practice.
2. Input such as chemicals, fertilizers, improved seeds etc should be given to farmers by the government at a subsidized price and at the right time.
3. Farmers in the study area should be trained to adopt new farming practice in order to improve their productivity.
4. Youth in the study area should be encouraged to embrace rice farming so as to reduce rural urban migration.
5. Farmers in the study area should be consulted when making any decision that affect their production.

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