



**REDUCING RURAL POVERTY AND DEVELOPING LIVELIHOOD
OPPORTUNITY THROUGH IRRIGATION FARMING IN TARABA STATE,
NIGERIA**

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ABSTRACT: Government programme of poverty reduction over the years, have been limited and largely ineffective not only due to lack of effective policies and actions but also due to lack of knowledge on the magnitude of the poverty problem, its causes and interventions that can reduce poverty more effectively. Irrigation is generally perceived to play an important role in improving productivity and aggregate food production, as well as increase in income, employment opportunity and poverty reduction. This paper examines the prospects of developing livelihood opportunity and reducing rural poverty through irrigation farming in Taraba State, Nigeria. The study suggest the need to integrate irrigation farming in government poverty alleviation scheme in Taraba state, given the hugh surface water resources of the state so as to ensure food security, self reliance, increase employment opportunity, poverty reduction and improved quality of life, especially for the rural dwellers.

Keyword: Irrigation, Livelihood, Poverty, Rural

INTRODUCTION

Poverty has remained entrenched in Nigeria, where 70 percent of the rural populations live below the poverty line. The incidence of poverty in the rural areas is highest among households in which the head is engaged in agriculture as the main source of livelihood and income. Because of its rural nature and agrarian economy, there is a high incidence of poverty in Taraba State. The rising poverty level in the state was the result of the poor governance and low economic growth over the years. In 2004, the Nigerian government launched a pro-poor Community Driven Development project (Second National Fadama Development Project—Fadama II) to increase the incomes of farmers, fishers, and other poor people in Fadama areas. This phase has elapsed and is replaced by a new phase, National Fadama III Project. Fadama farming which, is defined as a typical form of small-scale irrigation practice, is characterized by flexibility of farming operations, low inputs requirements, high economic values, minimal social and environmental impacts, and, hence conforms to the general criteria of sustainable development. The Fadama areas are irrigable low-lying floodplains along Nigeria's rivers, where poverty is concentrated. The land is fertile and water is easily accessible. The International Development Association (IDA) supported Fadama III project sought to generate income, empower local communities, and improve the government's capacity to reach out to the poor and the vulnerable groups, such as women, unemployed youth, widows and people living with HIV-AIDS.

With the advent of the Green Revolution in the 1980s, irrigated agriculture in Nigeria experienced significant expansion. Irrigation has been regarded as a powerful factor in increasing crop productivity, enhancing food security, expanding opportunities for higher and more stable incomes and employment and for increasing prospects for multiple cropping and crop diversification.

Despite the irrigation potentials, records of performance both in the state and nation at large have not been impressive. For example, total land under irrigation in the country has remained at 229.3 thousand hectares annually for the period 1997 – 2001, while the total volume of water consumed through irrigation fell from 2.29 billion cubic metres in 1997 to 1.99 billion cubic metres in 2001 (CBN, 2001) However, it is important to note that the Fadama component of the World Bank supported ADPs in the country, particularly during the 1980s was relatively successful in helping farmers to increase water use for dry season crop production. According to the CBN report, the Fadama experiment allowed irrigation on about one or two hectares of land at an average cost of between US \$350 and US \$700 per hectare, with drilled tube wells, and water pumps made available to farmers at subsidised cost. By the early 1990s, the project had over 50,000 pumps operating nationwide, with 90% success rate in terms of farmer adoption (Sharma *et al*, 1996). However under the current administration, significant attention has not been paid to the essentially stakeholder strategy of the Fadama programme.

Although irrigation is an important contributor to poverty alleviation, the magnitude of antipoverty impacts of irrigation varies greatly across systems and depends on a range of factors. These include size and distribution of landholdings (equity in land), distribution of available water across farm households and across upstream-downstream locations (equity in water distribution) with proper maintenance of irrigation infrastructure (good infrastructural condition), cultivation/production technology (improved cultivation technology), cropping patterns, and level of crop diversification supported by market infrastructure to facilitate marketing of inputs and outputs. In places where these conditions prevailed, access to irrigation has strong direct antipoverty impacts. The antipoverty impact of irrigation decreases as one or more of these conditions ceases to hold. Experience in other parts of the world shows that improving the performance of irrigation systems by improving land and water productivity of crops, diversifying cropping patterns, improving infrastructure and water distribution across locations would help in reducing poverty in the state, especially the rural areas. Government and other agencies efforts at addressing the problems of poverty in these rural areas over the years, have been limited and largely ineffective not only due to lack of effective policies and actions but also due to lack of knowledge on the magnitude of the poverty problem, its causes and interventions that can reduce poverty more effectively. Irrigation is generally believed to play an important role in improving productivity and aggregate food production. The contribution from irrigated agriculture to achieving this goal will be critical as irrigation provides a powerful management tool against the vagaries of rainfall. Given the present problem of global climate change with its attendant problem of irregular rainfall (especially late onset and early cessation) and intermittent river flow, the need to develop the irrigation potentials of the state cannot be more timely than now. Also, given the high rate of poverty particularly in the rural areas of the state, the high surface water resources and the problems of global climate change with its attendant uncertainties, this study highlight the need to develop irrigation farming in the state so as to increase food production, rural income, employment opportunity, poverty reduction and improvement in the quality of life of the people. In order to achieve these objectives a systematic review of existing literature on the topic using case studies from past successful or unsuccessful irrigation development projects has been conducted.

Aim and Objectives

The aim of this paper is to examine some of the benefits of irrigation activities in promoting sustainable livelihood and reducing rural poverty in the study area. The specific objectives include;

- i. To examine the livelihood potentials of irrigation activities.
- ii. To examine the irrigation situation in the study area.
- iii. To examine some of the empirical evidence of poverty reducing impacts of irrigation activities and
- iv. To recommend measures of improving irrigation activities in the study area.

Description of Study area

Taraba State is roughly located between latitude 6°25'N to 9°30'N and longitude 9°30'E to 11° 45'E, with tropical continental type of climate. Rainfall starts in the month of April and ends in November in the southern part, while in the north, rainfall starts in May/June and ends in October/November. Thus, the southern part of the state usually has 7-8 months of rainfall, while the north has about 5-6 months of rainfall. The mean annual rainfall is 1,350mm whereas the maximum annual rainfall is 1,650mm with peaks around August. The mean temperature varies from place to place and according to season. Maximum temperature ranges between 30°C and 39.4°C, while minimum temperatures range between 12°C to 23°C. Almost all the LGAs in the state are drained by River Benue and its tributaries such as rivers Taraba, Donga, Katsina-Ala, Pai, Kam, Suntai etc. The State is well endowed with surface water resources from rivers and ponds. Despite this abundant potential, irrigation farming is not commonly practise in the state.

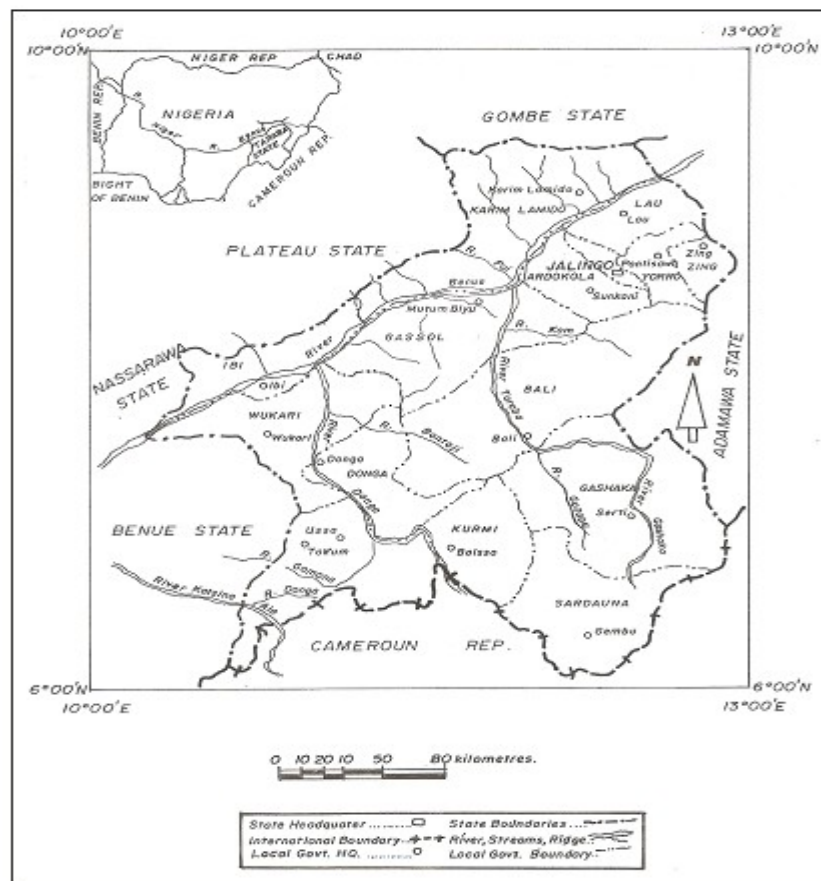


Fig 1. Political Map of Taraba State showing the drainage system

The people seemed to be contented with rainfed agriculture despite the high rate of poverty especially in the rural areas. This scenario seemed to suggest that irrigation is not part of the farming system (tradition) of the state and as such there is need for government intervention by way of encouragement through the provision of infrastructural facilities and necessary farming inputs.

Method of data collection

The data for this study was generated through systematic review of existing literature on the topic using case studies of both successful and otherwise. Oral interview with stakeholders particularly officials of the Taraba State Agricultural Development Programme (TADP), Upper Benue River Basin Development Authority (UBRBDA) and National Fadama II Project was conducted. Secondary data were also used in this study.

Irrigation Potentials of Taraba state

Taraba State has vast potentials of fadama land as a result of the numerous rivers that traverse the state such as Rivers Benue, Taraba, Donga etc. River Benue traverses the State for a distance of over 240 kilometres with wide extensive flood plain on both side of the river suitable for irrigation farming (Oruonye, 2010). There are many cases of abandoned irrigation projects in the state. For example, there is the Gassol irrigation project in Gassol LGA which was meant to deliver over 300 hectares of farm land but was later abandoned. There was another 1000 hectares of irrigable land abandoned at Bantaje (Wukari LGA) (Turaki, 2009). The Kashimbila dam in Takum LGA was planned for hydro-power generation, irrigation and water supply to numerous towns and villages in Taraba and Benue States. It has about 5,000 hectares of farm land meant to be developed for irrigation farming (Turaki, 2009). This project has not seen the light of the day. The Tunga dam on the Mambilla plateau, Sardauna LGA was constructed in 1991 by the Nigerian Beverage Production Company (makers of Highland tea). It has a capacity of 10 million cubic meters (M³). It was designed to irrigate an average of 1,000 Ha of Tea Farms annually and has been successful in provision of employment opportunity to the rural people in the area as well as raw material for the tea industry (Oruonye, 2010). There are over 1,000 casual workers employed on the Mambilla Highland Tea (Mac-Leva, 2008).

Despite these irrigation potentials, the proportion of the population involved in irrigation farming is very poor. Findings from the study show that out of 2,060,347 people of the state only 30,929 (1.5%) people were registered farmers involved in the Fadama II project so far as shown in the Table below.

Table 1. The breakdown per LGAs of registered farmers in the Fadama II Project in Taraba State.

S/No.	LGA	No. of People involved in Fadama II
1	Ardo Kola	1,857
2	Bali	2,645
3	Donga	4,360
4	Sardauna	4,111
5	Jalingo	12,525
6	Kurmi	280
7	Wukari	2,217
8	Ibi	557
9	Zing	859
10	Karim Lamido	1,518
	Total	30,929

Source: <http://fadama.org/taraba.html>

There are 572 registered Fadama User Groups (FUGs) with 30,879 members broken down by gender as follows;

- a). 407 FUGs are mixed (Males and Females) with membership of 17,211
- b). 103 FUGs are males with membership of 8,047.
- c). 62 FUGs are only females with membership of 5,621.

Although the Table above shows registered fadama farmers in 10 out of the 16 LGAs in the state, there are many other fadama farmers who were not registered because of their inability to meet the conditions of registration by the National Fadama III Project requirement. Some of these requirements include;

- i. The prospective members (farmers) must organize themselves into a cooperative group with membership between 20-25 members.
- ii. The Cooperative group must be registered with the Taraba State Cooperative Society Department of the Ministry of Commerce.
- iii. The prospective cooperative group must identify their intended enterprise i.e. forestry, fishing, irrigation, livestock etc.

Given the high level of illiteracy in the state (64.5%) (Oruonye and Bashir 2010) it is difficult for the local farmers to meet this requirement and enjoy the benefit of the agency. Although, the officials of the National Fadama Development project claimed that they have Facilitators whose responsibility it is to mobilize the farmers into organizing themselves into cooperative groups, this has not worked. Earlier study by Oruonye (2011) shows that the local natives have little interest in irrigation farming, while the Hausas are mostly the ones that engaged in irrigation farming in the study area. Since, the Hausa's are not indigenous to the area, inaccessibility to irrigation farmland constitute a major problem to small scale irrigation development in the study area.

The Potentials of Irrigation in Reducing Poverty

Over the years, an enormous amount of research work has been carried out to understand the poverty problem in developing countries, especially in sub Saharan Africa. One of the key lessons from previous work is that poverty is a complex and multidimensional and is the result of myriad interactions between resources, technologies, institutions, strategies and actions, and that there is no single solution to this problem. The multidimensional character of poverty has been reflected in a wide array of papers, poverty reduction strategies and policies (UNDP 1997; ADB 1999; DFID 1999; World Bank 2000; Narayan *et al.* 2000a,b; DMFA 2001; OECD-DAC 2001; IFAD 2001; Narayan and Petesch 2002).

It is now acknowledged that poverty is caused by lack of access to resources, opportunities, information, technologies and socioeconomic and demographic factors, and that it is also deep-rooted in other important factors, such as global-level policies and actions, national level historical factors and government policies, institutions and actions at various levels, and community-level power structures and informal institutions.

There is a plethora of literature on growth-promoting and poverty-reducing impacts of irrigation. No attempt is made here to review all the available literature. Hussain and Hanjra (2003) provide a very detailed review of recent studies on the subject. The review includes an empirical evidence based on comparisons of poverty with and without irrigation, and econometric evidence on the nature, direction and magnitude of impacts of irrigation on poverty alleviation. The review covers assessments made at micro, meso and macro levels. The extensive review of past work on the subject suggests that there are strong linkages between irrigation, growth and poverty alleviation. The empirical evidence from the studies implies that irrigation has a strong land-augmenting impact, with cropping intensity and overall crop productivity much higher in irrigated settings than in rain-fed settings. In most situations, the value of crop production under irrigated settings is almost double that under rain-fed settings. This simply means that one hectare of land with irrigation produces a yield almost equivalent to that from two hectares of land with no irrigation. Providing adequate irrigation to a poor small scale farmer with one hectare of land would enable him to harvest as if he/she has two hectares of land with no irrigation. Similarly, comparisons of labor employment per hectare and wages indicate that these are much higher in irrigated than in non irrigated settings. Depending on the technology used, irrigation farming demands more labor for construction, maintenance and operational work. Therefore it creates employment opportunities for the non-farming households in the region. Quantitative evidence shows that household income and consumption are much higher in irrigated settings than in rain-fed settings, and a 50 percent point gap is not uncommon (Intizar and Deeptha, 2004).

Almost all reviewed studies using econometric techniques show that irrigation is a positive determinant of incomes and expenditures and a negative determinant of poverty. The probability of households with access to irrigation water being poor is significantly less than those without access to irrigation water. The above mentioned studies provide evidence on this finding (Intizar and Deeptha, 2004).

Similar views in respect of the importance of irrigation on poverty reduction are being shared by Lipton *et al.*, (2003). Hussain (2007) in his study on exploring the link between irrigation and poverty in six Asian countries found that poverty outside of irrigation systems (non-irrigated settings) is almost twice than that within irrigation systems. However badly designed and managed, irrigation systems can have significant impacts on the rural livelihoods.

Some of these may include: a) unreliable supply of water to farmers leading to crop loss and diminishing returns (DFID, 1997; Elakanda, 2007), and b) inequitable distribution of water on account of sediment deposition and growth of weeds in the main channels which may force farmers especially at the tail end of the system to opt out of irrigation agriculture (DFID, 1997). Hasnip (2001) and Smith (2004) identified two inter-related mechanisms through which irrigated agriculture can reduce poverty or in other words improve livelihoods. Important in respect of this study are;

- a) Improvements in the productivity, incomes, employment for irrigator's household and farm labour; and
- b) The linkage and multiplier effects of agricultural intensification for the wider economy.

A study carried out by Gani and Omonona (2009) on resource use efficiency among small scale irrigated maize producers in northern Taraba state of Nigeria reveals a cost and returns per hectare as N55,152.61 and N105,937.50 respectively, which confirm earlier findings in other places.

Conclusion

There is a general consensus that irrigation investments will achieve a broader poverty and food security impacts if efforts are geared towards revitalizing and up-grading of existing traditional small-scale irrigation schemes, with support to enhance access to input supply, output marketing and extension to facilitate access to information and innovations. However, simply providing irrigation infrastructure to farm households is not a guarantee that rural poverty and malnutrition are being reduced. In addition to that, an enabling socio-economic environment (like access to roads, markets, credit, training and information about innovations) must be provided to the poor farmers to actually make them engage in irrigation farming.

Recommendations

Considering the importance of irrigation in sustaining rural livelihoods and poverty alleviation, this study suggest the following;

- i. Providing an enabling socio-economic environment through the provision of access roads, market, credit facilities, training and information to farmers.
- ii. There is need to integrate irrigation farming in government poverty alleviation scheme in Taraba State so as to ensure food security, self reliance, increase employment opportunity and improved quality of life of the citizenry.

REFERENCES

- ADB (Asian Development Bank). 1999. *Fighting poverty in Asia and the Pacific: The poverty reduction strategy*. Manila.
- Central Bank of Nigeria, *Annual Report and Statement of Accounts*, December 2001 and several other issues.
- Chambers, R. & Conway, G. (1992). Sustainable rural livelihoods: practical concepts for the 21st century. IDS Discussion Paper No. 296. Brighton, UK, Institute of Development Studies.
- DFID (1997). The Economics of Maintaining Irrigation Systems. DFID's Water KAR (Knowledge and Research) Projects, October 1996 – September 1997.
- DMFA (Dutch Ministry of Foreign Affairs). 2001. *Poverty reduction Dutch policy in brief*. Netherlands: Government of the Netherlands.
- Elakanda, S. (2007). Key Water Related Issues Identified in Sri Lanka. Paper presented in 4th Thematic Workshop on Water Allocation and Water Rights. 23 – 26 January, 2007, Saitama, Japan.
- Gani, B. S. and Omonona, B.T.(2009). Resource Use Efficiency among Small –Scale Irrigated Maize Producers in Northern Taraba State of Nigeria. *Journal of Human Ecology*, 28(2): 113-119.
- Hasnip, N. *et al*, (2001). Contribution of Irrigation to Sustaining Rural Livelihoods. Literature Review. Report OD/TN 109, September 2001, HR Wallingford UK.
- Hussain, Intizar; Hanjra, M. A. 2003. Does irrigation matter for poverty alleviation: Review of the empirical evidence. Colombo, Sri Lanka: International Water Management Institute.

Hussaini, I. (2007). Irrigation and Poverty Alleviation: pro – poor intervention strategies in irrigated agriculture in Asia. Paper presented in the 4th Asian Regional Conference & 10th International Seminar on Participatory Irrigation Management. 2 – 5 May, 2007, Tehran, Iran.

<http://fadama.org/taraba.html>

IFAD (International Fund for agricultural Development). 2001. Rural poverty report 2001: The challenge of ending rural poverty. New York: Oxford University Press, Inc.

Intizar Hussain and Deeptha Wijerathna. (2004) Irrigation and Income-Poverty Alleviation: A Comparative Analysis of Irrigation Systems in Developing Asia. International Water Management Institute (IWMI) February 2004

Lankford, B. (2003). Irrigation Based Livelihood trends in river basins, theory and policy implications for irrigation development. *Physics and Chemistry of the Earth* 28: 817 – 825.

Lipton, M. *et al* (2003). Preliminary review of the impact of irrigation on poverty with special emphasis on Asia. Food and Agricultural Organization. Rome.

Mac-Leva Fidelis (2008). Nigeria: Mambilla Plateau - Plantation of Slavery, Dwindling Fortunes. Daily Trust Newspaper, 9 August 2008. Lagos. Nigeria.

Narayan, Deepa and Patesch, Patti. 2002. Voices of the poor: From many lands. A Co-publication of Oxford University Press and The World Bank.

Narayan, Deepa; Patel, Raj; Schafft, Kai; Rademacher, Anne; Koch-Schulte, Sarah. 2000a. Voices of the poor: Can anyone hear us. Published by Oxford University Press for the World Bank.

Narayan, Deepa; Chambers, Robert; Shah, Meera Kaul; Patesch, Patti. 2000b. Voices of the poor: Crying out for change. Published by Oxford University Press for the World Bank

OECD- DAC (2001). *Guidelines on poverty reduction*. Parathasarathy, R. 1996. Recent trends in wages and employments of agricultural labour. *Indian Journal of Agricultural Economics* 51(1-2): 145-167.

Oruonye, E.D. and Abbas Bashir (2010) The Geography of Taraba State, Nigeria. Fab Educational Books (*in - press*).

Oruonye, E. D. (2011). An Assessment of Fadama dry Season Farming Through Small Scale Irrigation System in Jalingo LGA, Taraba State. *International Research Journal of Agricultural Science*. Vol. 1(1) pp. 014 – 019. www.interestjournals.org/irjas

Turaki, A.H. (2009). Nigeria: Deep Roots of Food Crises. Daily Trust Newspapers, 5 July 2009.

Sharma, Naranda, P.; T. Damhaup and Associates: *African Water Resources: Challenges and Opportunities for Sustainable Development*, (Technical Paper No. 331, Africa Technical Department Series). The World Bank, Washington D.C. (1996).

UNDP (1997). *Human Development Report 1997*. New York, UNDP. Ut, T.T.;

World Bank. 2000. *World development report 2000/2001: Attacking poverty*. Oxford, World Bank.