OPERATIONAL PERFORMANCE OF IKERE-GORGE DAM IN ISEYIN LOCAL GOVERNMENT AREA OF OYO STATE, SOUTH-WESTERN NIGERIA

OYEDEMI OYELEKAN ADEYEMO
Department of Geography,
College of Education, Lanlate,
Oyo State, Nigeria.

ABSTRACT

This paper assessed the Operational Performance of Ikere Gorge Dam in Iseyin Local Government Area of Oyo State. In achieving this aim, the primary data were collected through personal visitation to the site of the dam, direct observation, oral interview and the administration of 300 questionnaire in the eight selected settlement of Ikere and its environs, and middle Ogun-Osun irrigation scheme as well as Iseyin metropolis. The simple random sampling technique was used. Secondary data were sourced from internet, journals, Ogun-Osun River Basin Development Authority. The findings revealed that, Ikere dam is being under-utilized in areas of fishing, tourism and irrigation. It was further revealed that the potentials of the dam were not tapped at all in the areas of power generation and water supply. Based on the findings, the following recommendations were made: Rehabilitation of the road leading to the dam site from Iseyin, private investors' participation in the tapping of the dam's potentials, provision of steady supply of electricity to pump water for irrigation. Others are procurement and maintenance of irrigation equipments to ensure all year round farming.

Keywords*:* Ikere dam, irrigation and potentials

BACKGROUND TO THE STUDY

The Ikere Gorge Dam is a major earth fill dam in Iseyin Local Government Area of Oyo State in the South West of Nigeria. According to present project Engineer of the dam, four rivers namely Ogun, Owu, Amaka and Oowe were trapped. Ogun River supplies 95% of water to the dam. The dam was initiated by the military regime of General Olusegun Obasanjo and Started in 1983 by the Administration of Alhaji Shehu Shagari. The dam is a multi-purpose dam and was planned to generate 6 megawatts of electricity, to supply water to local communities and to Lagos and to irrigate 3,000 hectares of arable land etc.

Ikere gorge dam is under the control of Ogun-Osun River Basin Development Authority, one of the River Basin Development Authorities in Nigeria. O-ORBDA is in control of Oyo, Ogun, Osun and Lagos States respectively. The River Basins Development Authorities are saddled with the following responsibilities.

- To develop/harness both surface and underground water resources across the country.
- To manage the water resources across the country.

- To control floods.

The Ikere gorge dam being one of the large dams in Nigeria (Ministry of Water Resources and Rural Development Dam Register, 1995), is an earth fill multipurpose dam located at Ikere Gorge some 28km, North-East of Iseyin in Oyo State with reservoir capacity of 690 million m^3, total land area of 47km^2 was designed to serve the following purposes according to Ogun-Osun River Basin Development Authority (OORBDA):

- To generate 6 megawatts of hydroelectricity.
- To provide irrigation water for 3,000 hectares of arable farm land tagged middle Ogun irrigation project. Middle Ogun irrigation scheme is located at the bank of River Ogun between Iseyin and Oyo road.
- To supply 82 million cubic metres (mcm) raw water through the spill way to Ogun and Lagos states especially Iju water works.
- To serve as tourist centre especially for students within and outside Oyo state.
- To provide water supply to Iseyin, Okeho, Iganna and the neighbouring towns.
- To provide 17,325 tons of maize, 954 tons of sorghum and 3,630 tons of cassava tubers annually.
- To serve as means of transportation. According to Ikere dam project manager, there are fifteen landing sites/fishermen settlements. The dam serves as means of moving from one fishermen settlement to another within Ikere vicinity.

PROFILE OF IKERE GORGE DAM

Ikere Gorge Dam has the following descriptions;

Location	-	Ikere village (Iseyin Local Government Area of Oyo State)
Rivers Impounds	-	Rivers Ogun, Owu, Amaka and Oowe
Type	-	Earth fill dam
Total Capacity	-	690 million m^3
Surface Area	-	47 km^2
Depth at intake tower	-	35.599 meters
Intake tower length	-	50 meters

Source: Ogun Osun River Basin Development Authority and Author's field survey (Nov. 2015).

AN OVERVIEW OF DAMS IN NIGERIA

A dam is a hydraulic structure that is usually built across a river to create a reservoir on its upstream side for the purpose of impounding water. Dams are constructed to impound water for the purpose of flood control, water supply, irrigation, energy generation, recreation as well as pollution control of different forms (Gana, 2015). Nigeria as a country is blessed with many built dams for various purposes as mentioned above. The major available ones in the country, their capacities, surface areas, and their primary functions are presented in the table below:

Table 1: Over-view of dams in Nigeria.

S/N	States	Dams	Capacity in millions of M^3	Surface areas hectares	Primary usage
1.	Zamfara State	Bokolori Dam	450	8,000	Irrigation
2.	Kano State	Challawa Gorge Dam	930	10,117	Water supply
3.	Gombe State	Dadin kowa Dam	2,800	29,000	Irrigation
4.	Sokoto State	Goronyo Dam	942	20,000	Irrigation
5.	Oyo State	Ikere gorge Dam	690	4,700	Hydroelectric, water supply, irrigation, fishing
6.	Niger State	Jebba Dam	3,600	35,000	Hydroelectric water supply
7.	Katsina State	Jibiya Dam	142	4,000	Water supply irrigation
8.	Bauchi State	Kafin zaki dam	2,700	22,000	Planned irrigation
9.	Niger State	Kainji dam	15,000	130,000	Hydroelectric
10.	Adamawa State	Kiri dam	615	11,500	Irrigation plans for Hydroelectric
11.	Ogun State	Oyan river dam	270	4,000	Water supply irrigation, Hydroelectric
12.	Niger State	Shiroro dam	Nil	31,200	Hydroelectric power
13.	Kano State	Tipa dam	1,874	17,800	Irrigation water supply
14.	Kebbi State	Zauro polder dam	-	-	Irrigation
15.	Katsina State	Zobe dam	177	5,000	Water supply

Source: Kate (2013) News Agency of Nigeria [culled from Gana (2015)]

STATEMENT OF THE PROBLEM

The World Commission on Dams (WCD2000) report shows that dam promoters systematically exaggerate the benefits of dams. But all over the world, dams have on average generated less power, irrigated less land and provided fewer water supplies than predicted. These have actually placed populations around the dams at greater risk of suffering severe social, economic, cultural and environmental damages. Also, New Energy foundation, Japan

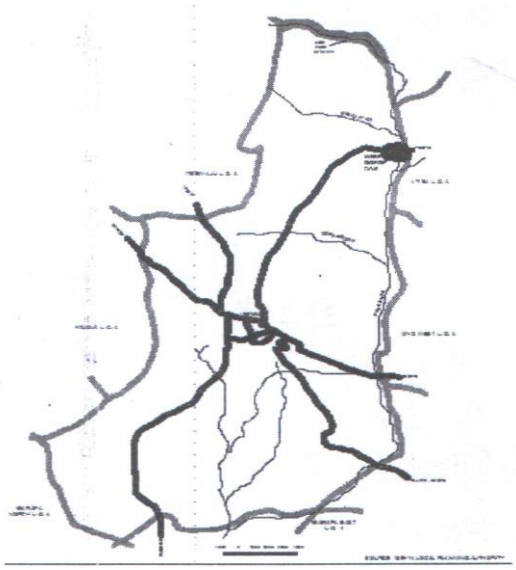
(2006) stated the functions of Dams as supplying protein food, irrigation and demotic water supply, tourist attraction and health resorts, as well as generation of hydroelectric power.

Ikere Gorge Dam which according to project manager of the dam (2015) has a storage capacity of 565million cubic meters and which is ranked fifteen on the dams register in Nigeria and supposed to perform functions as stated above has not been fully utilized to achieve these functions. The enormous volume of water that has been wasting away for more than (three) 3 decades which otherwise would have facilitated the transformation of present levels of social, economic and physical development of Iseyin and other parts of Oke-Ogun region of Oyo State for an improved or better condition is not fully in operation, therefore its transformational potential are barred (Oyediran, 2014).

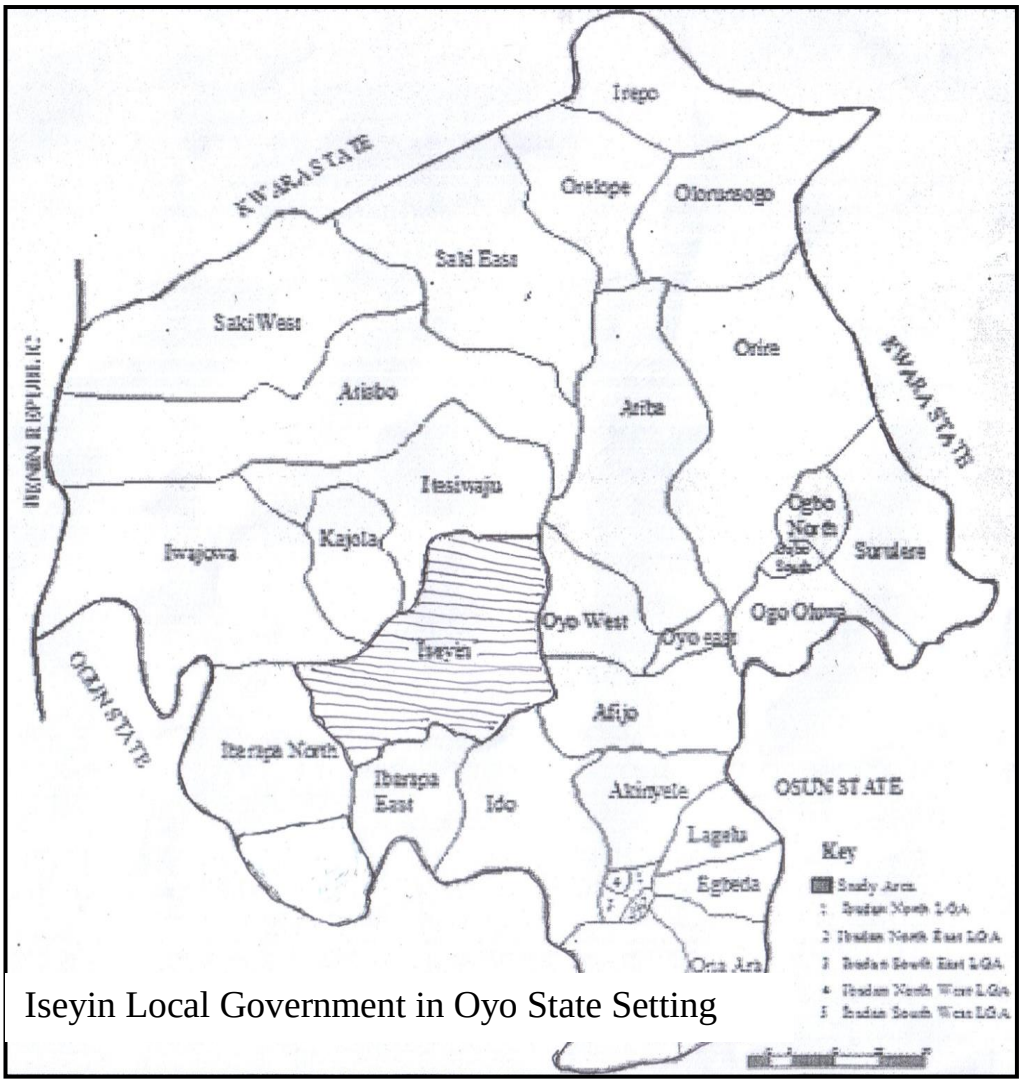
GEOGRAPHY OF THE STUDY AREA

Iseyin Local Government Area is one of the Local Governments that constitute Oke-Ogun Region of Oyo State. The Local Government lies on the geographical coordinates of 7" 58' O' N, and 3" 36' O" E. Iseyin township is approximately 100 Kilometers north of Ibadan. The Local Government is bounded in the West by Ibarapa North and Kajola Local Government area of Oyo State. Bounded in the East by Oyo West Local Government Area, in the North by Itesiwaju Local Government Area of the state and in the South by Ibarapa East Local Government Area of Oyo State.

The local government has a tropical climate. In dry season, there is much less rainfall than in Rain season. This climate is considered to be Aw according to the Koppen Geiger Climatic Classification. The average annual temperature is 26.1^{o}C. In a year, the average rainfall is 1171mm. The least amount of rainfalls occurs in January. The average in this mouth is 7mm. Most precipitation falls in September, with an average of 195mm. The temperatures are highest on average in March at around 28.2^{o}C. In August, the average temperature is 24.0^{o}C. It is the lowest average temperature of the whole year. The variation in the precipitation between the driest and wettest months is 188mm. The average temperatures vary during the year by 4.2^{o}C. The Local Government Area is drained by rivers such as Ogun, Owu, Amaka, Oowe…. e.t.c. The vegetation type is guinea Savanna which characterized by tall and luxuriant grasses with trees such as acasia, locust beans trees, shea butter trees etc (Emielu, 2007).



Location of Ikere Gorge Dam in Iseyin Local Government
(Adapted from Oyediran, 2014)



METHODOLOGY

Data for the purpose of this study were gathered from both primary and secondary sources. Four villages within Ikere dam namely Ikere village itself, Aba, Igborao, Abokede and Alobo were part of the study units. Four villages which include Soku, Gaa Lambe, Ajepere and Apata within the vicinity of middle Ogun-Osun irrigation scheme along Oyo-iseyin road were also parts of the study units. Also Iseyin metropolis as well as Ogun-Oshun River Basin Development Authority were parts of the study units. The primary data were collected through questionnaires administration on the respondents of the various study units. Additional information was also gathered through Oral interview as well as personal observation. Sampling technique used was simple random sampling technique. Twenty five (25) respondents from each of the eight (8) chosen villages were randomly picked for the purpose of the study. One hundred (100) respondents within Iseyin metropolis were also randomly picked. These make the respondents to be three hundred in all.

The researcher paid personal visit to the site of Ikere dam and was able to meet the project manager of the dam in person of Engineer Akingbade Sunday to gather additional facts on the dam. Secondary information on the study was gathered through internet, daily, text books, Journals and Ogun-Osun River Basin Development Authority. The data collected from all the above sources were subjected to simple analytical techniques. Simple tabulation and frequencies were used to analyze the data collected.

ANALYSIS OF DATA AND DISCUSSION OF FINDINGS

Table 1 Sex of the respondents

Sex	Frequency	Percentage
Male	172	57.3%
Female	128	42.7%

Source: Author's Field survey Nov. 2015

The above table revealed that 172 which constitute 57.3% of the respondents were male while 128 with 42.7% were female.

Table 2: Occupation of the respondents

Occupation	Frequency	Percentage
Farming	115	38.3%
Fishing	78	26%
Trading	31	10.3%
Artisans	41	13.7%
Civil Servants	35	11.7%

Source: Author's filed survey Nov. 2015

From the table 2 above, 38.3% of the respondents are farmers while 26% engage in fishing and other fishing related activities such as buying and reselling of fish. Traders constitute 10.3% of the respondents; artisans constitute 13.7% while 11.7% are civil servants. However, the larger percentage of farmers and fishermen are from the eight villages under study with few traders, artisans and civil servants. The civil servants among them are staff of Ogun-Osun River Basin Development Authority and teachers in the local primary schools. Larger percentages of the traders, artisans and civil servants are from Iseyin Metropolis with good knowledge of Ikere gorge dam. Civil servants among them include; local government

workers and teachers. Artisans are rewires, mechanics, vulcanizers, etc who have their workshops very close to the area and road leading to Ikere Gorge dam. One of the traders interviewed was one beer parlour and pepper-soup joint operator nick named Baba Fati who visits Ikere-gorge dam almost on daily basis to buy fish for his business.

Table 3: Performance of Ikere Gorge dam on power generation

Performance	Adequate	Inadequate	Non existence
Frequency of response	Nil	03 (1%)	297 (99%)

Source: Author's field survey Nov. 2015

From the table 3 above, it is evident that up till now the dam has not been utilized to generate hydroelectricity as initially planned. Generating electricity from the dam has remained a dream since 1983. According to the people interviewed and from knowledgeable sources, the equipments brought in by the Shagari led government to the dam were never installed, they had become obsolete. The facilities include turbines which were to generate electricity, two coils which were expected to power the turbines and a purpose built control room. The turbines, rather than generating electricity, are now being used for keeping grains.

To corroborate author's finding on the performance of Ikere Gorge Dam on Power generation, hydropower dams studied by the World Commission on Dams showed an overall tendency to fall short of target. 55% of dams studied by the WCD with hydro power components generated less power than projected.

Table 4: Performance of Ikere Gorge Dam on Irrigation

Performance	Adequate	Inadequate	Non existence
Frequency of response	41 (13.7%)	227 (75.7%)	32 (10.6%)

Source: Author's field survey Nov. 2015

From the table above 227 respondents which constitute 75.7% of the total respondents were of the opinion that the dam has not been performing to expectation as far as irrigation scheme is concerned. That is, irrigation scheme was not operating at optimum level. A visit to Ogun-Osun middle irrigation scheme along Iseyin-Oyo road and some villages around the area by the author revealed that several hectares of land in the scheme are lying fallow waiting for people to acquire them for farming. According to investigation made, electricity is not stable to pump water to the farmland, and if generator plant is to be used, the cost of buying the fuel and maintaining it will be two much for the farmers and Ogun Osun River Basin Authority to bear. In addition, the irrigation project was based on the sprinkler system which is difficult to manage and requires that the farmers be trained. It was also revealed that many local people are not aware of the middle Ogun-Osun River Basin irrigation scheme which leads to poor patronage of the project.

However, further investigation revealed that there is 20 hectares of land set aside for irrigation under centre pivot irrigation scheme. And in the Guardian of Friday, 13 June, 2014, vice chairman of Iseyin Elders' Council in person of Sir Emmanuel Siji Oke appealed to the Federal Ministry of Water Resources through the Ogun-Osun River Basin Development Authority, (ODRBDA) to increase the pivot irrigation project from 20 hectares to 50 hectares to embrace some of the willing farmers, especially graduate youths who are ready to farm rather that roam the street. To corroborate the low performance of Ikere Gorge dam on Irrigation, World Commission on Dam (WCD) study revealed that large dams designed to deliver irrigation services have typically fallen short of physical targets. All 52 irrigation

dams analyzed by WCD irrigated less land area and supplied less water to fields than predicted. According to (WCD 2000), the contribution of large dams to world food production indicates that a $^{1}/_{3}$ of total food production is made possible by irrigation from dams, thus fallen short of world food requirement.

Table 5: Performance of Ikere Gorge Dam on Water Supply

Performance	Adequate	Inadequate	Non existence
Frequency of response	NIL	7 (2.3%)	293 (97.7%)

Source: Author's field survey Nov. 2015

Ikere Gorge multi-purpose dam is to supply water to Iseyin, Okeho, Iganna and the neighbouring towns. This purpose has not been achieved as table 5 revealed the opinions of 97.7% of the total respondents. Since 1983, up till now water from the dam is yet to be tapped and forwarded to Iseyin, Okeho, Iganna and some other towns that supposed to benefit from water supply from the dam.

Table 6: Performance of Ikere Gorge Dam on fishing

Performance	Adequate	Inadequate	Non existence
Frequency of response	170 (56.7%)	109 (36.3%)	21 (7%)

Source: Author's field survey Nov. 2015

Fishing is no doubt one of the major occupations of Ikere people and its environs. But investigation revealed that, it is not done in large scale as evident in the crude implements they use in catching fish. Apart from nets, another locally made fish catching device used by these people is 'Gora' (a special basket made to entrap fishes). From the table 6 above 36.3% of the respondents were of the opinion that fishing was not operating at optimum level at Ikere Gorge dam while 7% do not see the dam as performing any meaningful fishing function. But efforts are being made by individuals and corporate bodies to embark on large scale fishing at the dam.

A good example is Tilapia Association of Nigeria, choice fisheries consults Ltd and Amolese Aquaculture Nig. Ltd among others. These individuals and corporate bodies are making efforts to tap the fishing potentials of Ikere Gorge dam on large and commercial scales.

Table 7: Performance of Ikere Gorge Dam on Tourism

Performance	Adequate	Inadequate	Non existence
Response	36 (12%)	242 (80.7%)	22 (7.3%)

Source: Author's field survey Nov. 2015

When the author visited the Ikere Dam in site in November 2015, the road leading to the dam was rough and in deplorable condition. Investigation revealed that the dam used to be the beehives of tourists in the past when the road was in good condition, but the present condition of the road is holding the people back from visiting the dam. The findings revealed that, before the road became so bad, so many institutions and universities within and outside Oyo state used to go to the dam for field trips and excursion. The responses of the respondents corroborated the fact that the dam is no longer attract tourists to itself as 80.7% of them agreed to the fact that the dam presently is not operating at optimum level as far as tourism is concerned.

CONCLUSION

This paper examined the operational performance of Ikere Gorge Dam. The Dam is expected to perform the designated functions as contained in the reasons for siting it. However the dam has not been put into proper use either due to the under-utilization in area of fishing, tourism and irrigation or due to the non-utilization in area of power generation, and water supply. However, if the under-listed recommendations could be followed, the dam would be able to put into proper use and its potentials would be fully maximized.

RECOMMENDATIONS

- The concerned authorities, either Oyo State Government or Ogun-Osun River Basins Development Authority through Federal Ministry of Water Resources and Rural Development should see it as a matter of urgency to rehabilitate the road leading to the dam or alternatively private investors could be allowed to rehabilitate the road and collect toll on it. This will make numerous potentials of the dam to be fully maximized.

- Private investors should be encouraged by the authorities concerned to come and invest in the development of the dam. The dam can be leased out to interested private investors to generate electricity, to supply water to the wiling communities and even to embark on large scale commercial fishing. Through this, revenue would be generated for the government and it will improve and better physical, social and economic conditions of the study area.

- The author's personal investigation revealed that farmers are restricted to only planting of cassava at the middle Ogun-Osun River Basin irrigation project. It is therefore recommended that planting of variety of crops of farmers' choice should be allowed to attract high patronage of irrigation scheme.

- Electricity to pump water to irrigate the land should be made stable and necessary equipments on irrigation should be procured and maintained to ensure all year round farming in the designated areas of irrigation scheme.

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