
ASSESSMENT OF SOCIO-ECONOMIC INDICATORS AND THEIR IMPACTS ON AFFORDABILITY OF POTABLE WATER IN OKADA TOWN AND ENVIRONS

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ABSTRACT

The purpose of this study is to prepare base line data (comprising, socio-economic indicators and related factors) which will contribute toward finding lasting solution to water supply and associated problem in the study project area. The main socio-economic indicators of the host community assessed include; Mean Size of Households; Occupation Distribution; Income; Family expenditure; Sanitary status; Access to potable water and Poverty incidence level. The mean size of nuclear household including dependents is 10. As high as 93% of the population obtain water from seasonal streams, pond and other unsatisfactory sources. Petty traders (15.4%) and farmers (7.2%), form the most part of occupational group with substantial proportion of under aged dependents and young school children. The unemployed is as high as 19.5%. More than half (50.1%) of the population have very low monthly income of ₦1,000 to ₦5,000 which falls below the Edo State average of ₦5,539.80 (Level of poverty is given as; extreme poverty level, 9.1%; moderately poor, 30.3%; non-poor, 60.6%). Only 6.5% of the water consumers earn monthly income of the minimum wage of ₦18,000. 4.1% earn monthly income of ₦61,000 and above. Overwhelming majority (72,8 %) are very poor, and consequently, prefer free services. These points should be borne in mind in determining affordable water rates. It is based on the forgoing, that the affordable water rate for water consumers in the study areas is proposed.

Keywords: Socio-Economic Indicators; Affordability; Portable water.

INTRODUCTION

Scarcity of portable water or poor affordability of good drinking water can lead to high prevalence of water related diseases including parasitic infections (Okafor-Elenwo and Eze, 2021). Many rural dwellers are very poor and lack vital amenities for social and healthy living. As a result of neglect and deficiency of basic necessities of life in poor rural communities, a good number of people suffer immense social and health challenges while the government still concentrate more effort towards enhancing the conditions of the over populated urban areas (Owamah *et al*, 2014;Bhasin *et al*, 2020).

The present study area is socio-economically backward, with low accessibility and affordability of potable water. The water supply of 80 m³/day is very grossly inadequate compared to estimated present daily water demand of 126,115 m³/day and 20-year estimated target water demand of 219,678 m³/day. This existing water supply situation in the study area clearly falls short of the water supply standards and accessibility as recommended by National Water Supply and Sanitation Policy (NWSSP). Unfortunately, the study area has a non-functioning existing mini-water scheme (Eze *et al*, 2013), very few sources of surface water, rivers and streams, etc. and undeveloped ground water potentials (Eze and Ezugwu, 2012), which have partly contributed to the water supply problem in the area. The study surveyed and assessed socio-economic indicators and their impact on affordability of potable water.

MATERIALS AND METHODS

Study Project Site:

The primary study area is Okada town (and its environs) capital of Ovia North East Local Government Area, Edo State, Nigeria. The present population is estimated to be over 80,000. It is bound in the South by Okhai and Iguobazuwa; West by Usen; North by Iguomo and East by Ofunwegbe and Ekhiadolor fig 1. Okada is located between latitudes 4.5⁰N and 5⁰N; longitudes 5.5⁰E and 6⁰E. It lies in the rainfall belt of Southern Nigeria (Mabogunje, 1976), with ample annual rainfall of about 2300 mm and abundant sunshine. The area is primarily, an agricultural area with very fertile soil. It is very important socio-economically/commercially and has prospects of becoming an urban area if the present status is upgraded.

There are many institutions (private, mission and government) of learning including a private university in Okada. Presence of the university (Igbinedion University, Okada – Nigerian Premier University) in Okada has attracted many people especially, traders, transporters and job-seekers to the community. Consequently, the population of Okada is constantly on the increase with the attendant water demand problems (Okafor- Elenwo and Eze, 2021).

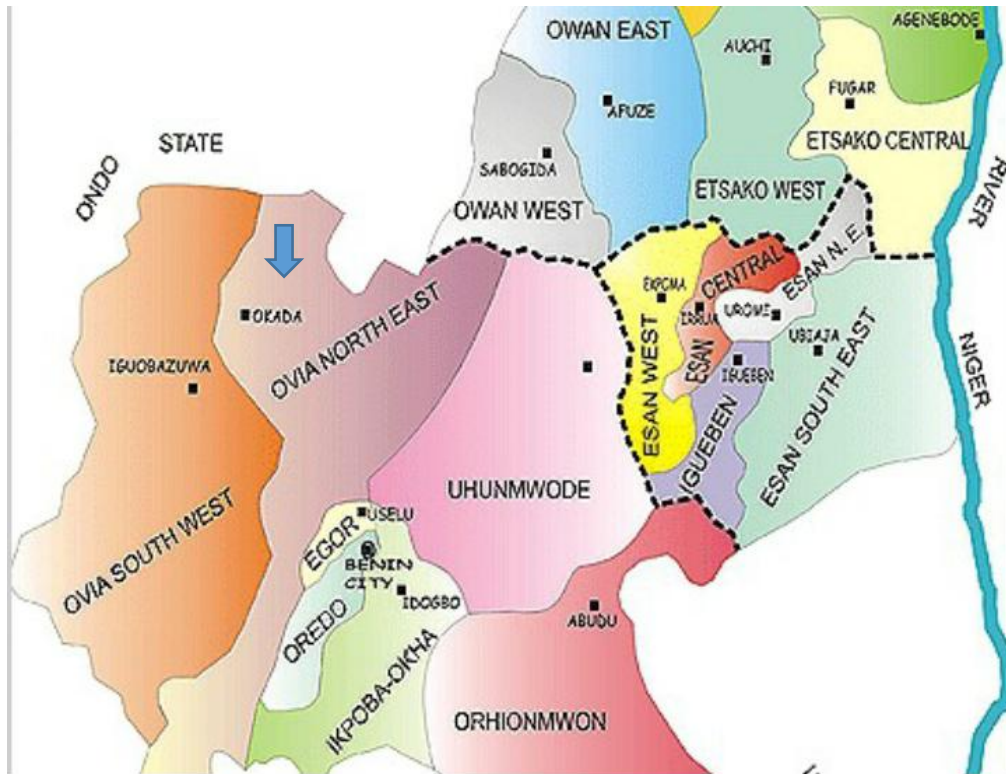


Figure 1. Map of Edo State showing Okada the study site (↙)

B. Study design

This involved enumeration, questionnaires and field Survey:

- Enumeration of the present population of the host community and its composition; density and distribution patterns.
- Use of questionnaires for collection of primary baseline data from the host community respondents
- Field Survey, surveys, distribution, collection, submission, collation and analysis of data.
- To prepare base line data (comprising, socio-economic indicators and related factors)

RESULTS

Survey of water supply to water consumers by various sources (public and private) shows that 55.2% of the population obtains water mostly from streams; 31.5% obtains water from boreholes.; while 9.5% obtains water from public taps run by the Edo State Urban Water Board. 2.3% gets water from wells, while 1.5% gets water from unsatisfactory sources such as pond. Every household gets some water by rain water harvesting during rainy season, table 1.

Field survey of reliability of quality of various sources of water supply to the consumer's assessment showed six sources of water to the study population, table 2. Rain water and

bottled water were regarded as very clean. Public taps, wells, borehole and streams represent fairly clean water while water from ponds is regarded as dirty water. Mean size of household for Okada host community / Environs is put at 10. (Considering a nuclear household of mean size is six (6) children and two (2) dependents, including the two (2) parents.

Analysis of the study population by type of occupation is shown in fig 2, with petty traders, peasant farmers, apprentices and the unemployed dominating the higher cadres.

Field survey studies carried for income range of between ₦1000 to ₦5000 is shown in table 4. 50.1% of the population earn salaries between 1000 and 5,000 naira only; 30% of them earn more than five thousand naira but not beyond ten thousand naira. Other categories of income have very low occurrence (<10%).

Field survey of amount of money needed to meet typical household expenses on such basic essential services as water tariff; NEPA / Electricity Bills; food; medical bills and children school fees) are shown in fig.2 below. The area of concentration of most households is food. This is seconded by school fees in the minority of cases. Others such as water rates, electricity and medical services etc. among the list, receive less attention and consequently attract less expenditures.

Table 1: Various Sources of Water Supply in Okada and Water Consumer Distribution

Item No.	Various Water Sources	Distribution of Water Consumers who Obtain their Water from the Source	
		Number	% Distribution
1.	Public Taps (EDSUWB)	95	9.5
2.	Boreholes	315	31.5
3.	Wells	23	2.3
4.	Ponds	15	1.5
5.	Streams	552	55.2
	Total	1,000	100
6.	Rain Harvesting	All	100

Table 2: Assessment of Reliability (Quality) of various sources of water supply to the consumers

Item No.	Various Water Sources	Level of Reliability of Water Sources			
		Very Clean	Fairly Clean	Dirty	Very Dirty
1.	Public Taps (EDSUWB)		√		
2.	Boreholes		√		
3.	Wells		√		
4.	Ponds			√	
5.	Streams		√		
6.	Rain Harvesting	√			
7.	Pure Water (Sachet or Bottled)	√			

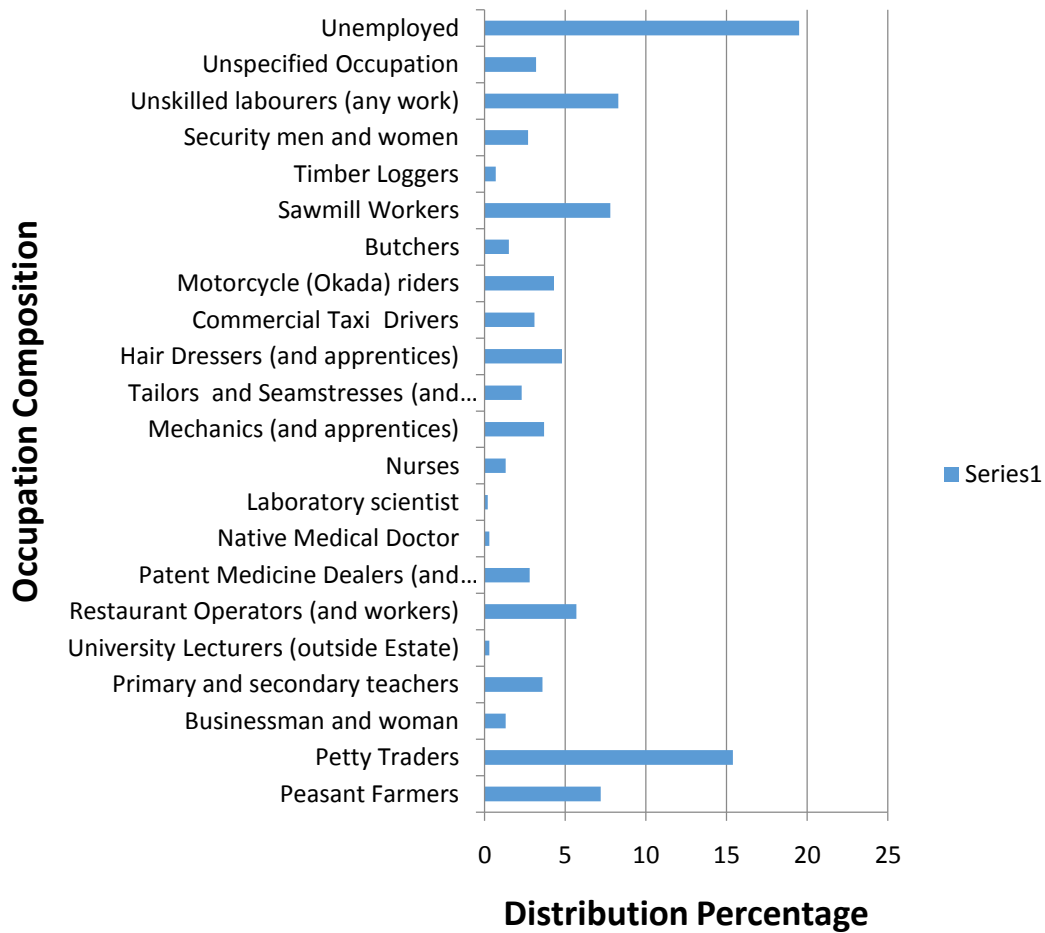


Fig. 2: Occupation Composition and Distribution of Population Household Mean Income

Table 3: Income Category and Distribution of Population

Item No.	Monthly Income Category (Naira)	Distribution	
		Number	% Distribution
1.	1,000 – 5000	501	50.1
2.	5,100 – 10,000	300	30.0
3.	11,000 – 20,000	65	6.5
4.	21,000 – 40,000	50	5.0
5.	41,000 – 60,000	43	4.3
6.	61,000 – 80,000	26	2.6
7.	81,000 and above	15	1.5
	Total	1,000	100

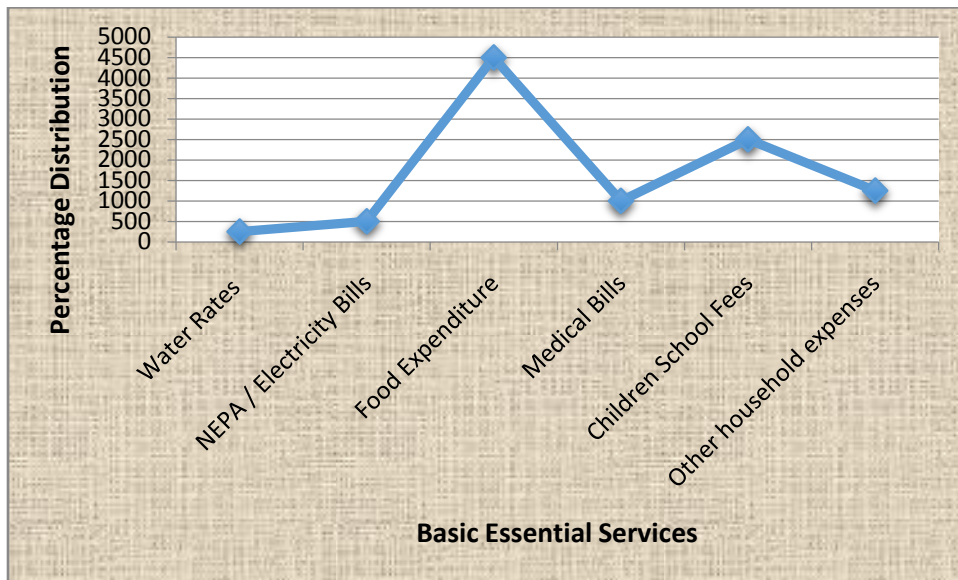


Fig. 3: Minimum amount of money needed to meet typical household expenses

Table 4: Proposed Affordable Water Rate/Tariff for Households

Item No.	Water Tariff Monthly	Category (Naira);	Distribution	
			Number	% Distribution
1.	Free of charge		91	72.8
2.	1,000 – 2,000		24	19.2
3.	2,100 – 3,000		7	5.6
4.	3,100 – 4,000		3	2.4
	Above 4,000		Nil	0
	Total		125	100

Discussion

According to the National Demographic and Health Survey (NDHS, 2000), about 4.4% of households in Edo State had access to piped water which placed the state in the fourth position nationally. The survey details further revealed that percentage of Household by source of water according to place of residence was water piped into residence 10.3%; piped into yard (8.6%); well with pump (7.2%); public tap (24.5%) surface water (27.4%) and other (8.8%); (Federal Office of Statistics (FOS, 2003); National Demographic Household Survey (NDHS, 2000). The report of General Household Survey Component conducted by LGAs, GHSC (2000) further showed that percentage of households that need water from seasonal streams, pond and other unsatisfactory sources was as high as 93% in most part of the state including Okada.

This existing water supply situation in the study area clearly fall short of the water supply standards and accessibility as recommended by National Water Supply and Sanitation Policy (NWSSP 2003) in collaboration with UNICEF and WHO (2000). According to Social Economic Indicators (SEPN; 2003), water borne diseases such as cholera, dysentery, typhoid

fever etc. were listed among major possible causes of infant mortality in the project study area.

The rural nature of the study area is depicted further by their occupational composition in which petty traders and peasant farmers with under-aged dependents and school children dominating the other categories. According to Federal Office of Statistics; FOS (2000), mean size of household for Edo State is 8. This implies that the mean size of household for Okada host community is greater than the Edo State average.

Mean Income of Household of the present population (1,000-5,000) is low and falls below the Edo State average of ₦5,539.80 (Urban = ₦5,517.30 and Rural = ₦5,567.10) respectively (FOS, 2000).

That is the dwellers who are mostly peasant farmers and petty traders who are very poor. They cannot pay reasonable water rate which can support any significant sustainable water supply scheme.

Only 6.5% of the water consumers can manage to earn monthly income very close to the minimum wage of N18,000. And only a minority population which form combined 4.1% earn monthly income of N61,000 and above. These are mostly sawmill owners / operators and filling services station owners. This point should be borne in mind in determining affordable water rates

Affordable water tariff for water consumer population in Okada and environs is determined by considering all operating factors and constraints; namely: (i) low income and limited source of income; (ii) large household size and dependency factor; (iii) poverty incidence level; and (iv) high rate of illiteracy. Based on the forgoing, the affordable water rate for the proposed water consumers is pegged or estimated N1,200.

But since majority of the water consumers are very poor the proposed water scheme will be run mostly as a social project with contributions from three tiers of government; namely: Local LGs; State and Federal Governments.

Most of the inhabitants of the Okada or the primary host community are mostly peasants and poor with extended family dependency and low income and could hardly afford to pay reasonable water tariffs needed to run a mini-water scheme. People will be very willing to pay for water service which is very satisfactory with reasonable tariffs. However, if there is service, consumers are willing to pay.

Conclusion

We conclude that from our assessment, the host community is grossly lacking in major socio-economic indicators, and that these factors contributed to inability of the host community to afford potable water. Since water consumers in the beneficiary host communities are very poor and unable to afford meaningful potable water, it is pertinent that our Government at all levels (local; state and federal government), should continue to subsidize available water supply schemes and should be provided mostly as social services.

Moreover, due to the depth of poverty and socioeconomic backwardness of most Nigerian rural communities, we call on the international communities (such as the European Union; NEPAD, etc.) and various multi-national Financial Institutions (such as World Bank; AfDB) to continue to assist Africa in sustaining existing water supply schemes.

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