

Water sources assessment for edo state, nigeria



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AN ASSESSMENT OF WATER SOURCES FOR DOMESTIC USES IN EDO STATE, NIGERIA

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Abstract

The study was carried out to assess the water sources for domestic uses in Edo State, by carrying out a survey of households in Ugo, Ebele, Igueben and Urhonigbe. Data were collected using various methods which included observations, oral interviews and questionnaires. On the whole, one hundred and sixty (160) questionnaires were administered on heads of householder. Information were gathered on various sources of water, those provided by the government, distances they go, the cost they buy water, the people who are involved in water collection and what the government should do to help in alleviating their problems. The findings have shown that generally, one major source is rain water stored in wells. From the study almost all the respondents said they fetch water from their domestic uses from dug out wells which their roofs help during the rains for them to trapped and store in underground hand-dug wells. The nearest stream is at Umutu, which is about 20 kilometer away in Delta State. There were only four families with water boreholes for commercial purposes. These water vendors sell water at N5 per ten litres. This is out of the reach of many people in this community to satisfy their water demands. The water board was observed to be non-functional. Reasons advanced by the respondents were poor power supply, inadequate operators, breakdown of equipment and poor maintenance. In conclusion, in Urhonigbe in Edo State of Nigeria, the sources of water for

domestic uses are inadequate. There is every likelihood that even the existing water from the dugout wells will be contaminated and not portable. It is therefore recommended that the Edo State government through the state water Board should assist in water supply development in Ugo, Ebele, Igueben, Urhonigbe town to ease the sufferings of the ruralites especially the women and children whose daily chores is providing water for domestic uses. They should equally make the water portable in order to make for good health all these are what this study has looked into.

Introduction

Water use varies considerably around the world depending on the availability of water and the degree of industrialization. However, water use can be classified into four broad categories:

- Domestic use
- Agricultural use
- Industrial use and
- In-stream use

Water is important for domestic, agricultural and industrial uses. The study of water and the means by which it may be obtained and controlled for use is of utmost importance to the welfare of mankind, Lapades (1974). About 70% of the earth is covered by water, which is the next most abundant resource after, air, water is the only natural resource founding three states of matter, (gas, liquid and solid) (Ifabiyi, 2000). Apart from air, water is the most important resources to man. He can survive longer without food than without water. Man requires water for cooking drinking, washing, general sanitation

(Ayoade and Oyebande, 1983), based on this Charley and Hagget (1969) has stressed that the availability of water has been important in sitting of human settlements and in the development of towns and cities. The use of water from drinking and household needs ranges from washing, cooking, bathing and for flushing of toilets and for general hygiene (Jennings, 1980).

It is universally accepted that an adequate supply of water for drinking, personal hygiene and other domestic purposes is essential to public health and well-being. According to a United Nations publication, on water security 2004, they posited that 1. 2 billion people live on less than one U. S. dollar a day and over 2. 3 billion live on the equivalent of two U. S dollar or less. These people, who are in millions are of the world's poor, use less water directly or indirectly but depend upon its resources for their livelihoods for more than the rest of us, out of the 500 million people living in sub-Saharan African the World Health Organization (WHO) and the United Nations International Children Emergency Fund (UNICEF) (1990), revealed that about 256 million lacked safe water for use. This situation is worse in some drought affected areas where renewable fresh water has dropped per person by more than 65% over the past 40 years (Ifabiyi, 2000).

It is a well known fact that large numbers of people in Nigeria, most of them living in rural areas, do not have access to safe and reliable source of water. The average daily requirement of an adult for alimentation only is 2. 5 liters (Isaac, 1965). Under the tropical conditions, the amount may be double. In addition much greater quantities are required for domestic activities. Total domestic water needs in home with piped water and inside sanitation is at least 115 liters per head per day.

Study Area

The total population figure of Edo State by 2006 as given by national Population Commission is 3, 117, 852 showing that the need for water will be high. In the rural communities in Edo State, there are various sources through which water are got for domestic uses. This main objective for this study is an assessment of sources of water for domestic uses in Edo State. This study focuses on the assessment of water sources for domestic uses in some towns in Edo State.

Methodology

Data for this study were collected through primary sources, which consisted of personal observation, oral interview and questionnaire administration. On the whole one hundred and sixty questionnaires were administered on the respondents in Ugo, Ebele, Iguben and Urhonigbe which were selected rural villages in Edo State based on the severity of water problems. Random sampling techniques were applied. A total of one hundred and sixty questionnaires were administered on the basis of forty to each rural community. The data gathered were presented in tables expressed percentages. The biological characteristics of the quality of water from these rural communities were analyzed with the most probable scientific methods.

Various Sources of Domestic Water

Rural areas in Edo state, Nigeria have several sources of water which are used for domestic purposes. The sources vary from natural sources like from rivers, streams, rain water, dugout wells, boreholes and in few cases pipe

born waters. These rural communities rely on various sources for their households needs as water is for daily need and throughout the year. The study revealed that the main source of water for domestic use is from dug well in which water from rainfall gathered from the roof.

Surface Water

These are waters which are found in streams, rivers, lakes, springs, dams and shallow wells. Surface water is the commonest water in the rural villages in the developing countries. Women and children get up early in the morning to go to fetch water for domestic uses in these villages. One major problem is that most of these surface waters are polluted all along the path ways through which the flow. People have their baths wash their clothes, cooking utensils and even some abattoirs are close to them which help in polluting and making the water unsafe for drinking and utilization for other domestic purposes.

Ground Water Resources

Groundwater is an important part of the hydrologic cycle, but it lies beneath the surface, beyond the soil-moisture root zones. It is tied to surface supplies through pores in soil and rock. Ground water is the largest potential of fresh water source in the hydrologic cycle-larger than all surface lakes and streams combined. About 50% of the U. S Population derives a portion of its fresh water from ground water sources. Between 1950 and 1995, annual ground water withdrawal increased to 150%. In some states such as Nebraska ground water supplies 85% of water need and as high as 100% in rural areas, Robert (2002). Despite this volume and its obvious importance <https://assignbuster.com/water-sources-assessment-for-edo-state-nigeria/>

groundwater is widely abused by pollution and over consumption in quantities beyond natural replenishment rates.

In Canada, about 6 million people (two-third of them live in rural areas) rely on ground water for domestic needs. In many ways ground water is better than surface water. It is available in many parts of the world that lack dependable surface runoff. Whereas surface supplies are affected by short term drought, groundwater is generally free of sediment colour, and pathogenic (disease) organism, although, polluted ground water conditions are considered irreversible. Ground water movement is controlled by the slope of the water table. Ground water is one source of water but it is not very common yet in the rural areas because of the cost of sinking.

Rainwater Harvesting Techniques

Edo State is not endowed so much with surface water. In rural area of Nigeria, water is traditionally, managed for two major purpose namely domestic consumption and agriculture. The techniques of water harvesting are micro-catchments and roof collection (Olokesusi, 2004). With reference to roof collection techniques, until the advent of western containers such as plastic sand metal African typically collected rain water from roof-tops with the aid of calabashes, and earthen ware pots. These objects are merely placed below the roof eaves and the water drops into them. Another traditional collection techniques, involved the construction of sliced bamboo gutters along the roof eaves, through which the water flows into calabashes and earthen pots. The water would then be taken into homes for domestic uses.

Rural Water Treatment

In many rural areas of in parts of Edo State water used in homes especially those for drinking area treated in various ways at the level they understand. Whenever surface water has been collected it is allowed to stand for some hours before it is decanted into earthen pots for storage. Some add alum in other to pull down sediments in the water to the bottom of the container after which they use some add ash and only a few boil cool before they use as drinking water.

Results

Table I: Water use and Sources in the Sample Communities

Source of water	Location		Iguebe		Urhonigb			
	Ebele	n	n	%	n	%	n	%
Rain water	10	25	14	35	6	15	8	20
Well	25	62.5	20	50	30	75	28	70
Stream	2	5	0	0	0	0	0	0
Bore holes	3	7.5	6	15	4	10	4	10

Public pump	0	0	0	0	0	0	0	0
Total	40	100	40	100	40	100	40	100

Source: survey data, Feb. 2009.

In the four rural areas studied, water stored in the well is commonly used for domestic purposes in Edo State, In order of usage Igueben recorded (75%), Urhonigbe (70%), Ugo (62. 5), and Ebele (50%) respectively(see table 1). Only a few uses bore hole and also since state surface water is very scare no respondent mentioned stream as a water source in Ebele, Igueben and Urhonighe. Public pump were not mentioned at all. This is because in many places in Edo State surface water is lacking and is a manor problem for the people residing in these villages.

Table II: Local methods of storing water by the respondents

Water storage method	No	%
Dugout wells	70	43. 75
Clay earthen wares	50	37. 5
Plastic tanks	20	12. 5
Kegs/ 20 liters and 10 liters	10	6. 25

Total 160 100%

Source: Survey data Feb, 2009.

Local methods used for storing water as gathered from the respondents are dugout well (43. 75%), clay earthen wares (37. 5%), plastic tanks (12. 5%) and kegs of different sizes (6. 25%). There is revelation that traditional was of storing and preserving water in the rural areas of Edo State is not being combined with the modern types. For instance one of the respondents interviewed mentioned that if many of the ruralites can afford plastic water tanks that they prefer it to earthen wares which break up easily.

Table 3: Cost of Water for Domestic Uses on Daily Bases

Cost	No of Results	Percentage
N5	14	8. 8
N10	41	25. 6
N20	53	33. 1
N30	32	20
N40 and above	20	12. 5
Total	160	100%

Source: Survey data Feb., 2009.

It is evident from table 3 that most people spend an average of N20. 00 daily to buy water. Thirty two people spend N30. 00; forty one respondents agreed that they spend N10. 00 daily to buy water. The implication of these expenses is that these rural inhabitants spent between N300. 00 to N900. 00 and these are predominately peasant farmers.

Table 4: Causes of water shortage

Causes of water shortage	No of Respondents	%
Government neglect	97	61
Low rainfall	8	5
Absence of surface water	32	20
Few private scheme	23	14
Total	160	100%

Source: Survey data Feb. 2009.

Table 3 revealed that the government neglect is the major cause of water shortage accounting for 61 percent of responses followed by absence of surface water that accounted 20 percent. Few private borehole schemes accounted for 14. 4 percent and low rainfall 5 percent.

Quality of Water in the Rural Area of Edo State

The rainwater quality in the four rural areas of Edo state showed satisfactory concentration in their physico-chemical and microbiological characteristics. This is because they fell with 2006 World Health Organization (WHO) safe limits for domestic water (see Onotu, 2006), thus it should be harvested, stored and use as alternative source of water for domestic uses since there is virtually the absent of hand-dug wells in these rural communities. The absent of hand dug wells in these rural areas could be attributed the topography of the area which is over 150 feet. The well is rain fed types, where gutter is connected round the roof and a ridge is connected from the gutter to the cemented wells. Nevertheless the rain water need slight purification methods (through traditional and scientific approaches) should be adopted in terms of its pH, Zn and Fe concentration. The detail method could be seen (Efe, 2006 and Origho, 2009). However the quality of the rain water stored in those wells depreciates with times, the residents adopt the addition of Alum, this actually only allows the suspended substance or particles to settle down. According to Efe (2006) the water quality stored in rain fed wells depreciate by 2% on monthly basis, and gives room for the growth of pathogens.

Similarly long storage the rain water makes the quality of the water from these wells vulnerable to bacterial. For instance high concentration of total coliform 1. 2 -2. 3MPN/100ml and faecal coliform (0. 23-1. 00) were found in over 40% of the rain fed water samples. And the water is characterized with high level of total dissolve substance (TDS) and total suspended solids (TSS),

turbidity. The water quality was observed in open wells and those covered with leaf and thatches.

Conclusion and Recommendation

In conclusion in Edo State of Nigeria, the sources of water for domestic uses are inadequate. There is ever likelihood, that even the existing water from the dug-out wells which almost of the household have and water stored in plastic tanks which were from rainfall harvesting will be contaminated. Water born disease will be prevalent and the sanitary level will be very low.

It is therefore recommended that the Edo State Government, through the state water Board should assist in the water supply development in the State to ease the suffering of the women and their children whose duty on a daily basis is to provide water in various homes in the various areas studied. They should equally make the water potable by adopting some purification methods in order to make for good health and healthy living in these rural environments.

REFERENCES

Aderibighe, S. A., Awoyemi, A. O. and Osagbemi, G. K. 2008. " Availability, Adequacy and Quality of Water Supply in Ilorin Metropolis", Nigeria, *European Journal of Scientific Research*, Vol. 23. No 4.

Anyadike, R. N. 1984. " Managing Nigeria's Water Resources Through Pollution Control", paper presented at the 27th Annual Conference of the N. G. A. University of Nigeria, Nsukka.

Ayoade, J. O. and Oyebande, B. L., 1985. *In a Geography of Nigerian Development ed* , by Oeuntoyinbo et al published by Heinemann Educational Books (Nig), Ltd, Ibadan.

Efe, S. I. (2006) Quality of Rainwater Harvesting for Rural Communities of Delta State, Nigeria. *The Environmentalist*, vol. 26, pp. 175-181

Onotu, E, (2006) Quality of Surface Water in Edo State, Nigeria. Unpublished B. Sc Dissertation in the Dept. of Geography and Regional planning, Delta State University, Abraka, pp23-45

Origho, T. (2009) Assessment of Rainwater Harvesting in Ughelli delta State , Nigeria, Unpublished M. Sc Dissertation Dept. of Geography and Regional Planning, Delta State University, Abraka, Nigeria pp16-67