

The Roles Played by Education in the Provision and Sustenance of Portable Water Supply; Case study of Bosso and Paikoro Local Government Areas of Niger State

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Abstract

It is no doubt that Education plays vital roles in the running of every sector of life be it health, transport, agriculture etc. That is the success of every human endeavor is greatly related to how informed the people are. This is also true about the provision and sustenance of portable water. Repeated visits were made by the Author to some communities in Bosso and Paikoro local government areas of Niger state with the view of finding the following; the sponsor(s) of the water points, comparative participation of the communities in the provision and sustenance of water points, the frequencies of the breakdown of the hand pumps among others. During the visits it was observed that about 95 percent of the cost of provision and sustenance of portable water was the responsibility of the government. This led to inadequate provision and sustenance of the water points, frequent breakdowns and lack of maintenance of the hand pumps. This in turn made the issue of sustainability very difficult. Proper education of these communities by the Author have led to a lot of improvement in the provision and sustenance of potable water points. This is indicated increase in the number of water points and in the rate of hand pump maintenance.

Introduction

Man has always tried to exploit the hydrologic cycle at one or more point in order to utilize the water for a variety of uses. In many States of the Central and Northern Nigeria, the provision and sustainability of this very important resource is not being adequately done, especially in the rural areas where about 70% of the population lives.

The provision of portable water in these communities is mostly through the construction of boreholes and hand dug wells. The boreholes are mostly installed with hand pumps operated machines.

Large investments have been made in the rural water sector in the past but a great number of the projects have reported deficiencies and systems that are not functioning. Meeting short term needs and at the same time establishing conditions for future in order not to lose what has been gained is being identified as the main challenges for the future and present generations.

Sustainability according to Collins Cobuild English Language Dictionary, is defined as something which is kept up for a long time. In the Beneficiary's point of view (in this case, the rural dweller and the

woman in particular), sustainability is to ensure that water services continue to function reliably and well. This should also correspond to a desired service level at an affordable cost. In context, the boreholes should function through out the year with only infrequent breakdowns, which are quickly repaired.

Objectives

This work seeks to know the cause(s) of inadequate provision and sustenance of portable water in these communities. It also aims at profiling solution(s) to these problems and to apply these solution(s) in solving them.

The Study Area

The study area is (parts of Paikoro and Bosso L.G.A's) located in Niger State of Central Nigeria. (Fig. 1). The climate is like much of West Africa. The day light temperatures vary from about 24°C at the middle of the wet season to over 35°C at the peak of the dry season (Shekwolo 1983). The vegetation is Guinea Savannah type with grasses between 0.5 to 2.5m high, and short broad-leafed trees up to 17m in height. The trees and shrubs are scattered but a few concentration is found along the streams. The average monthly rainfall is about 150mm with a peak period

occurring between August and September. The average annual rainfall is usually between 700 – 750mm. The relief falls within two main units which are the high ridges and the low lying terraces which give rise to undulating feature of area. This makes agricultural activities (which are mostly farming) very suitable.

The major ethnic groups are the Gwari people. A few others are Kadara and Koro. These people are mostly farmers producing food and cash crops alike. The women and children also participate greatly in the farm work.

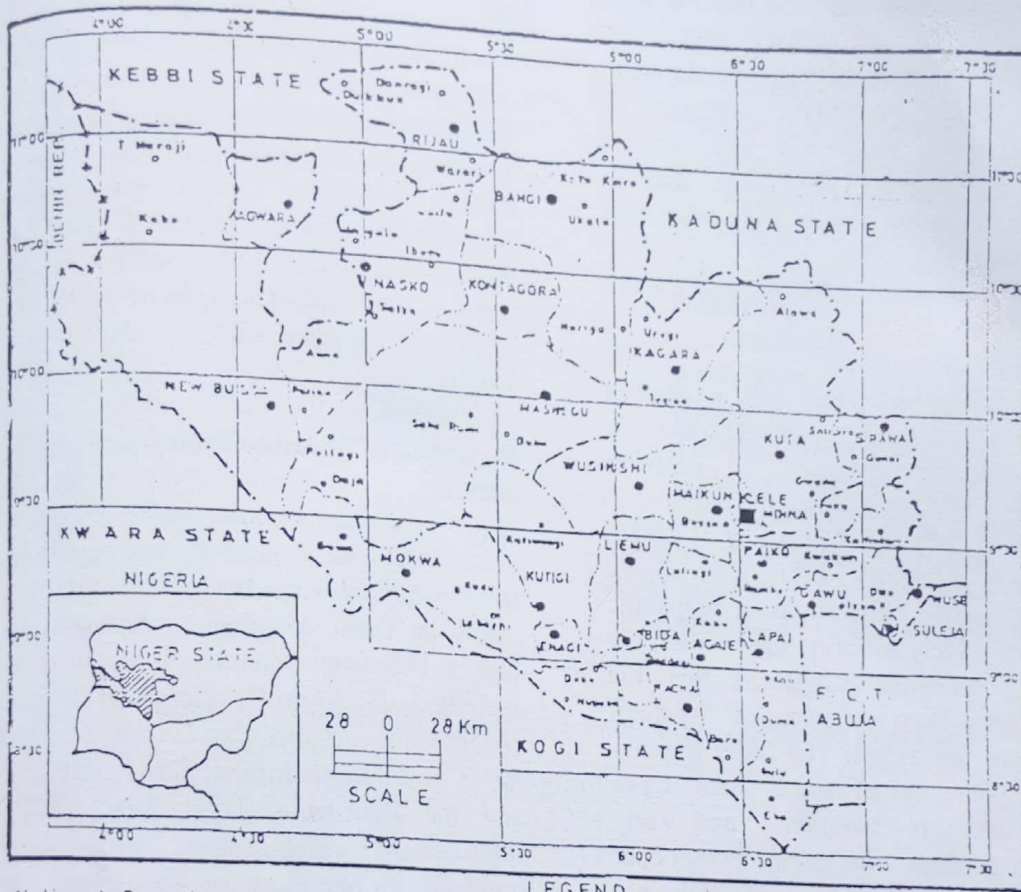


Figure 1 ADMINISTRATIVE MAP OF NIGER STATE

The Geological Setting

The area under study falls within the basement rocks complex of Niger State. So the geological setting will be discussed under the general geological setting of the Nigerian basement complex. The Nigerian basement complex is mostly underlain by S migmatites and constitutes about 55% of the surface area (Bawa S M1999). Most Authors agree with the view that the rocks are largely of sedimentary origin and associated with minor igneous rocks which have been variably altered by metamorphism, magmatic and igneous processes. Ajibade (1988) stated that the Nigerian basement also include other rock units namely;

- A. Charnockitic ,gabbroic and dioritic rocks .
- B. Metamorphosed to unmetamorphosed calc – alkaline volcanics and hyperbysal rocks
- C. Unmetamorphosed dolerites ,syenites dykes and pegmatites.

Rahaman (1988) and Ajibade et al (1987) in Bawa S, Makama (1989) have shown that at least two generations of magmatic gneises of widely differing ages within the complex. Rahaman suggested that the oldest rocks in some parts of Southern Nigeria are the oldest. The older granites are the youngest of three main types forming the Pre-cambrian and early Paleozoic geology of Nigeria. They occur as distinct plutons often of batholitic dimensions and of limited petrographic type. They include rocks of varying composition from tonalite through granodiorite to granite and syanite and they account for about 40– 50% of the basement out crop. The older granite normally form large plutons of batholitic

sizes extending a N-S direction e.g. the Minna and Zaria batholiths.

Hydrogeology

The rocks of the basement at their time of formation are crystalline and massive with little or no porosity, thus making them have permeabilities and hydraulic potentials. Consequently, they are not good aquifers at their time of formation. However, post emplacement activities such as tectonism and weathering have affected these rocks, which led to fracturing, and faulting, and jointing thus creating secondary porosity that improve their hydraulic permeability and storagetivity. Therefore, the permeability is solely dependent on secondary features such as the extent and volume of fissures or joints, together with the thickness of weathering.

Provision of Portable Water in Niger State

Niger State, like all other States in Nigeria have developed a number of programmes to provide water for her people (Martins, 2001, in Yemi Akegbejo – Samson etal 2002). The water agencies in recent times include Agricultural Development Projects (ADPs), the defunct Directorate of Food Road and Rural Infrastructure (DFRRI) and the Petroleum Trust Fund (PTF). International organizations have been involved in one way or the other. For example the UNICEF Assisted Rural Water Supply and Sanitation Project RUWATSAN have been on in the State since 1987 to date. The Author happened to be a staff of the Niger State RUWATSAN from 1991 to early 2007. This article is mainly based on her

Table 1: Water availability and use in related countries. Martins, 2001, in Yemi et al 2002

Country	Available water km ³ /yr	Per Capital withdrawal m ³ /yr	Fraction of available water withdrawn per year	Domestic (%)	Agriculture (%)
France	185	728	22	16	15
US	2478	2162	19	12	42
Libya	0.7	623	40	15	75
Iraq	100	4575	43	2	92
Nigeria	560	21	<3	<1	17

experience and observations during this period. In spite of Nigeria's huge water reserves, the level of exploitation is still very low. Table 1 shows a comparison of water availability and use in some selected countries including Nigeria.

Methodology

Several visits carried out in about forty (40) communities during which the following investigations were carried out.

1. The history of the water point.
2. The sponsors (i.e. the community, LGA's, State, Donor Agency or Joint sponsorship etc.)

3. A comparative involvement of communities in the provision and sustainability of the water points.
4. The frequencies of the break down of the hand pumps/boreholes.
5. Who was/is responsible for the maintenance?
6. The coordinates of the water points were also taken using the GPS (Geographic Positioning System).
7. The involvement of the communities (especially women) during the actual construction of the water points.

Most of these visits were done between 1992 and 2003. Table 2 shows the list of the communities visited and their GPS.

Table 2: Some bore hole location/communities visited and their GPS.

Bore hole location	Longitude E.	Latitude N.
Kwana	6.32341	9.22425
Kwabe	6.32342	9.22436
Butu ii	6.33114	9.25324
Butu iii	6.33039	9.25353
Karbwashaka	6.56687	9.46176
Yandayi	6.36412	9.26422
Adunu ii	7.09460	9.34560
Adunu iii	7.09606	9.34603
Adunu iv	7.09770	9.34591
Adunu BTS	7.09303	9.34404
Gwam	6.47783	9.25500
Danu	6.34779	9.31907
Sutuyi	6.36212	9.26422
Zayi	6.30958	9.24934

Discussions

About 95% of total cost of the provision and maintenance of the water points was done by the government. Thus all the bore holes constructed in Bosso and Paikoro LGAS were considered as been owned by the government. The communities contributed only about 5% of the total cost. As a result, most of the communities considered the boreholes to be government owned and never see the need to maintain them when the need arises. Communities such as all those listed in table 2 above where government could not provide boreholes remained without such facilities. Furthermore, at about 1993, the government could no longer continue with the free provision of portable water. With this background, three communities namely Danu, Selekpá and Suruyi were educated on the possibility of contributing money for the provision of the water points by themselves. About five married men along with the community leader in each of these villages were the targeted audience. I spoke with them to stop wasting their hard earned money which they generate mostly through yam farming in courts for divorce. They were also made to understand that they spend much money on hospital bills because of their lack of good potable water which in turn affect their productivity on the farms. They bought the idea and contributed money for the geophysical surveys, design and construction of the boreholes in the year 1995. The government then supported by providing only the hand pumps for the installation. The news of development went round the neighboring villages and when educated in the same way as the three mentioned above, did the same. With time, the communities bore the total cost for the provision and maintenance of the boreholes. For example two communities namely Adunu BTS and Kampala v in the year 2002 bore the total cost for the provision of bore holes and have been responsible for the maintenance.

The women and children were also made to that they need to participate actively in the provision and sustenance of potable water. This is because they suffer most in search for potable water. As a result of this education; they also got involved in the provision of potable water by providing the sand and gravel materials needed for the construction. This was done in all the villages /bore holes listed in table 2. Some women even went as far as divorcing their husbands only to be re-married in communities with boreholes. For example one Mrs. Binta Shehu of Berkuta village of Bosso LGA divorced her husband in the year 1995. This is because there was no bore hole at Berkuta village then. The younger ladies also refused to be married in communities without boreholes. In Kampala the women took up the responsibility of maintaining the boreholes. This they did by contributing money monthly for the maintenance of the boreholes thereby making the water points sustainable. This is still in practice till date.

Results

Portable water was adequately provided for in many communities. Individual households also provided water in their houses. The men had to do this in order to be able to maintain their wives and also marry more; more so that polygamy is in practice in the area. Most of the boreholes hardly breakdown for more than 48 hours without being put back to use. Statistics from RUWASTAN Project Minna shows that Paikoro LGA has the highest number of bore holes in the State. This is closely related to the role played by education to the community.

Conclusion and Recommendations

Proper education of the rural populace is very vital to the provision and sustainability of potable water. The involvement of the rural dwellers in the provision and sustainability of the water

points brought about great improvement in the sector. This could not have been possible without the people being properly educated.

The education and involvement of rural women in provision of portable water is highly recommended. This will bring about a great sector with much ease.

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