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Review

Lessons from Nigeria's Cross River State for MDG investment in bridging domestic water supply and basic sanitation gaps in local government areas

Ndiyo, Ndem A.* Okon, Emmanuel O., and Olumide, Ayodele S.

Department of Economics, University of Calabar, Cross River State, Nigeria.

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A gap analysis of the distribution and access to domestic water supply and sanitation facilities in Cross River State shows that 27.3% of the population is still living without access to safe domestic water supply and sanitation services. The infrastructural implication for meeting the MDGs target in this sector translates into a total of 6,160 additional water points using hand pump borehole option. The paper proposed a strategic initiative and accelerated actions through sustainable rural infrastructural development programming and effective investment mobilization and application strategy. This will involve participatory investment in water supply by stakeholders, ownership and management of facilities by rural and small town communities, women, private sector operators,and the use of appropriate technology towards achieving the water and sanitation related MDGs in the State.

Keywords: Water Supply, Sanitation, MDGs

INTRODUCTION

Cross River State lies between latitudes 4º 28' and 6º 55' North and longitudes 7º 50' and 9º 28' East of the Greenwich Meridian within the tropical rainforest belt of Nigeria. It shares boundaries with the Republic of Cameroon in the East, Benue State in the North, Ebonyi and Abia States in the West, Akwa Ibom State in the South West and the Atlantic Ocean in the South. The State lies within the Cross River Basin, which has a total area of 53,855 km^2 of which 44, 105 km^2 lie in Nigeria and 9750 km^2 in Cameroon. The Cross River Basin also covers parts of Benue, Abia, Ebonyi, Enugu and Akwa Ibom States in Nigeria. The topography of Cross River is mostly characterized by low-lying undulating terrain with several areas of extensive flood plain along the course of Cross River and its major tributaries. There are however, high elevations at the basement areas of the Oban massif and the Obudu Plateau with the Obudu hills attaining heights of up to 1,600m.The State has a land area of 23,074 square kilometres, with an estimated population of 2.89 million (2006) and a comparatively

*Corresponding Author's E-mail: ndemayara@yahoo.com

low population density of 20 persons per square kilometre. The State capital Calabar has a population of approximately 473,000 (2006). Lack of adequate water supply and sanitation has been a serious concern for health and for economic activity in the State. Guinea Worm scotch for example, is one of the major water related diseases that had been predominant in Cross River State in the recent past. The 1988 case search recorded a total of 3,477 cases within 74 communities in 7 out of the then 14 LGAs of the State. Owing to various interventions with the improvement of awareness and access to safe water supply in the endemic communities, the State has maintained a zero case status since 2006 when the last 3 cases were reported in Obubra LGA. Meanwhile, three of the 18 LGAs in the State (Obubra, Yakurr and Yala) are still under surveillance. The other LGAs that had previously reported cases of Guinea Worm are Abi, Biase, Ikom, Obudu, Boki, Etung and Obanliku. Lack of regular water supply has serious economic implications apart from the related health impacts. At the household level the time and effort spent fetching water prevents individuals (particularly females) from participating in other beneficial activities including education. Lack of adequate water infrastructure also inhibits commercial and industrial development.Access to safe water is defined in this paper as the availability of potable water of at least 30 litres per person per day, located within a maximum of 250-500 metres from the household. Access to safe drinking water also includes coverage, which refers to the percentage of the population accessing "improved" water sources. Access to water supply depends not only on the existence of a water source but also includes a range of other aspects such as regularity, sufficiency, affordability, quality and safety. Key linkages among contributions of water supply/sanitation in rural development, improved health status, poverty reduction and sustainable economic development are the driving forces for the Water Sanitation and Hygiene(WASH) Sector reform agenda and strategic policy initiatives. Institutional responses to this sector are aimed at overcoming the enormous challenge of meeting the provisions of Target 10 of the MDGs: to "*halve the population without sustainable access to safe water by 2015'* thereby contributing to MDG 7 - "*achieving environmental sustainability*". Cross River State response to the development of this sector is captured within her development Agenda 6, " to build, upgrade and maintain infrastructure for water supply and sanitation – among others – in urban as well as rural communities" under the State's 7-Point Development Agenda. The Policy Thrust for this sub-sector is expressed in the State's initiative of providing 60% access to portable water and improved hygiene and sanitation levels of rural communities in the State.

Existing global and local targets to which Nigeria and Cross River State ascribes, remains desirable and achievable. Attainment of these goals and targets is however, elusive, as current statistics suggests that Nigeria remains a major threat to the achievement of the MDGs in Africa with Cross River State also contributing significantly to this deficit, perceivably due to slow execution of commitments to the Goals owing to resource gaps in the State; poor coordination within and between programmes; inadequate mechanisms for tracking progress and evaluating impact; weak innovative financing mechanisms and strategies for resource mobilization and partnership development. This paper examines the MDGs gap bridging lessons in domestic water supply and basic sanitation sub-sector in Cross River State. The study begins with inventory taking of water and sanitation facilities in local communities, baseline assessment, and review of evidence-based operational sector governance framework towards improving access to domestic water and capacity building of local institutions for effective service delivery in the State. The data collection process focused on mapping of water infrastructure and documentation of milestones of ongoing implementation of the strategic initiatives of the State Government in the water and sanitation sub-sector. Some of the data used were obtained from surveys conducted independently, and proxies are also used in some cases. Although this may have implications for the outcome, but the data are reliable enough to make an informed decision on the sub-sector development status vis-à-vis MDGs, and some suggestions for future interventions. For comparative analysis, the paper uses descriptive statistics; tables, percentages and charts to present its results. Gap analysis was also done using a gap analysis matrix. The findings will facilitate quick evaluation of sequential progress made toward achieving the water and sanitation sub-sector related MDGs through accelerating actions towards the realization of the MDGs and attainment of the State's strategic objectives and vision. The rest of the paper is organized in parts. Following the introduction is Part 2, focusing on cross-country water studies, water resources in Nigeria, andwater sector coordination in Cross River State. Discussion of findings dominates Part 3, while the paper ended in Part 4 with conclusion and recommendations.

Cross-country Water Studies

Water related issues are very important in general and especially for developing countries where usually problems with water provision are the most obvious. That is why much literature is devoted to water

consumption studies. Research studies exist not only on determinants of safe drinking water and welfare effects of connections but also on the cost-benefit analysis of water projects. Benefits of water supply projects are usually difficult to quantify and reduction in the number of diseases is one of the most important benefits. There are several directions in the literature on water related issues such as estimation of demand for water and welfare gains from improved water supply and cost-benefit analysis of water projects.

Basani, Isham and Reilly (2004) investigate Cambodian case to determine the estimate of price elasticity, identify empirically the main constraints for the non-connected households to water provided by the network, and to evaluate the welfare effects of connection. As it might be expected the main constraints turned out to be low coverage and high connection fees. The authors found significant and robust price elasticity estimates ranging between -0.4 and -0.5. Using this estimate the welfare benefits were determined and it was found that the ratio of household expenditure of the non-connected households would increase from 0.45 to 0.53. According to the authors, this study may understate true welfare benefits of connection to the network because positive spillovers such as health externalities were not taken into consideration during the analysis. In addition the authors found positive effect of connection on household's income distribution. Their analysis implies sizable reduction in both Gini coefficient (approximately three percentage points) and the "poverty head-count ratio" (approximately six percentage points) from water connections. Thus this study found positive effect of water connection on the welfare of households.

Strand and Walker (2003) studied the benefits from water connections in Central American cities. Their study yields the same result as connected households enjoy large welfare gains from their connections to the water system, given current water prices and service levels. They also showed that tap households consumed much more water than non-tap households. On the other hand there is a small difference in water consumption levels between metered and non-metered tap households with higher consumption levels in the latter group. Moreover it turned out that households pay much higher prices for non-tap water than for tap water although some non-tap water (alternative water source) as well for example is free. Because average prices for non-tap water are higher those households which use only alternative water are subject to higher water costs. Thus connected and unconnected households differ by the prices they pay for water and by the quantities they consume implying that provision of tap water will lead to significant welfare gains. Ahmad, Haq and Sattar (2010) focus only on the demand side and estimate the factors determining demand for safe drinking water using the case of Peshawar district in Pakistan. Along with the estimation of the determinants of demand for safe drinking water the authors also estimated the household's willingness to pay (WTP) for improved water quality. They also estimated the effects of different households' characteristics on the decision to use purification methods. The study showed that education significantly affects demand and WTP for improved water services. It also found that informal education plays an important role in obtaining purification methods. The study revealed that educated people are ready to pay more for water than uneducated people. The authors show that households who are aware of the health risks associated with contaminated water and the prevention measures to improve quality of drinking water are likely to adopt water purification measures (Ahmad, Haq and Sattar, 2010). This study empirically justified that income level and level of awareness about the threats of contaminated water are key determinants of demand for safe drinking water.

Haller, Hutton and Bartram (2007) emphasize the fact that benefits of adequate water provision are difficult to measure because some of the externalities are not easily captured. The authors classified the benefits of the water supply and sanitation improvements into three main categories: direct economic benefits of avoiding diarrheal disease; indirect economic benefits related to health improvement and non-health benefits. This study shows that here are many and diverse potential benefits associated with improved water and sanitation, ranging from the easily identifiable and quantifiable to the intangible and difficult to measure. Mangyo (2008) estimates the effect of in-yard water source on child health which was measured using child-specific fixed effects (weight and height). Further, he focuses on interaction of access to in-yard water source and mother's education in determining child health and found that access to in-yard water positively affects child health if the household female member is educated. Zhang (2007) estimates the effect of a water quality improvement program in rural China on the health of adults and children using panel data covering about 4500 HHs from 1989 to 2006. The author shows how the introduction of access to water from water plants affects health. According to the results of the study adults and children benefited a lot from the construction and implementation of water plants in rural China.

Water Resources in Nigeria

Nigeria is endowed with abundant freshwater resources spreading all over the country from the coastal region to the arid zone of Lake Chad Basin. The country is essentially drained by two river systems; the Niger –

Benue and the Chad systems. With exemption of few rivers that empty directly into the Atlantic Ocean, all other rivers drain into the Chad Basin or River – Niger – Benue system. Nigeria has huge water resources potential estimated at 330BCM/year of surface water and 142BCM/year of ground water.

Recent National Water Supply and Sanitation Baseline Survey Report shows that there are over 40,000 water supply infrastructures in Nigeria. Of the number, 11% are based on surface water. The remaining 89% is based on groundwater with 34% using motorized pumps and 55% on hand-pumps. The total combined installed capacity of all the schemes is about 5.1 million cubic meters per day. This total installed capacity is about 38% of the current water demand of the population based on the population and water supply coverage of the country in 2011.There are about 264 medium and large dams with a combined storage capacity of 33 billion cubic meters of water for multipurpose uses of which 210 are owned by the Federal Government, 34 by the States and 20 by Private organizations.

Nigeria has a total land area of about 91 million hectares, out of which about 82 million hectares have been classified to be arable land. 42% of the cultivated area is being farmed under the bush fallow system. 18 million hectares are classified as permanent pasture, but have the potential to support crops. From the available impounded water, Nigeria has short-term irrigation potentials of 3.14 million hectares of land out of which 150,000 hectares have been developed. There are also 27 small earth dams that are currently being constructed by Governments nationwide with a total combined capacity to irrigate 2,700 hectares of farmland post construction. In addition, 78 water control structures made up of small earth-dams, concrete dykes and ponds under the control of Federal Ministry of Agriculture and Rural Development have combined capacity to irrigate 3,000 hectares of farmland. Putting all together, the current level of water infrastructure can irrigate a total of 355,700 hectares of farmland. However, less than 25% of the available irrigation infrastructure facility is currently being utilized. The broad vision advanced for the water sub-sector is to provide sustainable access to safe and sufficient water to meet the cultural and socio-economic needs of all Nigerians in a way that will enhance public health, food security and poverty reduction while maintaining the integrity of fresh water ecosystems of the nation.

Water and sanitation sector coordination in Cross River State

Average annual rainfall ranges from 1,760 mm in the northern part of the State to 3,100mm in the southern part. The duration of the dry season varies from 3 months in the south to 5 months in the north. Only 6% of rainfall occurs in the driest three months of the year. This has significant consequences for water resources management particularly in the northern part of the State where some rivers are non-perennial. Due to the impermeable geology of most of the State, runoff from sub-catchments is 40% - 60% of annual rainfall. Seasonal floods have created wide, deep river channels. The flood plains are routinely inundated making most human activity impossible during the wet season. Dry season flows are small and contained within low flow channels meandering along the bottoms of the large flood channels. Therefore in order to make use of river water in the dry season it is necessary to lift it several meters out of the low flow channels.

Surface water resources in the State are plentiful. With high average annual rainfall of 2370mm and an average annual actual evaporation of 1,170 mm there is excess rainfall of approximately 1200 mm in the average year. This leaves a high volume of water to drain away through the ground and the river system. Within the Cross River Basin, approximately 64 billion cubic meters of water drains away annually through the ground and through the river system. In theory, this is enough to supply the entire population of Nigeria with drinking water for a year and also irrigate 5.5 million hectares of rice for 150 days each year. However in practice, probably less than 5% of this water is presently used by human beings for drinking, irrigation, industry, commerce, farming and fishing.

The Cross River is the largest river in the State with its source from the Cameroons in the North while it empties into the sea at the coastline of the State. Along with its tributaries it remains a major source of livelihood, water supply, transportation and other economic activities for many communities in the State. It is estimated that 72% of the water running down the Cross River emanates from the Cameroons and this has important implications for Integrated Water Resources Management between the two countries. Not all the available surface water resources are available in the right quantities or quality, at the right places at the right times. For instance, there are shortages of drinking water in the dry season in many parts of the State because groundwater is scarce and river flows are low. There are also ecological problems associated with the destruction of watersheds, deforestation, bush burning, etc, which has led to many perennial rivers and streams becoming seasonal.

There are 3 main sources of groundwater in Cross River State; the regional aquifer of the Coastal Plain Sands covering 10% of the total area of the State, the fractured Shale of the Eze-Aku and Asu River Group (55%), and the weathered and fractured zone aquifers of the Oban and Obudu Basement complex (35%). As the

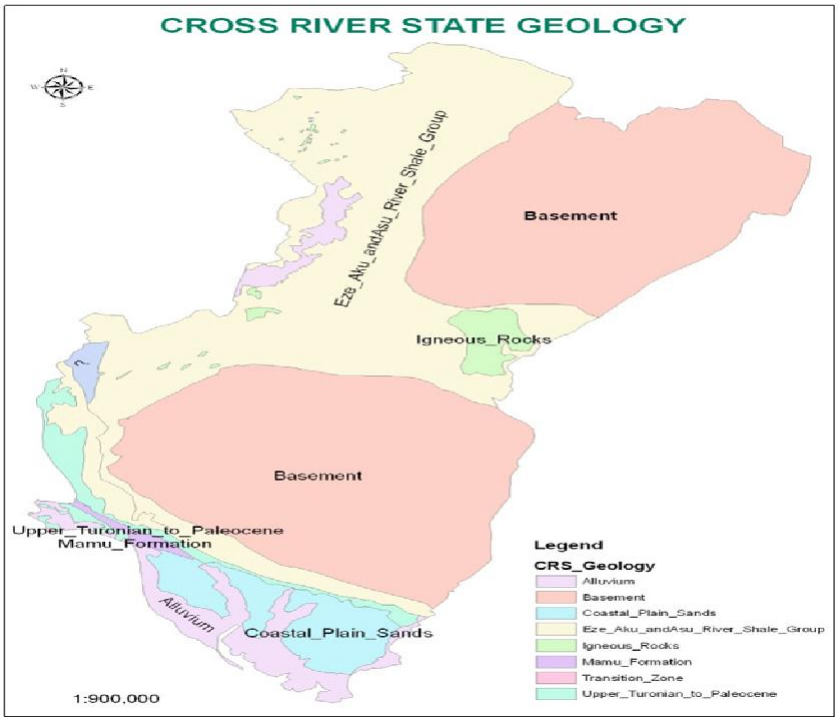

Figure 1: Cross River State Geological Map
Source: EU WSSSRP IWRM Pilot Study, 2009

Shale and basement complex rocks are essentially impermeable, about 85% of the State has poor groundwater resources, accounting for the difficulty in providing safe drinking water through groundwater exploitation. (Figure 1)

However, small local aquifers are found within the Shale where they are highly fractured or where fractured sandstone strata are confined within them. In the basement complex area groundwater distribution is localized, occurring only where the weathered layer is thick and relatively permeable or where there are significant fracture zones. In the dry season, the need to locate and exploit these small local aquifers is acute. However, this is technically difficult and requires the use of sophisticated geophysical techniques and analysis of the existing hydrogeological data. In summary, the ground water potential within the southern flank of the State (comprising both confined and unconfined aquifers of the coastal plain sands) is relatively good compared to the potential in the central and northern parts of the State.

The Cross River State Ministry of Water Resourcesoversees water related functions with overall mandate to coordinate and manage water resources in the State. The Ministry's main focus is the facilitation of access to adequate and affordable clean water supply to all the Citizens of Cross River State in a sustainable manner as well as co-ordinating, monitoring, harnessing and exploiting the water resources potential for individual and domestic purposes in the State.

Urban Water Supply and Sanitation: Urban Water Supply comes under the purview of the Cross River State Water Board Ltd (CRSWBL), incorporated in 1998. It was originally established as a Water Board, by Edict No. 13 of 1975.CRSWBL does not implement sewerage activities, but Urban Development Agencies in the Ministry of Environment implement environmental sanitation activities for the urban towns of Calabar, Ikom, Obudu, Ogoja and Ugep.

Rural Water Supply and Sanitation: There are two State agencies active in the area of rural water supply and sanitation; the Cross River State Rural Water Supply and Sanitation Agency (RUWATSSA) and the Rural Development Agency (RUDA).RUWATSSA was established by Edict No. 6 of 1991. In 1997 it was merged with the UNICEF Assisted Water **and** Environmental Sanitation Project and brought under the office of the Executive Governor. RUWATSSA constructs water supply infrastructure in rural areas such as mini-water schemes, boreholes fitted with hand pumps, protected dug wells, rainwater harvesters and impoundments of surface water like streams and springs. It also carries out repairs and maintenance of broken down facilities, water quality sampling and

analysis, and community mobilization for greater sustainability.

RUWATSSA also constructs VIP and low cost Sanplat latrines and carries out health education and promotion of safe hygiene for rural communities. RUDA was created in 2007/2008 to respond to the Government's agenda for accelerated rural development. The Agency intervenes in the areas of rural water, health, education and roads. The Agency provides water infrastructure in rural areas but has limited activity in facilitating the activities of LGAs and communities. Currently, there is an administrative arrangement whereby RUWATSSA reports through RUDA to the Executive Governor.

Local Government Areas (LGAs) also have responsibility for the provision of potable water to rural communities in their area of jurisdiction. They also carry out the function of establishing and maintaining public conveniences and refuse disposal. Each LGA has a Water Sanitation and Hygiene (WASH) Department. The WASH Departments encourage the formation and functioning of Water, Sanitation and Hygiene Committees (WASHCOMs) within communities. The WASH Departments plays a key role in community mobilisation and sensitisation, establishment of project management structures (such as Water and Sanitation Committees, WASHCOMs in rural communities, Water Consumers Associations in Small Towns and Urban settlements). The LGA WASH departments, equally plays a key role in facilitation of community-led project implementation processes and activities, and in monitoring and evaluation, and reporting.

DISCUSSION

The data on Water supply and sanitation presented in this document represents findings of the state-wide benchmarking exercise on the status of water supply and sanitation infrastructure and service delivery in Cross River State. These data remains valid to the extent that careful efforts were put on ground to ensure a minimum of 96% coverage and a high degree of quality control during the survey.

Distribution and Functionality of Water Supply and Sanitation Facilities in Cross River State

As seen in Figure 3, there are 2,387 improved water points in the State consisting of 9 developed springs, 157 IHDWs, 1,104 HPBHs and 1089 MBHs. An average functionality rate of 68.3% was recorded in 2009 (CRS, 2010).

There is great disparity in the distribution of water supply facilities between the urban and rural LGAs (Figure 3). For instance, water supply facilities accounting for 45% of the State's total access are found within Calabar Municipality and Calabar South LGAs alone. Additionally, facilities' functionality is also skewed in favour of the urban LGAs. 86% of facilities in the urban LGAs are functional while only 57% are functional in the rural LGAs. The overall functionality rate for the State stands at 63.8%.

There are also 3 regional water schemes in the State covering 3 urban centers (Calabar, Ugep and Akamkpa) with the adjoining small towns. The urban water supply is estimated to cover about 300,100 beneficiaries. About 29% of the facilities are constructed by the respective households.

Access to Water Supply and Basic Sanitation Services in Cross River State

Reliable, up-to date statistics on WSS coverage in Cross River State are not generally available. However, the State Planning Commission commissioned a detailed community scorecard survey in 2008 to monitor the progress achieved by the State through the first Cross River State Economic Empowerment and Development Strategy (CR-SEEDS-1). The study, which focused on citizens' perceptions of services delivered by government, found out that there was a great difference in ease of access to potable water between the Calabar Metropolis and the rest of the State. In Calabar, 59% of the population had easy access to piped water and 76% had access to borehole water. Yet, in most rural LGAs, citizens had little or no access to either piped or borehole water. The Scorecard showed that in 2008, 70% of people in the State sourced their water from rivers and streams while only 4.7% and 13.2% of the population used piped and borehole water respectively. Of the communities with piped water supply, 66% had supply less than 3 times a week, 16% had a supply more than 3 times a week and only 18% had a continuous supply.

Urban Water Supply: The Cross River State Water Board Ltd (CRSWBL) currently has the capacity to produce 166,000 m3/day and mainly serves the areas of Calabar, Akamkpa and Ugep / Ediba with a total urban population of 563,000. It has a total pipe network of 538 kilometres, 25 reservoirs, and three Treatment Plants and intake works. CRSWBL supplies its customers through some 14,000 service connections. CRSWBL is currently only utilising about 40% of its production capacity due to its inadequate distribution system and the unreliable power supply. Further infrastructure is being developed in other areas within the State, to increase production to 187,000m^3/day by 2015.

The State Government supports the operations of the

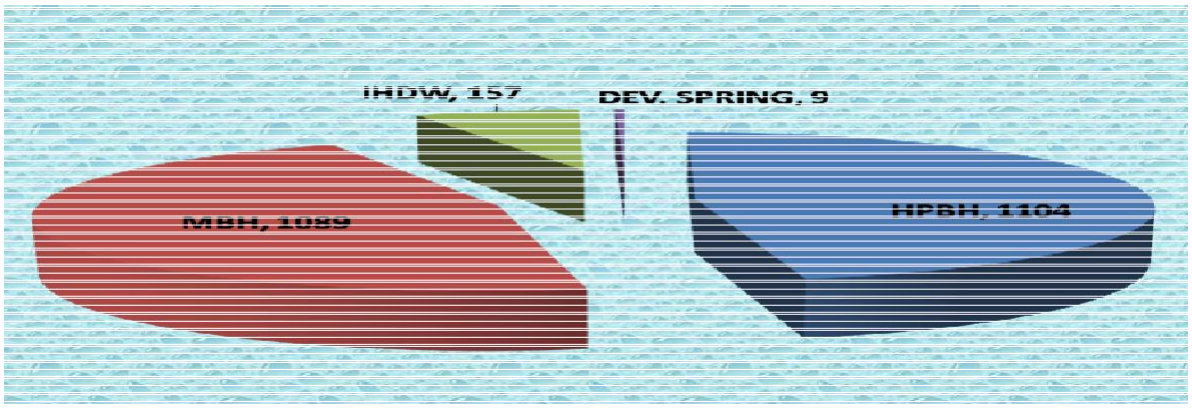

Figure 2. Distribution of water supply facilities

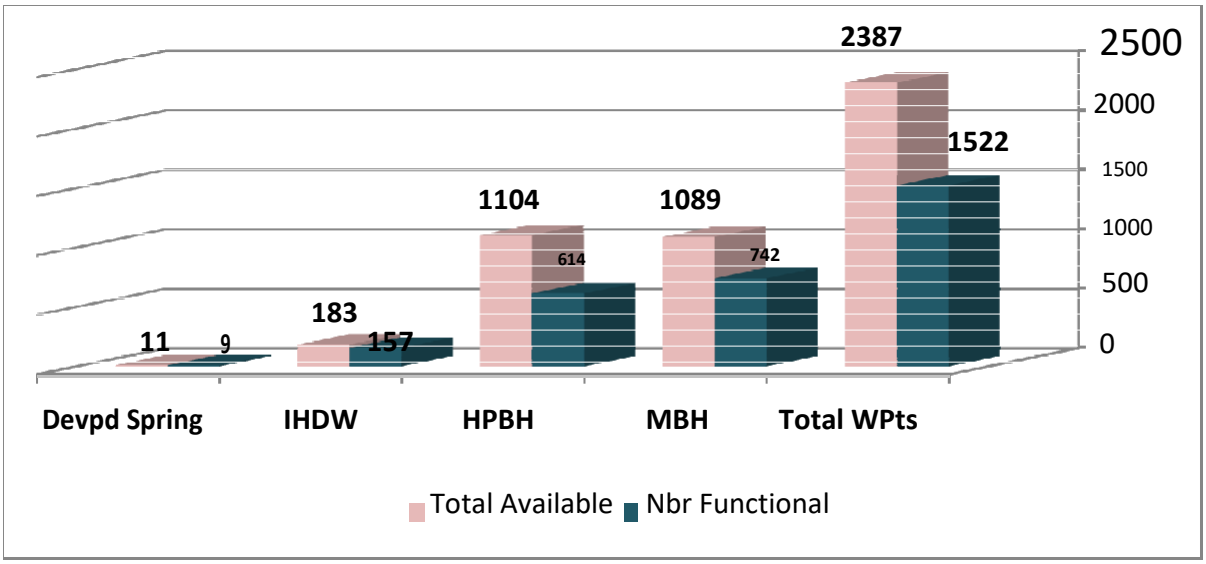

Figure3. Water supply facilities in Cross River State and their functional status

CRSWBL by providing grants for capital costs, while operation and maintenance costs are borne by CRSWBL. Even though CRSWB is required to cover its Operation and Maintenance cost, it does not have sufficient customer connections to enable it to do so completely. In addition it is unable to increase water rates for existing customers. For water supplied by the CRSWBL, tariffs are currently fixed at N120/m^3, having been increased a few years ago from N100/m^3. Tariffs are recommended by the utility management to the Governing Board for approval and then to the State Executive Council for final authority to implement.

CRSWBL has introduced a Public-Private Partnership (PPP) arrangement, under which a private firm has been contracted to manage the functional schemes in Calabar, Akamkpa and Ugep/Ediba. Whilst, this has raised the operational efficiency in those areas, it has also substantially raised CRWBL's overheads. The high cost of running the CRSWBL water systems on diesel powered generators coupled with the high administrative cost of maintaining the PPP management contracts are believed to be largely accountable for the inabilty of the CRSWB to break even on its operating activities.

Rural Water Supply and Sanitation: RUWATSSA has 4 drilling rigs which have broken down for lack of funds to repair them. The RUWASSAs work in collaboration with the UNICEF assisted WASH programme to deliver improved sanitation as well as water supplies. The Cross River RUWASSA also receives technical assistance and some matching funds for scheme implementation from the EU Water Supply and Sanitation Reform Programme (EU WSSSRP). The status of rural water infrastructure is summarised in the table **1.**

Table 1 shows that there are 2,387 water points in the

Table 1. Cross River State Rural Water Facilities

Type	Functional	Non-Functional	Total
Hand pump boreholes	635	469	1104
Motorized boreholes	769	320	1089
Improved Hand Dug Wells	157	26	183
Developed Springs	9	2	11
Established WASHCOMS	252	122	374

Source: *RUDA/RUWATSSA facility Inventory, 2009*

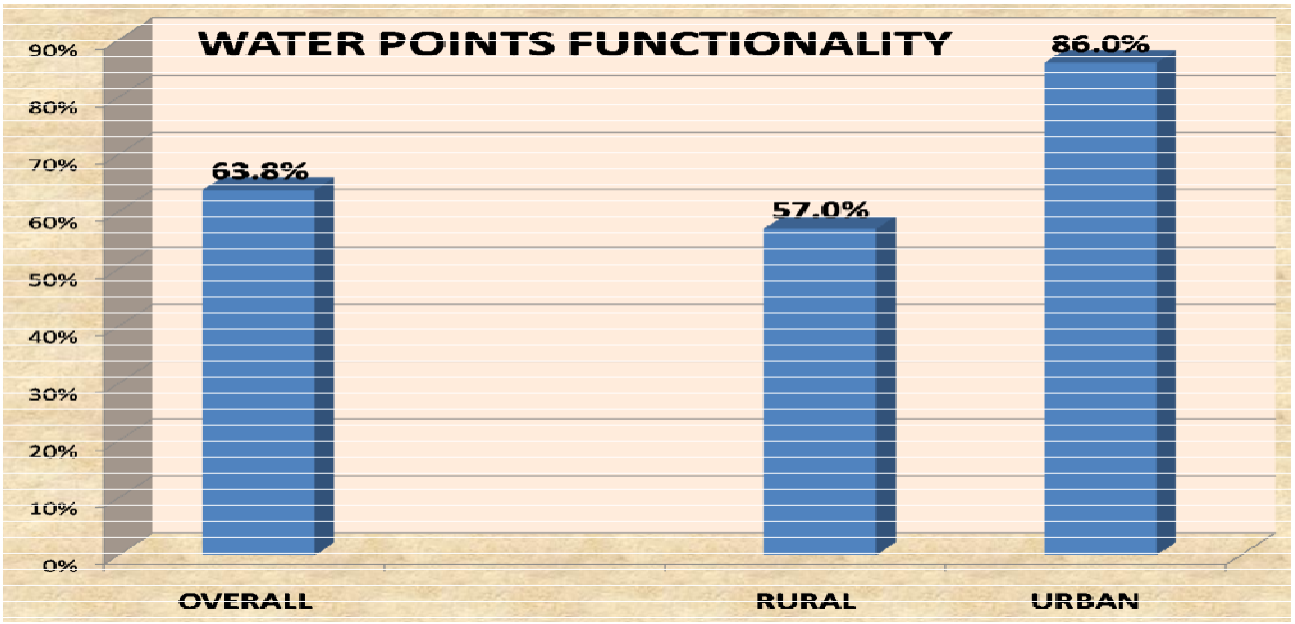

Figure 4. Functionality analysis for Urban and Rural Sub-sectors

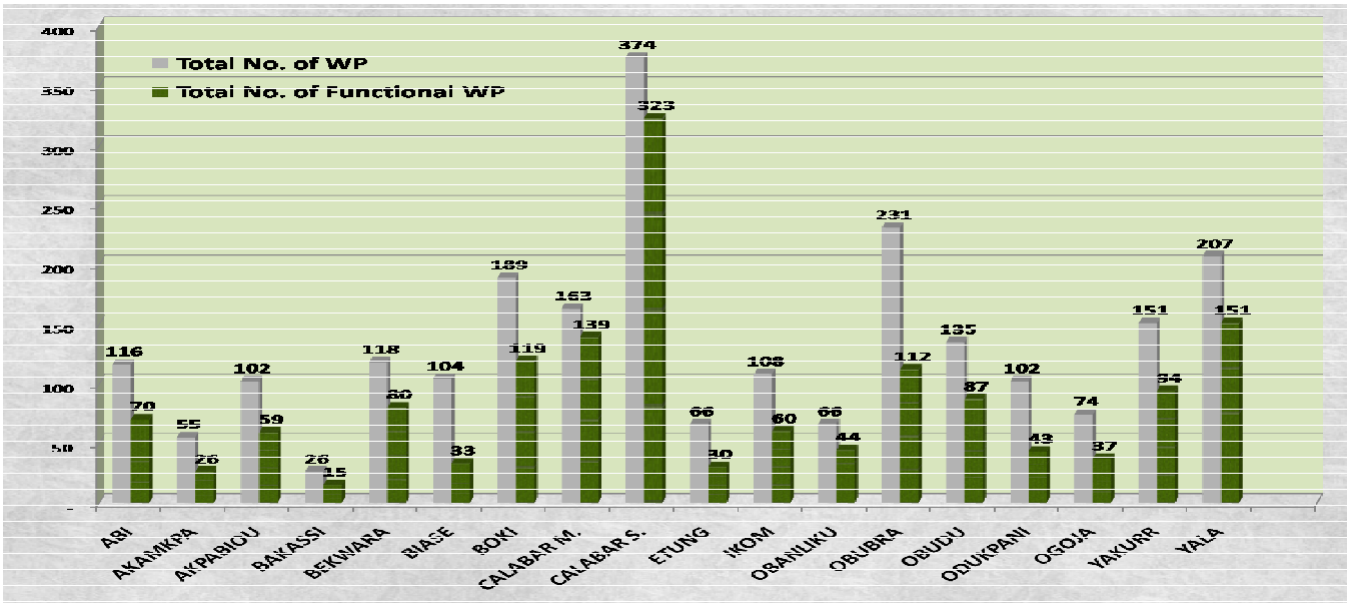

Figure 5. Distribution and functionality of facilities across the LGAs

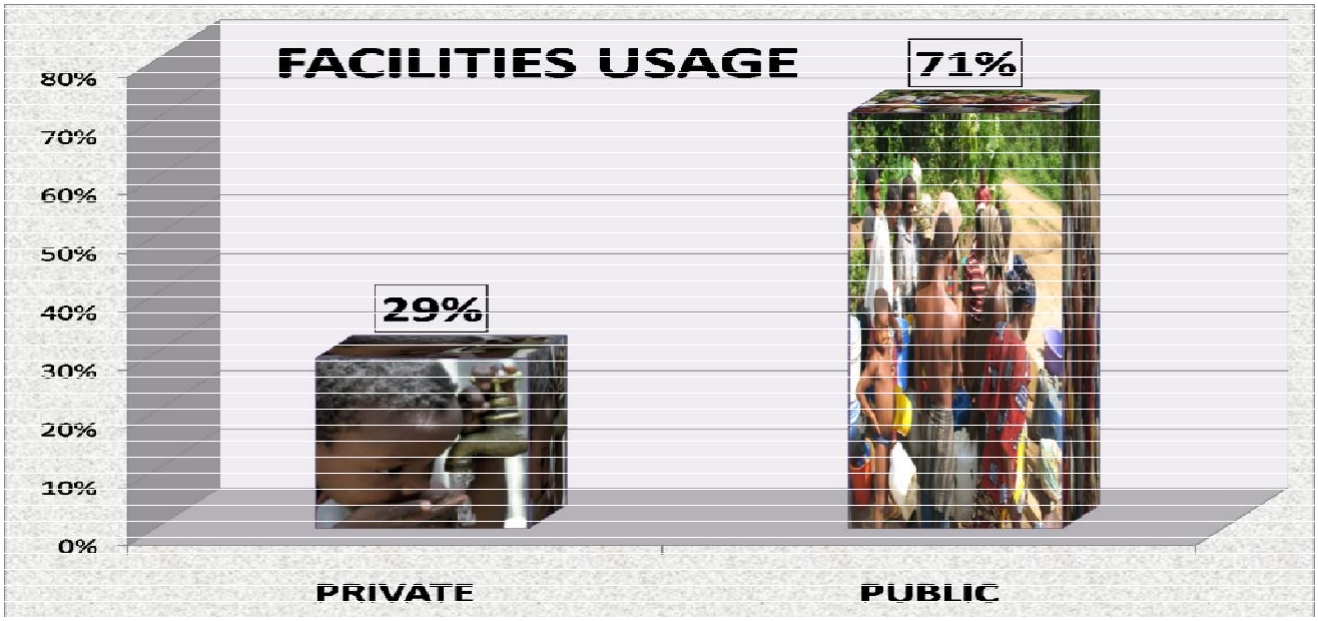

Figure 6. Facilities ownership with respect to usage

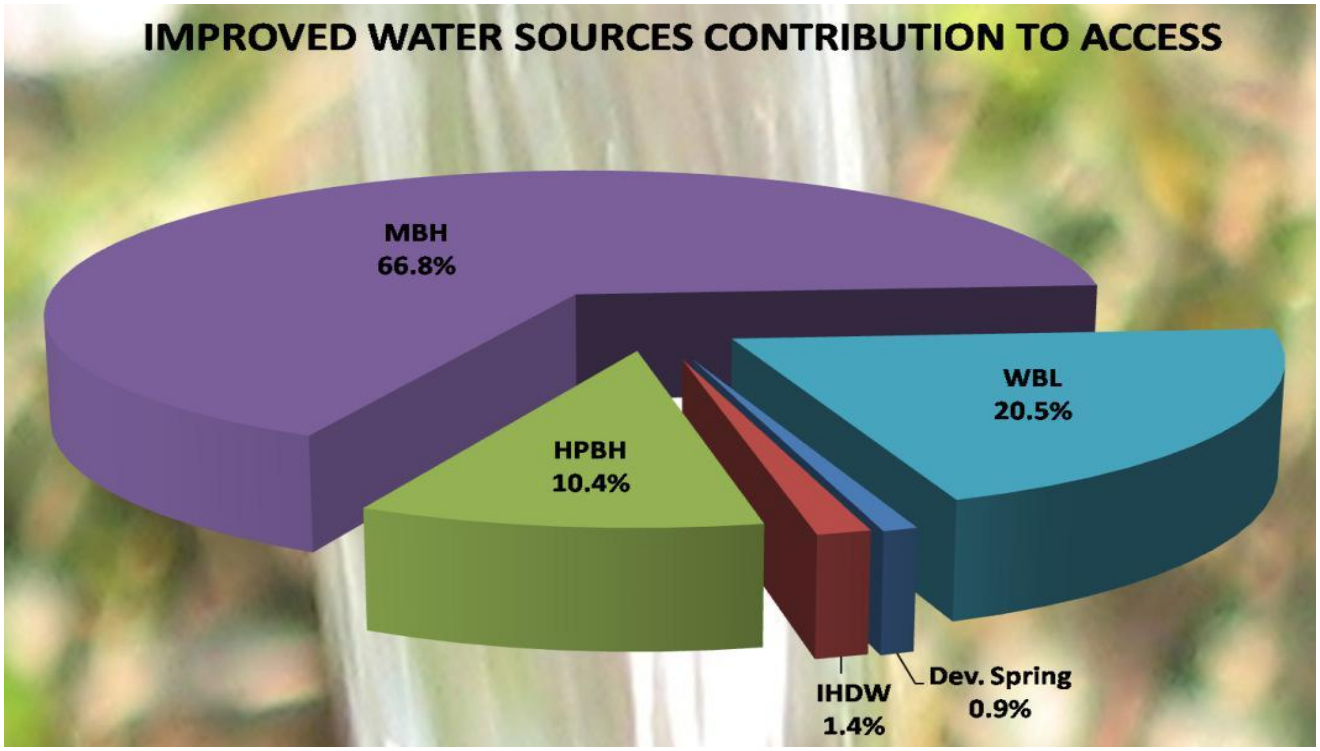

Figure 7. Contribution of various water supply options to access

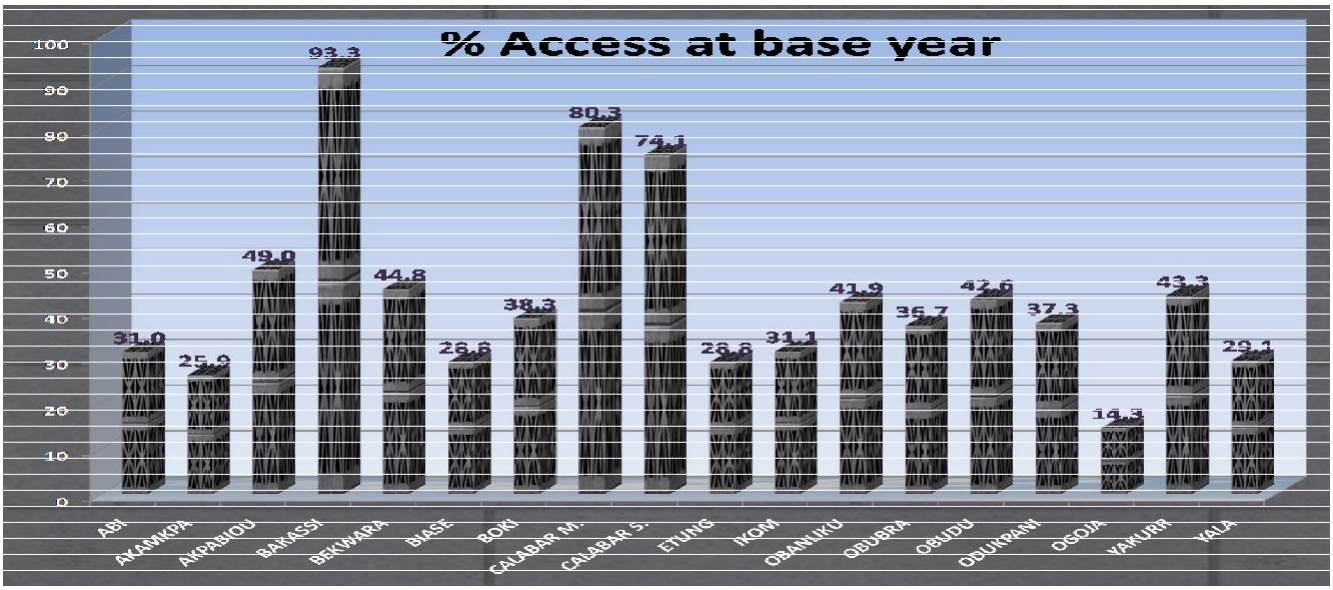

Figure 8. Distribution of water supply access across the LGAs

state of which 65% are functional. The table also indicates that over 30% of WASHCOMs are inactive.

Sanitation

In the area of sanitation the observations are as follows.

Toilets: Flush-toilet and pit-latrines were commonly used in Calabar Municipality. Yet around 70% of the focus groups in the rural areas reported that they use bush/field/rivers and not latrines. It is currently estimated that overall access to sanitation facilities across the state between 35% and 40%.Refuse Disposal: Some 54% of the groups surveyed in Calabar Municipality have access to a government refuse collection service. However, there was minimal or no refuse collection service in the rural areas of the State.

Based on recent survey, access to water supply in the State shows that average access to acceptable domestic water sources is 41% with relatively good access in the Calabar Municipality, Calabar South and Bakassi. The graphic below shows the access by LGA.

The total beneficiary coverage for the State stands at 2,167,157 amounting to 68.6% coverage while the beneficiary access for the State stands at 1,305,307 representing 41.3% of the population (Figure 8).

Breakdown of water supply facilities denied 27.3% of the population (representing 861,850 persons) access to safe water supply. A total of 1,851,544 persons (58.7% of the population) are un-served. While it was common to find water facilities in most parts of the state, their non-functional status creates great disparity between the number of persons expected to be served and the actual number of persons served. (Figure 9 and 10).

On institutional WASH Facilities the State status shows that only 35% (114 of 328) health care facilities have access to water supply facilities, while 56% (184 of 328) have access to safe means of excreta disposal. (Figure 11 to 13).

Only 15% (175 of 1201) of Educational facilities have access to water supply facilities, while 35% (435 of 1201) have access to safe means of excreta disposal. (Figure 14 to 19)

Implications for Attaining the MDGs in Cross River State

Cross River State Policy Thrust for this sector is expressed in the State's initiative of providing 60% access to portable water and improve by 50%, the hygiene and sanitation levels of rural communities in the State by 2015. However, available data on Fig. 8 above shows that only 3 LGAs have met the 2015 access target. This may also call for progressive stepping up of funding for domestic water and sanitation infrastructure development between now and 2015 in order to meet the target in the remaining 15 LGAs.

If there are no interventions between now and 2015 access will further deplete to 34.6% leaving a total of 2,464,139 persons without access as shown in figure 20 below. This will be largely due to the expected population growth between now and 2015. (Figure 20)

To meet the MDGs in the area of providing safe water supply in the State a total of 1,232,069 persons must be reached amounting to providing access to 577 persons

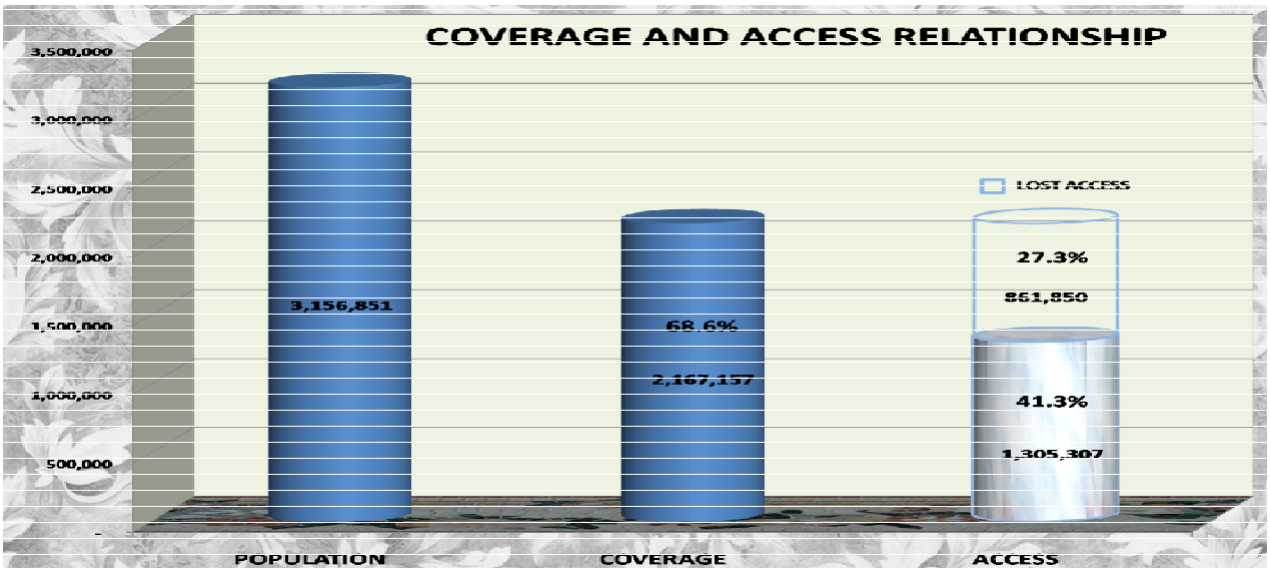

Figure 9. Comparison between State Coverage and Access

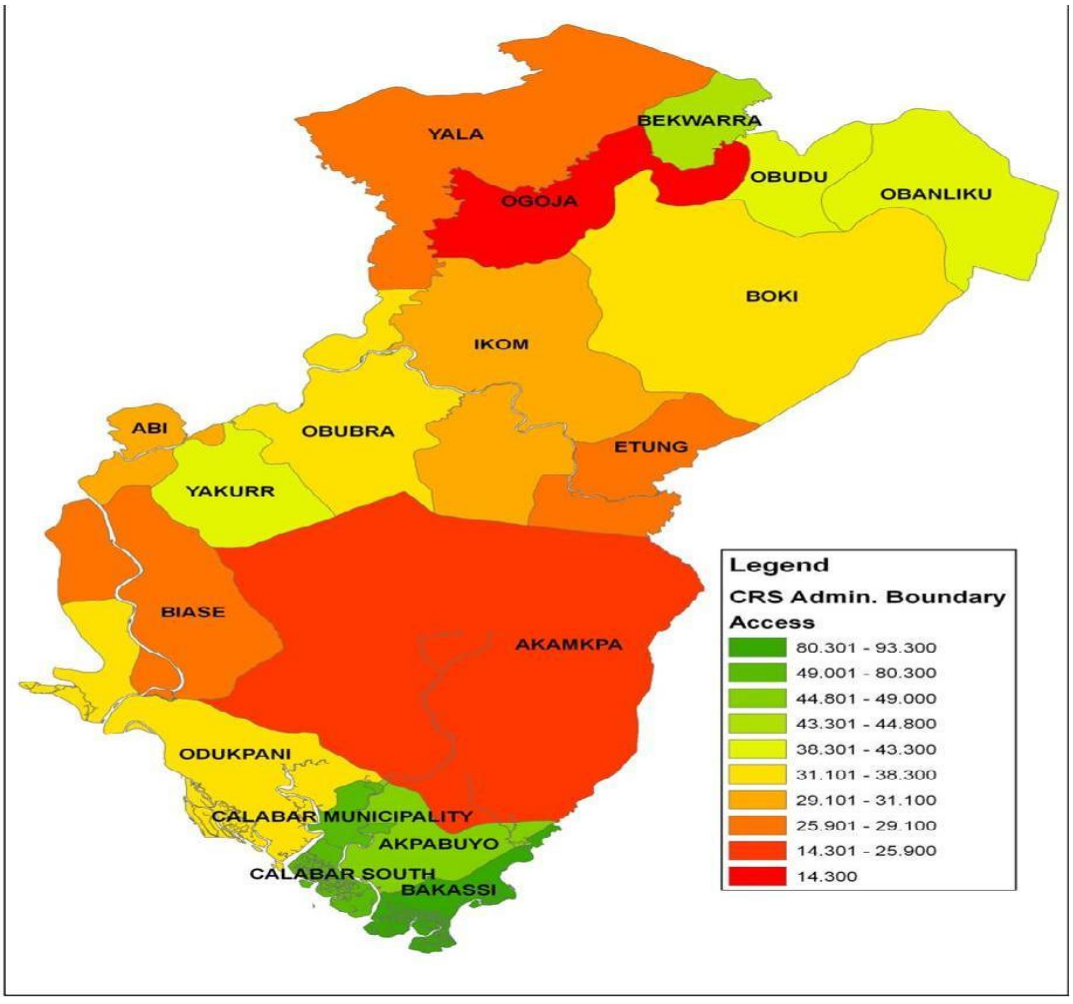

Figure 10. Graduated Scale Map for water supply access across the LGAs in the State

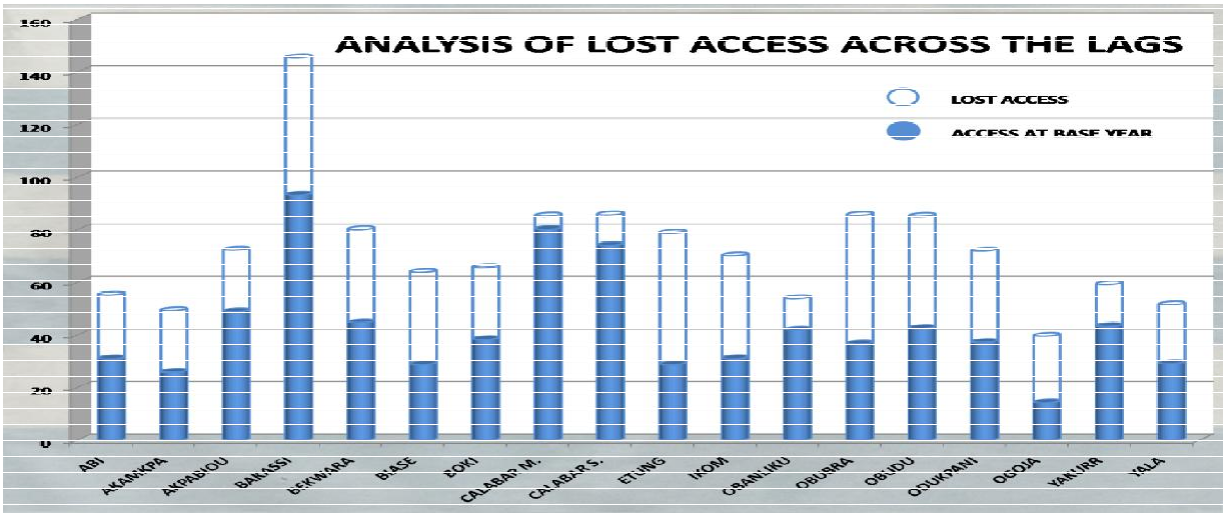

Figure 11: Analysis of Lost Access across the LGAs

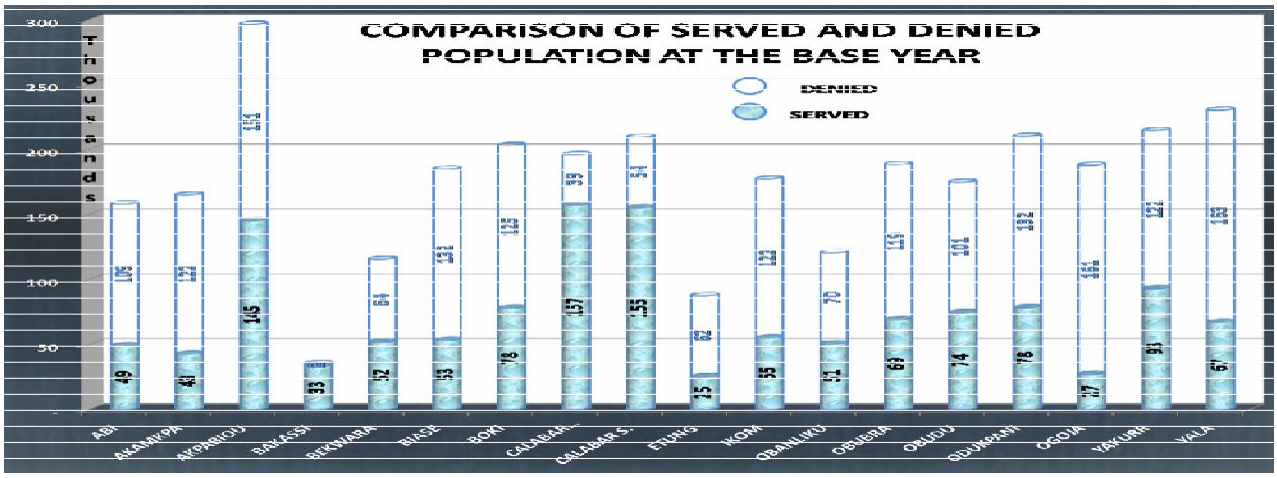

Figure 12: Comparison of Served and Un-served Population at Base Year

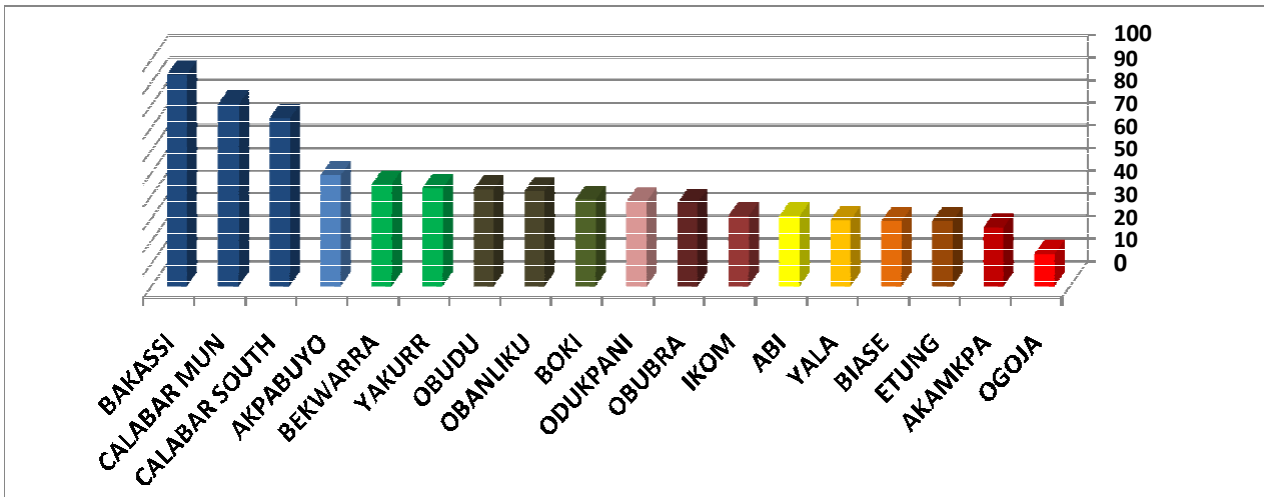

Figure13. Vulnerabilities of LGAs with regard to *Access* to water supply

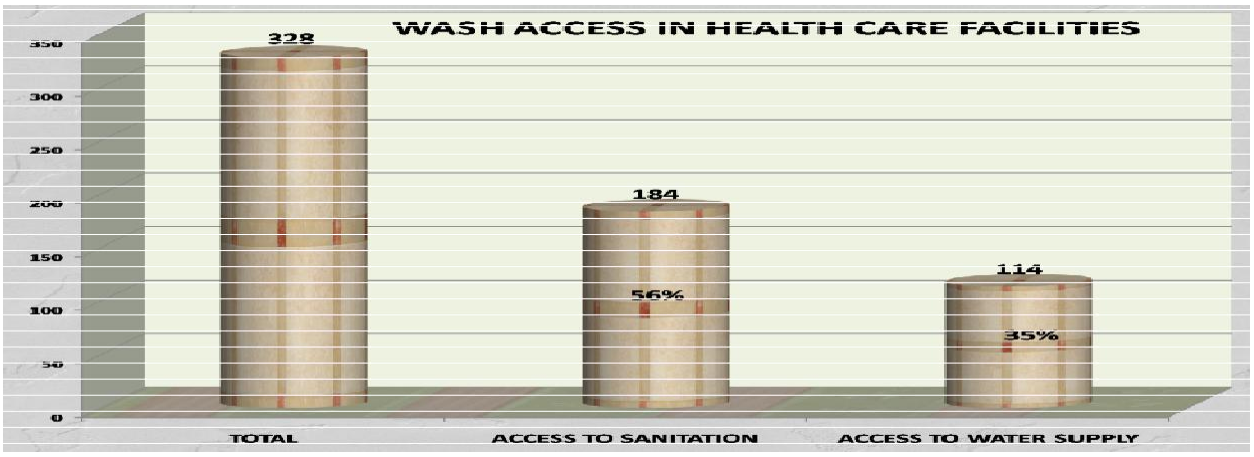

Figure 14. WASH Access in Health Care Facilities at Base Year

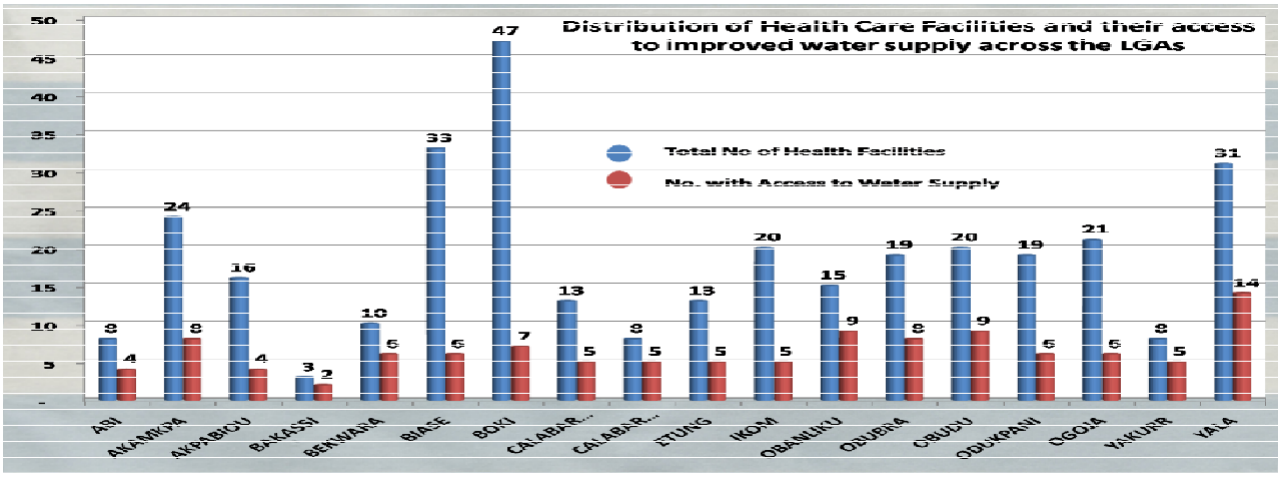

Figure15. Access to Water Supply facilities in Health Care Facilities across the 18 LGAs

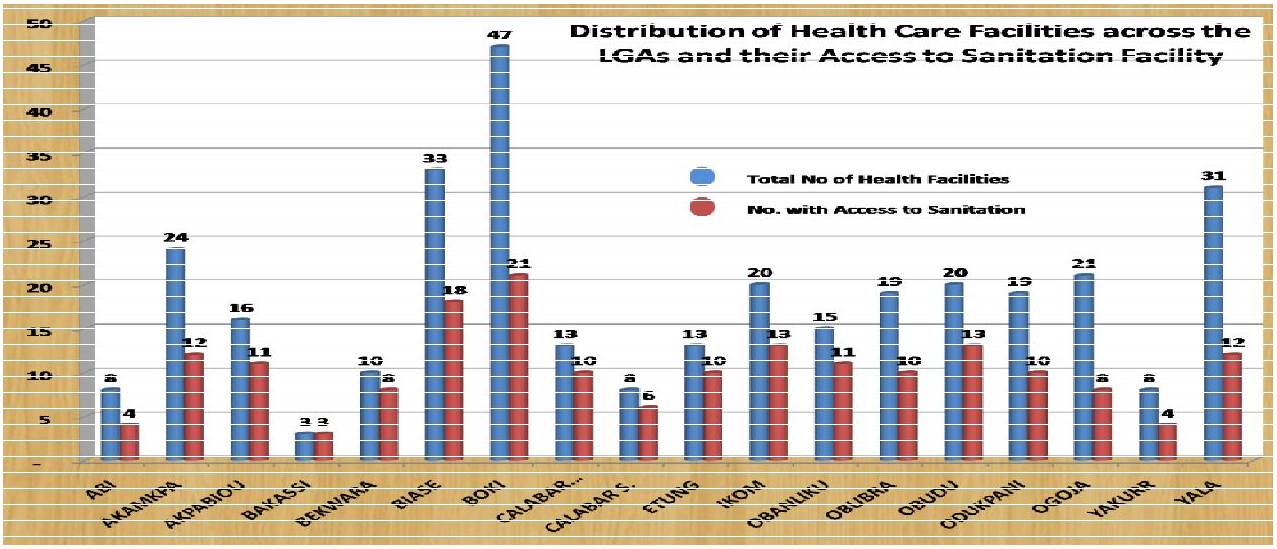

Figure16. Access to sanitation facilities in Health Care Facilities across the 18 LGAs

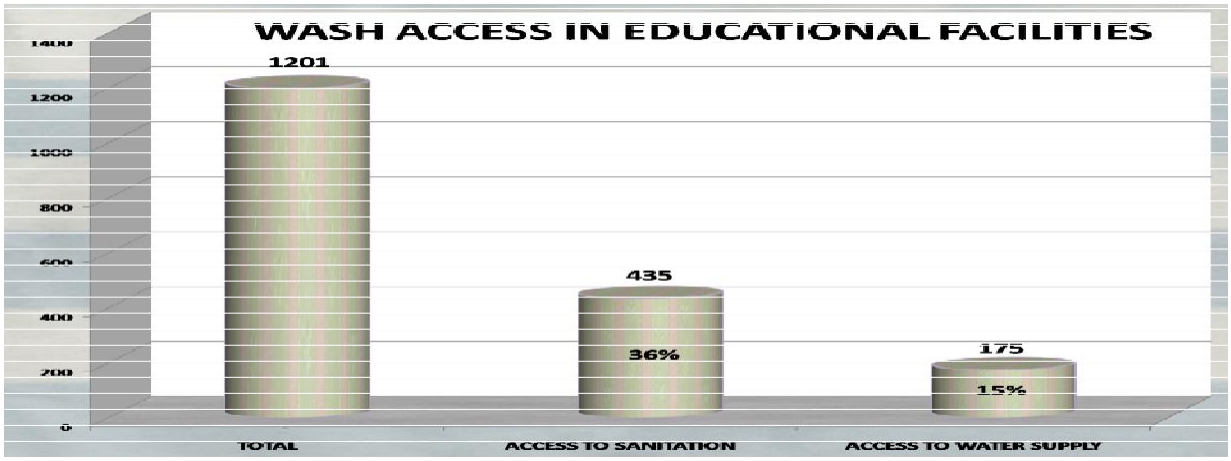

Figure 17. WASH Access in Public Educational Facilities at Base Year

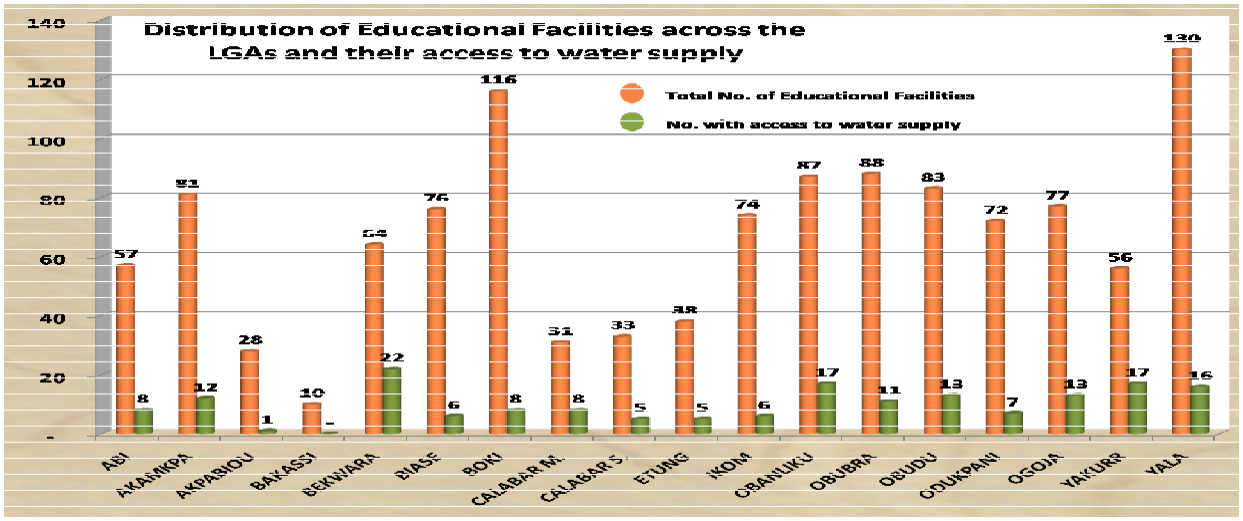

Figure 18: Access to Water Supply in Schools across the 18 LGAs

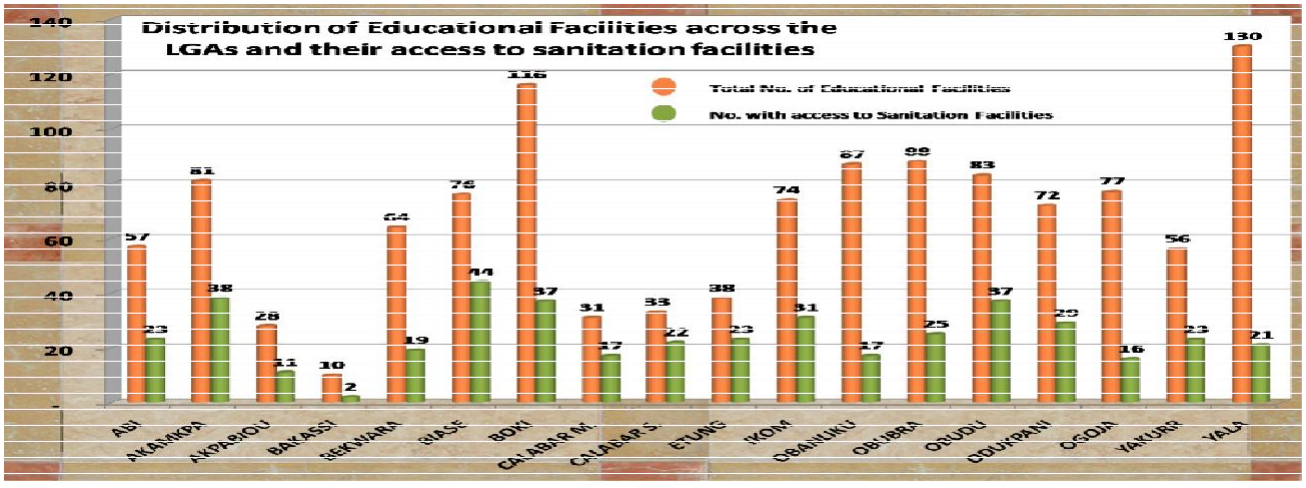

Figure 19: Access to Sanitation Facilities in Schools across the 18 LGAs

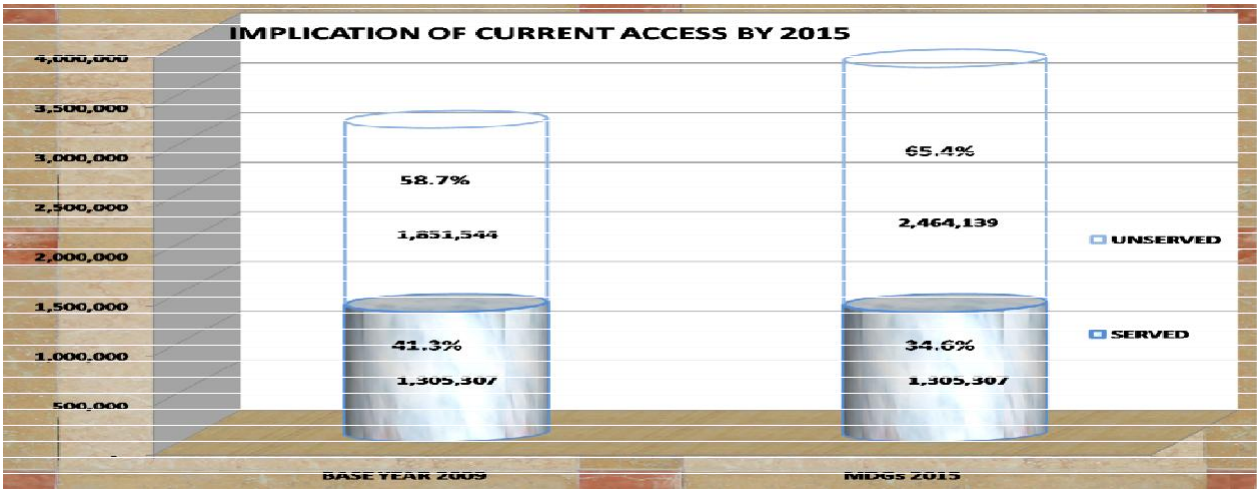

Figure 20: Depletion of current access by 2015

Figure 21. Cost Benefit analysis for facilities rehabilitation and construction of new facilities

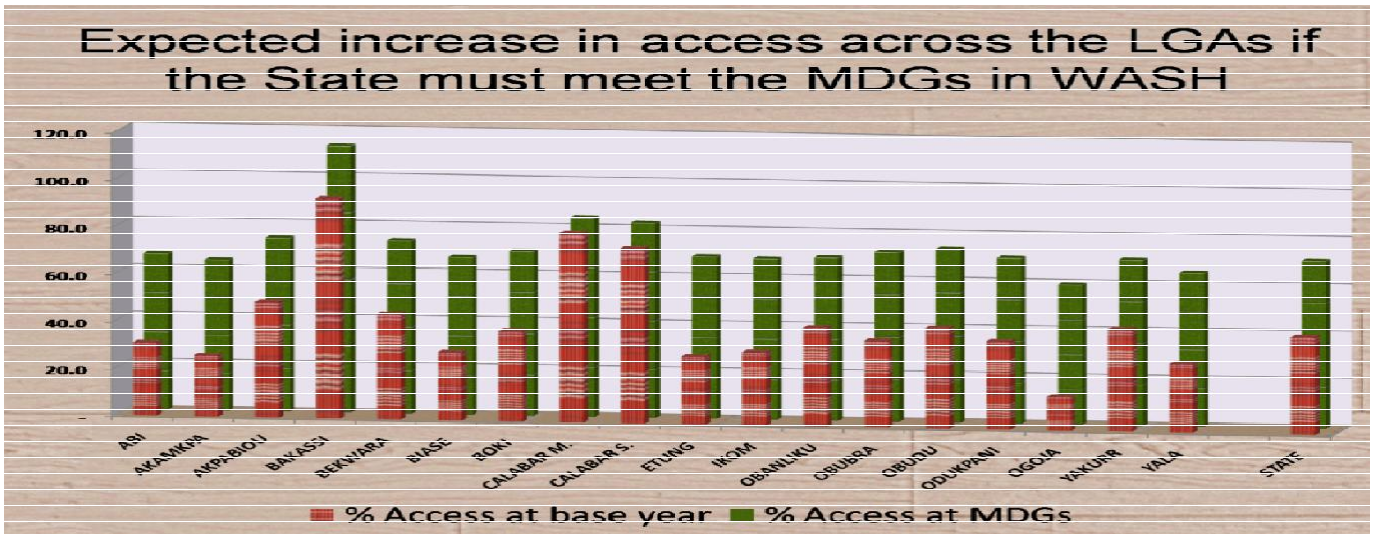

Figure 22. Expected Increase in Access across the LGA at MDGs mark

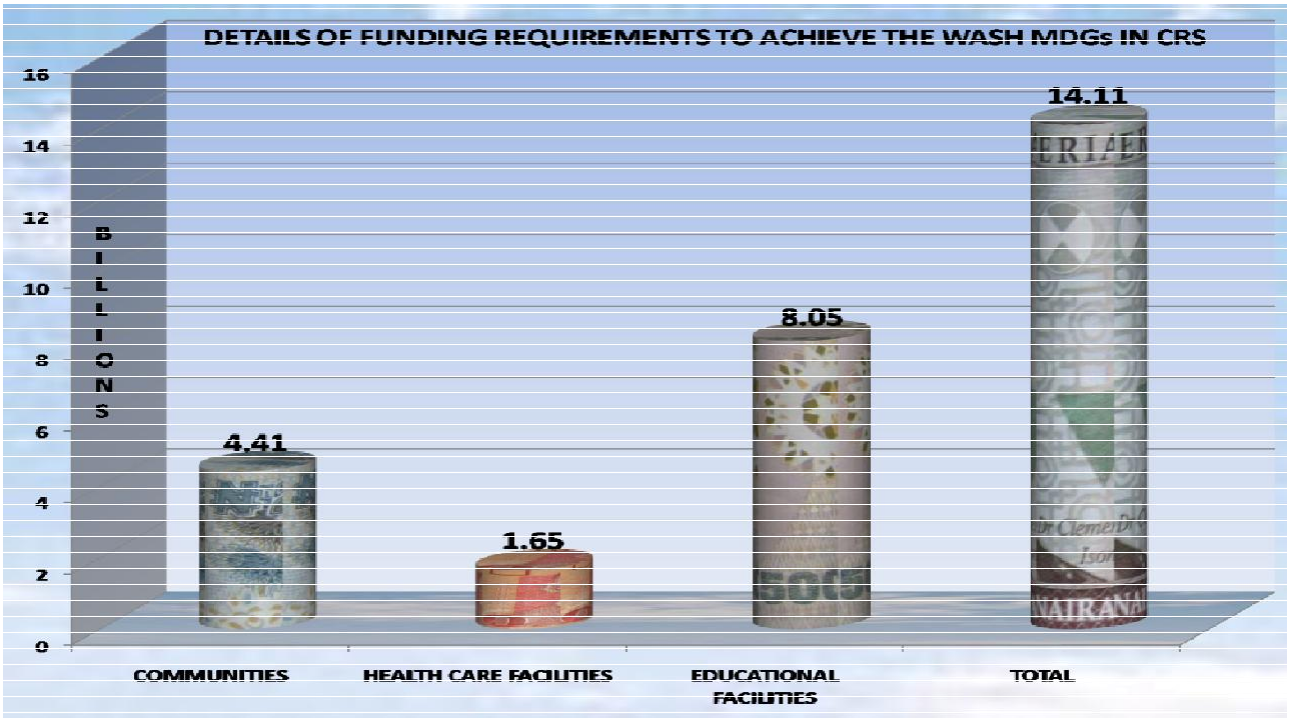

Figure 23. Overall investments required for attainment of the WASH MDGs in the State by 2015

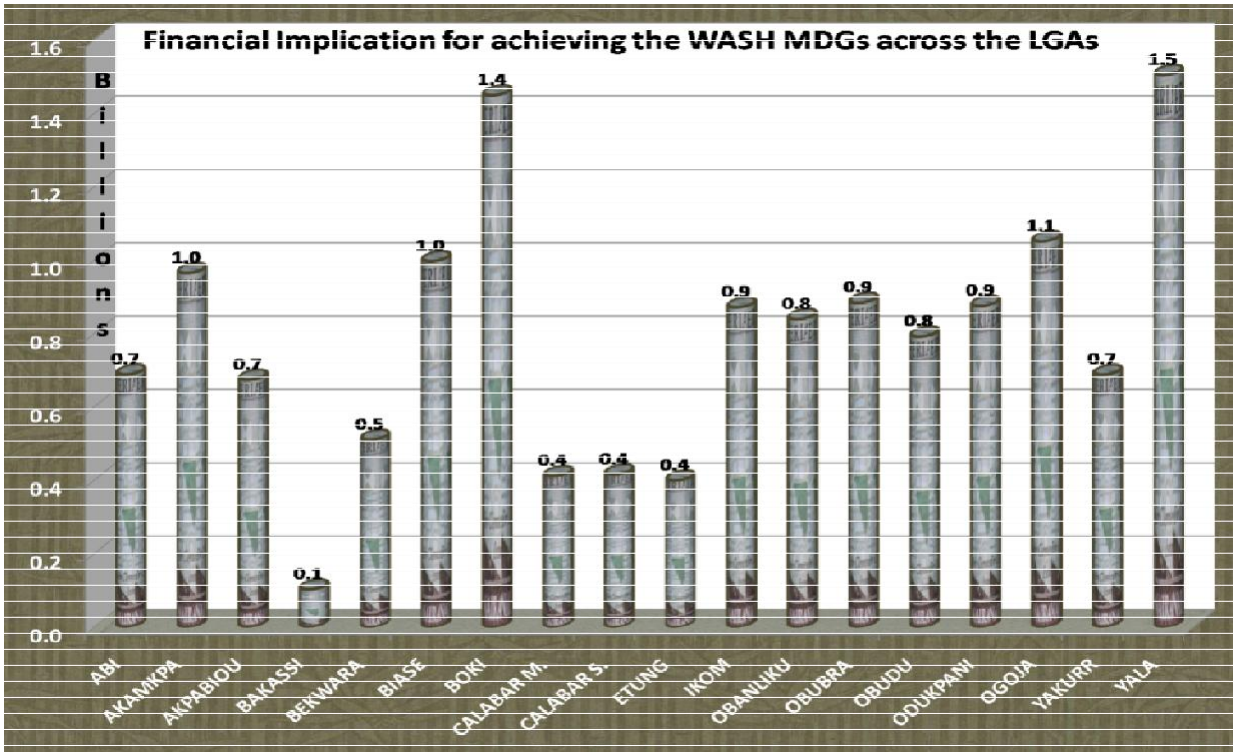

Figure 24. Financial Implication for achieving the WASH MDGs across the LGAs

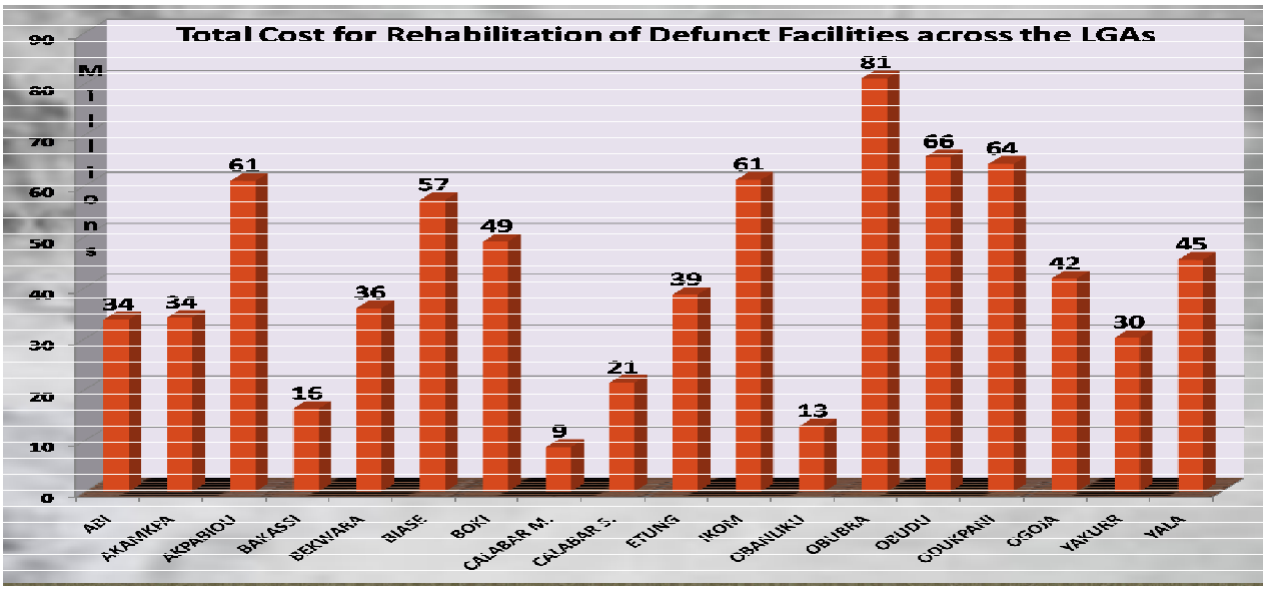

Figure 25. Cost of Rehabilitation of 80% of defunct water supply facilities across the LGAs

with access each day. The infrastructural implication for meeting the MDGs translates into a total of 6,160 water points if hand pump boreholes are preferred as the technology option. This also interprets a total of 86 HPBHs per month. A critical finding from our analysis is that '**the recovery of 80% of lost access through the rehabilitation of defunct facilities would provide access to 689,480 people'.** This number account for about half the number of people needed to be given access for the State to meet the MDGs.

Thus, rehabilitation of facilities that are broken down in the State alone can take the State half way into the achievement of the MDGs. Cost benefit analysis reveals that the cost of providing access through rehabilitation of existing water supply facilities is just one quarter of the cost implication for providing new water supply facilities (see fig 21).

Projected Access at the MDGs year (2015) and Cost Implications

Considering programming cost and the actual cost of facilities, the per capital cost of safe water supply in the State was evaluated. This estimates shows that ₦ 4,250 will be required to provide access per person through construction of new water supply facility, while for rehabilitated works the cost per capita is ₦ 1,100. To move access to water supply to 71.2% within communities and thus contributing to the achievement of the WASH MDGs, the Water supply sector requires a total investment of ₦ 4,411,822,626 if low cost options like HPBHs, Reticulated MBHs, etc, are used. The cost will however vary for regional schemes, which will require designs and costing that are more detailed. However, the achievement of the WASH MDGs is intrinsically connected to the achievement of the other MDGs, thus access to WASH facilities in public institutions, especially the Educational and health care facilities, is as well critical in the realization of improved services delivery within these sectors. The financial implication of providing access to WASH facilities to all health care facilities that currently don not have access stands at ₦1,650,200,000. The financial implication of providing access to WASH facilities to all Public Educational facilities that currently do not have access stands at ₦ 8,044,300,000.

The overall cost of achieving the MDGs (including Community and Institutional WASH interventions) for the State Stands at ₦14, 106, 322, 626, which interprets an annual financial implication of ₦ 2,351,053,771, with monthly investment of N195,921,148.At the point of achieving the MDGs the States access will be at 71.2%, thus the percentage increase in access will be 36.5% of which rehabilitations will contribute 18.3%.(Figure 23-25)

CONCLUSION AND RECOMMENDATIONS

The study reveals 2,387 improved water points in the State consisting of 9 developed springs, 157 improved hands dug wells, 1,104 hand pump boreholes and 1089 motorized boreholes (MBHs). Facilities' functionality is skewed in favour of the urban LGAs recording 86% functionality. However, 43% of facilities in the rural areas are not functional. State functionality rate is at 63.8%.

Table 2. Targets for Water Supply and Sanitation coverage

	2011	2015	2020
Targets for Water Supply coverage			
Urban Water Supply	60%	75%	95%
Small Towns Water Supply	40%	70%	85%
Rural Water Supply	40%	70%	85%
Targets for Sanitation coverage			
Urban	40%	70%	80%
Small Towns	40%	70%	80%
Rural areas	40%	80%	80%

Table 3. Cost sharing for Water Supply Capital Investment

Agency	Urban and Small towns	Rural
State Govt.	95%	65%
Local Govt.	Nil	30%
Community	5% for small towns	5%
Cost sharing for Water Supply Operation and Maintenance		
Agency	Urban and Small Towns	Rural Water supply
State Government	0%	10%
Local Govt	0%	20%
Consumers (through tariffs)	100%	70%

Only 1.3 million people (41.3% of the population) have access to improved water supply. The implication of this is that about 1.9 million persons (58.7% of the population) are un-served. Only 15% (175 of 1201) of public educational facilities have access to water supply facilities, while 35% (435 of 1201) have access to safe means of excreta disposal. The achieve the WASH MDGs in Cross River State additional 1,232,069 persons will be provided access to safe water supply and sanitation before the end of 2015.

The recovery of 80% of lost access through the rehabilitation of defunct facilities would provide access to 689,480 people and this represents half the number of persons that need to have access if the State must meet the WASH MDGs target. The overall cost of achieving the MDGs for this sector (covering both communities and institutional WASH service delivery) stands at about N14.2 billion. This will implies an annual financial investment of N2.4 billion and a monthly investment of N196 million. To achieve the WASH MDGs in Cross River State, the study therefore suggest the following:

Targets and Consumption Standards: To put the State on track towards attaining the Millennium Development Goal 7, Target 10 for water supply and sanitation by 2015 and beyond, the following consumption standards should be assumed for planning purposes; *Rural* - 30 litres per capita per day for settlements with population of less than 5,000; *Small Towns*- 80 litres per capita per day for small towns with population of 5,000 - 25,000; *Urban* - 120 litres per capita per day for urban areas with population greater than 25,000. This will translate to the following outcomes in the water and sanitation sub-sector in the State (Table 2)

Participatory investment in water supply by stakeholders

The state government should work closely with LGCs to progressively step-up funding for water and sanitation infrastructure development between now and 2015. This is the only way to pull more resources towards achieving the MDGs in the State. The financing of capital investments and operation and maintenance cost for water supply shall be based on cost sharing in line with the following cost sharing arrangements. (Table 3)

In all engagements with External Support Agencies (ESAs) the emphasis will be on supporting State programmes rather than stand-alone initiatives driven by ESAs. This will promote a standardised sector approach and at the same time make better use of ESA resources. Rural and Small Towns Water Supply and Sanitation programmes in Cross River State will operate on the basis of demand responsiveness from communities and

on agreed criteria for participation, This will involve participation by State, LGAs and communities in self-selection procedures using agreed compliance criteria for participation.

Ownership and management of facilities by rural and small town communities

Rural and small town communities shall take ownership of water supply facilities provided by the State Government. Communities will make all decisions about their water supply and sanitation facilities and assume full responsibility for operating and managing them, including collection of revenues to cover recurrent and normal replacement cost. LGA personnel (or personnel of an NGO, private sector group of the implementation agency) will assist the communities to plan for their facilities and its management.

Community-led total sanitation shall be employed as a key strategy for scaling up access to improved sanitation in rural areas and small towns. This strategy empowers communities to take full responsibility for the financing household sanitation facilities and promoting improved hygiene practices. Communities will be encouraged to mobilise behaviour change agents (e.g. Volunteer Hygiene Promoters) and in conjunction with schools authorities support the formation of Environmental Health clubs in all schools. In order to promote greater efficiency in service delivery, the Agencies responsible for service delivery shall have sufficient autonomy. Their management staff and Board of Directors shall comprise adequately qualified and experienced persons. Consideration shall be given to employing management staff on fixed term performance based contracts.

The Cross River State Government and its WSS Agencies should encourage manpower development through existing relevant training institutions in the State (Universities, Polytechnics, Technical and Vocational training Colleges) and in-house capacity building; Utilize the National Water Supply Training Network and the National Water Resources Institute to support the training of water supply operatives in the State; Encourage Public- Public - Partnerships between CRS WSS agencies and other high performing WSS agencies locally, nationally and internationally through twinning programmes, exchange / study visits etc; Encourage formation of joint ventures between foreign water supply operators and contractors and local state based companies.

Gender Mainstreaming and Pro-Poor Strategies

Measures shall be put in place to achieve gender mainstreaming in the Water Supply and Sanitation Sector at all levels. These should include training and retraining of staff in water and sanitation related MDAs and community committees on mainstreaming gender in water and sanitation activities; Provision of targeted capacity building programmes on all aspects of water and sanitation operations and management to include women; Ensuring equal representation of women in membership and leadership positions of WASHCOMS and WCAs; and Providing gender sensitive software or hardware and other equipment by water and sanitation agencies or implementing partners.

The Agencies responsible for service delivery in urban areas, small towns and rural areas shall carry out Poverty Mapping to determine areas and communities that could benefit from water and sanitation subsidies; Water and sanitation subsidies when considered necessary, should be affordable to the Government that is providing them, targeted to the groups intended to benefit, and transparently administered with the involvement of the intended beneficiaries; Where it is considered appropriate and feasible, tariff structures shall include cross subsidies between consumer groups in order to meet the basic needs of the poor; and where it is considered justified, exceptionally poor communities could be wholly or partially exempted from cost sharing obligations.

Private sector participationand the use of appropriate technology and management practices

As a means of improving efficiency in the sector, the Cross River State Government should create an enabling environment to allow the private sector (including the banking sector) to contribute to sector development through a number of activities including; Outsourced management responsibilities through Public-Private Partnerships, billing and collection, wastes disposal, provision of emergency water supplies using tankers, operation and maintenance of small-scale water schemes, construction and rehabilitation contracts for water and sanitation facilities, and local manufacture of WSS equipment and materials.

Service delivery institutions shall implement efficiency improvement measures in order to reduce cost. Improved financial management, operation and maintenance, abstraction and treatment techniques and control of water source pollution shall be also be institutionalized. In rural areas and small towns, consideration will be given to using the most appropriate technologies including hand pumps, tube wells, spring development, rain water harvesting facilities and solar power. Metering shall be employed wherever possible by all service providers providing piped water as a means of

contributing to the prevention of wastage of water as well as for the purposes of increasing the effectiveness of billing and revenue collection. This shall include the use of prepaid meters where appropriate.

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