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Investigation on Poor Water Quality Supply in Calabar: A Case Study of Cross River State Water Board

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Received: August 10, 2019 Published: September 16, 2019

Volume: 01; Issue: 04

To Cite This Article:

Jerome G Egbe, Gitu I Bassey, Ubi S Emmanuel, Emiri A Dafe, Friday J Egu. Investigation on Poor Water Quality Supply in Calabar: A Case Study of Cross River State Water Board. Peer Res Nest. 2019 - 1(4) PNEST.19.09.015.



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Abstract

Increase in population and change in lifestyle has created water scarcity in many parts of the country. Microstructures for rainwater harvesting, artificial recharge and reuse of water are becoming more and more popular to solve the local water problems, to mitigate water shortage and improve water quality. The study was conducted to investigate the challenges influencing the implementation of water sector reforms in Cross River State Water Board Limited and to address the poor water quality service delivery which is evidence, leading to inadequate delivery of clean, safe and reliable water to Cross River State people, with an aim of coming up with recommendation that will enhance the policy makers in the water sector for a successful and faster implementation. The research was delimited to the target population of 500 which include senior staff, junior staff, contract staff and residence living in Calabar South, Calabar Municipality, Akpabuyo, Odukpani, Akamkpa and its environs. The study utilizes both primary and secondary data. The secondary data were gathered through review of the relevant studies. Primary data on the other hand was collected through the use of questionnaires. Selfadministered questionnaires were used to gather data and to control the amount of data collected. It this therefore recommended that the board should established water appeal board dedicated to resolve complaints, government and agencies responsible for maintenance and repairs of vandalize water facilities and to restrained people from building on the existing facilities on the water board pipes to avert possible outbreak of water borne diseases in the affected areas.

Keywords: Water reforms; poor water delivery; Implementations vandalism; water board

Introduction

Increase in population and change in lifestyle has created water scarcity in many parts of the country. Microstructures for rainwater harvesting, artificial recharge and reuse of water are becoming more and more popular to solve the local water problems, to mitigate water shortage and improve water quality. The earth's population is projected to double from the present 5.6 billion to about 10 billion by the year 2050 (State of World population report, 1993, U, N. Population Fund). Most of this increase will occur in the third world, where close to 90% of the World population will then live. Also, people will continue to migrate from rural areas to cities and already by the end of this century, there will be 22 mega cities (population more than 10 billion), 18 of which will be in the Third world. Such cities have mega water needs, produce mega sewage flows, and will have mega problems. However, it is estimated that half the people in the third world will have no access to safe drinking water that one billion will get sick every year from waterborne diseases, and that 12 million will die, 80% of which will be children [1-4].

Increasing water demands require more storage of water in times of water surplus for use in times of water need. Traditionally, this has been achieved by constructing dams. However, dams, have finite lives because of eventual structural failure by constructing and sediment deposits in the reservoir. Also, good dam sites are becoming increasingly scarce, dams are not possible in flat areas. And they loss water by evaporation and have adverse on environment and socioeconomic effects. Reforms in water sector are considered as an essential pillar in government's poverty reduction strategies, toward economic recovery for wealth and employment creation [5]. It also recognizes that for a country to achieve its set objectives and goals in water sector there is need to make water available, accessible and affordable, especially to the poor. This, directly and indirectly called for increased coverage, reduction of high water loses, rehabilitation and expansion of existing schemes, sustainable demand management, construction of new water supply scheme, transparency, accountability, good water governance efficiency, clear institutional framework, encouraging propoor focus, strategies and programs among others [6-10]. Over the years, implementation in water

sector has remained a major challenge. Observed that poor water governance leads to increase in political and social risk, institutional failure and rigidity among other things. Poor water governance also leads to increased incidences of poverty as malfunctioning systems cause misallocation of scarce resources. It is within this realization that reforms in the water sector become necessary.

Water is seen to be vital for man's existence; irrigation, power generation, recreation, industrial production and receiving wastewater [11-18]. The enormous need of water for man consumption can never be over emphasize. Access to this water has remained a scarce resource to the residence living in Calabar South, Calabar Municipality, Akpabuyo, Odukpani, Akamkpa and its environs in Cross River State. The WHO/UNICEF Joint Monitoring programme for water supply and Sanitation reported that 663 million people did not have access to improved sources of drinking water and more than 2.4 billion people lacked access to basic Sanitation services in 2015. [19-22].

The Rights to water entitle everyone to sufficient, safe, reliable and affordable water for personal and domestic use in or near their homes, workplace or educational institutions (General comment 15 of UN committee on Economic, Social and Cultural Rights) [23,24].

A research conducted on factors influencing the implementation of Water Sector Reforms in Kenya, Simon defines reforms in water sector as the process of implementing changes in the sector to ensure better water service delivery and resources management. In a study conducted on implementing integrated water resources management in Philippines. He observed that, there was need for sound basic principles and structural framework relating to appropriation, control, conservation and protection of water resources to achieve optimum development and efficiency to meet present and future needs. He also recommended the need for adequate administrative machinery to implement the reforms in Philippines [25]. In his general overview of the Ugandan water sector reforms, found out that there was inadequate financial strength in both private and public sectors and that there was limited coordination among water institutions to carry out successful implementation of the water sector reforms in Uganda.

According to nwsrp.gov.ng [8] Cross River State Water Board Ltd (CRSWBL), as it is called today, came into existence over 100 years ago. From history, the Calabar water scheme is the oldest water scheme in Nigeria, as Calabar is the first capital of Nigeria. The scheme was constructed before the 1890's by the colonial masters, followed by the Badagry water scheme in Lagos State. The CRSWBL inherited the oldest water supply scheme in the country. The first managers of the oldest water scheme were the Eastern Nigeria Ministry of Works in Enugu. When the South-Eastern State was created, the Ministry of Works, South-Eastern State, later Cross River State took over the scheme, and the water board was a small division in the Ministry of Works. The division operated under the Ministry of Works up to 1975 when it was made autonomous and called "Cross River State Water Board". It was established at that time with Cross River State Edict No. 13 of 1975. So, ever since, the water board has remained an autonomous water agency operating the old Calabar scheme. The old CALCEMCO in Essien Town, Calabar, is where the old water schemes were located. Cross River State Water Board Ltd is the water utility of the State, responsible for piped water supply services in the entire Cross River State, Ugep-Ediba, Itigidi, Obubra, Ikom, Obudu and Ogoja, commissioned in the early 1960's by the late Colonel Onogu when he was in power during the Biafran regime. So, those systems have been in operation in their various capacities and have been properly managed up to the late 80's, when it was realized that the systems were old, and demand had increased tremendously due to populations increase. That realization led to the quest for reform for infrastructure rehabilitation and expansion.

The significance of the study is to address the poor water service performance, which is evidence, leading to inadequate delivery of clean, safe and reliable water to the masses of Cross River State. The results of the study will help the Cross-River State Water Board Ltd (CRSWBL) in formulating data base that will enhance the policy makers in the water sector for a successful and faster implementation, toward ensuring continuous water supplies and customer satisfaction.



Materials and Research Methodology

The study area is located in Calabar, Cross River State, Nigeria. Cross River is a state in South South Nigeria", bordering Cameroon to the east. It is a coastal state located in the Niger Delta region, and occupies 20,156 square kilometers, with the population of about 3,737,517, Density 190/km2 (480/sq mi). It shares boundaries with Benue State to the north, Ebonyi and Abia States to the west, to the east by Cameroon Republic and to the south by Akwa-Ibom and the Atlantic Ocean. Its major towns are Akamkpa, Biase, Calabar South, Ikom, Calabar municipal, Obubra, Odukpani, Ogoja, Bekwarra, Yakurr, Obudu, Obanliku, Akpabuyo, Ofutop, Iso-bendghe, Danare, Boki, Yala, Bendeghe Ekiem, Etomi, Ukpe and Ukelle [9] Figure 1.

The study used both primary and secondary data. The main techniques used in collecting the primary data were structured questionnaires and key informant interviews. Apart from the primary data sources, the study also made use of extensive secondary data. Secondary data was collected by reviewing reports from government reports, books, periodicals, journals, newspapers and magazines on water sector and water reforms in Nigeria and other countries. Secondary data was helpful to furnish a background fabric and context to the primary data and serve as a precursor to the primary data collection exercise. In addition, secondary data was useful in cross checking and confirming the primary data. Information obtained from secondary data was also used to strengthen findings and draw conclusions.

Structured questionnaires were main tools for data collection. The questionnaire ensured that it translated all the research objectives into specific questions which had both open and closed ended questions. To achieve a higher response rate, the researcher made the questionnaire short and simple. It had brief introduction paragraph and a plea to the respondents to fill and return the questionnaire. Key informant interviews were also used in this study as it was believed to be vital in providing an in –depth understanding of the water sector and the challenges facing the implementation of water sector reforms. This research also employed the analysis of available literature on the issue under investigation and collection of data from various sources, policy makers, regulators and implementers like the Cross-River Water Board limited and residence living within the environs.

Instrument validity

Validity is the degree to which an instrument measures what it purports to measure [11]. To determine validity of the instrument, a pre-test was carried out by administering the questionnaire to some of my scholars to make corrections and modifications on the items of the instrument.

Target population

Defines a population as a group of individuals, [3] objects or items from which samples are taken for measurement. The target population for this study comprises staff in Cross River State Water Board Ltd (CRSWBL) including its substations and Residence living in Calabar South, Calabar Municipality, Akpabuyo, Odukpani, Akamkpa and environs in Cross River State. The respondents include the senior staff, junior staff and contract staff, Residence living in Calabar South, Calabar Municipality, Akpabuyo, Odukpani, and Akamkpa. The target population of the study is 150 which include 15 senior staff, 35 junior staff, 25 contract staff and 75 Residence living in Calabar South, Calabar Municipality, Akpabuyo, Odukpani, and Akamkpa [15,17], For this study a range of between 10-20% is reasonable enough for the researcher to draw generalizations about the target population. Therefore, a reasonable numbers of board members and Residence living in Calabar South, Calabar Municipality, Akpabuyo, Odukpani, and Akamkpa participated in this study.

Data collection procedures

To increase the credibility and validity of the results, the subject matter of the study was warrant triangulation. The main techniques that were used in collecting primary data was structured questionnaires and key informant interviews. Apart from the primary data sources, the study also used extensive secondary data. Secondary data was collected by reviewing reports from government reports, books, periodicals, journals, newspapers and magazines on water sector and water reforms in Kenya, Nigeria, and other countries The questionnaire ensured that it translated all the research objectives into specific questions which had both open and closed ended questions. To achieve a higher response rate, the researcher made the questionnaire short and simple. Brief introduction paragraph and a plea to the respondents to fill and return the questionnaire. This research also employed the analysis of available literature on the issue under investigation and collection of data from various sources. Mainly data on water sector reforms was derived from various policy makers, regulators, Residence living in Calabar South, Calabar Municipality, Akpabuyo, Odukpani, and Akamkpa and implementers like Cross River State Water Board, Water Service regulatory board (WASREB).

Data analysis techniques

After editing and sorting out the questionnaires for completeness, returns, and coding analysis of the data was done. The quantitative data analysis, descriptive statistics was used to analyze the data to give the percentages (%), frequencies (f) and mean. Data was presented in form of tables which will help to explain the relationship between the variables of study. Qualitative data analysis was carried out from the open-ended questions.

Result and discussion

The Figure 2 present the response of duration the organization has stayed in operation. It was observed that 46.7% said that the organization have been in operation for 13-20 years, 22% said it has stayed for 9-12 years, 14.7% said the organization have stayed for a period of 6-8 year, 10% said for a duration of 3-5years while 6.7% did not provide answer and this gives an indication that they did not have a clear understanding of when the organization was established or the duration it has stayed in operation.

Table 1 present Response of how often the staffs meets with the policy makers to deliberate on issues affecting the water sector reforms. It was observed that 6.7% hardly meet, 10% meet monthly,

33.3% meet quarterly while 50% did not respond. The 50% that did not respond is an indication that either they are residence who are not staffs of CRSWB ltd or have no knowledge of when the board meets, While the 33.3% is a good average of the staffs strength who

have the knowledge of when the board meet. This an indication that, the staffs meet with the policy makers to deliberate issues affecting the water sector, which is aim, at achieving an efficient and effective way of managing water resource.



Figure 2: Response of duration the organization has stayed in operation.

Table 1: Issues affecting the water sector reforms.

Duration	Frequency	Percent
Hardly meet	10	6.70%
Monthly	15	10%
Quarterly	50	33.30%
No response	75	50%
Total	150	100%

Table 2 present response of how often the staffs meets with the policy makers to deliberate on issues affecting the water sector reforms. It was observed that 6.7% hardly meet, 10% meet monthly, 33.3% meet quarterly while 50% did not respond. The 50% that did not respond is an indication that either they are residence who are not staffs of CRSWB ltd or have no knowledge of when the board meets, While the 33.3% is a good average of the staffs strength who have the knowledge of when the board meet. This an indication that, the staffs meet with the policy makers to deliberate issues affecting the water sector, which is aim, at achieving an efficient and effective way of managing water resource. Table 2 present response of how regular is submission of monitoring and evaluation reports to policy makers. It was observed that 46.7% responded they normally submit reports to the policy makers as required while 3.3% responded no to report submission of monitoring and evaluation reports to policy makers. 50% left the box untick, indicating that either they were residence who are not staffs of CRSWB ltd or have no knowledge on report submission. This indicates that the board has no clear focus on raising the awareness about the reforms in the water sector by educating members of the public on the benefits of the decentralized service delivery and inviting stakeholders to participate in the reform process. The board should develop a stakeholder communication strategy to expand service outreach in its area of jurisdiction. The information and communication strategy will have an educational value. It is imperative to educate the public on the dangers of using untreated and polluted water. It is also necessary to create awareness on the health problems associated with poor sanitation. This is another area in the water sector reforms which is key to ensuring that the public has access to safe and quality water. The board thus has to ensure that industrial

effluents are properly treated and do not endanger the lives of the people

Table 2: how regular is the Submission of monitoring and evaluation reports in the water sector reforms.

Response	Frequency	Percent
Yes	70	46.70%
No	5	3.30%
Left blank	75	50%
Total	150	100%

The Figure 3 and Figure 4 clearly, shows the response that concurred with the view that lack of training affects their work/ performance. 3.3% responded no to how lack of training affects work/performance, while 3.3% response did not see the

importance of training on water sector reforms. On probing further for those who did not wish to respond to the question, it emerged that there were some members of staff who were favored than others when it comes to selection to attend trainings and they feared for retribution should they be known. The Board needs to be more proactive in outlining the various roles and responsibilities of the staff of the board that are key to the realization of the strategic plan. This will in turn influence the implementation of water sector reforms.



The 97.3 % responded that the current state of water sector infrastructure within CRSWBL and its environs is poor. 2% said that the current state of water sector infrastructure within CRSWBL and its environs is fair while only 0.67% said the current state of water sector infrastructure within CRSWBL and its environs is good. A source said "It is unfortunate that we find ourselves in this precarious situation. The situation has compelled both mothers and children to travel long distances in search of water daily. Concerned residents have appealed to the Cross-River Water Board Limited and local government council to intervene before it assumes crisis-proportions. Therefore, appealed to government and agencies responsible for maintenance and repairs of vandalize water facilities to come to their aid to avert possible outbreak of water borne diseases in the area.

According to, 98.7% evaluation they maintained that the board is lacking in the area of maintenance of its water facilities, assets and extensions of water distribution lines in the Cross-River State Water Board Ltd and its environs for the last two years while 1.3% said yes. This however could not verify the number of the assets maintained against the planned ones within a period of two years. A source at the Cross-River Water Board Limited, who preferred anonymity, disclosed that the outfit would fix the vandalize water facilities in due course. The view on current implementations status of water infrastructure projects their responses are depicted in Figure 5 as shown below.



A sustainable management of water resources remain a precondition for economic and social development. In this regard, efficient and effective reporting systems will be essential in keeping track of performance. From Figure 6, 95.3% opined that CRSWBL does not receive timely and adequate budgetary allocations from the government and donor funding partners. Only 1.3% of the respondents did not respond to the question while 3.3% responded yes. Without receiving timely and adequate budgetary allocations from the government and donor funding partners it will be difficult to run the organization and maintain water facilities.



From Figure 7, 92% responded to a great extent, that the sector lack proper water infrastructure and properly maintained water structures. 6.7% responded to some extent while 1.3% responded moderately. It this evidence that lack of proper water infrastructure

and properly maintained water structures contribute to the factors affecting implementation of water sector reforms in CRSWBL and its environs.



From Figure 8: Another factor influencing implementation of water sector reforms was failure to adhere to project master plans, action plans and comprehensive frameworks in project execution.

This was supported by 6.7% who said to a great extent, 10% to some extent and 80% had a moderate view. Only 0.7% of the respondents did not respond to the question.



From Figure 9: 76.7% responded to a great extent feel that lack of institution capacity structures, able staff and administrative order, affect implementation of water sector reforms in calabar and its environs. 10% reply to some extent, 2% said moderately, 6.7% not at all, 1.3% do not know while 3.3% no response. To a

large extent, the boards need to build the capacity of its staff and directors at both the organization and the WSPs level. It also needs to endeavor to establish sound governance principles and practice tenets of good corporate governance at the organization and water service providers



The Managing Director of CRSWB, Professor Godwin Igile, who spoke to NDV on the occasion of the 2017 World Water Day, stated that the board distributes 180,000 cubic metres of water every day from its seven water plants across the state, but thousands of water consumers do not pay their bills while others vandalise water installations pipes, valves and metres were a major hindrance in efficient water distribution across the state, warning that the board was on the watch for vandals and would appropriately deal with them by sending law enforcement agents after them. Offenders to face revenue court: "Those who illegally connect water would soon be arrested because they are water thieves and those who consume water without paying are also water thieves. The effect of the vandalization of water board installation facilities in the state has tremendously increased demands on private bore holes owners for patronage. From our field survey work Figure 10, 97.3% responded strongly agreed that sustainability of water sector reform implementation is been affected due to financial indebtedness to electricity company, 1.3% agree, 0.7% neutral while 0.7% disagree. This will cut electricity supply to CRSWBL's headquarters and treatment plant, leaving her consumers to endure long periods without water supply in the metropolis.

Figure 11, private borehole owners, 93.3% responded strongly agreed that sustainability of water sector reform implementation

are affected due to patronage of private borehole owners who charge exorbitant rates, have taken over water supply business in the state. However, the concern is not just the supply by private borehole owners, but the quality of water they supply, knowing that unclean water is the source of typhoid fever, cholera and other killer diseases. 5.3% agree, 0.7% neutral while 0.7% disagrees patronage of private bore holes suppliers as alternatives means for water supply for teaming population of the state Figure 12.



The dumpsite at LEMNA axis is also said to be affecting the

ground water in the area from which the treatment plant gets its water supply, describing it as a time bomb waiting to explode, not only disheartening but a huge threat to the health and well-being of

the residents. A functional borehole head on a portion of the land sold to private individuals, this is an exposure to pollution as shown in Figure 13.



Figure 13: Pilfering of water board's property.

This is an indication that people in Calabar South, Calabar Municipality, Akpabuyo, Odukpani, and Akamkpa are all at risk because the water the board is circulating is not properly treated and worrisome situation here is the indiscriminate building on the existing facilities of the board such as the pipes and people are now building on top of the raw water pipes, poses serious environmental concerns to the people [26-28].

Conclusion and Recommendation

To advert the challenges influencing the implementation of water sector reforms in Cross River State Water Board Ltd and to address the poor water service performance which is evidence, leading to inadequate delivery of clean, safe and reliable water to the masses of Cross River State, with an aim of coming up with solutions that the policy makers and other players in the water

sector need to use to ensure a successful and faster implementation. The Government of Cross River State should formulate state water policy to provide top priority to drinking water supply and undertook the national River Action Plan to clean up polluted river stretches. Emphasis should be given to adopting a river basin approach or sub-basin –based approach. Which integrates all aspect of water management namely water pollution, water allocation, pollution control, protection of water resources, and mobilization of financial resources. An appropriate tariff structure for water supply and sanitation for both urban and rural areas need to be collected to formulate strategies and priorities and action plan.

Recommendations on the Study

The rivers and water bodies should not be used as a source for water supplies as well as convenient sink for wastewater discharges. The rapid urbanization, industrialization and increasing use of chemical fertilizers and pesticides etc. have made our rivers and water bodies highly polluted. Different organizations like central pollution control board, central water commission. And central groundwater board should be involved in water quality monitoring water quality assessment authority should be set up to effectively coordinate and improve the work of water quality monitoring by various organizations.

As for now there is no established method to assess requirements of minimum flow in the rivers. From the study conducted, the following recommendations were made: The board should established water appeal board dedicated to resolve complaints Government and agencies responsible for maintenance and repairs of vandalize water facilities to come to the aid of the masses to avert possible outbreak of water borne diseases in the affected areas. The board should constitute monitoring and task force directly in charged in monitoring the activities of the vandals and illegally water connection, the board should send law enforcement agents after them and offenders to face revenue court. The state government must as a matter of urgency stop any form of work going on within the premises of Cross River State Water Board Ltd because it poses serious health risk to the people of Cross River State. To be able to pay off an outstanding indebtedness to electricity bills, water consumers should pay their water bills regularly. The government and donor agencies should timely, properly and adequate release budgetary allocations to the board.

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