

## Review

# Localizing the strategy for achieving rural water supply and sanitation in Nigeria

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**Water is essential for sustenance of life and determines the overall socio-economic development of any nation. In Nigeria, so many programmes to improve water supply and sanitation situation had been put in place by different administrations. Despite this, the hope of meeting the UN Millennium Development Goals (MDGs) target of safe water supply by the year 2015 is still uncertain. The MDG in water supply and sanitation aims to half the proportion of people without access to potable water supply and basic sanitation. More recent statements of the MDGs refer to the right of communities to have access to an adequate supply of safe water. Safe rural water supply coverage in this context is taken to mean water that does not represent a significant health risk; that is of sufficient quantity to meet all domestic needs; that is available continuously to all of the people and is affordable. There is no gainsaying the fact that the objective of improved rural water supply generally is limited to improved health. This paper therefore examines the extent to which government, implementors, and users are adopting different but interrelated mechanisms to deal with water stress in Nigeria. The paper also identifies the challenges in governance, government policies and priorities as responsible for poor service delivery. More importantly, a policy/institutional framework for sustainable rural water supply and sanitation delivery is developed towards achieving the Millennium Development Goals.**

**Key words:** Rural water supply, sanitation, sustainable development, Millennium Development Goals, Nigeria.

## INTRODUCTION

Adequate and safe water supply lies at the heart of development whether it is urban or rural. Water supply and sanitation development of any nation are continuing long-term process which requires careful planning and implementation geared towards achieving improved conditions of life (Babalola, 1990, 1997). Consequently, there is an imperative urgent need for effective integration of theory and practice peculiar to our communities in planning programmes of rural water using local experts.

More recently, greater attention has been paid to the broader livelihood benefits of rural water supply, looking beyond direct links between improved water supplies and public health (UNICEF, 1999; Nicol, 2000; Calow et al., 2002; Moriarty and Butterworth, 2003). The direct health benefits of improved rural water supply, especially when integrated with sanitation initiatives, are well known. They derive mainly from the safe disposal of human excreta, the effective use of water for hygiene purposes (washing,

cleaning, etc.) and the satisfaction of basic drinking needs with clean water (MacDonald et al., 2005).

Rural communities, in the context of the water and sanitation sector in Nigeria, have populations less than 5,000 and usually do not have electricity, pipe water or tarred roads. The National Standard of water consumption for rural areas is currently 30 L per capita per day and 48 and 44% access to safe water and sanitation (MICS, 1999). Water supply means the delivery of 30 L per capita per day of safe water within 250 m of the community and serving about 250 to 500 persons per water point; and safe water means water that meets the National Drinking Water Quality for Nigeria.

In rural water supply and sanitation, demand for community water supply services are localized demands. Therefore, managerial decisions about levels of service, location of facilities as well as cost sharing should be made locally. The main role of higher-level government agencies should be to establish institutional rules,

**Table 1.** Static water resources, groundwater, fresh meteoric water in Nigeria.

Province	Structural units	Area SQKM	TWRS M1 Million ( M <sup>3</sup> )
Crystalline Hydrogeological province	N. Nigeria Shield	234516	94979
	W. Nigeria Shield	115529	46789
	Mandara Hills	18460	2492
	Biu Plateau	4418	123.54
	Adamawa Mountains	60152	8121
	Oban Hills	4276	577
	<b>Total Cryst.</b>	<b>437351</b>	<b>166212</b>
Sedimentary hydrogeological province	Sokoto Basin	66424	3188352
	Katsina Basin	3564	28512
	Nupe Basin	36704	1468160
	Coastal Monocl.	12365	296760
	Keri-Keri Basin	22593	101669
	Abakaliki + Mamfe	24945	374175
	Benue Syncliner	96216	1443225
	Niger Delta	104234	2084660
	Borno Basin	119377	2148786
	Total Sedim..W.	486422	11134299
Total Fresh GWtr	923773	11134299	
Total Water Nig.	923773	36201836	

TWRS = Total Static Water Resources; SQKM = Square Kilometres. (Source: Schoeneich, 2003).

regulations, and processes that encourage such local decisions (UNDP-World Bank, 1995).

While water supply inadequacy is a widespread problem in Nigeria and the demand for it is growing everyday, rural dwellers feel the effect most. To cope with this problem, proper hydrological study of both surface and underground water resources on the basis of abundant and accurate data is inevitable. This paper therefore, analyzes the policy framework to develop water sources to meet the needs of different users, the institutional framework used in implementing these policies, and the participation of users at the community level.

## WATER RESOURCES IN NIGERIA

As is the case in most parts of sub-Saharan Africa, water demand in Nigeria far outstrips supply. The main sources of water for households are piped supply from treated water sources, untreated piped water from groundwater sources, shallow boreholes, wells and pond, springs, lakes, rivers, and streams (MacDonald et al., 2005).

Nigeria has a tropical climate and there is a wide variation of rainfall, influenced by the Southwest monsoon. Average rainfall is about 500 mm/year in the north occurring between April and September, increasing to about 3000 mm/year in the south (occurring between March and October). The country is noted for its two river

systems: the Niger entering the country from North West and the Benue entering from the North East which together with their tributaries drain half the area of the country. The two rivers meet at Lokoja, then moves in a southerly direction into an extensive delta before discharging into the Atlantic Ocean. Other rivers flow directly into the Atlantic Ocean or into Lake Chad. Many rivers in the North are intermittent having water in them only in the rainy season but majority of the rivers in the South are perennial, flowing all year round and are important sources of drinking and irrigation water.

About sixty percent (60%) of the country is underlain by crystalline rocks, 20% by consolidated sedimentary materials, and 20% by unconsolidated sedimentary materials. Static water level in water wells ranges between zero (0) in parts of the coastal alluvium to 200 m in some sedimentary areas (Table 1). The exact amount of groundwater storage is not yet known, but available records indicate that major aquifers in Nigeria are located in the sedimentary deposit basins. Table 1 shows the static water resources of Nigeria.

Well yields are unpredictable in the crystalline rocks found in many parts of the North. Where sufficient depth of weathering exists, the area may be suitable for operation of handpump (minimum of 10 L/min), but only at specific localities where deep weathering and underlying fracture coincide are yields likely to be sufficient for motorized schemes.

Generally groundwater quality in Nigeria is good

(Oteze, 2006; Uzoh and Okeke, 2009). Only in some areas are iron, manganese, nitrate or fluoride concentrations above the recommended World Health Organization (WHO) Standards. The corrosiveness of groundwater is also an important consideration in choosing materials for water supply equipment.

## **HISTORICAL REVIEW OF RURAL WATER SUPPLY AND SANITATION IN NIGERIA**

For several years now, many governments (both civilian and military) have been talking and emphasizing the need for sustained rural water supply and sanitation. Up till today, the effects of all these are far from reality. Since independence in 1960, rural water supply and sanitation development in Nigeria has proceeded inconsistently. According to Ajayi et al. (2003), Ezeigbo (2003), Hanidu (2003), Goni (2006), Offodile (2003, 2006), Oteze (2006), Oyebande (2006), Onugba and Yaya (2008), Nwankwoala and Mmom (2008), Nwankwoala (2009), Okeke and Uzoh (2009), rural water and sanitation in Nigeria suffered from poor co-ordination, poor maintenance culture, poor technical/institutional structure, multiple programmes, lack of data/information for planning, over bearing bureaucratic control by various supervising ministries, lack of professional inputs on projects, lack of community participation, inadequate funding, irregular disbursements of subventions, inappropriate infrastructures as well as lack of adequate quality monitoring and evaluation, lack of clear policy direction, lack of focus in terms of goals and objectives ( which resulted in the country's inability to achieve full coverage of the rural population with safe water and improved sanitation services.

Serious efforts at addressing rural water supply and sanitation issues began with the on-set of the International Drinking Water Supply and Sanitation Decade (IDWSSD, 1981 to 1990), which established target of universal coverage. This was followed immediately by the World Summit for Children (1990), which established goals of universal access to safe water and sanitation and complete eradication of Dracunculiasis (Guinea worm). Following this, the National Programme of Action (NPA) for the Survival, Protection and Development of the Nigerian Child envisaged achievements that emerged during this 30-years' period, some of which with the assistance of External Support Agencies (ESAs) undertook (and currently involved) in several massive water supply development projects through the following agencies:

- (i) National Borehole Programme (1981 to 1986);
- (ii) UNICEF Assisted State Water and Sanitation Projects (1981 to 2010);
- (iii) Directorate of Food, Roads and Rural Infrastructure (DFRRI) – Rural Water and Sanitation Programme

- (RUWATSAN) (1986 to 1992);
- (iv) World Bank Assisted Agricultural Development Projects (1983 to 1992);
- (v) UNDP's RUSAFIYA (An acronym in local language) Projects (1988 to 1993);
- (vi) Japanese International Cooperation Agency's (JICA) Rural Water Supply Projects (1992 to 1994);
- (vii) Petroleum Trust Fund (PTF) Rural Water Supply and Sanitation Programme (1996 to 1999);
- (viii) Improved Access to Water Supply and Sanitation Programme (2000 to 2001);
- (ix) European Union (EU) Water and Sanitation Programme (2002 to 2009);
- (x) Department for International Development's (DFID) Water and Sanitation Pilot Project (2002 to 2008);
- (xi) Water Aid's Rural Water Supply and Sanitation Programme (1996 to 2010);
- (xii) National Rural Water Supply and Sanitation Programme (2001 to 2010);
- (xiii) Japanese International Cooperation Agency's (JICA) Rural Water Supply Projects;
- (xiv) Development of local manufacture of hand pumps (1988 to 2010).

Despite these bold and elegant initiatives, by most conservative estimates, the country is still recording less than 50% access to safe water and sanitary means of excreta disposal. Until recently (in year 2000), there has been no National Water Supply and Sanitation policy framework which defines policy objectives, guidelines and targets for the entire sector. Even then, the will power to ensure co-ordination, streamlining and lending of focus and thrust to all these initiatives is yet to be translated into action. The Rural Water Supply and Sanitation Sector and Action Plan, developed in 1992 after a major review by a cross-section of stakeholders, did not lead to the planning and implementation of a sound Rural Water Supply and Sanitation (RWSS) programme.

## **COMMUNITY OWNERSHIP AND MANAGEMENT OF WATER SUPPLY PROJECTS**

Lack of community participation has led to poor operation, maintenance, and of the water projects. This is mainly because of inappropriate technology, incorrect location of supply systems, lack of affordability, and lack of social acceptability because of "poor" or "wrong" taste of new water supply or the presence of minerals. In some cases an inadequate survey led to sitting systems where mineral content has been detrimental to tooth development in children. However, it is evident that communities could control and manage their systems and make them work efficiently. The proposition is for communities to take greater responsibility in the financial outlay for the development of the projects and recover

much of the cost of establishment and maintenance of the supply systems.

According to the United Nations International Children's Emergency Fund (UNICEF, 1999), a community should provide between 5 and 10% of the capital cost of facilities. It proposes that communities provide labour for the construction of hand-dug wells, and any supporting agency or corporation would provide technical assistance and training for maintenance.

UNICEF's perspective involves enhancing community participation in needs assessment, planning, implementation, management, and monitoring and places emphasis on establishing affordable and appropriate technology, particularly hand-dug wells, under standardized and competent technical supervision. Other technical considerations involve training community artisans in construction and maintenance techniques. On the other hand, there are also pressures for community planning, design, construction, and supply of material and equipment to be provided by the private sector.

Key features of community ownership and management include the community's

- (i) having legal ownership and control of the services, including formal agreements with the project agency;
- (ii) selecting the level of service it requires, can afford, and can sustain with human and financial means;
- (iii) selecting the site for water points;
- (iv) contributing real (not token) cash of between 5 and 10% to the total cost of facilities;
- (v) setting up a committee or board that is accountable for managing the project;
- (vi) accepting complete responsibility for operation and maintenance of the water systems, including collection, management, and safekeeping of funds and purchasing the goods and services required for maintaining the system;
- (vii) appointing its own caretakers to receive training and tools and be responsible for preventive and simple corrective maintenance; and
- (viii) being ready to undertake self-help action to assist with repairs, cleaning, and maintenance of the area around the water projects.

The premium placed on community financial obligation might create obstacles for meeting the set objectives of providing the widest rural areas with safe water. Most settlements have very small populations, and many of these, cannot afford what is required to construct a hand-dug well of the standard and quality proposed for a safe water supply.

## **POLICY ISSUES AND PERSPECTIVES**

In Nigeria, there is no clear long-term sector programme at all levels, no specific agency with role of sanitation, no

clear monitoring and data base systems as well as inadequate and unreliable data.

The National Rural Water Supply and Sanitation Programme is being developed within the context of the overall water and sanitation sector. Both government and donor/lending agencies have a broad consensus on the need to pursue the Sector-Wide Approach within the context of a Poverty Reduction Strategy. This approach recognizes a process in which funding for the sector (both internal and external) supports a single policy and expenditure programme, under government leadership and adopting common approaches across the sector, and progressing towards relying on government procedures to disburse and account for all funds.

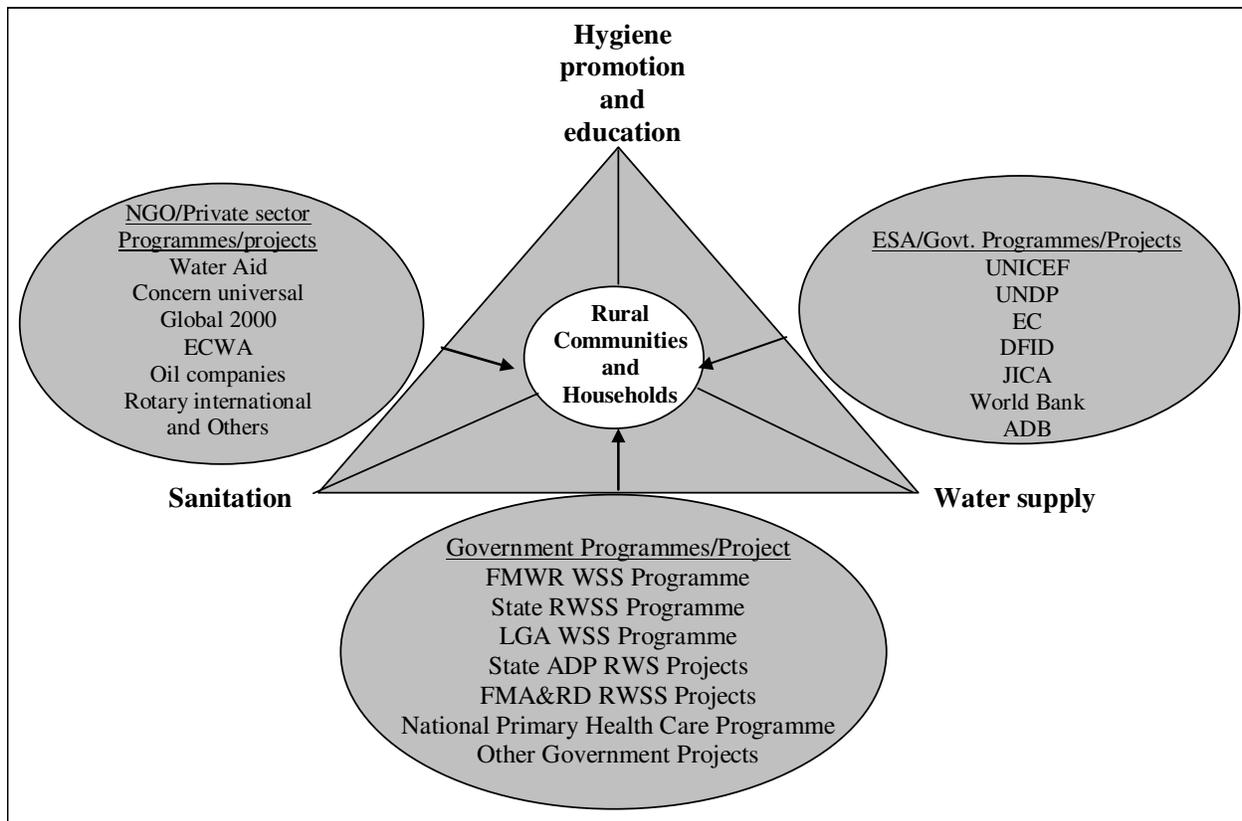
Over the years, effort has been made to develop various sector-wide instruments, all aimed at organizing the sector into a coherent whole. These include the National Water Supply and Sanitation Policy now in place, the sector overarching Water Resources Policy, the Water Law, the Water Resources Management Strategy and the National (Environmental) Sanitation Policy in advanced stages of development.

The National Rural Water Supply and Sanitation (RWSS) Programme framework document is supposed to put the sub-sector into proper sectoral perspective and provide the necessary guidance for the programme to be implemented within the context. Figure 1 shows the conceptual framework of the National Rural Water Supply and Sanitation Programme in Nigeria.

Ideally, the National Programme should pursue an integrated approach for the delivery of safe water supply and improved sanitation and hygiene services, targeting communities, health centres, schools and other public/private institutions in the rural areas of Nigeria. This is in line with the recommendations of (World Bank, 1991) which seeks to:

- (i) Promote and foster community management of services;
- (ii) Give districts assemblies a central role in supporting community management;
- (iii) Give government a role in promoting provision of service;
- (iv) Give the private sector a role in the provision of goods and services;
- (v) Initiate demand-driven programs with self-selection and commitment by communities to enhance sustainability (in other words, communities would have their water resources developed if they could afford the costs of establishment and maintenance);
- (vi) Focus on women as users and on the active involvement of women as planners, operators, and managers of community systems.

The accelerated program in the new priorities should be based on demand by recipient communities and on their capacity to afford and manage the systems, especially



**Figure 1.** Conceptual framework of the National Rural Water Supply and Sanitation Programme in Nigeria.

their ability to pay operation, maintenance, and replacement costs. Donor and aid programs that are sensitive to cultural nuances, recognize local priorities, value effective community participation, mentor staff in the water sector and appreciate the long time-scale for the behavioural change are more likely to be successful (White et al., 2008).

Interestingly, many of the pressing future problems can be addressed through six policy objectives:

- (i) Improve understanding and monitoring of water resources and their use;
- (ii) Increase access to safe and reliable water supplies and appropriate sanitation;
- (iii) Achieve financially, socially, and environmental sustainable water resource management;
- (iv) Increase community participation in water management and conservation;
- (v) Improve governance in the water and sanitation sector; and
- (vi) Provide training opportunities for and mentoring of staff in the sector.

In order to achieve the policy objective, there is need for increased service coverage, good water quality standards, affordability of services for citizens,

guaranteed affordable access for the poor to basic human need level of water supply and sanitation services, enhancing national capacity, privatizing water supply and waste water services (where feasible) with adequate protection for the poor, monitoring the performance of the sector for sound policy adjustment and development, and regular review of legislations, regulations, standards and laws for water supply and sanitation.

### **BENEFITS OF IMPROVED RURAL WATER SUPPLY AND SANITATION IN NIGERIA**

The benefits of improved water supply have important socio-economic benefits. Water can be used for a variety of productive uses, generating important sources of income (cash and non-cash) for households. Productive uses may include cultivation (for example small garden irrigation of vegetables), livestock watering (chickens, goats, cattles), cottage industries (for example brewing and brick-making) and services (for example tea shops).

Improved water supply does not automatically lead to poverty alleviation. In order to maximize water-related benefits, interventions in other areas or sectors may be required. For example, an improved water supply

combined with micro-enterprise development may enable women to use time savings to their best advantage, creating new sources of income for the household. Generally, water supply interventions—rehabilitation, repair, well deepening etc – coordinated with food security/asset rebuilding efforts, can help sustain income, production and consumption in the early stages of drought, or in the aftermath of a bad year (Calow et al., 1997, 2002; DFID, 2001).

The key objective of improved rural water supply and sanitation is the provision of potable water on a continuous basis, which addresses security of supply across seasons, and between wet and dry years, and is also essential if health and wider poverty alleviation benefits are to be met and sustained. The direct health benefits of improved rural water supply, especially when integrated with sanitation initiatives, cannot be over emphasized. It is interesting to note that the full range of health benefits can only be realized through intensive community sensitization campaigns around water, sanitation and health. Unlike demand for a better water supply, demand for improved sanitation facilities is often weak or non-existent. It may therefore need to be stimulated before it can be responded to.

An impact assessment exercise aimed at establishing the long term effects of water supply in most parts of Sub-Saharan Africa carried out by the Non Governmental Organization (NGO) WaterAid (2001, 2004) highlighted the following:

(a) Direct benefits – relatively quick changes at individual-household level

- (i) Time and energy savings, particularly for women and children. Savings can be 'invested' in new income-earning opportunities; school enrolment and attendance – particularly for girls-increases;
- (ii) Reduced sickness especially among children, reduced expenditure on medicines and care and increases in the number of working days;
- (iii) Expenditure savings – because of reduced expenditure on more expensive water from vendors, for example.

(b) Indirect benefits – longer term, more diffuse

- (i) Development and diversification of the local economy as productive water use increases (for example in brick-making, tea shops), and money/time is invested in industrial and service enterprises;
- (ii) Development of management and negotiation skills in village communities which can be deployed in other areas. Particularly important where decentralization policies are placing new demands on local institutions;
- (iii) Household and community empowerment through taking control of important decisions relating to the selection and management of water systems;

(iv) Improved food security and greater resilience to shocks such as drought.

More importantly, the decline in the incidence of water-borne disease and water-related diseases in rural areas is expected to reflect in lower patronage of health institutions and lower spending on drugs. The savings made through lower spending on drugs and hospital attendance can thus be channeled to other productive ventures. After all, it is often said that 'water is life' and safe water guarantees good health, which is an important condition for increased production.

The provision of potable water in rural areas among others will encourage cottage industries and hence provide a catalyst for the reduction of rural poverty and enhancement of quality of life through employment generation. In addition, rural water supply allows rural women enough time to undertake economic activities instead of the usual long treks and time consuming search for water. Children, who usually fetch water with their mothers are also spared the long treks for water and can thus attend school regularly and punctually.

## CONCLUSION

This paper emphasizes the necessity to reassess traditional approaches to water supply, the breakdown of sectoral boundaries, and a search for new practical solutions (policy, technical, institutional, financial) in addition to collaborating across boundaries within the water sector. The paper also advocated the need for government to review its policies towards social-health issues like water. This is a matter that demands urgent attention given the fact that if health is to be given priority, water supplies to the poor communities should be subsidized.

The role for the communities is by no means limited to finance and maintenance. Communities must be involved, from the start, in decisions about which water systems they want, what they can afford, and where the systems should be installed. Such involvement can only improve decisions about the introduction of technology that is affordable and accessible, both in economic terms and in terms of the acquisition of technical maintenance skills.

More importantly, to strengthen the approaches outlined in this paper, it will be necessary to consider the socio-economic context within which an alternative water system could be implemented. The nature of the household and of the social relationships, particularly gender and how it affects community relationships and the participation process needs to be considered. This will ensure the active participation by different actors at different levels of decision-making in the implementation of water systems. The need for a systematic education program using various mass media, interpersonal

communication techniques, and social occasions (such as festivals, market days, and literacy classes) cannot be overstated. If health is to be given priority, then potable water supply and adequate sanitation to the rural populace should be given urgent attention.

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