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## **Challenges in Meeting the MDGs: The Nigerian Drinking Water Supply and Distribution Sector**

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### **ABSTRACT**

The provision of clean drinking water and discharge of adequately treated wastewater is a fundamental requirement for human life. The lack of access to clean water is a serious health concern. According to reports, worldwide, over a million deaths per year have been attributed to unsafe water and poor sanitation, with close to 90% of these deaths occurring in children under five years of age. This study was therefore, aimed at reviewing and evaluating the Nigerian drinking water supply and distribution sector, with particular reference to the historical perspective and organization structure; water law and profile in respect to meeting the millennium development goal target for improved water supply and distribution. Although there is temporal and spatial variation in water availability between the North and the South in Nigeria, the country is considered to be abundantly blessed with water resources. Nigeria has a national water supply policy, whose objective is to ensure adequate, affordable and sustainable access to safe drinking water for all citizens. Despite the existence of several government agencies, whose roles are to enhance efficient water supply and distribution to all citizens in Nigeria, current access to improved drinking water in Nigeria is still low, with improved water supply and increasing from 47% in 1990 to 58% in 2008. According to report, Nigeria water supply situation has not kept pace in meeting the millennium development goal target of 75% coverage for safe drinking water. For improved water supply coverage, there is the need for enforceable water legislation, building of institutions and policies related to water resource planning, development and management, demand management and privatization of the water supply and distribution sector. Through deliberate reorganization of socioeconomic policies regarding the water supply sector, a significant increase in the proportion of people with access to improved drinking water source can be attained.

**Key words:** Water supply, water distribution, improved drinking water

### **INTRODUCTION**

Globally, problems related to the management of water supply and distribution exists. This is partly due to extensive industrialization, increased population density and present high rate of urbanization. To tackle these problems, several legislations, guidelines and policies have been developed, both at international and national levels (Akpor and Muchie, 2010). The importance of water for socio-economic development is globally recognized but with increased population growth and rapid industrialization and the demands for water for various uses, water scarcity seems to be

looming in many countries of the world. Adequate water supply is central to life, hence of the five basic human needs (water, food, health, education, peace), water is a common factor to the other four. The supply and distribution of adequately treated water and the discharge of properly treated wastewater into receiving water bodies are vital for societal wellbeing and human existence. This will help to safeguard public health by safeguarding water supplies against the transmission of diseases and the prevention of water natural water sources (Akpoy and Muchie, 2010).

In Africa, the water supply situation is already precarious (Rached *et al.*, 1996; NEPAD, 2006). As water resource stresses become acute in future, water-deficit areas of Africa which may be due to a combination of climate impacts and escalating human demand (increasing population growth leading to a rise in water use per person), the conflict between human and environmental demands on water resources, will intensify. Because reduction in the availability of water can lead to adverse health, environmental and social effects, there is therefore, a need to conserve water, pollute less, manage supply and demand and slow population growth (UNEP/GRID ARENDAL, 2009; CST, 2009). There is therefore, a global concern on uncertainties in the water sector, with much focus bordering on uncertainties in freshwater reservoirs, fragile aquifers and poor and unsustainable management practices (Akpabio and Ekanem, 2009).

For Africa development, water is a crucial resource with great implications. This is because the present freshwater situation in Africa is not encouraging. Globally, the Middle East and parts of Africa are the continents with the most limited water resources. No where more than in Africa and the Middle East is water likely to become the most critical resource issue, which is a great limiting input to food security, economic and social development. Of the estimated 800 million who live on the Africa continent, more than 300 million live in water-scarce environment. In Africa, 54% of the continent is arid to semi-arid and only 14% is humid to very humid with the remaining 31% having good rainfall (Rached *et al.*, 1996; NEPAD, 2006). Availability of water in Sub-Saharan Africa is highly variable. Only the humid tropical zones in central and West Africa have abundant water. The main challenges that the African populations are likely to face will emanate from the effects of climate change. Because water resources are inextricably linked with climate, the prospect of global climate change has serious implications for water resources and regional development (Global Environmental Outlook, 2000). Efforts to provide adequate water resources for Africa will confront several challenges, including population pressure; problems associated with land use, such as erosion/siltation and possible ecological consequences of land-use change on the hydrological cycle. These are likely to exacerbate management problems relating to pollution, sanitation, waste disposal, water supply, public health, infrastructure and technologies of production (Global Environmental Outlook, 2000; UNEP/GRID ARENDAL, 2009).

In Nigeria, although there is temporal and spatial variation in water availability between the north (precipitation of 500 mm) and the south (precipitation over 4,000 mm), the country is considered to be abundantly blessed with water resources (Federal Republic of Nigeria, 2004) Despite numerous efforts by the Nigerian three tiers of Government, external support and donor agencies to enhance efficient water supply and distribution to all, there is still a general consensus that water supply and distribution is inadequate. The public sector has not been successful in meeting more than a small portion of the demand for water and sanitation of residential and commercial users (Federal Ministry of Water Resources, 2000; Kuruk, 2004). A large percentage of the population still lack access to water in adequate quantity and quality of the total number of people in urban and semi-urban areas, only about 48% have access to potable water while only 39% have access in rural areas. Of the 85 million people living in urban and semi-urban areas, less than

half are reported to have reasonable access to reliable water supply. Despite the low figures, it is also estimated that the average water delivery to the urban population is only 32 litres per capital per day and that for rural areas is 10 litres per capital per day. In places where water supply services are in existence, they are mostly in critically short supply, unreliable and of low quality and in most cases not sustainable because of difficulties in management, operation, pricing and failure to recover costs (Federal Republic of Nigeria, 2000; Federal Ministry of Water Resources, 2000; Abubakar, 2006; Kuruk, 2004; Hall, 2006).

The lack of access to clean water is a serious health concern (WHO, 1996). Reports have revealed that about 2.3 billion people suffer from diseases that are linked to dirty water and that water-related diseases are growing human tragedy, leading to the death of over 5 million people yearly. This number is said to be 10 times the number of people killed in wars (Al-Safady and Al-Najar, 2011; Okpara *et al.*, 2011). Also, water that is contaminated with nutrients, such as nitrates can prove fatal to infants and other susceptible individuals. This is because, nitrate presence in water is known to cause digestive tract ulcers and in infants leads to the restriction of the amount of oxygen to the brain, leading to blue baby syndrome (Akpor *et al.*, 2008). In 2005, the UN Millennium project report attributed million deaths per year to unsafe water and poor sanitation with close to 90% of these deaths occurring in children under five years of age (Dunn and Derrington, 2010). Since water quality assurance is an integral part of environmental management, efficient potable water supply and wastewater discharge strategies are vital for water quality management (Akpor *et al.*, 2007). According to the Millennium Development Goals (MDGs), with respect to environmental sustainability (Goal No 7), it is targeted that by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation should be halved (Target 7C). Since almost all of the MDGs have a form of linkage with water (UN-Water, 2006), real successful achievement of the MDGs will depend on the method of addressing water scarcity issues. The lack of water hampers development through constraining food production, health and industrial development. According to NEPAD (2006) report, the key issues in Africa are investing in the development of Africa's potential water resources, drastically reducing the proportion of people without access to safe water and adequate sanitation, ensuring food security by expanding irrigation area and protecting the gains of economic development by effectively managing droughts, floods and desertification.

For example, to eradicate poverty and hunger, there is a need for equitable and fair access to basic livelihood assets (including water and land) for domestic and productive uses (UN-Water, 2006). This entails proportion of population with sustainable access to an improved water source, urban and rural. It is hypothesized that weakness and in some cases absence of appropriate policy instruments are the key problems impeding Nigeria from meeting the Millennium Development Goals (Guio-Torres, 2006; Water Aid, 2006). This study is therefore, aimed at reviewing and evaluating the Nigerian drinking water supply and distribution sector, with particular reference to the historical perspective and organization structure; water law and profile in respect to meeting the MDG goal target for improved water supply and distribution.

## **WATER SUPPLY SECTOR IN NIGERIA**

**Historical perspective and organizational structure:** As with most developing countries, access to safe water and sanitation is a major challenge in Nigeria. The Nigerian government has a national water supply policy, whose aim is to provide potable water to all citizens by the year 2020. The objective of the policy is for all Nigerians to have access to adequate, affordable and

sustainable sanitation through the active participation of the Federal, State and Local Governments, Non-Governmental Organisations (NGOs), Development Partners, Private sector, Communities, Households and Individuals (Federal Republic of Nigeria, 2000; WSMP, 2008).

In Nigeria, public water supply started in a few towns under the management of the lowest administrative level in the twentieth century. The early beneficiaries were: Lagos, Calabar, Kano, Ibadan, Abeokuta, Ijebu-Ode and Enugu. The water schemes were initially maintained without revenues from water sales and not from government subvention. After the creation of regional governments in 1950, the government took over the schemes' technical and financial responsibilities. Several high level manpower that consisted of Water Engineers and Superintendents, were assigned by the regional governments although their salaries were paid from revenue generated from water rates, while maintaining their employment in the regional service. Although the regions were slow in establishing independent bodies, due to growing demand and operational cost, independent bodies, known as Water Corporations/Boards who took over the water undertakings were later set up by them in the 1966. With the present 36 States and a Federal Capital Territory system in Nigeria, all the states and the Federal capital Territory now have Water Boards/Corporations or Public Utilities Boards managing their public water supply undertakings. In many cases, the efforts of these public utilities are supplemented by local governments who distribute water to towns and villages within their jurisdiction (Federal Ministry of Water Resources, 2000; Commission of the European Communities, 2006; CEON, 2008).

It was only after the creation of the Federal Ministry of water Resources and the 11 River basin Development Authorities in 1976 that the Federal Government got involved in water resources management. Through the provision of aid loans, the UNICEF, UNDP and several other bilateral, multilateral and support agencies are also involved in water supply in Nigeria. Presently, there is no Apex Law or Government Agency regulating water sector in Nigeria. Activities in the water sector are presently being handled by the Federal Ministry of Water Resources at the Federal Level and State Water Board at the State Level (Federal Republic of Nigeria, 2000; AFDB/OECD, 2007).

Furthermore, the organization structure of the water sector in Nigeria shows several agencies as water supply policy operators. Some of these agencies include the Federal Ministry of Agriculture, Water Resources and Rural Development Agency, National Council on Water Resources, River Basin Development Authorities and the State Water Agencies. The major responsibility of the Water Resources and Rural Development Agency are the formulation of policies, collection of data, coordination and monitoring of water resources development at the national level. The River Basin Development Authorities operate within the Federal level while water boards or water corporations operate at the state level as state water supply agencies (Oyebande, 1993).

**Water law and profile in Nigeria:** In Nigeria, water-resource laws and regulations are found in several documents and instruments (Akpabio, 2008). Besides the Constitution of the Federal Republic of Nigeria, the next primary law regulating water is the Water Resources Act 101 of 1993. This law vest on the Federal Government of Nigeria through the Federal Ministry of Water Resources, the rights to regulate, develop and license all water operators in Nigeria. This includes planning, development and usage of Nigeria's water resources, ensuring quality, quantity, distribution, use and management of water, ensuring application of appropriate standards and techniques for investigation, use control, protection, management and administration of water resources, facilitating technical assistance and rehabilitation for water supplies etc. (Adoga, 2006;

Akpabio, 2007). The water-resources legislation in Nigeria provides for customary water rights in connection with domestic use, watering of livestock, fishing, navigation and irrigation. According to Ramazzotti (2008), the Nigerian customary water law is not explicitly mentioned by the Water Resources Decree of 1993. Under the law, any person may:

- Take water without charge for his domestic purpose or for watering his livestock from any watercourse to which the public has free access
- Use water for the purpose of fishing or for navigation
- Take and use water from the underground water source or from a watercourse, if abutting on the bank of any watercourse or if he has a statutory or customary right of occupancy to any land, without charge for domestic purposes, for watering livestock and for personal irrigation schemes (non-profit motives)

In 1993, the Nigerian Water Resources Decree vests the right to the use and control of surface and groundwater in the federal government for watercourses in more than one state. This is to help in planning promotion, development and use of the country's water resources and ensuring the application of appropriate standards for the investigation, use, control, protection, management, coordination and distribution (Kuruk, 2004; Ramazzotti, 2008).

According to the Water Act of 1993, the Minister of Water Resources is given power to regulate water-related issues such as pumping or use of commercial scale or construction, licenses of water, storage, maintenance, operation, repair of any borehole or hydraulic works, etc. The minister also has the responsibility to define places from which water can be taken or use and also fix times of actual envisaged water shortage, amount of water which may be taken to by any person. He also prohibits temporarily or permanently the taking or use of water that is hazardous to health, revokes the right to use water where such right overrides public interest, require to be examined or license any drilling operations, regulate, place, depth, manner of construction of borehole or well. In the discharge of his duties, Minister is to ensure the provision for adequate water supply that is suitable for animals, irrigation, agriculture, domestic and non domestic use, generation of hydro electrical energy, navigation and recreation, drainage, safe disposal of sewage, prevention from pollution, prevention from flooding, soil erosion, reclamation of land, protection of the environment etc. (Adoga, 2006).

According to Akpabio (2007), the instruments and documents that govern and regulate water-resources in Nigeria are not sufficient to resolve the issues of control, ownership, management and protection of water resources. In his report, it was observed that water resources operators and managers are not guided by defined set of principles and regulations but by a set of directives and executive decisions. This implies that water resource management will not correspond to the principles of needs and equity, thus the relevant agencies and authorities do not work for the common goal of optimum accessibility and standard practices.

**Water supply situation in Nigeria:** In Nigeria, two institutions have been mandated to manage water resources: the Federal Ministry of Water Resources and the River Basin Development Authorities. Neither of the two institutions has been in a position or given a mandate to develop management plans, generate sufficient data for planning or have departments with the capacity for such management. The result of this is that, there is a lack of effective water resource management practices thus leading to confusion between development and management with

supply driven, top down approach that is failing (Atkins International, 2006). In January 2000, the Federal Ministry of Water Resources led the National Water Supply and Sanitation Policy. The policy target for water supply was to improve service coverage from 40 to 60%; extend service coverage to 80% by the year 2007 and achieve 100% coverage in 2011 (Water Aid, 2006).

Currently, access to improved drinking water in Nigeria is generally low, with urban areas having a higher proportion than those in rural areas who have access. In this study, access to drinking water refers to the proportion of the population that uses drinking water from improved sources, such as household connections, public stand pipes, boreholes, protected wells and springs (WSMP, 2008). Generally speaking, improved water supply in Nigeria only increased from 47% in 1990 to 58% in 2008. Between 1990 and 2008, the proportion of people with access to improved water supply declined from 79 to 75% in urban areas and increased from 30 to 42%, in rural areas (Fig. 1). The decrease in urban access is perceived to be due to the lack of services in peri-and semi-urban areas as a result of population growth. The explosive population growth of 5.0% per year and the over-concentration of people in a few centres have continued unchecked in Nigeria. The proportion of the population living in urban areas is expected to rise to 60% by 2015, compared to 30% in 1990. According to report, Nigeria water supply situation has not kept pace in meeting the Millennium Development Goal (MDG) target of 75% coverage for safe drinking water. To achieve the MDG target, Nigeria must increase the rural population with access to improved drinking water by 33% (Oyebande, 1993; WSMP, 2008; WHO/UNICEF, 2010; UNEP, 2010).

The management of water resources is said to be ineffective in Nigeria. This is because there is inadequate and inequitable distribution of adequate surface and groundwater supplies; hence there are significant zonal and state variations in the proportion of people using improved water sources (Water Aid, 2006). Based on the NBS (2006) survey report, of the six geopolitical zones in Nigeria, improved water coverage ranged from 73.5 to 30.7%, with the South West Zone having the highest coverage of improved water source (73.5%) and the North East Zone has the lowest coverage (30.7%) (Fig. 2). In a study by Water Aid (2006), in Nigeria, it was indicated that there was strong political influence in the provision of water points as the allocation of government boreholes and other improved water supply projects are mainly left to the inclination of political leaders and state patronage.

Another challenging issue with the Nigerian water supply sector is the traditional way in which citizens view the provision of water supply and services. The provision of water is traditionally regarded as a social responsibility of government. Consequently, the costs of water infrastructure and service delivery is usually met largely from government allocations and aids, rather than from water tariffs and charges, thus leading to the long standing practice of fixing water rates far below

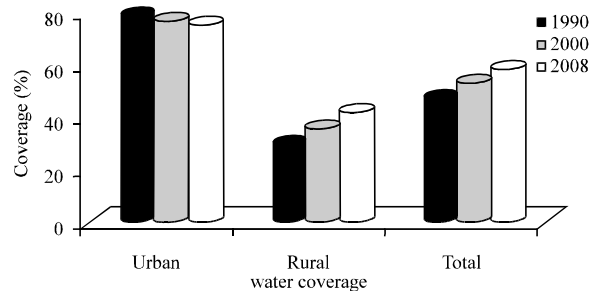


Fig. 1: Improved water supply coverage in Nigeria (Data source for chart: WHO/UNICEF, 2010)

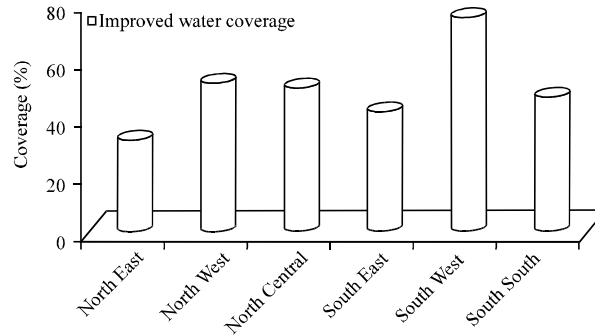


Fig. 2: Zonal disparities in improved water supply coverage in Nigeria (Data source for chart: NBS (2006))

the full cost of service provision (Odigie and Fajemirokun, 2005). Because of increased maintenance and operational costs, coupled with competing demands on public funds, government at the state and federal levels have proposed privatization of the drinking water supply sector, although have always met intense resistance. Critics of privatization have argued that the provision of safe drinking water is a fundamental human right, hence too crucial to the national welfare to be totally sold to the private sector. Against this backdrop, civil society groups and local communities have always mobilized and intensified their advocacy campaigns against privatization, since the process is perceived as more of concern for economic efficiency rather than ensuring the rights of the poor to access to safe drinking water (Ariyo and Jerome, 2004; Odigie and Fajemirokun, 2005).

Also, although the water supply sector have always been dominated with the awards of large contracts under the supervision of government consultants, both at the federal and state levels, a great number of these projects targeted at urban water supply, mostly with external loan components from several sources have unachieved unsatisfactory levels of completion (Water Aid, 2006). Overall, it is reported that water scarcity is due to low runoff, high evaporation and threats associated with nature (drought and salinity) and humans (overuse and pollution). Through proper improvement in water-management strategies, threats from human activities which are great can be effectively controlled (Rached *et al.*, 1996). In order to address the social inequity in access to water, as well as attaining the MDGs, there is the need to manage water demand. Although demand management is necessary, without an enforceable regulatory mechanism, success cannot be achieved (Akpabio and Ekanem, 2009).

According to Odigie and Fajemirokun (2005), to improve water supply coverage in Nigeria, there is need for specific water laws, regulation and standards that deal with targets and indicators on service coverage (accessibility, affordability, quantity and quality), community participation in water management and decision making, accountability and regulation and monitoring of service provision. In addition, in achieving the goal of affordability to an effective water supply and distribution policy, it is also recommended that water supply service cost reduction measures should be pursued without compromising the efficiency of service. Also, tariff policy should protect consumers from bearing any additional cost of the inefficiency of the water supply undertaking (Ariyo and Jerome, 2004). With the government as driver of change and joint private sector participation, coupled with an enhanced coordination and strategy, an improved water supply and distribution mandate can be attained in Nigeria.



## CONCLUSION AND RECOMMENDATION

A major challenge facing many developing countries is how to supply safe drinking water to their citizens. The demand for water is rising at an exponential rate due to increasing population and pollution of water sources. Many factors are reported to be responsible for the inadequate and inequitable water distribution of improved water supply in Nigeria. Some of the factors include the lack of basic planning data, flood and erosion, manpower shortage and corruption.

For effective water supply coverage in Nigeria, there is therefore the need for enforceable water legislation, building of institutions and policies related to water resource planning, development and management, demand management and privatization of the water supply and distribution sector. The current condition in which water supply is controlled by the government as a public service is not a shining example of efficiency. The model of privatization and liberation of water supply and distribution sector which is advocated in recent years should be adopted. The challenge will be on how to regulate market forces to supply water at an efficient but affordable price. To achieve that, some measure of government subsidy will therefore, be needed to ensure assurance of continuity in a cost driven private operation of water supply services. In addition, there should be completion of on-going water supply and distribution projects, quantification of groundwater reserve, provision of funds and the training of adequate personnel to cope with changing demands and technologies. Through deliberate reorganization of these socioeconomic policies, the environmental impact factors on effective water supply and distribution in Nigeria can be reduced.

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