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IMPROVING WATER RESOURCES MANAGEMENT IN NIGERIA: POLICY IMPERATIVES AND EMERGING REALITIES

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ABSTRACT

Water is no doubt an essential ingredient for sustenance of human life and a vital component for socio-economic development. The water supply in Nigeria seems to be worsening daily as demands increase with rapid population growth, increased urbanization and industrialization, resulting in water crisis situation. Huge government investments in the water sector and numerous other programmes had been put in place to improve the water supply schemes by successive administrations. Despite these noble giant strides by government, potable water supply for all is still uncertain. It is sad to note, however, that at this stage of the nation's development that there are varied and poorly coordinated groups and individual agencies participating in water supply programmes. These result in conflicts of efforts and waste of resources. In this paper, an attempt is made to look at some of the issues, problems and prospects of water supply in Nigeria. The paper suggests that water resources development must be viewed in a broader perspective, with adequate financial, economic, social, legal, political, technological as well as environmental considerations. Above all, the paper advocates that adequate water policy and priority is a vital ingredient for meeting the United Nations Millennium Development Goals (MDGs).

INTRODUCTION

Nigeria has enormous quantity of water resources, surface and underground, that requires a well articulated administrative structure that can manage the resources effectively. The present position of water supply in Nigeria is grossly inadequate. The Federal, States and Local Governments have over the years been intervening from time to time in terms of the provision of potable water to the people through the Federal Ministry of Water Resources, Petroleum Trust Fund (PTF), River Basin Authorities, DFRRI, National Water Supply Rehabilitation Project, National Borehole Programme and of course, the present government's Legislative Boreholes. Despite these efforts, potable water supply is still poor and grossly inadequate.

In reality, the problem of water supply in Nigeria is enormous and can only be solved through properly coordinated approach so as to overcome the problem. According to Babatola (1997), Offodile (2003, 2006), Nwankwoala & Mmom (2008), water supply lies at the heart of development whether it is urban or rural. Water supply and development of any nation are continuing long-term process which requires careful planning and implementation geared towards achieving improved conditions of life. Consequently, there should be an overhaul/review of the existing water policy or a new national water policy that would involve a comprehensive hydrogeological mapping of the country. The exercise must be based on known groundwater and surface water sources of the country. This paper therefore attempts to discuss the challenges facing water supply sector in Nigeria, in the context of sustainable development with major focus on policy issues, emerging scenarios and realities as well as advocates for the promulgation of regulations necessary to ensure safety of water supply and

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recommends appropriate measures for continuity in line with the United Nations vision for water supply.

REVIEW OF WATER RESOURCES DEVELOPMENT IN NIGERIA

At the global scene, there has been continuing efforts in respect of sustainable management of water resources. The Earth Summit, the World Water Commission, the World Water Forum as well as other water related projects of Global Water Partnership, World Bank, WHO, UNESCO, FAO, UNICEF and UNDP etc have been at the forefront in the timely efforts of water resources management, especially in the provision of safe drinking water and basic sanitation which is within the frameworks of the United Nations Millennium Development Goals (MDGs).

In the early 1950s, government's attempt at groundwater development in Nigeria was through the Geological Survey of Nigeria. But concerted efforts have been made since independence towards the provision of potable water to the citizenry. The Nigerian government's major intervention in water resources development came during the first National Development Plan (1962 – 1968) which saw the establishment of the River Niger and Lake Chad Basin Commissions. In 1973 and 1974, the Sokoto-Rima and Chad Basin Authorities were established. In 1976, the river basin authorities were increased to eleven (11) to cover the whole country. But, before then in 1975, the Federal Ministry of Water Resources (FMWR) was created. Following the creation of the ministry, extensive water resources development (both surface and groundwater) was embarked upon to boost economic activities such as irrigation, fisheries as well as hydropower generation. More importantly, all these giant strides were aimed at improving water supply delivery in line with the United Nation's International Drinking Water Supply and Sanitation Decade (IDWSSD, 1981 – 1990). Beside these noble efforts, the Federal Government embarked upon other numerous intervention programmes in the water sector, including the National Borehole Project (1980), Department of Food, Roads, and Rural Infrastructure (DFRRI) in 1986 -1994, The Petroleum (Special) Trust Fund (PTF) Rural Water Supply Project (1995-1999), Improved National Access to Water Supply (1999) and lastly the Senate Constituency Water Projects (2001 till date).

INSTITUTIONAL REGIME AND WATER POLICY ISSUES IN NIGERIA

The National Water Policy in Nigeria is the development of the water resources potentials of the country in order to ensure the availability, equitable distribution and conservation of water for domestic and industrial uses, food production, navigation, hydropower, and recreational activities etc. Global concerns with the increased use of water for domestic, agriculture and industrial purposes and the associated problems of sustainability and resource depletion has necessitated renewed attention towards issues of water resources governance. In doing so, direct regulation through timely and adequate policies have been advocated.

According to Goni (2006), good water policies and management depend on the quality of knowledge available to the decision makers. The major institutional problem in water resources development and administration is finding a relevant decision making framework, for maximizing the effective management of water resources at minimum possible economic, political and social costs (Ajayi, 2006).

In Nigeria, there is no workable water resources policy. The only decree for water resources management in Nigeria was articulated in Decree 101 of 1993. A detailed and comprehensive study of this decree by a host of scholars (Akpoborie, 1999; Akujieze *et al.*, 2003) showed that it drew heavily on the Riparian Law Concept without detailed distinction of groundwater concepts and their

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significance, thus resulting in a great bias to mainly surface water development and management. This bias of Decree 101 towards surface water underscores the built-in neglect of groundwater resources development in Nigeria. As a result, there is unregulated and haphazard groundwater exploitation.

According to Ajayi (2006), any proposal for water resources administration in Nigeria which does not begin from an evaluation of the ability of the local institutions to sustainable development efforts, will contribute insignificantly to the solution of the problem in the long run. There is therefore an urgent need for a revision of the Decree 101 and such amended Decree should be given enough authority to ensure a regulated/ controlled development and management programmes in Nigeria.

Effective regulatory measures must be established among the various organizations for competent water resources management. Regulatory systems are needed to monitor and enforce laws, agreements, rules and standards. The principal areas to be covered by regulations are standards of service, water quality and environmental protection, watershed management, soil and water conservation, prices charged by regulated utilities, ease of entry to water service industries, etc. More importantly, clear administrative rules should be established to determine the priority of use, regulation mechanism, duration and the quantity and quality of water supply. These rules are required to protect both governmental and private sector investments. If this is done, hopefully all water institutions in Nigeria as well as other bodies connected with water will brace up to the challenge of sound water resources development and management in Nigeria.

WATER RESOURCES MANAGEMENT (WRM) IN NIGERIA: EMERGING REALITIES, ISSUES AND TRENDS

The haphazard historical development common to developing countries had led so far to a highly fragmented water supply sector and poor achievement in Nigeria. The Federal Government has been in the forefront in the efforts towards the water supply sector through the provision of matching grants to various state governments in the late 70s. Although, the Federal Government can no longer afford to provide such grants, it has continued to provide some form of administrative framework and guidance for orienting water supply in the country. In spite of these elegant postures, suitable machinery for the effective management of water resources has not yet evolved. This is because the authorities have put up institutions for this purpose, but at the same time set up rival agencies to carry out very overlapping functions. Responsibility for water supply is therefore thinly spread over several governmental departments giving rooms for a gross overlap of responsibility (Fig.1). The overall implication is waste of available resources, leading to lack of progress in water management.

The trends and issues to non attainment of adequate water resources management and emerging scenarios in Nigeria include: scientific and technological deficit, institutional inertia, vested interests and corruption, amongst others. As a result of weak service delivery, Nigerians do not even see the need for payment of water rate, even where water is provided. Since water is an economic and social commodity, some cost recovery is expected from services that are provided, at least to cover the cost of operations and maintenance. The MDGs vision will only be achieved if everybody concerned keeps to the cost sharing formula for water supply projects.

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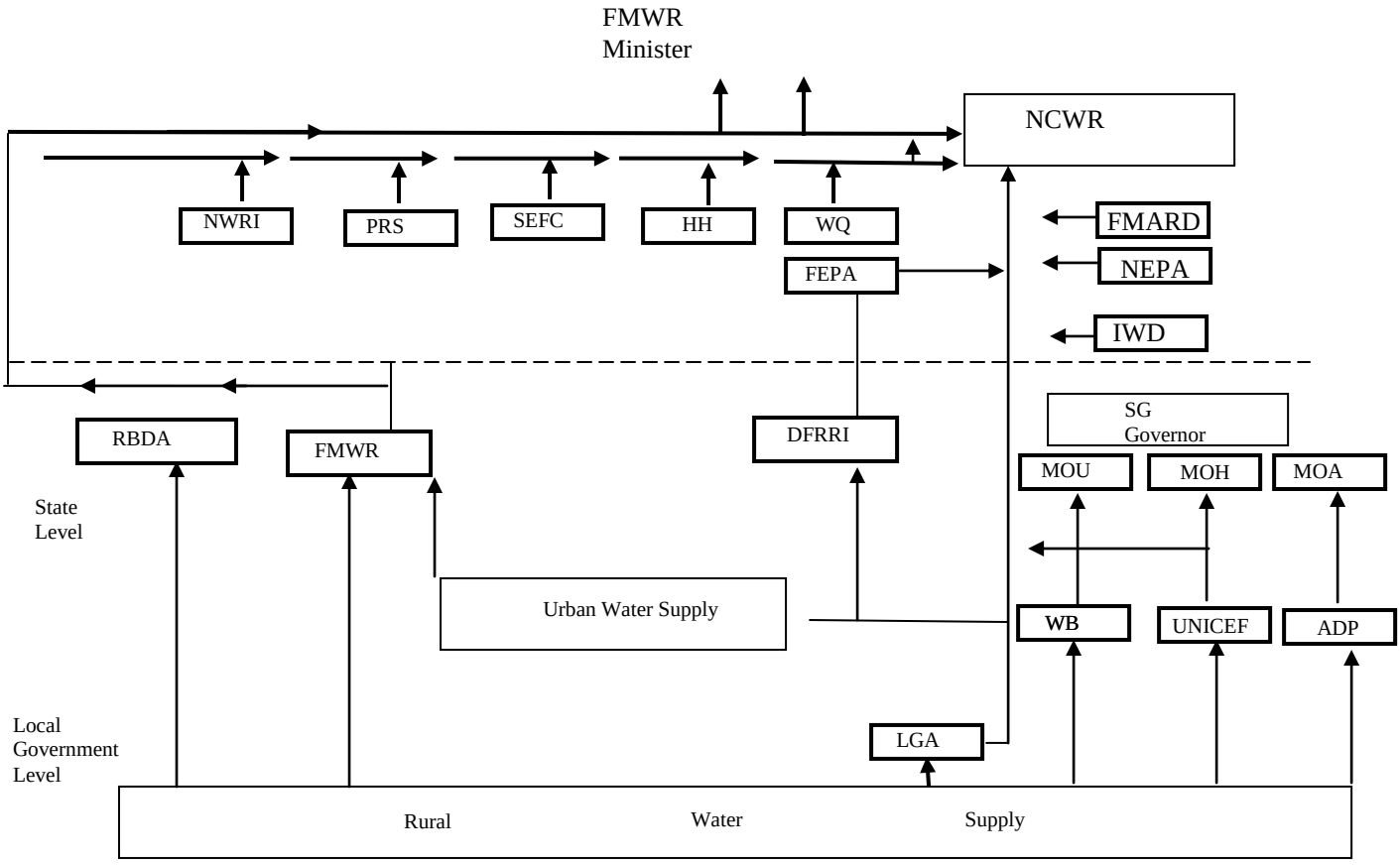

LEGEND

FMWR = Fed. Min. of Water Resources
NWRI =National Water Resources Institute
PRS = Planning, Research & Statistics
SEFC = Soil Erosion/Flood Control
HH = Hydrogeology & Hydrology
WQ = Water Quality
NCWR = National Council on Water Resources
RBDA = River Basin Dev. Authority
IWD = Inland Waterways Dept.
SG = State Government
MOU = Min. of Utilities
MOH = Min. of Health
MOA = Min. of Agric.
WB = Water Boards
LGA = Local Govt. Area
FEPA = Fed.Env.Prot.Agency
ADP = Agric. Dev. Project
ADP = Agric. Dev. Prog.

Fig.1: Schematic Representation of Present Organization of Water Resources Management in Nigeria

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Generally, the Nigerian water problem revolves round two critical issues, namely:

(i) poor distribution of water resources in time and space in relation to the needs of the people, and
(ii) inadequate planning and management of these resources.

The above mentioned problems have further manifested themselves in the form of incessant water shortages, poor access to public water supply and water-borne diseases.

According to Nwaogzie (1995), Babatola (1997), Ezeibgo (2003), Hanidu (1990, 2003), Ajayi, *et al*., (2003), Ajayi (2003, 2006), Oteze (2006), Tijani (2006), Goni (2006), (Nwankwoala & Mmom (2006, 2008), Nwankwoala (2009), Offodile (2003, 2006), Oyebande (2006), and Okeke & Uzoh (2009), the major obstacles for sound water resources management include: instability in governance, government policies and priorities, absence of or ineffective legal/institutional and regulatory framework, poor maintenance culture, poor technical and institutional capacity, lack of coordination, multiple programmes/overlapping functions, lack of data and information for planning, shortage of well trained/committed manpower with appropriate local technology, irregular recruitment and limited manpower occasioned by the civil- service structure and the over-bearing bureaucratic control by supervising ministries, lack of professional input on water programmes and projects, absence of professionalism due to politicization, career stagnation and the lure of private practice, lack of community participation and inadequate revenue generation by water agencies, inadequate funding as shown by poor budget allocations, irregular disbursements of subventions, limited sources of aids and grants (particularly from foreign sources), inappropriate infrastructures as well as lack of adequate quality monitoring and evaluation.

In Nigeria, data on water resources are not widely published or made available outside government organizations. Extraction and recharge estimates are also unreliable. As a result, discussions on water resources utilization are always based on unrealistic data. However, it is a fact that unquantifiable water sources and budget will have serious socio-economic consequences in a country like Nigeria. Therefore, it is needless to point out that there is an urgent need for conservation of this vital resource for sustainable water resources management.

In the light of the foregoing, it is highly likely that the future expansion in water supply will continue to take place in Nigeria. This is primarily due to the relatively high population growth rate, combined with the unprecedented rise in industrialization and welfare, which tends to increase the average per capita water use. The largest single consumer of water is, and will continue to be agriculture with urban and industrial uses on the rise. Though the generalizations made here may not be totally justified, as differences exist in different parts of the country.

Current water utilization is characterized, as earlier stated, by uncoordinated development and supply to all sectors: rural and urban users, small and large scale users, industrial and agricultural users. This, in part, is attributable to the intrinsic properties of the resource. The general prevalence and stability in time and space of water makes it a reliable and widely-accessible resource, easily amenable to private, local, and on – demand exploitation. However, this "common pool" property of water also complicates a more formalized and coordinated control (Custodio, 2002). Therefore, options/strategies for significant improvements in potable water supply delivery, are in the areas of formulation of adequate, efficient and effective water policies, funding/appropriate infrastructures as well as monitoring and evaluation.

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SUGGESTED WATER RESOURCES MANAGEMENT (WRM) POLICY OPTIONS

A sustainable water resources management (WRM) policy requires using water cost-effectively in all sectors and maintaining the overall harmony in the environment. If the socio-economic and environmental issues are not considered in a holistic manner, the gain in one sector from a project implementation may very well be offset by the losses accrued in other sector. More importantly, if effective public participation does not materialize and transparency and accountability in water management are not established, the society would remain deprived of the immense benefits of water resources. Therefore, government, Non Governmental Organizations (NGOs), private agencies and local communities should be integrated into the management process by the regulatory framework and administrative rules.

ORGANIZATIONS FOR WRM

Institutional structure at the Federal, States and Local Government levels is necessary for the formulation and implementation of the policies for improved water resources management and public investment. Presently, there are three major participants in water resources development and management programs in Nigeria: governmental organizations, NGOs, and private agencies. A new dimension must be included in water resources development and management programs by community involvement. In order to implement a sound water resources management policy, a level of inter-connectivity amongst different organizations shown in Fig.2 should be established without delay.

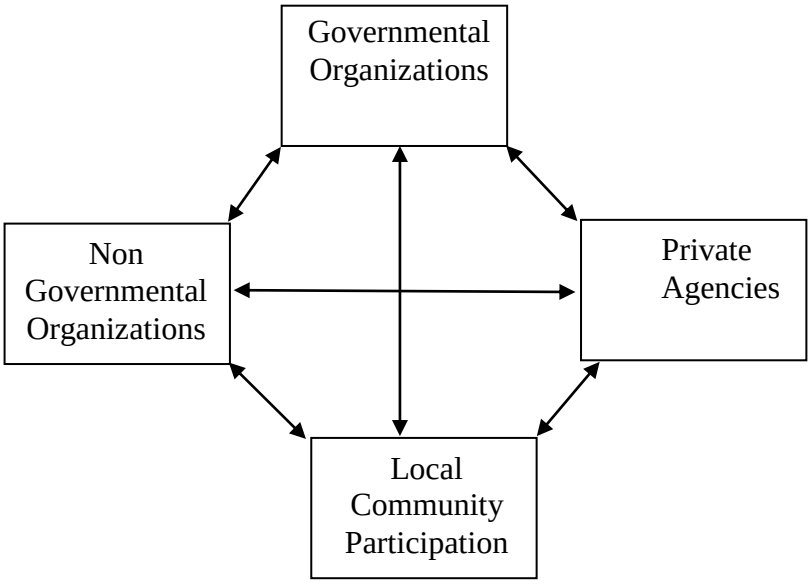

Fig. 2: Different Organizations for Water Resources Management

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- Role of Government in WRM

Under ideal conditions, the government should presume the responsibility for the overall management of water resources for the benefit of the Nigerian society undertakes major development programs and provide public services. The government must have the overall authority through the statutory departments like the Ministries of Water Resources to control the NGOs, private agencies and the local communities by adopting regulatory framework and strict administrative rules.

- Role of NGOs in WRM

There are a number of NGOs acting in different parts of Nigeria. Most of the NGOs have received the acceptance of local communities. These organizations could have important roles to play in the development of private water markets. The NGOs could assist in the formation of user groups, facilitate information exchange and even provide capital assistance to small entrepreneurs. NGOs could also contribute significantly to the social and environmental activities including educating the public, monitoring environmental hazards and mobilizing the people to undertake protective measures for water resources. NGOs can work actively with other organizations to encourage people to campaign for the health and sanitation awareness for the benefit of local communities. Therefore, the management policy measures for water resources should be defined in such a way as to facilitate the role of NGOs.

- Role of Private Agencies in WRM

Private agencies can increase the management efficiency of water resources through investment, consultation and technical support. It is the appropriate role of the government to control the overall exploitation and management of water resources. Consequently, the private agencies would invest in developing the commercial aspects of water system production, treatment and delivery. These agencies are capable of providing consultation, design and construction, operation and maintenance, and other services in water sectors. If this step is adopted, it will help to decentralize the water services in order to achieve the desired level of efficiency in water resources management in Nigeria.

- Role of Local Communities in WRM

The involvement of local communities is very important for the coordinated development and utilization of water resources throughout the country. Many water development projects have failed due to lack of understanding of local indigenous production systems and failure to take into account social and cultural relationships. The participation of local communities and the associated consultation process should be the key features in water resources management. Therefore, emphasis should be given to the involvement of local people at the feasibility stage of water resources planning process. If the local communities are not involved at the planning stage of different water projects and their roles in operation and management are not defined, pragmatic cost recovery policies will not be successful, and eventually the project will not run smoothly and more importantly, the intelligent and accountable water resources management will not be established without the conscientious participation of local people.

SUSTAINABLE APPROACHES FOR ACHIEVING EFFECTIVE WRM IN NIGERIA

Because water supply is on the concurrent legislative list in the constitution and that means all tiers of government have responsibilities for the provision of water supply to the people. Realizing the significant role played by potable water supply and clean environment in ensuring good and healthy individual, family and communal lives, government has embarked on certain policies and strategies to improve the coverage level of rural water supply and sanitation facilities. The water supply is to

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ensure that all Nigerians have access to clean water and sanitation at an affordable price. The viable options/solution to the Nigerian water problem is a unified and integrated approach to water resources planning and the provision of reliable information on the following:

i) the nature and magnitude of available water resources
(ii) the future demand for water for domestic, agricultural and industrial purposes
(iii) how these demands can be faithfully met within the ambit of available resources.

The issues raised above can be adequately addressed through water resources mapping. Not only can the information be obtained at regular intervals but their accurate state, can also be updated. In this context, efficient water policy is imperative if sustainable water utilization is to be realized. Water management policies therefore, will need to address a multitude of critical issues including, but not restricted to the following:

(i) Management of supplies to improve water availability in time and space;
(ii) Management of demands including efficiency of water use, sectoral interaction with economic activities etc.; and
(iii) Balancing competing demands and preservation of the integrity of water dependent ecosystem.

Beside the foregoing on water management options, there is need for the following:

(i) encourage user participation in the water resources administration;
(ii) propose and coordinate actions geared towards the protection, defense and knowledge on water use;
(iii) proper coordination between the different tiers of government and the public, realistic tariff structure to cover cost of services, research into local production of materials required in the water sector, training of professionals and education of the public about water conservation;
(iv) promote, organize, participate and undertake all kinds of activities, courses and seminars, outreach programmes, training, and specialization on water, and any other relevant collaboration with different public administrations.

For an effective management of water resources, there is a need to create awareness among the different user groups and workout area specific plans for sustainable development. Thus, sustainable water management not only requires proper assessment of available resources and understanding of the interconnection between surface and groundwater system, but also actions required for proper resource management and prevention of the adverse effects of uncontrolled development of water resources (Velayutham,1999). The component of action-driven water policy must be to consider and manage water as an economic as well as social commodity, and importantly, to manage water at the lowest appropriate level with users involved in the planning and implementation stages (See Fig.3).

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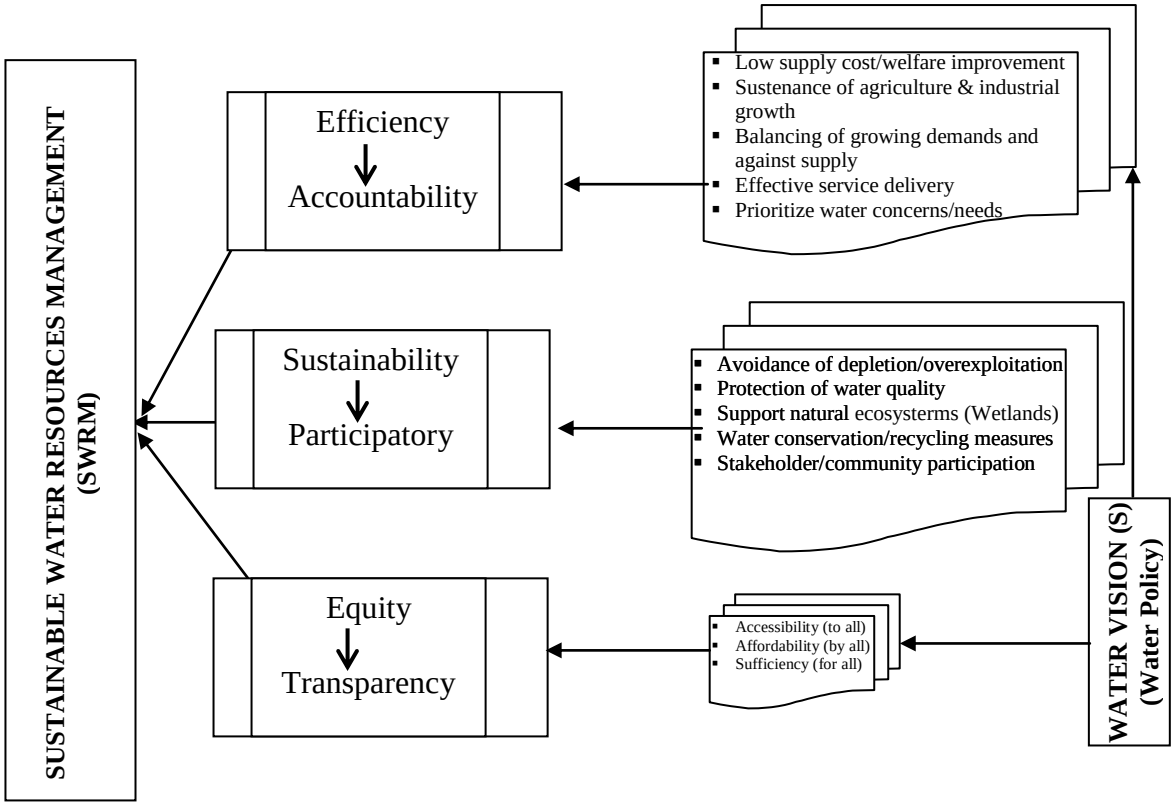

Fig.3 : Components of action-driven water policy & sustainable water resources Management (modified after Arntzen, 1999)

Generally, according to Nwankwoala and Mmom (2008), the key steps necessary to move towards sustainable use of water resources include:

(i) Improvement of the knowledge of the resource;
(ii) Improvement in reporting and having access to information;
(iii) Improvement in public education and better understanding of the public's attitudinal motivations;
(iv) Use of ecosystem approach to manage water resources;
(v) Embracing adaptive management; and
(vi) Adoption of a goal of sustainable use.

More importantly, one of the important strategies for sustainable management of water resources is regulation in critical areas. This is because over exploitation/development of water resources is increasingly being recognized as a major problem (Nwankwoala and Mmom, 2006). The tendency towards over utilization of water resources is rooted in the rapid spread of energized pumping technologies, resource characteristics, demographic shifts and incoherent and inconsistent government policies. There are very little efforts to checkmate exploitation and utilization of the resource, more especially groundwater.

The Integrated Water Resources Management (IWRM) approach implies coordinated planning and management of land,

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water, and other environmental resources for the equitable, efficient and sustainable use (Calder, 1998). The IWRM advocates for the systematic integration of population dynamics, environmental and socio-economic issues which are an essential component for the overall sustainable water resources development (Fig.4).

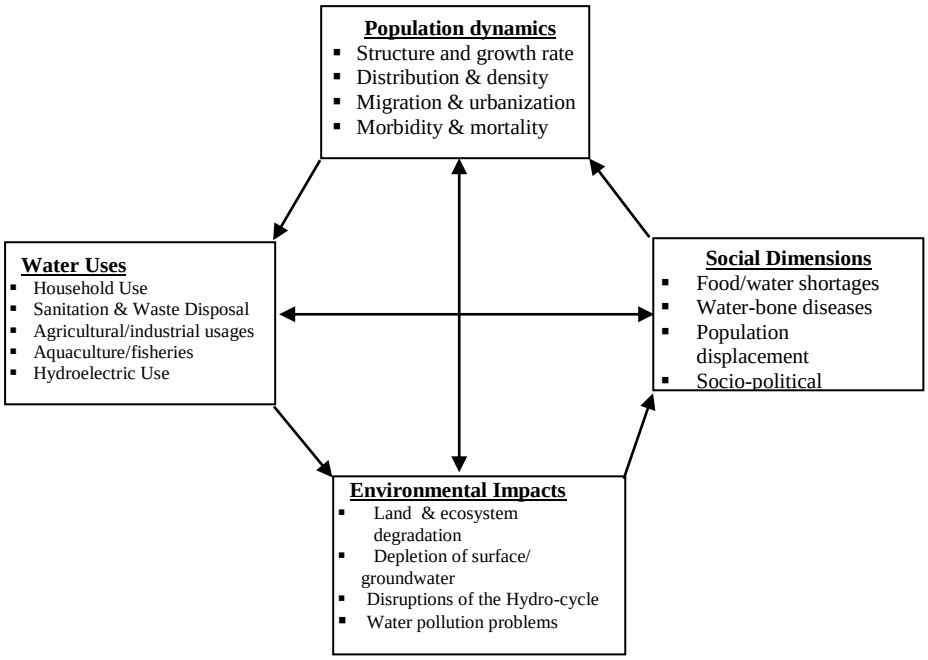

Fig.4: Relationship of population dynamics, water use & socio-environmental dimensions (modified after de- Sherbinin, 1998).

CONCLUSION

There is no doubt that efficient management of water resources in Nigeria requires effective coordination. This is necessary so as to overcome the present more or less haphazard manner of water exploitation. There should be national water policy that would involve both a comprehensive hydrogeological mapping of the country, and based on known groundwater and surface water sources. More so, the policy and water supply programmes should adopt a holistic approach to ensure a viable and sustainable water supply option.

This paper therefore has shown that an adequate and sustainable policy options must be embarked upon for potable water supply in Nigeria and that a well implemented strategy that involves sustainability of services, mobilization of community participation, private sectors etc. should be continuously, consistently and vigorously pursued.

If the Millennium Development Goals (MDGs) formulated by the United Nations, designed to halve the number of people without access to safe drinking water by the year 2015, is to be attained, then all stakeholders – government, scientists, water managers, community leaders, NGOs, CBOs, and others should begin to recognize that there is a distinct need for better data gathering and better

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utilization of that data. These needs, though, generally exceed, most times the financial capacity to effectively address them, efforts must be intensified for improvement. Additionally, federal, states and local governments support must be garnered to address wide – reaching technological and research needs important to developing the best possible science and water management strategies that keep pace with the resource. This is very imperative because, with business as usual, the Millennium Development Goals will not be met. Therefore, the challenge is to communicate to decision makers and legislators that presently available information must be significantly enhanced to accomplish sustainability goals. Particularly, fundamental data, on-going programmes, data standards, data coordination and sharing are core requirements for more effective improvement in water resources management.

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