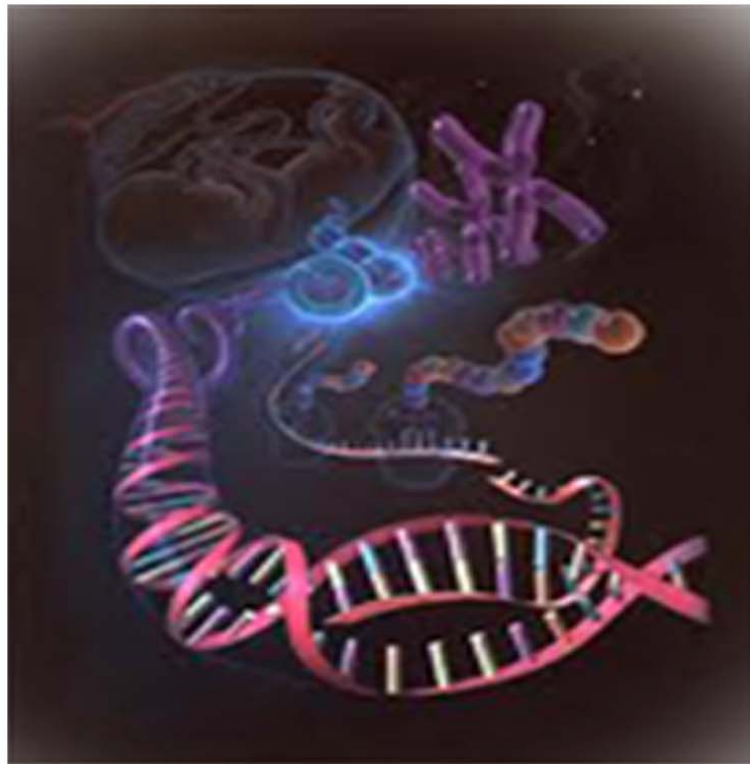




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Review Article

A REVIEW OF THE CHALLENGES OF SUSTAINABLE WATER RESOURCES MANAGEMENT IN NIGERIA

Ajiboye A J¹, Olaniyi A O^{1*} and Adegbite B A¹

*Corresponding Author: **Olaniyi A O**, ✉ aolibraheem2007@yahoo.com

Nigeria is a federation state on the West Coast of Africa. The country is considered to be abundantly blessed with water resources. The three levels government, Federal, State and Local Government share responsibility for water resources management. Thus the leading fragmentation duplication and lack of inter-sectoral coordination with each segment pursuing its own independent water agenda. The salient features of water resources management in Nigeria include: weak data base, fragmented responsibility and weak institutional framework among others. Because of the fragmented and uncoordinated approach to water management issues, the regulatory and monitoring machinery within the water sector in Nigeria is diverse, diffused and weak. Present water laws lack proper provisions and mechanisms for inter-sectoral coordination, tariff setting and conflict resolution. There is therefore an identified need for a new water law in Nigeria and with it, a new regulatory mechanism to ensure sustainable and integrated approach to water resources management.

Keywords: Fragmentation, Regulation, Independent water agenda, Integrated water resources management

INTRODUCTION

Water is essential for health and necessary for the production of food, economic and growth and support of the environment. Water is used in households, industries and agriculture but also for energy, transport and recreation. The World's by far largest water using sector is agriculture. In developing countries irrigation accounts for approximately 80%, compared with 10% for domestic uses. Although the trends are no longer

in favours of large scale irrigation agriculture; water for food provision is crucial. The fulfillment of poor people's water-related needs is fundamental to the elimination of poverty.

Nations, the world over, strive for studious planning, development and management of resources in order to meet the basic needs of people, over time, to live and maintain a life which is decent, healthy and respectable. These needs are in the areas of calorie and protein intake i.e.

¹ Department of Agricultural Science, Osun State College of Education, PMB 5089, Ilesa, Osun State. Nigeria.

food in terms of quality and quantity wholesome water for domestic, industrial and other uses. The United Nations has defined the minimum levels of these basic requirements, which express decent, healthy and respectable life. A country's socio-economic development efforts particularly Nigeria could therefore be assessed against these minimum levels of basic requirements (Handidu, 1990).

In the last decade, particularly in the last half of the decade, the issue of sustainable water resources management has attracted the attention of the international community and policy makers in Africa. The issue of water resources management was for example addressed at the Millennium Summit (2000) which produced the Millennium Development Goals (MDGs), the World Summit on Sustainable Development (2002), the 3rd World Water Forum in Kyoto (2003), the Africa Ministerial Council on Water, and the programmes and actions articulated under the New Partnership for African Development (NEPAD) framework.

The new emphasis on water resources management in Africa is coming with a shift in the principle and approach to the management of water resources. It is now recognised that water is a commodity of strategic importance because of increasing demands and rising costs, coupled with diminishing supplies (Sharma et. al., 1996). Furthermore, it is recognised that it is no longer feasible in a long-term, cost-effective and environment friendly manner, to increase water supply by building additional dams and conveyance systems, sinking new wells, constructing desalinization plants, etc. In addition, it is now recognised that solutions must be found at the user-end of the pipe that is, improving water

use productivity, reducing conveyance losses, reusing water and optimizing allocation (Sanstrom, 1997). The underlying principle is that water is a scarce good with dimensions of economic efficiency, social equity and environmental sustainability. Therefore, it has both public and private characteristics, and hence there is an important role for public and private participation in efficient management and development of water, particularly communities that use water (Sharma et al., 1996; Karikari, 1996).

After almost sixty years of water supply development in Nigeria, it is regrettable that only 60% of the population has access to safe drinking water, and in rural areas less than 50% of the households have access to potable water (National Millennium Development Goals Report, 2005). Rural people in the country still depend very much on rivers, streams, ponds, and shallow wells for their water needs. During the dry season, some of these sources dry up and households have to invest a substantial amount of their resources to get water of doubtful quality. This has very serious implications for the economic development and social welfare of the people specifically and the country as a whole. First, there is the tremendous economic waste involved in people spending so much time and effort in search of water. Secondly, lack of water often means relatively low levels of personal hygiene and environmental sanitation. Thirdly, because water is needed for most productive activities, inadequate access to water limits the livelihood options of the people, particularly in rural areas (IDRC, 2002).

In recognition of the poor state of water management in the country and its implication

for socio-economic development and environmental sustainability, the present democratically elected government has prepared a new national policy on water resources development. One cardinal objective of the policy is to provide potable water for the entire population at an affordable price. To achieve this objective, needs to better understand the constraints and challenges of water supply in the country. Apart from addressing the issues of participatory governance, cost recovery and appropriate technology, there is also a need to take into consideration the values, attitude, preferences and capacities of the different stakeholders in the supply and management of water in rural areas. The new integrated approach to sustainable water supply requires greater knowledge and understanding of the technological, social, economic and ecological dimensions of water resource management and how they are inter-related. Developing the capacity to engage in integrated sustainable development planning from the community level to the highest national decision-making level, remain a major challenge in Nigeria and many other African countries. This paper provides a review of the changing trend in the national policy framework for water resource management in relation to the motivation for policy design, knowledge capacity building, and the degree of compliance with the new principles and approach and the implications of this for sustainable water supply provision in Nigeria.

Salient Features of Water Resources Management in Nigeria: The features as highlighted by (Goldface-Irokaliba, 2002) are:

Weak Data Base: Water management cannot be done with poor data management. In the past ten years, no single-pan Nigerian hydrological

yearbook has been published. Without assessment there cannot be decision support system (DSS) models necessary for understanding the impact of abstraction and groundwater aquifers.

There is currently no effective water resources data management system for the nation. Therefore, Nigeria not only needs to set up nationwide networks for these data collection but also an institute to use the data and made models. Although the Water resources Management Strategy recommended the establishment of Water Modeling Centre, the Federal Government has gone further to create National Hydrological Agency to anchor these.

Fragmented Responsibility: Fragmented sectoral practices have also led to disjointed development and have critically led to a situation where there is presently nothing in place to significantly ensure the quality of water. There are no clear responsibilities, no mandated water quality standards, no effective water monitoring, no enforcement, no sanctions for polluters, no remediation and no overall responsibility for the quality of surface and groundwater in Nigeria remains unclear.

Weak Institutional Framework: The River Basin Development (RBDAs) came into existence following the promulgation of Decree 25 of 1976. They were conceived as vehicles for attaining a pan Nigerian Programme of water resources development. The current law on RBDAs is the RBDA Act, cap 396 Laws of the Federation of Nigeria, 1990. This statute spells out diverse functions and objectives for these Authorities from which it may be inferred that their existence nationwide propels their acceptance as an appropriate unit for water management.

Response to National Phenomena: Flood, including dam break, tends to be struggled off as “acts of God” with little done to intervene to prevent their occurring or to mitigate their impact. Upstream dams that could be managed to absorb flood flows have more often been the cause of the floods; nobody has been responsible for river training, the building of flood embankment and dykes and the prohibition of building residential houses in flood plains. Even the advantage of being downstream of virtually all its major transboundary waters, in that flood move down a river at a steady rate, has been a lost to make flood forecasting. Similarly, while drought cannot always be effectively forecast but it can be anticipated. Drought management requires good demand management and effective control water resources.

Customary Law: In all native community in Nigeria, there are customary laws relating to water rights. Rules and regulations are known to, and observed by all and sundry. These laws are handed down orally from generation to generation. The pristine antiquity of these laws and their observance to this day is of remarkable significance especially against the background of these customary laws being legislative in effect. (Wouters, 2000)

Framework Allocation: The ever-increasing demand for water throughout the country and the decline in quantity available for use especially in the arid parts of Northern Nigeria impels the identification of a range of options for the optimal and beneficial use of basin waters whether surface or underground. The competing demand for drinking water, irrigation, ecosystem management, biodiversity and grazing raises the question of whether priority of uses can be

established, and if so what criteria should be employed for achieving this end. The position on the ground is that there are many users of water and each of these have very significant impact on the others. The optimum use of basin water resources can only be attained when all the potential uses are considered simultaneously. This approach will involve trade-offs between different potential uses and demands nationwide.

Challenges of Sustainable Water Resources Management

The challenge of sustainable water resources management, in line with the new principles and approaches, may be conceived in terms of some simple policy relevant questions: how much resources is available and who needs it? Who gets how much? At what cost, if any? (IDRC, 2002). However, there are also deeper questions that also need to be addressed: who decides by what procedures? What features of governance will most likely produce management decisions that are fair, effective and environmentally sustainable?

The answers to these questions are by no means trivial and they may vary for different communities or nations depending on their form of organizing socio-cultural and political life. This is particularly true for the deeper questions: who decides by what procedure? Douglas (1987) and Thompson et al., (1990) argued that it is possible to discern four fundamental forms of social organization from which a large variety of ultimate forms of social and cultural life can be derived. Each of the four ways of organizing socio-cultural life (usually called ‘ways of life’ or social solidarities), that is fatalism, egalitarianism, hierarchy and individualism, consists of specific ways of structuring social relations and a

supporting cast of particular beliefs, values, emotions, perceptions and interests (Douglas et al., 2003; Thompson, 2003) as well as specific knowledge systems (Mabawonku, 2003). In the individualist social setting, actors view nature as benign and resilient – able to recover from any exploitation – and man as inherently self-seeking and atomistic. The individualist solidarity trust others until they give them reason not to and then retaliate in kind, and see it as only fair that those who put the most in get the most out. They think institutions that work with the grain of the market (that get rid of environmentally harmful subsidies, for instance) are what are needed. Their knowledge system is essentially scientific. In the egalitarian social setting, actors see nature as fragile, intricately interconnected and ephemeral, and man as essentially caring (until corrupted by coercive institutions such as markets and hierarchies). For the egalitarians, it is not enough that people start off equal; they must end up equal as well. Trust and leveling go hand in hand, and institutions that distribute unequally are distrusted, their knowledge system is described as the philosophical.

Generally, the answers to the deeper questions: who decides by what procedures? What features of governance will most likely produce management decisions that are fair, effective and environmentally sustainable? Will determine the answers to the policy questions: how much resources is available and who needs it? Who gets how much? At what cost if any? We therefore conceive the water management process as a five stage procedure. The first is the governance and decision-making stage. At this stage, the deeper questions are answered by both the policy makers and the general public. As explained earlier, the answers are determined

by the 'ways of life' of the people, or their knowledge systems, cultural beliefs and values. The second stage in the water management process is the water balance modeling. It is at this stage that the question: how much resources are available and who needs it is answered. It involves the determination of the volume of water being available over space and time, the present and future water needs as indicated by population growth, industrialization and changing habit of use, and the socio-economic and ecological implications of water supply and demand.

Management guideline development is the third stage in the water management process. At this stage the question, who gets how much is answered. It involves defining the priorities, goals, rules and capacity requirements. Specifically, it involves defining the policies, regulations and enabling environment as well as the mechanism for sharing water resources between competing interests. The next stage is the implementation stage, and it is the stage that decisions about cost and price are determined. Other issues such as funding, institutional or capacity building, environmental sustainability, and public awareness are tackled at this stage. The last stage is the water supply stage. It involves supplying water for different uses and evaluating the use of water and its implications such as the human dimensions of water supply, environmental sustainability, trans-boundary conflict of interests, and effects of economic and population growth.

The five stages in the water resources management process are interrelated and interdependent. Analysis of the management process may either proceed from the last stage to the first or from the first to the last. The direction of analysis is not important, but it is important to

recognize the link between the five stages and to take linkages into consideration in the analysis. For example, analysis of the pattern of social solidarity of the key stakeholders or decision makers may be linked to information about the water balance and management guidelines. Similarly, analysis of the water balance information and management guidelines may be linked with the implementation process and water supply.

According to Olokesusi (1990), water supply situation in Economic Community of West African States (ECOWAS) is far from satisfactory. The following seem to be the major factors responsible for the inability of member states to satisfy the drinking-water needs of their teeming populations. Water engineers and administrators in ECOWAS have been prone to thinking 'biggest', a series of small water schemes is nowhere near as proud an achievement as a massive structure, in other words the wrong scale of technology is being used. Unfortunately, the larger systems tend to carry with them a greater degree of vulnerability, since if they break down more people and more enterprises are adversely affected. In some states that are drought-prone, or do not have the infrastructural maintenance and repair support, the failure of one large water project can have immensely negative and sustained consequences. More important, perhaps, is the 'think big' syndrome of aid agencies and consortiums, which has affected the psyche and performance of the water-supply projects.

The Main Challenges to Achieve Water Security in Nigeria

The main challenges enumerated by (Musa, 2005) are:

Meeting Basic Needs: To recognize that access to safe and sufficient water and sanitation are basic human needs and essential to health and well-being, and to empower people, especially woman, through a participatory process of water management.

Securing the Food Supply: To enhance food security particularly of the poor and vulnerable, through a more efficient mobilization and use, and the more equitable allocation of water for food production.

Protecting Ecosystems: To ensure the integrity of ecosystems through sustainable water resources management.

Sharing Water Resources: To promote peaceful co-operation and develop synergies between different uses of water at all levels, whenever possible, within and, in the case of boundary and trans-boundary water resources, between states concerned, through sustainable river basin management or other appropriate approaches.

Managing Risks: To provide security from floods, droughts, pollution and other water-related hazards.

Valuing Water: To manage, water in a way that reflects its economic, social environmental and cultural values of all uses, and to move towards pricing services to reflect the cost of their provision. This approach should take into account the need for equity and the basic needs of the poor and the vulnerable.

Governing Water Wisely: To ensure good governance, so that the involvement of the public and the interest of all stakeholders are included in the management of water resources.

RECOMMENDATIONS

1. It is hereby recommended that the objective of the present legal and regulatory framework study is to review existing statutes and customary laws related to water and those affecting water resources management, in order to achieve stated water management objectives in Nigeria, to recommend measures for strengthening or modifying existing laws, and/or proposing, new laws and measures (institutions and practices) for enforcement.

2. In order to establish a fair and acceptable regulatory framework, it will be necessary for the new dispensation to be transformed in a manner that shift focus away from the topmost strata as presently constituted to the people. In terms of the political considerations it will be necessary to allow the regulatory and monitoring mechanisms to operate without pressure or influence from government or lobbyist so as to pave the way for a better enforcement process that will instill confidence in both private and public sector stakeholders.

3. The linkages between political/bureaucratic power, corruption and economic power should be broken. It is possible to achieve this through the separation of responsibility for the building of water infrastructure from responsibility for production and distribution. The separation will also enhance the termination of inter-institutional conflicts and politics which has resulted in certain government agencies and upper strata citizens paying little or nothing for water consumption.

4. Management that promotes efficiency and generates net benefits for the common good is needed. As always, the tremendous variation between countries and other relevant entities must be taken into account in the analyses.

Furthermore “effective policy formation requires collaboration among several parties to ensure practical implementation and subsequent evaluation of results and performances. The role of government is to establish the framework and provide incentives that stimulate people and business to perform well. Authorities have a key role to balance self-interest with the common good and safeguard the functioning of life support systems.

CONCLUSION

In highlighting major issues and challenges above, it was pointed out that there is an absence of policy framework for water resources management in Nigeria, and which has led to the pursuit of different water agenda, fragmentation and lack of inter-sectoral coordination or well as lack of mechanism of conflict resolution. In clear terms there is an institutional gap identifiable alongside the legal one.

The analysis also reveals that both political and social factors are primarily responsible for the limitation hampering the enforcement of water and sanitation laws in particular and environmental laws in general. The availability of water and the regularity of supply are products of state apparatus that is biased in favour of the interests of identifiable segment of society. The policies responsible for this state of affairs hardly contain social equity at their root, and are reflective of the distribution of power society.

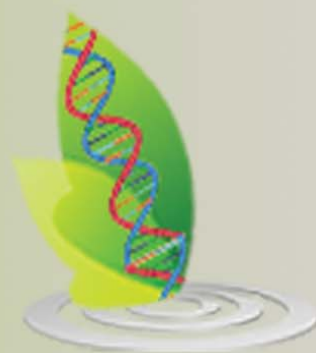
In general welfare of the Nigerian nation requires that the water resources of the country be put to beneficial use to the optimum level of which they are capable; that wastage or unreasonable use or unreasonable method of use of water be prevented. The conservation of water and the preservation of quality of such water

should be exercised with the objective of attaining the reasonable and beneficial use thereof in the larger interest of the people, and that funds—Public and Private—for promotion and expansion of the beneficial use of water resources should be invested to the end that serves the best interest and welfare of the people. Water is among the basic resources of Nigeria, and subject to appropriation in accordance with the provision of law; the control and development, as well as the use of water for all beneficial purpose should remain vested in a “National Water Commission”; which in the discharge of its functions should take such measures as shall effectuate full utilization, conservation and protection of Nigeria’s water resources.

REFERENCES

1. Douglas M M Thompson and M Verweij (2003), *Daedalus*, Spring, pp. 98-107.
2. Goldface-Irokaliba I J (2002), “Towards an Effective Legal and Institutional Framework for Integrated Water Resources Management in Nigeria”, A. B. U. Zaria.
3. Handidu JA (1990), “National Growth, Water Demand and Supply Strategies in the 1960s”, *Journal of the Nigerian Association of Hydrogeologists*, Vol. 2, No. 1, pp. 18-25.
4. IDRC (2002), *In Focus: Water – Local Level Management*, International Development Research Council (IDRC), Canada.
5. Karikari K (1996), “Water Supply Management in Rural Ghana: Overview and Case Studies”, in E Richard, E Rathgeber and D B Brooks (Eds.), *Water Management in Africa and the Middle East – Challenges and Opportunities*, International Development Research Council (IDRC), Canada.
6. Mabawonku A O (2003), “Cultural Framework for the Development of Science and Technology in Africa”, *Science and Public Policy*, Vol. 30, No. 2. pp. 117-125.
7. Musa S D (2005), “Water Resources Exploration in Northern Nigeria: A Review”, *International Journal of Ecology and Environmental Dynamics*, Vol. 3, pp. 9-14
8. Nigeria Millennium Development Goals 2005 Report. Cited in Igbuzor O (2006), *The Millennium Development Goals: Can Nigeria Meet the Goals in 2015?* Paper Presented at a Symposium on Millennium Development Goals and Nigeria: Issues, Challenges and Prospects Organised by the Institute Of Chartered Accountants of Nigeria (ICAN), Abuja District on 27th July, 2006 at Sheraton Hotel and Towers, Abuja, available at www.whiteband.org/development/mdg/
9. Olokesusi F (1990), “An Assessment of Water-Supply Situation in ECOWAS Countries and the Policy Implications”, *J. Water SRT-Aqua*, Vol. 39, No. 3, pp. 152-160.
10. Sanstrom K (1997), “Ephemeral Rivers in the Tropics: Hydrological Processes and Water Resources Management: A Review and Pathfinder”, Research Report No. 8 from EPOS, *Environmental Policy and Society*, Linkoping University, Sweden.
11. Sharma N P T, Dambaug E, Gilbert-Hunt D, Grey V Okaru and D Robberg (1996), “African Water Resources: Challenges and Opportunities for Sustainable

- Development”, The World Bank, Washington DC.
12. Thompson M R Ellis and Wildavsky A (1990), *Cultural Theory*, Westview Press, Boulder, Colorado.
 13. Thompson M (2003), “Cultural Theory, Climate Change and Clumsiness”, *Economic Political Weekly*, Vol. 38, No 48, pp. 5107-5112.
 14. Wouters P (2000), “National and International Water Law: Achieving Equitable and Sustainable use of Water Resources”, Water International, Carbondale.



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Hyderabad, INDIA. Ph: +91-09441351700, 09059645577

E-mail: editorijlbpr@gmail.com or editor@ijlbpr.com

Website: www.ijlbpr.com

