

ENVIRONMENTAL SANITATION AND GROUNDWATER RESOURCES OF THE DEVELOPING ECONOMY OF PARTS OF SOUTHEASTERN, NIGERIA: IMPLICATIONS AND SUSTAINABLE CONTAINMENT APPROCHES

By
Okoro, E.I., Egboka, B.C.E., Onwuemesi, A.G and Anike, O.L.
 Department of Geological Sciences,
 Nnamdi Azikiwe University, P.M.B. 5025 Awka, Nigeria
 Email:reallizkay@yahoo.com, boniegboka@yahoo.com



ABSTRACT

Pollution and contamination of water resources are parts of the negative consequences of urbanization and population growth in many developing economies. Poor waste disposal and sanitation practice of the increasing population of the urban and commercial cities of southeastern Nigeria abound leaving the total environment in unacceptable poor sanitation condition. One is confronted by heaps of refuse that form ugly scenario on entry into the rural, commercial and urban areas. The poor sanitation standard has implications on groundwater quality and public health as human and environmental sanitation receives very low attention. The impact of climate change on water resources and the environment is on the increase and has resulted in the increased dependence on unprotected shallow wells. Ignorance and self indiscipline impair the benefits of the natural environments exacerbating the standard of living of the people. For sustainable socioeconomic development, functional water and efficient waste management schemes are prerequisite. The government of Anambra State, Nigeria has recorded appreciable success in these areas in recent times for the achievement of the millennium development goals.

Keyword: Environmental sanitation, sustainable development, waste disposal/management, water quality, public health.

INTRODUCTION

The poor population of southeastern Nigeria lacked appreciable organized supplies of utilities in form of water and waste-cum- toilet facilities. The numerous commercial and urban centers of Onitsha, Awka, Nnewi, Ekwulobia, and Ihiala are victims of environmental ignorance and carelessness. Improper waste disposal practices with attendant poor condition of the total environment abound. Most of the urban centers have no garbage dumps or landfills for industrial and domestic wastes disposal. The peri-urban and rural areas still make use of open spaces and bushes for toilet purposes. Proper waste disposal/management is a key to environmental sanitation and protection. There is need for the introduction of adequate wastes management methods in major cities where unprecedented population upsurge have negatively affected the total environment. Government involvement in sanitation and provision of basic amenities to the increasing population of Anambra state is a positive development in both urban water supply and public health security.

URBAN/RURAL ENVIRONMENTAL SANITATION

Increase in rural to urban migration especially to the commercial cities of Anambra state result in the generation of huge volume of waste that are poorly disposed/ managed and stress on urban infrastructure. The rural areas are most affected as they not only lack basic amenities but are handicapped by increased level of poverty and lack of proper orientation on the importance of good sanitation/hygiene practices. The heaps of waste dumped indiscriminately along the road in the major cities of the state tell the level of environmental sanitation of the area and the standard of living of the population.



Waste dumps along the road



Poor sanitation in market place



Waste disposal in drainage channels



Shallow groundwater supply close to pit latrines

ENVIRONMENTAL SANITATION AND GROUNDWATER QUALITY

The poor environmental sanitation of the developing economy of the study area is not without implications on the quality of water available to the increasing population for their daily water need. The use of open spaces, bushes and shallow pits for toilet purpose have negative impacts on groundwater quality. This is commonplace as shallow groundwater sources located few meters from pit latrines serve water supply purposes.



Shallow groundwater supply close to pit latrines



Improper disposal/management of industrial and domestic wastes also affect groundwater quality. The impoundment of flood water and associated wastes in the capital city of Awka affect surface and groundwater interaction in terms of quality.



Flooding incidence with implications on groundwater quality

The components of the hardly monitored fertilizer applications and human wastes eventually reach the groundwater domains polluting and contaminating parts of the environment. The nitrate concentration of the shallow groundwater resources of the area range from 1.3 -32.8mg/l. The high values observed are likely to have resulted from the recharge of the shallow groundwater by the impounded waste water and leachates escaping into water bodies from domestic waste dumps. High values of *Total Coliform* MPN (*Most Probable Number*) which are indication of faecal pollution/contamination of groundwater sources are also recorded in the area. Absence of functional government water scheme encourages the use of water from unprotected shallow groundwater in the vicinity of open spaces used for toilet purposes.



Poor environmental sanitation of shallow groundwater supply sources



Unprotected shallow groundwater supply sources



The implications of environmental sanitation on public health disproportionately affect children and rural poor women. The use of water supply sources of objectional quality is exacerbated by the siltation and loss of some surface water bodies ensuing from the impacts of climate change.



Children in environmental sanitation for water quality



Government water project



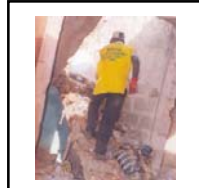
Impact of climate change on surface water supply

CONTAINMENT APPROCHES

Environmental sanitation and access to potable water supply have received appreciable success in recent times under the new government of Anambra states. Boreholes have been developed in schools and hospitals to ensure potable water supplies.



Improve water supply sources in urban areas



Environmental sanitation team at work courtesy of the government

Monitoring of private sector participation in water supply ventures to ensure provision of water of good quality has been adopted. Considering the numerous benefits of a healthy total environment, Department of Environment and Water Resources was created and adequately equipped with relevant expertise, facilities and manpower to ensure environmental protection and enforcement of environmental laws and polices. Sustainable water projects in the commercial cities of the state for adequate water supply are in progress.

Waste disposal facilities located at strategic places now abound with the inauguration of environmental protection agency to ensure regular evacuation of wastes.



Environmental sanitation team at work courtesy of the government

Individuals and business centers are charged a token for the efficient and new household waste disposal services. The Institution of new sanitary inspectors to ensure adequate household and environmental sanitation has received mass commendation. Provision of toilet facilities in schools and market places has also improved the sanitation condition of the area. The above measures have positive impact on the economic development of the state.