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Inadequacy of Safe Domestic Water Supply in Small Urban Centre's in Kenya: A Case Study of Ahero Town, Kisumu County, Kenya

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Abstract: **Urbanization and subsequent creation of urban sprawl have become a major concern to many countries worldwide and particularly, developing countries that experience a rapid rate of urbanization. This situation is pronounced more in Africa where the annual growth rate were 4.7% and 4.6% between 1960 - 1980 and 1980 - 2000 respectively. (UN 1969). In Kenya the big numbers of small urban centres such as Ahero indicate the trend where urbanization is spreading. This influx of people into specific settlements creates high demand for water. This situation implies that no provision of safe water for domestic use can be expected. In Ahero town, the provision of adequate supply of safe water for domestic use is lacking. This has led to other environmental problems including high health risks for the inhabitants. This study examines the state of and the adequacy of supply of safe domestic water in Ahero town. A survey was conducted that made use of the existing physical development plan for Ahero town. A still camera was used to capture the state of the subject of study and 199 close ended questionnaires. Discussions were held with key informants and non-governmental organizations in relation to water supply in the town. The data collected was analyzed using statistical package for social scientists (SPSS). The study established that there is one water point constructed by the Catholic Mission church. The facility is situated in the mission compound and run by the same church that supplies water at a fee. Other sources include wells and nearby River Nyando. The study concludes that environmental problems relating to poor and inadequate supply of safe domestic water exists in Ahero town. It recommends that proper strategy and planning for provision of these essential services is made.**

Keywords**: statistical package for social scientists (SPSS), Inadequacy of Safe Domestic Water Supply in Small Urban Centres.**

1. INTRODUCTION

United Nations Millennium project has goals, which targets the year 2015, when nearly 60% of the world's population are expected to make cities their home. Therefore meeting the rapidly growing urban demand for housing and safe water is and will be a daunting challenge (UN Habitat, 2003). Developing countries and Kenya in particular is facing acute housing and safe water provision in urban areas. Many of the urban towns fall short of providing the services because local governments are not efficient enough to fulfill their mandate.

The shortfall relates to lack of urban environmental management, which is best seen as a formal body of techniques, rules and practices for planning organization, social and technical control of human Utilization of, and interaction with nature and national resources (Emmit, 1998 in Mwangi, 1998). Urban areas as centers of population and human activities, consume natural resources as they interact with their environment and generate environmental problems over spatial scales, thus the households, workplaces, the neighbourhood, cities, the wider region and the globe (Handy, *et al*., 1993: 2001 in Mwangi, 2002).

The types of environmental problems at home, in workplace and neighbourhood can be viewed as poor quality and overcrowded housing, inadequate and contaminated quantities of water, inadequate (or lax) enforcement of environmental and occupational health legislation among others. High proportions of third world's urban population live and work in

very poor conditions (UN, 1996). Many health problems are linked to water, its quality, the quantity available and the ease with which it can be obtained and the provisions made for its removal once used. Hundreds of millions of urban dwellers usually have no alternative but to use contaminated water or at least water whose quality is not guaranteed. A small minority has water piped into their homes and others have water piped to a standpipe nearby, which has to be collected. Those not served are normally obliged to use water from streams or other surface sources, which in urban areas are often little more than open sewers.

This confirms the fact that children whose parents live in such conditions suffer frequently, often fatally, from diarrhoreal diseases (Cairnscross, 1990). Water is very heavy to carry so the distance it has to be carried will influence consumption levels. Therefore, limited quantities due to the distance it has to be carried mean inadequate supplies for washing and personal hygiene, washing, food, cooking utensils and clothes. It is also a known fact that eye and ear infections, skin diseases, scabies, lice and fleas are very difficult to control without sufficient supplies of water. A conference organized by United Nations Economic Commission for Africa (UNECA) reviewed some of the environmental problems and in part it alluded to the fact that the quality, the quantity and availability of water have an impact on the health status of urban dwellers. In particular the lack of drinking water worsens the occurrence, the spread and severity of water related infections diseases such as cholera, diarrheal diseases, skin and eye infections.

Despite the link between health status and water, a significant number of urban dwellers do not have access to clean dependable source of drinking water, this is supported by the fact that a 1980/81 survey carried out in Dakar and Pikine (Senegal) estimated that 28% of households had private water connections, 68% relied on public stand pipes and 4.2% on water vendors. In Pikine a suburb of Dakar, an average of 696 persons used standpipes with 1513 in one neighbourhood. In Dar-es-salaam (Tanzania), 1986/87 survey of 660 households associating all income groups, found that 47% had no piped water supply either inside or immediately outside their houses and 32% had a shared water supply. From a 1981 household survey in Kampala (Uganda) it was estimated that many households did not have piped water close to their homes and had to rely on springs, streams or wells, many of which are polluted.

Adequate Provision:

Everyone has access to water in some form since no one can live without water. The issue is not whether they have access to water but whether the supplies are safe, sufficient for their needs, regular (for example is water available 24 hours a day and throughout the year) convenient (for instance is the water piped to their homes or close by) and available at a price that they can afford.

Water Provision in Urban Areas of Africa:

Sub-Sahara Africa's urban population probably has the world's worst provision for urban water. In most small urban centres, there is little or no public provision. However, South and most nations in North Africa have good levels of provision. Some examples of specific urban centres such as Abidjan (Cote d' Ivoire), which had distribution, network of 180,000 half of all households. In Cotonou (Benin) more than half of the population depends on water resellers or handcart vendors while in Ibadan (Nigeria) only 22% of the population is served by the municipal water supply system (UN-Habita,t 2003).

Impacts of Inadequate Provision:

Many diseases are associated with inadequate water and at any one time close to half the urban population in Africa, Asia and Latin America are suffering from one or more of the main diseases associated with inadequate water and sanitation (WHO 1999). Water related diseases are classified into feacial-oral, water-washed, water based and water related inject vector, according to environmental pathways by which infection takes place. Feacial-oral diseases, mostly diarrheal diseases account for high proportion of infant, child and adult illness and mot water-related infant and child deaths (Jacoda, 1993).

Water - washed diseases are associated with a lack of water supplies for washing and include various skin and eye infections such as scabies and trachoma (from which millions become blind). Most water borne diseases are also water-washed as their incidence is associated with inadequate water supplies and contaminated with inadequate as well.

The most significant water-based diseases are bilharzias (schistosomiasis) and guinea worm. Although guinea worm is a rural based but it has occurred in epidemic form in small urban centres when piped water systems break down. Diseases

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spread by water related insect vectors are among the most pressing environmental problems in many cities. Malaria often considered a rural disease, is now among the main causes of illness and death among children and adults in many urban areas. In South Asia malaria is related to the storage of drinking water in roof tops (so called overhead tanks). Malarial mosquito Anopheles Stephensi has adapted its breeding habits.

Impacts on Mental and Social Development:

Research in urban Brazil and Peru has demonstrated strong connections between infection with diarrhoeal pathogens in the first two years of life and cognitive functioning when children are between six and nine (Guerrant, Moore, *et al*., 1999). A study in Java also found that infection with hookworms had a significant adverse effect on children's working memory, with consequences for their reasoning ability and reading comprehension (Sakti, *et al*., 1999).

Legal Issues:

There is a water act of 2002, which governs all aspects water supply. The Water Act 2002 in section I(1) and II(2) defines the national Water Resources Management Strategy which will be used to manage, protect, used, developed conserved and control the water resources of Kenya. Sessional paper number 1 of 1999 on water policy, water resources management and development provides policy direction to overcome the existing challenges. The policy directions include supplying adequate amounts of water meeting acceptable standards for the various needs.

2. MATERIALS AND METHODS

The study made use of a physical development plan for Ahero town for a better understanding and orientation of the inner parts of the town. This plan was obtained from the provincial physical planning offices to assist in identification of issues under investigation. Features, important to the study were captured in the field these were such as the housing types. Focused discussions were held with the staff of the water supplier in town. One hundred and ninety nine households including business premises were interviewed to obtain primary data. Secondary data was obtained from library and materials included relevant books, journals, researches conducted with regard to housing and water inadequacy in urban settlements. Other sources included government of Kenya publications such as National Water Act among others.

3. RESULTS AND DISCUSSION

Results of this study revealed that one main source of piped water in Ahero town is the Catholic Mission Church bore hole, which was constructed in 1967, initially for use by the mission alone. Later with the growing demand for more water the mission opted to extend the service to the town's central business district. Further, discussions with the administration of the church at the time of data collection showed that the service have been extended to Oketha water kiosk, Ahero Police Station and Law Courts, Ahero Health Center and a few individual home connections. It was also affirmed by the water technician that no water treatment is undertaken before distribution and no monitoring is done to ascertain the condition and safety of the water. There are also some boreholes at Onjiko Secondary School, which is run by the school authorities and at Boya Village Polytechnic run by the community around the polytechnic.

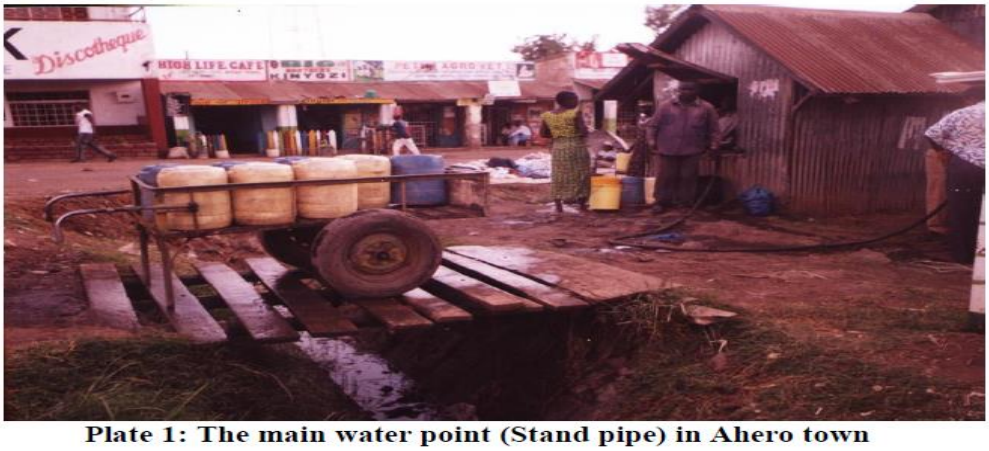

Plate 1: The main water point (Stand pipe) in Ahero town

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From the respondents interviewed, 69% indicated that they obtained water from standpipes at the central business district, 17.1% said that they obtain water from wells directly, the rest 13.6% sourced water from a combination of wells and standpipe, river and tap, wells and river, wells and roof catchment. Most households have to walk for about one kilometer to fetch water at a cost of two shillings per twenty-litre jerrican. The respondents indicated that when there is power failure and tank cleaning they miss water at the standpipe. The respondents indicated that when there is power failure and tank cleaning they miss water at the standpipe.

Table 1: Some sources of water used in Ahero Town

Source of Water	Frequency	Percentage
River Nyando	5	2.5
Wells	14	7.0
Taps	138	69.3
Roof Catchment	2	1.0
River and Well	2	1.0
River and Tap	1	0.5
Well and Tap	1	0.5
Borehole and Tap	1	0.5
Borehole	34	17.1
Total	**199**	**100**

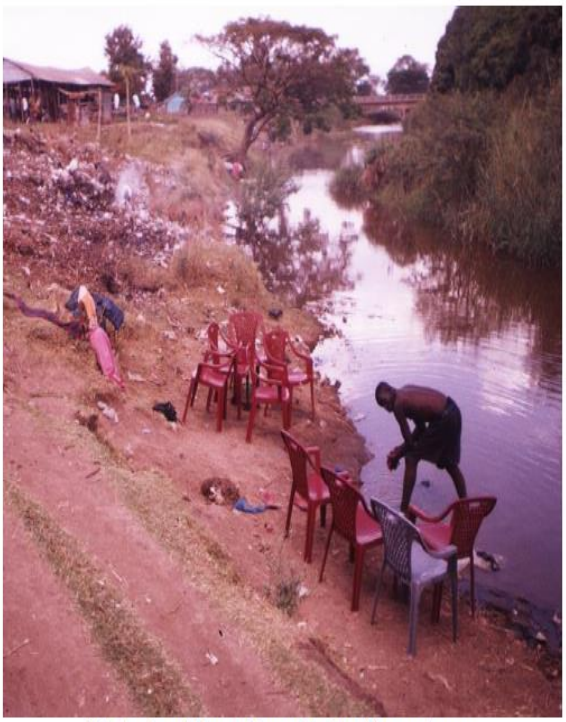

Plate 3a: River Nyando in Ahero town

Plate 3b: Shallow well in Ahero town

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Plate 2: The tank and bore hole below which is the source of Ahero town piped water

The quantity of water available to a household and the price, which have to be paid for it, can be as important to a family's health as its quality (Cairn, 1990). Where there is a public supply through a well or public standpipe the quantity used per person will depend on the time and energy needed to collect and carry water back to the home. Water is very heavy to carry so the distance that it has to be carried influences consumption level. It is apparent that the majority of households carry water for one kilometer, this is quite far therefore less of water will be used a situation that justifies the fact that water supply is inadequate in Ahero Town. The piped borehole water, wells and river water, which are the sources of water in Ahero, are not treated and so the quality of water consumed by the residents cannot be relied upon. This situation puts the health of the residents at risk for contracting diseases.

The International Institute for Environment and Development through their publication alluded to the fact that hundreds of millions of urban dwellers still have no alternative but to use contaminated water or water whose quality is not guaranteed.

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