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AfriAlliance MOOC#2 Final Assignment

Equitable Water Distribution in Nairobi County, Kenya.

Name of Participant: Vivian Nasike Wanyama

Abstract

Access to safe water and sanitation is recognized as a fundamental human right.

Many developing countries are faced with increased population growth in their cities which often leads to strain on existing public utilities such as water and sewerage facilities.

Nairobi City, like many other cities, is faced with water shortages as the demand for water surpasses the available water for consumption.

In order to ensure equitable water allocation there is need for water infrastructure development; financial allocation; government intervention and reduced inequalitiess in water allocation.

DESCRIPTION AND BACKGROUND

Sustainable Development Goal 6 recognizes the need to achieve universal and equitable access to safe and affordable drinking water as well as adequate and equitable sanitation and hygiene by the year 2030. Accessibility of this resource is considered a fundamental human right and thus an indicator of human progress. At the household level, water is important for most of the domestic activities inclusive of drinking, washing, cleaning, cooking among others.

Urbanization has led to rapid uncontrolled population growth which is one of the major problems facing cities globally. It results in strain on existing water and sanitary utilities due to poor urban planning. Nairobi, just like many other cities in other developing countries, is also faced with these problems (UNDP, 2011). Nairobi is the capital city of Kenya. It is located between longitudes 36^{o} 45‘East and latitudes 1^{o} 18‘South. As per the 2019 Census, the county has a population of 4.397 Million over an area of 696Km^{2} which gives a population density of approximately 6,247 people per square Kilometer.

The rapid growth within the city has led to subsequent water and hygiene related problems. (Ledant, 2013) Nairobi County has no major water towers and therefore relies on other neighbouring counties located within the Tana River Basin which is approximately 50 Kilometers from the city. The effects of climate change, such as prolonged drought periods and siltation of reservoirs due to increased deforestation has made the system not fully reliable. (GOK, 2018) The primary sources of water in Nairobi are private-in house piped metered connections, water kiosks and water vendors.

About 60%of Nairobi residents live in informal settlements. The congestion in these areas has proved to be a challenge in enabling provision of water and sewerage services. The supply problem is further increased by poor distribution systems that causes a loss of about 50% from leakages, illegal connections and wasteful consumption habits by consumers.

Water consumption within households in Nairobi averages 40 liters per day(Gulyani, et al., 2005). The demand for water has surpassed the ability of the Nairobi City Water and Sewerage Company (NCWSC) to supply water effectively to the dwellers. Most of the urban dwellers who cannot access the metered connection are forced to buy water from unsafe and potentially contaminated water sources.

Equitable distribution of water is essential in ensuring good health and well-being. Several factors influence equitable distribution of water, these are; water resource infrastructure, financial allocation, government intervention and household characteristics.

Water infrastructure in Nairobi as well as other cities in developing countries is often outdated and cannot serve the current urban population. Poor management, leakages and blockages are contributing factors to water supply issues. There is need for technological advancement in the maintenance and expansion of water supply systems. This can be achieved through appropriate financial resource allocation. The funding is often through foreign aid; government allocation and revenue collection from water billing and water permits.

The government is the key driver in ensuring equitable water distribution by ensuring all Kenyans have access to clean portable water. The achievement of this is through enforcement of existing policies; enforcement of policies on rain water harvesting and partnerships with the private sector in the distribution of drinking water. There is need to reduce inequalities in water distribution between the urban rich and urban poor. (WSP, 2015) Studies have shown that majority of the urban poor lack access to piped water and use alternative sources that are often unsafe. Effective consumption can be achieved when consumers are provided with information on the need to reduce water wastages and practice alternative water harvesting such as rain water harvesting at the household level.

In order to ensure controlled supply of the existing water capacity, the Equitable Water Distribution Program was adopted. The program ensures that different areas within the city are allocated water on specific days of the week for a given period of time. Although the system was initially faced with opposition, it has been effective in ensuring water use efficiency. Without the rationing system, households are often left to their own capacities, self-interest and chances when it comes to harvesting the available water.

TECHNOLOGICAL SOLUTIONS

Both local and international technological solutions are effective in ensuring water use efficiency within the country.

- Water demand exceeds supply in Nairobi County, due to water shortages and rationing, households are often faced with water shortages before the next available water supply. **Mobi-Flow Sensor Node** converts any water meter into a smart meter and thus enabling remote monitoring and analyzation of water consumption and thus assist in making data-driven decisions to improve water consumption.
- Expansion of the existing water supply system to large scale water supply project to meet the needs of the exponentially growing population.
- Rain water harvesting technologies should be adopted at the household level to supplement water supply by the Nairobi City Water and Sewerage Company.
- Reliable water metering bridges the gap between demand and supply of water by forming a backbone for a sound Non-Revenue Water Strategy.

CAPACITY DEVELOPMENT

In order to ensure effective and equitable water allocation, there is need for people, organizations and societies to work together.

- The Nairobi Water and Sewerage Company in ensuring water access in informal settlements uses the settlement leadership to mobilize the community to ensure ownership peer to peer policing so as to overcome mistrust between lower income settlers and authorities.
- The Kenya Alliance of Residence Association has collaborated with Nairobi City Water and Sewerage company in order to ensure improved water services across the city by developing a Northern Water Collector Tunnel that adds 140,000 cubic meters to Nairobi Water Supply.

SOCIAL INNOVATION

GOVERNANCE STRUCTURES

- In order to ensure equitable water distribution there is need for reduced inequalities in water allocation.
- There is need for strengthening of the existing laws and policies on water consumption. The Constitution of Kenya, 2010 as well as The Water Act, 2016 recognizes that every person in Kenya has the right to clean and safe water in adequate quantities and to reasonable standards. Equitable Water Distribution Programme should therefore take this into account.
- The Water Services Regulatory Board ensures the protection of interests and rights of consumers in the provision of water services.
- The Water Resource Authority (WRA) is mandated to ensure and safeguard the right to clean water by ensuring proper regulation of the management and use of water resources.

BUSINESS ROAD MAP

Supply and Demand of water services creates business opportunities.

- Applications such as Mobi-Flow Sensor Nodes and Mobi-Water Sensor Nodes create a business opportunity when sold to consumers as well as aiding in water level monitoring.
- The Nairobi City Water and Sewerage Company supplies water to consumers. Connection fees and Monthly metering fees are applied to enable consumers to get access to piped water.
- Financing and micro-credit schemes have made water and sanitation services affordable to low income households through microloans and staggered payments of consumption bills.
- Water distribution in Nairobi has received funding from International Development Association and the World Bank Water and Sanitation Program to ensure water supply to the urban poor.

Summary

Water supply within Nairobi continues to be a challenge due to the lack of efficiently working water supply systems. The rapidly increasing population has strained the existing water and sanitation utilities. In order to ensure equitable water allocation throughout the city, there is need for improved technological systems in water supply as well as water harvesting mechanisms. This can be achieved through financial allocation from the government and funding agencies.

The existing equitable water allocation mechanism is only short term since households have the right to continuous and efficient supply of water. There is need for the four dimensions of social innovation to work together in order to ensure equitable water allocation.

Water scarcity is also as a result of climate change. Climate change adaptation mechanisms are therefore essential in ensuring water availability. This may include afforestation of degraded land and bulk rain water harvesting mechanisms.

References

AfriAlliance Social Innovation Factsheet #2.2

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