

**ASSESSMENT OF WATER SERVICE DELIVERY FOR THE
URBAN POOR IN TANZANIA**

**The case of Buguruni in Dar es Salaam City and Tanga
Municipality**

Byera Simon

**Masters Degree in Integrated Water Resources Management Dissertation
University of Dar es Salaam
July 2008**

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By

Byera Simon

**A dissertation Submitted in (Partial) Fulfillment of the Requirement for the
Degree of Masters in Integrated Water Resources Management of the
University of Dar es Salaam**

**University of Dar es Salaam
July, 2008**

CERTIFICATION

The undersigned certify that they have read and hereby recommend for the acceptance by the University of Dar es Salaam the dissertation: *Water Service Delivery for the Urban Poor in Tanzania. The case of Buguruni in Dar es Salaam City and Tanga Municipality*, in fulfillment of the requirements for the degree of Masters in Integrated Water Resources Management of the University of Dar es Salaam.

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I, **Byera Simon**, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other university for similar or any other degree award.

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Last but not least, I would like to thank my brothers and sisters together with my in-laws' for their prayers and encouragement, my classmates and friends for their moral support and company.

May Almighty Lord God Bless you all.

DEDICATION

To my lovely husband Faraja, my beautiful daughters Shannon and Davynn.

Without their unconditional love and encouragement I would not come this far.

My dear departed parents were the roots of all these, may their souls rest in peace.

ABSTRACT

The status of water supply service delivery to the urban poor is neither well understood nor adequately studied. Worse still, the problem has not been given much attention. This study aimed at assessing water supply services delivery for the urban poor community in Buguruni, Dar es Salaam and Tanga Municipality. Different methodologies including questionnaires, key informant interviews and desktop analysis were used for assessing the service delivery.

A sample of 108 and 150 households in Tanga and Buguruni respectively, together with a sample of 7 selected urban poor (based on Tanga UWSA criteria), provided the study data through questionnaire. Levels of water service delivery in the study areas were different with respondents from Tanga having access in 24 hours seven days service while those of Buguruni are depending on the availability of the person who sells water at the water kiosk or individual yard taps. The price of water ranged between 20 - 30TShs and 10 and 30TShs in Buguruni and Tanga respectively for a 20 litres bucket. The urban poor in Tanga are satisfied with the better quality of service from the Tanga UWSA utility. In Buguruni, 100% of the sample population is using water from boreholes and wells. 98% of which complained of the poor quality of water which they linked with the prevalence of health problems in the area. The coping mechanism to the current situation in Buguruni was on the boreholes which have standby generators, rainwater harvesting and water vendors. The study concludes that the urban poor in Buguruni are still suffering from poor water services. It recommends that DAWASCO should learn from Tanga UWSA on how to serve the urban poor considering them as their potential customers.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
DAWASA	Dar es Salaam Water Supply and Sewerage Authority
DAWASCO	Dar es Salaam Water Supply and Sewerage Company
DI	Ductile Iron
GoT	Government of Tanzania
HIV	Human Immunodeficiency Virus
KIWOHEDE	Kiota Women's Health and Development Organization
NAWAPO	National Water Policy
NGO	Non Governmental Organization
PRO	Public Relations Officer
PRSP	Poverty Reduction Strategy Paper
PVC	Polyvinyl Chloride
TANESCO	Tanzania Electric Supply Company
TB	Tuberculosis
UDSM	University of Dar es Salaam
UN	United Nations
URT	United Republic of Tanzania
UWSA	Urban Water Supply and Sewerage Authority
UWSS	Urban Water Supply and Sewerage Services
WEO	Ward Executive Officer
WSS	Water Supply and Sanitation

CHAPTER ONE

INTRODUCTION

1.1 General Introduction

Freshwater is indispensable and irreplaceable for human life, especially for primary uses, such as drinking, food preparation and hygiene. It is necessarily interwoven with human societies, their settlements and their history. (Eguavoen, 2007) In developing countries, the way people acquire and dispose of water varies considerably. While piped water may be the norm for richer urban households, the poorer segments of the population often struggle with a number of alternative means for accessing water (Kjellen, 2000).

It is a well-documented fact that in many countries water supply and sanitation systems fall short of present and future requirements. Some of the world's poorest people lack adequate access to these most basic of services. The well-being and livelihoods of millions of households and home-based enterprises in urban and peri-urban areas are seriously impaired by the considerable time and money spent collecting water, buying it from private vendors or fighting diseases arising from deficient water supplies and poor or non-existent sanitation (Allen, *et al* 2006). In many countries, peri-urban areas generally lie outside the coverage of formal networked water and sanitation systems, which are, in most cases, restricted to a relatively small metropolitan core. Part of the reason for this is that many peri-urban settlements develop outside existing formal regulations, affecting their formal right to these basic services.

However, if adequate land policies and official control procedures are in place, the goal of improving access to water and sanitation by the peri-urban poor should not necessarily require formal land or housing tenure, but might instead focus on collective land rights and responsibilities for paying for these basic services.

In Tanzania, according to the Water Utilisation Act No.42 of (1974) amended in 1981 and 1997 and National Water Policy (URT, 2002), water is regarded as a 'Public good'. However, owing to the high cost of potable water supply, peri-urban communities are forced to pay for water though at a subsidised rate; this payment covers only maintenance and running costs. In this respect, the state pays for capital investment in community water supply systems. Private water vendors charge commercial rates (usually leading to small profits). Therefore, from policy and statutory provisions, water remains a social good only in so far as public (state) provided systems are concerned. However, only a few communities in the peri urban interface have access to potable water supplied by the state as a social service, largely because of the limited resource capacity of the state to provide potable water to the sprawling peri urban settlements.

The water poor in urban areas are not necessarily restricted to low-income households, as there might be members of other income groups lacking access to adequate Water Supply and Sanitation (WSS). However, although there are frequent instances of neighbourly solidarity and collective efforts, low-income urban dwellers and home-workers generally lack the political means to improve their access to WSS services in a way that is affordable for them and therefore tend to be more vulnerable than higher income ones.

For example, women and children are often more affected by the lack of services, as it is mainly they who are responsible for fetching water and performing water-dependent household tasks (such as cooking, cleaning, childcare and hygiene), which means they are much more exposed to water-related diseases and stress.

1.1.1 Informal Urbanization

Informal urbanisation is the dominant feature that characterises urban growth in Dar es Salaam. One of the main causes of this phenomenon is the conflicting land tenure regimes and particularly of customary and quasi-customary land tenure systems in peri-urban areas. The two systems are facilitating access to unplanned and un-surveyed land for housing. The latter has given rise to crowding and dysfunctional spatial urban growth, especially in peri-urban areas. Some of the major adverse effects of informal urban growth in Dar es Salaam include over-densification in low-income housing areas, pollution and faecal contamination of ground water sources as housing density increases.

Excessive housing density is mainly a problem associated with the lack of a regulatory framework for informal housing land development coupled with the absence of coordination between land use and WSS development processes. Subsequently, sustainability of the current ground water supply sources and the public health of settlers in the peri-urban interface are increasingly being threatened as unregulated informal housing densification takes a toll in the peri-urban interface (Kombe and Lupala, 2004).

1.1.2 Dar es Salaam's Water Infrastructure

One of the age-old roles of urban governments has been to manage the urban environment, including its water systems. The infrastructural development of Dar es Salaam is still patchy, however, negatively affecting planned but densely populated areas, as well as 'unplanned' and 'squatter' settlements. It is estimated that 85% of the population live in unplanned or un-serviced settlements (Kanza and Ndesamburo, 1996).

The initial water supplies for Dar es Salaam originated from shallow wells within the city, with the first water-supply system planned in 1891 (JICA, 1991). A number of expansions were carried out during the first half of the twentieth century, drawing mostly on sources within the city. The development of Ruvu River commenced in the 1950s with a plant at Upper Ruvu, some 65 km west of Dar es Salaam, which has subsequently undergone several phases of expansion and rehabilitation. The Lower Ruvu scheme, some 55 km west (or north-west) of the city, was commissioned in 1976. The capacity of the sources supplying Dar es Salaam was in 1995 estimated at 273 megalitres per day with the Lower Ruvu plant being the most important in terms of quantity (Humphreys, 1995). Two-thirds of the water delivered by the Upper Ruvu system and 10–20% of that delivered by the Lower Ruvu System has been estimated to be consumed or lost by leakage along the transmission mains before reaching the reservoirs in Dar es Salaam (JICA, 1991).

In general, the primary distribution system covering Dar es Salaam is extensive and in reasonable condition (Humphreys, 1995). However, the secondary distribution system is less developed, and therefore an extensive network of small diameter

service lines has developed (JICA, 1991). Most of the service pipes are badly laid and riddled with bursts, leaks and substandard fittings (Humphreys, 1995). Many consumers resort to pumping water directly from service lines in order to obtain water. In areas where people do not have the means to invest in pumps, many have resorted to digging holes in the ground, in order to connect to the underground service lines from below.

In an estimate by JICA (1991), about 30% of the households had house connections, 24% yard connections, and 45% had no connections (relying on water kiosks or standpipes). The registered house and yard connections accounted for 30% of the net volumes supplied, whereas only 6% of the water was delivered through standpipes/kiosks. The remainder of the water supplied went to illegal connections (29%) and leakage (30%). The number of illegal connections is estimated to be of the same order of magnitude as the legal ones—out of which some 15% are not billed (United Republic of Tanzania, 1995).

Even though Tanzania's 'free water' policy was never applied to urban areas, the urban tariffs have declined dramatically in real terms since the mid-1970s (Mashauri and Katko, 1993). Poor billing and collection, politically determined tariffs far below operating costs and a host of other problems have rendered the National Urban Water Authority (NUWA), in 1997 replaced with the more autonomous DAWASA, unable to meet Dar es Salaam's water demand.

1.1.3 Tanga Urban Water Infrastructure

The raw water for the Tanga Water Supply is abstracted from Mabayani Reservoir, which was created by the construction of a dam on the Sigi River in the late 1970's. It lies about 20kms west-northwest of Tanga town. The water is pumped from a raw water intake located near the reservoir to a water treatment plant at Mowe via a 6.3km long, 600 mm diameter, bitumen coated ductile iron (DI) cement mortar lined raw water rising main.

The water treatment plant is a conventional water treatment works that operates at a nominal capacity of 26,000m³/day and is currently being upgraded to process 42,000 m³/day. After treatment, water is then flowing through a 12km long 600 mm diameter bitumen coated DI cement mortar lined by gravity to the 4,500m³ Kange Reservoir before being distributed to town. Additional storage capacity intended for balancing purposes is provided by two reservoirs located further downstream at Nguvumali, each having a capacity of 2,425 m³.

The town's primary distribution system commences from Kange Reservoir from whence it is laid out towards the town centre, its suburbs and the peri-urban/rural areas. It is made up of pipe work ranging in size from 150 - 700mm diameters in material types comprising ferrous pipe work for the larger sized mains and asbestos cement and PVC for the smaller sized mains. The detailed reticulation generally comprises 50, 80 and 100mm diameter cast iron pipes together with limited lengths of 150mm diameter cast iron and asbestos cement pipe work. There are also water supply lines to the larger village centers outside Tanga. These are Maweni and Pongwe, which lie to the west of Tanga on Korogwe Road and Tongoni south of

Tanga. The water supply to Pongwe is initially flowing by gravity from Mowe to Pongwe tank, located about halfway to Pongwe. From here is fed into the local distribution. Also at present the distribution network does not exceed Tongoni area hence the rest of Tongoni, Kirare and nearby villages are depending on boreholes.

The system is in the process of been rehabilitated so that the network can reach at these villages. The total length of water network is about 420km and total customers are about 16,200. Presently unserviceable bulk flow/level measuring facilities are installed at various locations within the system whilst others installed at the Water Treatment Plant are operational.

1.1.4 Description of the study area

1.1.4.1 Buguruni

1.1.4.1.1 Location and area

The Ward of Buguruni is located in the eastern part of Dar es Salaam Region. The ward belongs to the Ilala District. Buguruni ward with a total area of 3.6 km² consists of four neighbourhoods: Mnyamani, Kisiwani, Malapa and Madenge. During German colonial rule, Buguruni grew out from a Zaramo village into an unplanned settlement on the outskirts of Dar es Salaam. In the late 1960s its population was 10,000. Since then it grew nearly fivefold, to a population of 48,247 in 1988 (Bureau of Statistics, 1989). To this day, patrons in Buguruni derive much of their prestige from their ability to manipulate rural-urban links. They take advantage of the urban areas' dependence on the countryside for produce, bringing into the city charcoal, fruit, wood, and fish from the coastal villages (Swantz, 1969).

The residential parts of Buguruni are largely unplanned settlements with high housing density and a relatively low socio-economic background, characterized by small ten cell unit sizes. The few relatively large ten cell units are industrial areas, belong to the police and churches, or are used for agricultural purposes such as the northern part of Kisiwani which is located in a river valley.

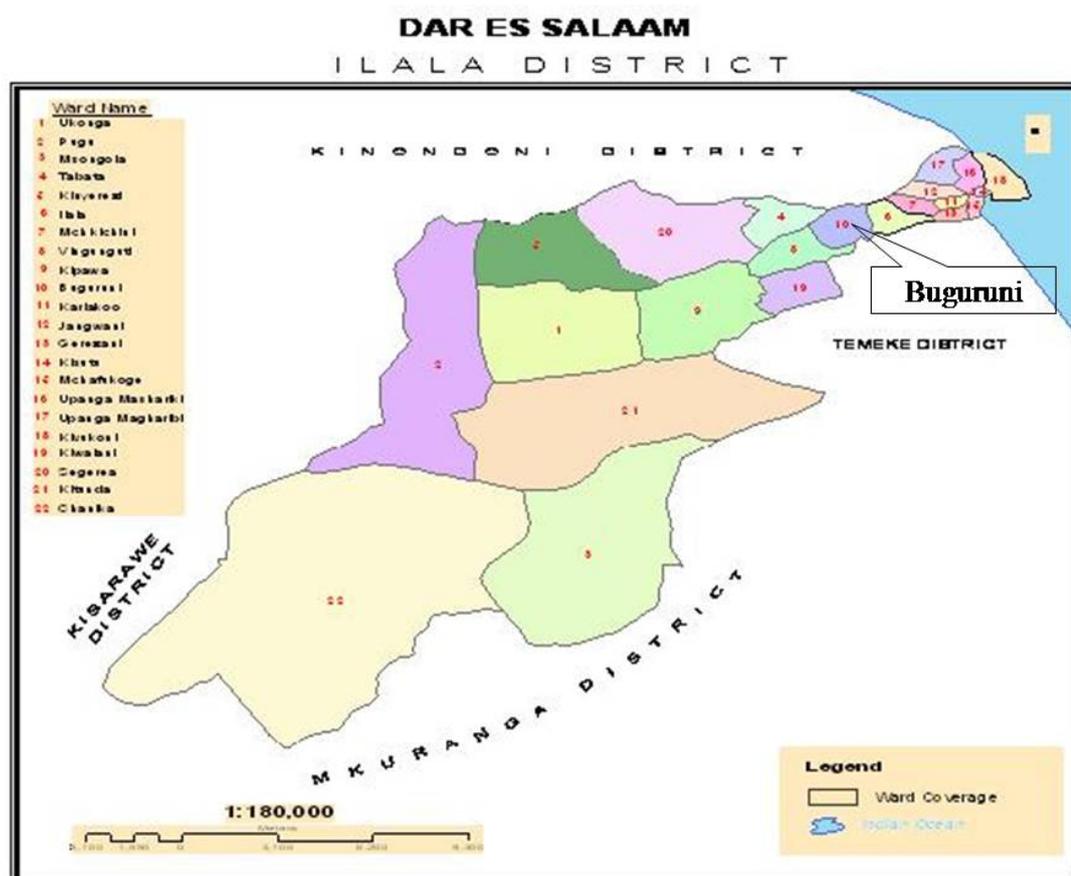


Figure 1.1-1: Map showing location of Buguruni

Source: Ilala Municipal Council, 2004

1.1.4.1.2 Administrative boundaries

Buguruni falls under Ilala municipality. Ilala municipality is divided into 3 divisions, 22 wards, 65 sub-wards, 9 villages, and 37 hamlets. The municipality is bordered by Indian Ocean to the East, the Coastal Region to the West, Kinondoni

municipality to the North, and Temeke municipality to the South (Figure 1.1-1). Buguruni ward is bordered by Kipawa and Tabata wards to the east, Vingunguti ward to the west, Chang'ombe and Sandali wards to the south; and Kigogo ward to the North.

1.1.4.1.3 Population

Current population

Based on the 2002 Population and Housing Census, Dar es Salaam had 2,497,940 inhabitants, of whom 1,261,077 were males and the rest females. Of the three Municipalities, Kinondoni had the highest population with a total of 1,088,867 inhabitants, followed by Temeke with 771,500 and Ilala with 637,573 inhabitants. The table 1.1-1 below shows the population in four hamlets which forms Buguruni ward.

Table 1.1-1: Current population in Buguruni

	Mnyamani	Kisiwani	Malapa	Madenge	Total
Total	17,177	24,940	13,169	11,520	66,806
Male	8,665	12,385	6,566	5,800	33,416
Female	8,512	12,555	6,603	5,720	33,390

Source: Population and Housing Census, 2002

Buguruni was originally dominated by Zaramo and a few other tribes especially Ndengereko and Kwere. However, due to urbanization many people of different ethnicity and origins have immigrated to the city in big numbers. This has caused the undefined cultural change.

1.1.4.1.4 Population Growth

Dar es Salaam is one of the fastest growing cities in Sub Saharan Africa. The city's population grew from only about 3,500 in 1867 to 128,742 in 1957, to 272,821 in 1967 and to 843,000 in 1978. The 1988 census recorded the city's population to be 1,360,850 and currently the city population is estimated at 2.5 million and is growing at 4.3%. The relatively high population growth rate is due to increased birth rates, immigration rates, and more significantly by transient population. The population growth rate for Kinondoni Municipality was 4.1 percent while Ilala and Temeke Municipalities recorded growth rates of 4.6 percent.

Considering the registered population growth and migration rate of 10% per annum, the projected population of the Ilala Municipality of which Buguruni is a ward will be as shown in the table below.

Table 1.1-2: Projected population of Ilala Municipality by the year 2007

Municipality	Gender	Year			
		2002	2003	2005	2007
Ilala	Male	321,903	334,185	363,543	395,480
	Female	315,670	328,040	356,858	388,207
	Total	637,573	662,225	720,401	783,687

Source: Population and housing census, 2002/Dar es Salaam City Council, 2004

1.1.4.1.5 Climatic conditions

Buguruni being among wards of the Dar es Salaam city it falls in the tropical coastal belt of Tanzania and therefore experiences a modified type of equatorial climate. It is generally hot and humid throughout the year with an average temperature of 29°C. The hottest season is from October to March during which temperatures can raise up

to 35°C. It is relatively cool between May and August, with temperature around 25°C. There are two main rain seasons; a short rain season from October to December and a long rain season between March and May. The average rainfall is 1000mm (lowest 800mm and highest 1300mm). Humidity is around 96% in the mornings and 67% in the afternoons. The climate is also influenced by the southwesterly monsoon winds from April to October and northwesterly monsoon winds between November and March.

1.1.4.1.6 Infrastructure and services

In Buguruni area the following infrastructure and services are available: Roads, industries, hotels and restaurants, schools, churches, mosques, markets, hospital and health centers, and playing grounds. All of the mentioned services requires water supply for their sustenance and proper service delivery to the community.

There is an ongoing upgrading of the unplanned settlement in Dar es Salaam city and this project has brought up some problems to the residents. The road level has risen up a bit which causes floods to the houses nearby the roads as the plate 1 shows. Plate 1.1- 1 was captured half an hour after it rained. It was not possible to capture the flooded street due to the fact that there was nowhere to hide so as not to be wetted by the heavy rainfall.



Plate 1.1-1: A Street which is impassable during rainy season after upgrading roads in Buguruni

1.1.4.2 Tanga

1.1.4.2.1 Location and area

Tanga is a coastal town situated on the Indian Ocean, 65km south of Tanzania – Kenya border and it lies between 38° 53' and 39° 10' E, and 5° and 5° 16' S. It extends 20 km inland from the coast between 0 and 17 meters above sea level. The landscape features rolling hills, valleys and streams.

Tanga Municipality has a total area of 534 km², out of which 62 km², are covered with water bodies. It has 24 Administrative Wards (12 urban, 7 rural and 5 mixed), distributed over four divisions. It has 23 registered villages, and 129 hamlets.

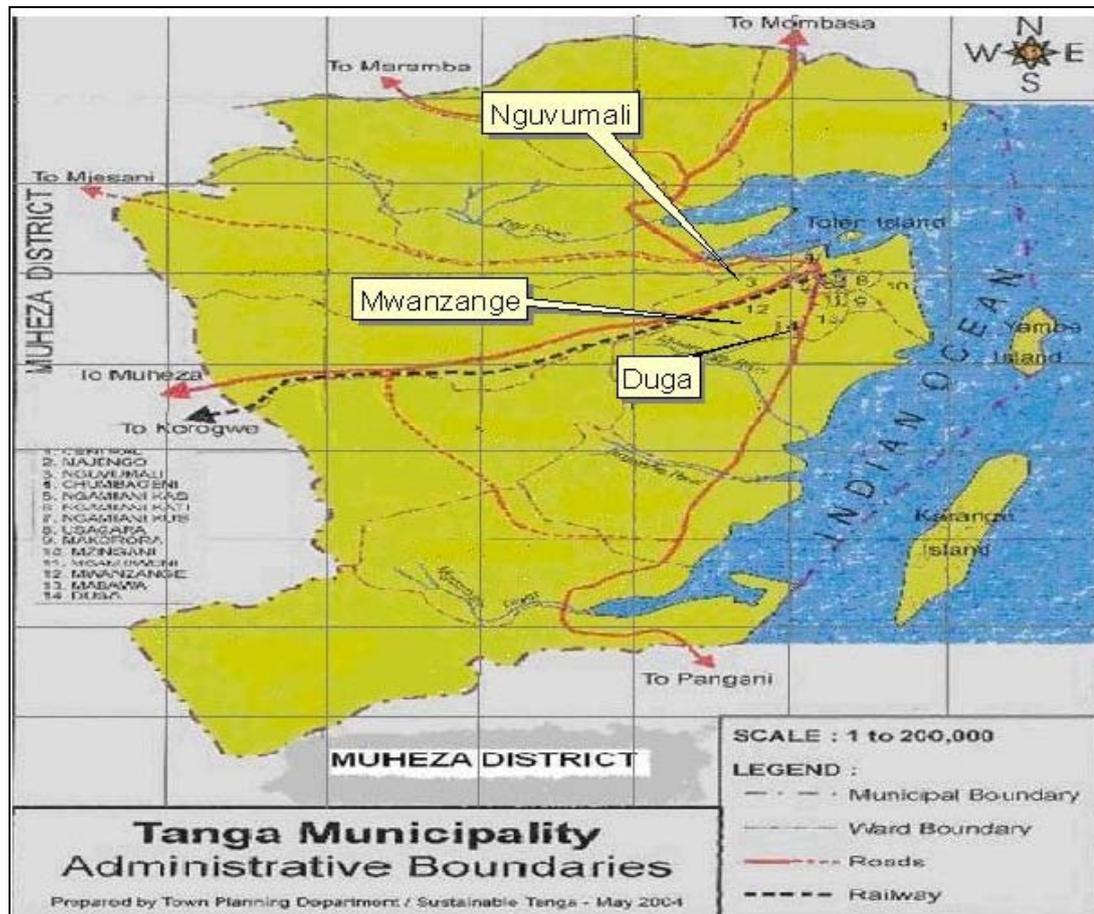


Figure 1.1-2: Map of Tanga City showing the study area

Source: Tanga Municipal Council, 2004

The town of Tanga is the administrative centre for Tanga Region. Tanga harbor is the Tanzania mainland's second largest port as well as the third largest town after Dar es Salaam and Mwanza. The town lies on the Coastal Plain, one of the four major topographical features in Tanga Region. The topography is flat and averages 20m above mean sea level with the exception of the north-western part of town, which rise to more than 60m above sea level.

1.1.4.2.2 Demography and Water Demand

According to the 2002 census, Tanga Municipality has a population of 243,580 (120,242 males and 123,338 females). The inhabitants are of mixed tribes with different dialects.

Table 1.1-3: Population of Tanga Municipal distribution by wards found to have unplanned settlements

S/No	Ward	Type	Population (Number)			Household	
			Male	Female	Total	Number	Average Size
	District Total		120,242	123,338	243,580	53,104	4.6
1	Majengo	Urban	4,146	4,720	8,866	1,951	4.5
2	Nguvumali	Urban	8,588	8,570	17,158	3,538	4.8
3	Msambweni	Urban	5,059	5,628	10,687	2,545	4.2
4	Mwanzange	Urban	3,730	4,032	7,762	1,796	4.3
5	Tangasisi	Mixed	5,455	5,729	11,184	2,458	4.6
6	Duga	Mixed	6,461	6,791	13,252	2,974	4.5

Source: Population and Housing Census, 2002

The population in the water supply area is currently estimated to be 255,000 with current unrestrained Water Demand standing at 24,000m³/day. It is estimated that the water network covers areas inhabited by 98% of the town's population. However some do not have formal water supply at present, so the actual served population is about 90%. "Water Supply" is used here to mean that they receive water on most days on a 24-hour basis.

1.1.4.2.3 Climatic Condition

The climate is monsoonal with bimodal rainy seasons and a high relative midday humidity averaging 70%. The long rains occur from March to May and the short rains from October to December. The precipitation ranges from 1000 - 1,400 mm per annum.

The hottest and driest period is from January to March. During the long rains the temperature falls. June to September is cool and during the short rains temperatures rise to the early year maximum. The relative difference in mean temperatures is about 5°C.

1.2 Problem Statement

Human existence depends on water. We all need water for different purposes in order to survive. A healthy life depends on more abundant access to water for hygiene and daily household use. A comfortable life requires water to be safe and easily and reliably available when needed. Poor water environment mostly affects the poorest people, in the poorest areas in the poorest countries of the poorest regions of the world.

Densely populated urban areas without adequate water and sanitation services presents severe problems with regard to environmental health, but there is also great potential in the resources available to address the problem (Kjellen, 2006).

People living in underprivileged urban and urban poor areas rarely benefit from adequate water supply and sanitation services. They collect water from kiosks or buy it from vendors at a cost higher than that of the house connections. The poor cannot afford to collect their wastewater and hygienically dispose it, thus leading to increase in water borne diseases, which may spread to all corners of an urban area (URT, 2002).

Buguruni is among the unplanned area of the Dar es Salaam city. Houses in many places are crowded together. Streets are often sandy or, when it rains, muddy, rendering many homes inaccessible except by foot. Often homes are built in areas

where the risk of being evicted is substantial. Buguruni is also composed of the rudimentary housing; an unhealthy environment and a deteriorating physical infrastructure are major problems. Water supply services are difficult due to the setup of the housing. Due to such conditions, many of the urban poor find themselves renting in these squatter areas where rent charges are a bit low as compared to other areas of the city.

In Tanga municipal, the case is different and the utility has set up criteria with the help of ward/area leaders who assist on identifying the urban poor group. This can be also assessed and compared with other countries on how they categorize such a group.

The importance of adequate and good quality water for all human beings and the social economic plight of the urban poor are issues that are acknowledged and well reported worldwide. In contrast, the status of water supply service delivery to the urban poor is neither well understood nor adequately studied. Worse still, the problem has not been given much attention.

This deficiency needs to be addressed urgently because: 1) the economic poverty, which partly characterizes the urban poor (the affected people), aggravates water supply service related problems and worsens with time and 2) overall, the provision of urban water supply services in Tanzania has always been and is still deficient, which means the problems specific to the urban poor are additional to the ones affecting the rest of the urban residents. Notably, the water supply service

deficiencies in Tanzania pertain to both service coverage and supplied water quantity and quality.

1.3 Objectives of the Study

1.3.1 Overall Objective

The overall objective of the proposed research is to assess water supply services for the urban poor community.

1.3.2 Specific Objectives

The specific objectives are:

- To establish socio-economic aspects of the urban poor in the study area
- To analyze type of water supply service delivery in the urban poor vicinity.
- To analyze quality of water supply service delivery in the urban poor vicinity.
- To compare water supply service delivery to the urban poor of Dar es Salaam and Tanga cities.
- To find out the coping mechanism for the current water supply services.

1.4 Working questions

Specifically the study will answer the following questions.

- 1. What is the social life in the urban poor community?*
- 2. What is the current urban water supply system?*
- 3. Sources of water to these communities?*
- 4. What is the quality of service given to the poor?*
- 5. What is the coping mechanism?*

CHAPTER TWO

LITERATURE REVIEW

2.1 Water sources

The poorest people often get their water by queuing for hours, sometimes starting at 3am to collect water from a standpipe, or from a polluted well or illegal connection. Many people obtain water from water carriers – small-scale independent providers who charge ten, maybe twenty times more for a container of water than the price paid by rich people with piped water connections.

Governments often promise low prices for water so everyone can have access to this precious basic need. However, government laws usually prevent suppliers from providing water pipe networks into illegal, unplanned housing areas. So though up to half the city may live in these areas, including the poorest, these people receive no government support for water. The higher income households, living in the planned areas, receive most government help. The poorest remain at the mercy of criminal gangs who often control the illegal water supply.

2.2 The Challenge of Water and Cities

One of the most significant urban changes has been the growth of cities to unprecedented sizes. The average size of the world's 100 largest cities grew from around 0.2 million in 1800 to 0.7 million in 1900 to 6.2 million in 2000 (Satterthwaite, 2002). By 2000 there were 388 cities with 1 million or more inhabitants (UN, 2002). Only in the late twentieth century did 'megacities' of 10 or more million inhabitants develop, with sixteen cities becoming 'megacities' in 2000, concentrating some 4 percent of the world's population.

Although rapid urban change is often viewed as an uncontrolled flood of people, there is an economic logic underpinning global urban trends. Most of the world's urban population and most of its largest cities are concentrated in the world's largest economies (Satterthwaite, 2002). In addition, the nations that urbanized most quickly over the last forty years are generally the countries with the greatest economic expansion (UN-Habitat, 1996). While the most developed regions still have a much higher percentage of their population living in urban areas, the 2015 projection shows the beginning of a reversing trend, with half of the population of the less developed regions living in urban areas, i.e. 75 percent of the world's urban population.

Many urban residents, and especially the poor, have only intermittent or no water supplies and no sanitation. For the urban poor, this lack of access to safe water and basic sanitation causes widespread ill-health that further limits their productive capabilities. Ironically, the urban poor have often to buy their water from private vendors and pay far more per litre than their richer neighbours.

2.3 Impact of effective price rises on the poor

Given the limited available information on the lease contract and scope of works the following analysis is a scenario of possible impacts on the poor rather than an analysis of the actual impact. The analysis is based on data from the basic needs and food poverty lines developed by the Tanzania National Bureau of Statistics.

The 2000/1 Household Budget Survey reported that 17.6% of the two and a half million people in Dar es Salaam live below the basic needs poverty line. People living below the basic needs poverty line are those classified as living on less than

9203Tsh a month or 329Tsh a day. Though water prices in the city vary according to factors such as location, type of supply, season and DAWASA breakdowns, research done by WaterAid and its partners show that households in low income areas buy around 30 litres of water per person per day at a cost of around 1Tsh a litre. For people living on 329Tsh this represents just under 10% of their daily expenditure.

While a 100% price rise in water only amounts to 30 Tsh a day, it has the potential to prevent a further 4% of the population from affording these basic needs. In other words around an additional one hundred thousand people would be forced to substitute a proportion of bought water with water from other often unprotected sources such as open 'tyre' wells or polluted streams with the inevitable consequences on their health (see table 2.3 - 1).

Aside from price rises, poor people are particularly vulnerable to water shortages or cutoffs. Few things in Dar es Salaam hit the papers faster than DAWASA breakdowns as they are really dreaded by residents. Water costs can increase from 1Tsh to 20Tsh a litre in 24 hours. For people living under the basic needs poverty line these breakdowns are particularly cruel. Just one three day breakdown can send an additional 10% of Dar es Salaam's residents below the basic needs poverty line for the month, while further oppressing those already below the line.

Table 2.3-1: Impact of effective water cost changes on poverty in Dar es Salaam

Change in actual cost of water	Average expenditure on water (28 days)	Change in poverty line	Headcount index	Additional % under poverty line
0%	840	9203	17.60 %	0%
10%	924	9287	17.90%	0.3%
20%	1008	9371	18.20%	0.6%
30%	1092	9455	18.50%	0.9%
40%	1176	9539	18.87%	1.27%
50%	1260	9623	19.32%	1.72%
60%	1344	9707	19.78%	2.18%
70%	1428	9791	20.23%	2.63%
80%	1512	9875	20.68%	3.08%
90%	1596	9959	21.14%	3.54%
100%	1680	10043	21.67%	4.07%

Average expenditure in 28 days based on community survey of informal settlements in Temeke Municipality
Source: WaterAid Tanzania, (2003)

2.4 Urban Low-Income Population

The population in urban low-income areas ranges from 60% to 70%. Given the total population living in urban areas of 29% of the total population in Tanzania, this is to say that about 5.4-6.3 million out of 9 million people living in urban areas live in low-income areas. This includes those who live in areas which receive little or no attention at all as far as water and sanitation services are concerned. These areas are usually unplanned although may be legally recognized residential settlements (DAWASA, 2000).

In the United Republic of Tanzania, more than 60 percent of communities in Dar es Salaam live in areas with minimal or no infrastructure such as water supply, sanitation and drainage (Mazwile, 2000).

2.5 Quality of water supply services in different country levels

In high-income countries, there is more or less universal provision of advanced water and sanitation facilities and other city water services, most of which are provided by public sector utilities, although increasing use is being made of private sector provision. The main challenges revolve around prevention of microbial and chemical contamination of water distribution systems, optimizing the efficiency of utility operation both in economic and in ecological terms, dealing with issues of asset renewal and management of residuals from water treatment, and ensuring that the impact of effluents from wastewater discharges on receiving waters remains within acceptable levels.

In middle-income countries, a great deal of water and sanitation infrastructure exists but it is often in poor condition. The service delivery systems are frequently underfunded, poorly managed and in a poor state of maintenance with high levels of water leakage, and inadequate wastewater treatment. Here the most pressing issues are usually related to improving efficiency, infrastructure maintenance, renewal and extension, pricing and revenue collection, and more effective supervision and enforcement of regulations on industrial pollutants. Governments are beginning to take steps to address these issues, especially in larger cities.

Lower-income countries have particularly difficult problems. They have less water and sanitation infrastructure than high- and middle-income countries. Likewise, their institutions and management systems are generally underdeveloped, and their overall capacity to deliver a reasonable water and sanitation service is very low. Big cities generally have some water and sanitation infrastructure in their central areas

and this is, in many cases, being improved and expanded by the introduction of private concessionaires or improved public utility operations.

However, in many peri-urban areas of large cities and in most smaller urban centres, water and sanitation infrastructure is very limited, and there are problems with industrial pollution often difficult to control as they stem from many small-scale operations. The overall result is widespread microbial and chemical pollution of water sources in and around the cities (See figure 2.5 - 1).

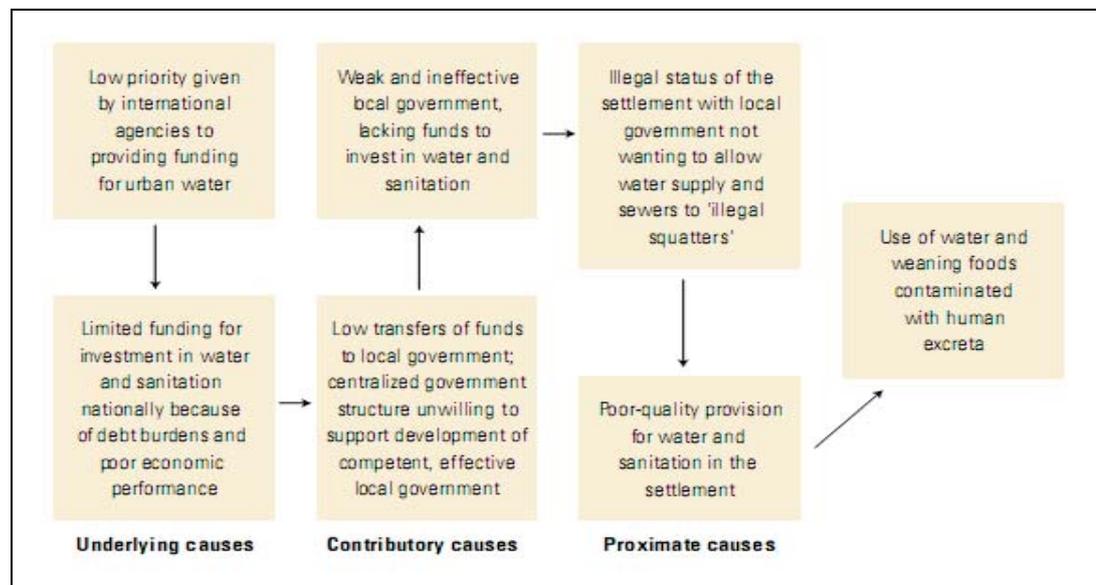


Figure 2.5-1: Examples of causes for the prevalence of diarrhea diseases in a squatter settlement

Source: UNICEF, 2003.

2.6 Water and sanitation provision standards

Over time, many cities have acquired governance structures that have greatly improved water management (including all the national or provincial laws, institutions and financial systems to support this). In cities of high-income nations, it is taken for granted that each home or business has a twenty-four-hours-a-day piped water supply that can be used for drinking, bathing and other domestic purposes, as

well as hygienic, easily cleaned toilets available to all. Yet it was just over 100 years ago that provision of access to safe, piped water supplies, sanitation for all city dwellers and governance structures to ensure that these operations were carried out, began to be accepted, initially in Europe and North America, as a key part to any city's water management (Mumford, 1991).

This acceptance now seems universal. In 1976, at the United Nations (UN) Conference on Human Settlements (Habitat), 132 governments formally committed themselves to a recommendation stating that 'safe water supply and hygienic disposal should receive priority with a view to achieving measurable qualitative and quantitative targets serving all the population by a certain date' (UN, 1976). In 1977, at the UN Water Conference at Mar del Plata, governments agreed that national plans should aim to provide safe drinking water and basic sanitation to all by 1990 if possible that is within the International Drinking Water Supply and Sanitation Decade (IDWSSD), (UN, 1977). In 1990, at the World Summit for Children, the many assembled governments made a commitment to achieving universal access to safe water and adequate sanitation by the year 2000. However, these targets were not met, and hundreds of millions of urban dwellers still suffer from very poor or non-existent provision for water and sanitation. There is also the worry that the targets set within the Millennium Development Goals, which imply improved provision for water, sanitation and drainage – i.e. to have achieved, by 2020, a significant improvement in the lives of at least 100 million slum dwellers – will achieve no more than previous commitments made by governments and international agencies.

There is, however, an add-on value of setting such goals on a relatively short-term basis and within a minimalist view of development: in retrospect, without the IDWSSD goals, the status of water and sanitation in the world would have been even worse. In high-income nations, the need for all urban households to have safe, regular piped water supplies to their home, internal plumbing and their own sanitary toilet is unquestioned. These can be set as the standard for which universal provision is possible. But in lower-income nations, where universal provision to such a standard is not possible, other standards have to be set. From a public health perspective, it is better to provide a whole city's population with safe water supplies to taps within 50 meters of their home than to provide only the richest 20 percent of households with water piped to their home.

The Global Water Supply and Sanitation 2000 Assessment Report suggests that 'reasonable access' for water should be broadly defined as 'the availability of at least 20 litres per person per day from a source within one kilometer of the user's dwelling'. For most urban settings, distance alone does not provide an appropriate standard; population density is a critical modulator. While in a sparsely populated rural area, a one- kilometer distance may indeed provide reasonable access, this is most unlikely to be the case for a high-density squatter settlement with a population of 100,000. Furthermore, standards for water provision should also consider the regularity of the supply alongside such issues as water quality and price.

2.7 Water and Sanitation Coverage in Low-Income Areas

Low-income areas are essentially un-serviced by utilities. The water services available in low income areas exist through third party initiatives. These include vendor-supplied water services on push-carts, shallow wells belonging to more financially influential residents, and to a limited extent utility water connection in a few residences. These residences do sell water to neighbors and to vendors who subsequently deliver water to areas of shortage. Sanitation is typically by way of traditional pit latrines that are emptied by frog-men.

There is growing concern regarding the increasing stress on water resources caused by population growth, unsustainable consumption patterns and uncontrolled uses, both in urban and rural areas. Although, despite the broad recognition of the central role of water in sustainable development, including in efforts to eradicate poverty; addressing the water needs of the poor through concerted global action has not been given enough priority. Provision of safe drinking water and sanitation services remains one of the most critical challenges humanity is facing today.

2.8 Privatization and poor people's access to water

One of the objectives of water privatization in Dar es Salaam is to improve people's access to water, especially for the poor (World Bank, 2003). Nevertheless, poor people's needs particularly those of poor women have been largely ignored in the reform design. WaterAid Tanzania, for example, has noted that 'from the beginning, it was clear that the poor, Unconnected settlements of Dar es Salaam were marginal to whatever process was being considered and implemented'(WaterAid Tanzania, 2003).

Many of those interviewed said that poor people now have to spend longer looking for water because the service is more unreliable. One senior Bank official noted that ‘all of Dar es Salaam is poor, so anything which helps to provide more water in Dar es Salaam will automatically help the poor’ (World Bank, 2004).

Unplanned settlements, where 80% of the population live, (WaterAid Tanzania, 2003), will be left to local NGOs under a ‘community water supply and sanitation’ project subcomponent; which will account for only 2% of the total expenditure. In other words, donor resources, and the Tanzanian government’s current and future tax revenues, will be used to fund a project in which 98% of the money will be spent on the richest 20% of the population.

2.9 Water and Health: A Problem with a Future as Well as a Past

If seemingly modern issues of urban water, nutrient cycles and sustainability have actually been with us for centuries, seemingly old fashioned issues of water, poverty and infectious diseases may unfortunately be with us for centuries to come. Reports based on government statistics indicate that in the early 1990s about one fifth of urban dwellers in the South were without adequate access to safe water and about one third were without adequate sanitation, and what governments define as adequate may still be far from healthy. There are roughly three million deaths every year from diarrheal diseases, most of which could probably be averted by the better use of water. While water related health problems are likely to remain far more severe in the South, some are beginning to re-emerge in wealthier countries. The 1993 diarrhoea outbreak in Milwaukee in the American Midwest, where more than 4,000 were hospitalized after being infected with a parasite in the municipal water

supplies, was a challenge to Northern complacency (World Health Organization, 1996).

2.10 Water and Infectious Diseases

Overall, the situation regarding environment and health in disadvantaged neighbourhoods is not unlike the typical situation encountered in regard to the broader sustainability problems globally: it is far easier to make a long list of preventative steps which taken together would undoubtedly reduce the environmental health burdens considerably, than it is to demonstrate the importance of particular hazards and prioritize particular measures. Water is critical to the transmission of many diseases. In arguing for the importance of water, it is common to oversimplify its role, and overemphasize the significance of contaminated drinking water. Actually, the role of water in washing pathogens away from the path of potentially infected people is at least as important as its role in bringing pathogens to people. As a result, in areas where faecal-oral diseases are endemic, how much water people get, and how they use it, is probably more important than its quality.

There is still enormous uncertainty; however, concerning how faecal-oral diseases are most often transmitted, and which interventions are likely to make the most difference. Moreover, the accumulation, flow and quality of open freshwater is critical to the spread of malaria, dengue fever and a variety of other vector borne diseases. Here too, better quality water is not a sufficient remedy, and if pursued unthinkingly can even facilitate disease transmission. In combating water related diseases, it is possible to identify a few measures, such as hand-washing and applying oral rehydration therapy that are sufficiently general and important to

advocate widely, but for the most part the simplest solutions come at a very high cost. Overall, while far more could be done on the basis of existing knowledge, a better understanding of these processes could still make an enormous difference.

2.11 Unhealthy and yet Sustainable Urban Water Systems

The current burden of water-related diseases in urban areas is not, by and large, the outcome of the city-wide water supply and pollution problems that threaten sustainability. Low income urban neighbourhoods and households are more likely to lack water because they cannot access the city's water supplies than because those supplies are limited. A comparatively healthy overall water balance can be accompanied by extremely unhealthy conditions in disadvantaged neighbourhoods.

Indoor piping and low water prices may be the rule in one neighbourhood, while residents of a squatter settlement nearby must choose between a heavily polluted stream and extremely expensive water from vendors. Water may be clean in the pipes, but heavily contaminated by the time it has been carried home, stored, and ladled into a guest's drinking vessel. For many of the more disadvantaged urban dwellers, water scarcity and life-threatening water pollution are not future prospects given unsustainable practices, but current realities. Only concerted actions, based on better science, more respect for local knowledge, and politics that create a continuous pressure for improvement, are likely to make significant headway.

2.12 Water and Sustainability: A Problem with a Past as Well as a Future

Water is universally recognized as a critical resource, but the sustainability of water supplies is often overlooked in planning for a city's future. This is not a peculiarly

modern problem. Writing in the 14th century on “Requirements for the planning of towns and the consequences of neglecting those requirements,” Ibn Khaldûn placed water for human consumption first in the list of resources whose negligence had made a number of Arab cities of the past “very ready to fall into ruins, in as much as they did not fulfill all the natural requirements of towns” (Khaldûn, 1981). His concern is echoed in modern texts, describing cities straining the limits of their water supplies (Anton, 1993). Modern technologies, with their much greater capacity to draw on distant supplies, shift but do not eliminate urban water supply constraints.

2.13 Water services to the urban poor

In many cities of developing countries, expansion of the population and of the residential areas of urban squatters has been accelerated and accompanied by urbanization. The increase of urban squatters has, in general, caused various problems in relation to public health and socioeconomic conditions (Yusof and Kwai- Sim, 1990). One of the major difficulties among urban squatters contributing to these problems is the lack of access to water supply. For the majority of the world’s population living in the urban slums of the tropics, there is no possibility with existing resources of having the same high level of water supply enjoyed by the people of Europe and North America (Cairncross and Feachem, 1993). The urban poor in Buguruni, consisting mainly of the squatters, have been playing an indispensable role in both the formal and informal economic sectors, i.e. construction labor, loading at ports, street vending, etc.

2.14 What is Urban Poverty

Urban poverty is a multidimensional phenomenon. The urban poor live with many deprivations. Their daily challenges may include;

- Limited access to employment opportunities and income,
- Inadequate and insecure housing and services,
- Violent and unhealthy environments,
- Little or no social protection mechanisms, and
- Limited access to adequate health and education opportunities.

But urban poverty is not just a collection of characteristics; it is also a dynamic condition of vulnerability or susceptibility to risks. In order to provide a richer understanding of urban poverty, this site presents these two analytical frameworks (i) a dynamic framework of poverty (vulnerability and asset ownership) and (ii) the multiple characteristics of poverty and its cumulative impacts.

2.14.1 UN Definition of Poverty

“Fundamentally, poverty is a denial of choices and opportunities, a violation of human dignity. It means lack of basic capacity to participate effectively in society. It means not having enough to feed and cloth a family, not having a school or clinic to go to, not having the land on which to grow one’s food or a job to earn one’s living, not having access to credit. It means insecurity, powerlessness and exclusion of individuals, households and communities. It means susceptibility to violence, and it often implies living on marginal or fragile environments, without access to clean water or sanitation” (UN Statement, June 1998 – signed by the heads of all UN agencies).

2.14.2 Where do they live and why?

Lack of access to secure and safe housing is a central feature of urban poverty. At least 600 million urban dwellers in Africa, Asia and Latin America live in housing that is so overcrowded and of such poor quality, with such inadequate provision for water, sanitation, drainage and garbage collection that their lives and their health is continually at risk (UNCHS,1996). Housing is also an important productive asset since access to credit to secure a livelihood may depend on property ownership. The price and availability of land for housing remains an important influence on housing prices and conditions leading to the development of illegal or informal land markets, where the poor have limited capacity to pay.

2.14.3 Indicators of urban poverty

Poverty diagnostics and the monitoring of results require appropriate indicators. Table 2.15-1 suggests a menu of indicators to assess and monitor both the visible causes and the policy-related causes of the various dimensions of poverty. Selecting indicators is an important basic task in strategy formulation. The chosen indicators should be used to assess the depth of problems over time and in relation to external benchmarks. Indicators need to be developed to facilitate stakeholder participation indeed; the selection of indicators can be an essential focus of participation. Once validated, the selected indicators can be used to increase the accountability of the public and private sectors to poor people. (Deniz and Christine, 2000)

There are many ongoing efforts to develop indicators. The objective here is to provide a set of illustrative indicators, rather than a definite list and definitions. There are some points noted here for example, disaster mitigation and discrimination

in access to jobs and urban services where specific measurable indicators need to be worked out. Such items were included to attract the attention of policy makers and professionals to those issues that should be taken into consideration in assessing, monitoring, and evaluating poverty in cities.

Table 2.14-1: Indicators of Urban Poverty

<i>Poverty dimensions</i>	<i>Intermediate indicators</i>	<i>Impact/outcome indicators</i>
Income	<ul style="list-style-type: none"> • Access to credit (for example, percentage of the target population using or eligible for credits from formal finance organizations, including for housing and productive uses) or the share of credits used by the target group in the total loans offered by formal finance organizations)—C,I * Shares of informal employment—C,I • Share of household expenditures on housing (lowest two quintiles)—U,C,I * Modal shares of transport for work trips—C,I • Share of household expenditures on transport (lowest two quintiles)—U,C,I • Mean travel time to work—C • Access to electricity—U,C,I * Regulatory delays (such as licensing burdens on small and microenterprises [SMEs])—C • Land development controls—C • Coverage of social assistance—C 	<ul style="list-style-type: none"> * Poverty headcount—U,C,I • Poverty gap—U,C,I • Extreme poverty incidence * Female-headed households in poverty—U,C,I • Income inequality (Gini coefficient)—C,I * Quintile ratio of inequality—C,I • Unemployment rate—U,C,I • Housing price/income ratio—C
Health	<ul style="list-style-type: none"> • Share of household expenditures on potable water and sanitation—U,C,I * Percentage of households connected to water/sewerage—U,C,I • Per capita consumption of water—C,I • Percentage of wastewater treated—C * Percentage of households with regular solid-waste collection—C,I • Percentage of solid waste safely disposed of—C * Crowding (housing floor space per person)—C,I • Air-pollution concentrations—C • Shares of sources of household energy—U,C,I • Access to primary health services—U,C,I • Access to nutritional safety net—C,I • Share of household expenditures on health care (lowest two quintiles)—U,C,I • Share of household expenditures on food (lowest two quintiles)—U,C,I 	<ul style="list-style-type: none"> * Infant and under-5 mortality—U,C,I • Maternal mortality rate—U,C,I • Life expectancy at birth—U,C,I • Female-male gap in health (under-5 mortality rate by sex)—U,C,I • Malnutrition rate of children—U,C,I * Morbidity and mortality rates from public health/environment-related diseases (for example, diarrheal, respiratory, malaria)—U,C,I • Death rates by violence—U,C,I • Injury/death rates by transport accidents—U,C,I • Mortality rates by disaster—U,C,I
Education	<ul style="list-style-type: none"> * Primary and secondary school enrollment rates—U,C,I • Access to vocational training—U,C,I • Share of household expenditures on education (lowest two quintiles)—U,C,I 	<ul style="list-style-type: none"> • Literacy rate—U,C,I * School completion rates—U,C,I • Gender gap in education attainment—U,C,I • Child labor—C,I • Street children—C,I
Security —Tenure —Personal	<ul style="list-style-type: none"> * Population in unauthorized housing—C,I • Population living in precarious zones—C,I • Scope of disaster prevention/mitigation measures—U,C • Access to police and legal system protections—C,I 	<ul style="list-style-type: none"> * Percentage of households with secure tenure—C,I • Deaths from industrial or environmental disasters—U,C,I * Murder rates (and rates of other crimes, such as domestic violence, child abuse, robbery)—C,I
Empowerment	<ul style="list-style-type: none"> * Extent of public consultation in local government budget decisions—C,I • Participation of residents in political or community organizations—C,I • Discrimination in access to services/jobs—C,I • Access to telephones and internet—U,C,I 	<ul style="list-style-type: none"> • Citizen involvement in major planning decisions—C,I • Public access to information about local government decisions, services, and performance—C,I * Satisfaction with city services—C,I

*Indicates suggested basic or “core” indicators

Indicator can be collected at different levels of aggregation: U = nationwide urban average or total (all urban areas combined); C = city-specific (citywide rate); I = intra city (for example, neighborhood/ward level)

Source: http://povlibrary.worldbank.org/files/4418_chap16.pdf

CHAPTER THREE

METHODOLOGY

3.1 Primary data acquisition and use

3.1.1 Site selection

The study was carried out in three hamlets of Buguruni, Dar es Salaam and Mwamboni and Majengo in Tanga Municipality. The study considered 3 different sites since they represent low income groups in respective cities. Housing type, sources and quality of water together with area set up were important profiles in the selection criteria.

3.1.2 Research design

The research design used was descriptive. This was opted for since it has the capacity to entail report findings, formulation of principles, comparisons between two or more variables and interpretation of the findings. It was intended to be used alongside the objectives of the study.

3.1.3 Research instruments

The research design used the following research instruments engaged to meet the objectives of the study:

In establishing water service delivery for the urban poor; the research design used Participatory Rapid Appraisal (PRA) approach. These includes: interview to target persons, walking around, household questionnaire survey, observation and literature/documents review. The information sought was sources of water, general information on water supply system, urban poor views on water services.

Information showed that sources of water to be Tanga UWSA in Tanga Municipality which is covering the whole of Tanga city and some parts of the outskirts of Tanga. 100% of respondents in Tanga claimed to get water from Tanga UWSA water supply system. In Dar es Salaam, Buguruni area, water sources were found to be boreholes as 100% of total sample population declared.

3.1.4 Household questionnaire

This was the main source of primary data for this study. The structured household interviews were carried out among the study area and were based on formatted questions. The survey grasped mainly quantitative information but some open-ended questions taped qualitative information useful for the study. The numbers of households visited are as indicated in the figure below.

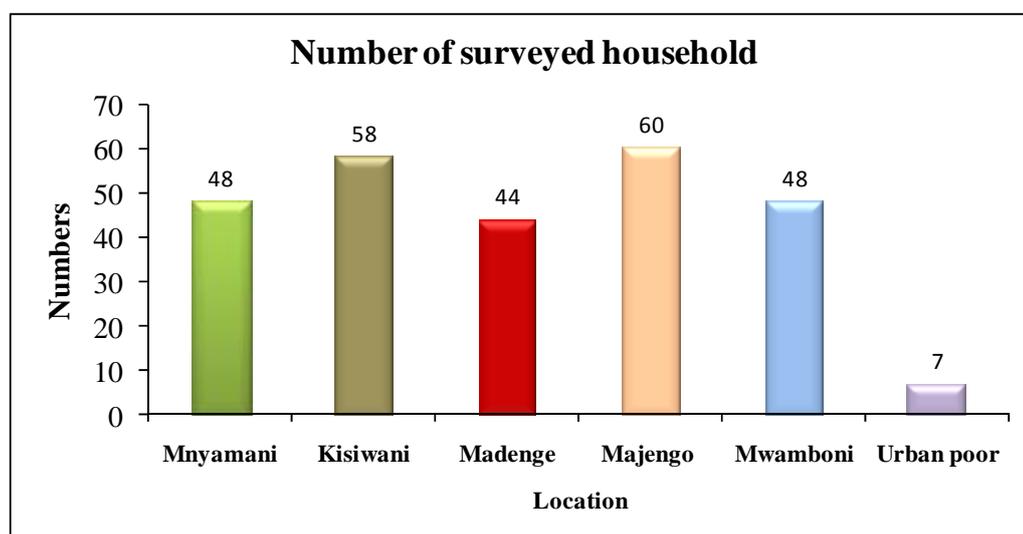


Figure 3.1-1: Surveyed households in different location

3.1.5 Structured and targeted persons/groups' interviews

Key people interviewed included the PRO and production Engineer at the Tanga UWSA and other persons in relevant departments. The interviews targeted the

information on water supply services to the Tanga Municipality as well as for the identified group of urban poor. A questionnaire with 53 questions was administered to Tanga UWSA to give the information requested. There were about 18,304 households being served by Tanga UWSA and all of them were metered. Communities in the informal settlements were also supplied by the same. Consumers regarded the Authority as a well performing one and it cares for the customers as they are well informed of the services.

3.1.6 Field visits

On spot assessment through critical observations was made in order to obtain a comprehensive picture of the existing situation and making inquiries of water service delivery. Types of houses, and materials used in constructing different sanitation facilities were also observed.

In Buguruni, mainly women and children were seen fetching water from water taps from neighbours' taps and from water points. Few vendors were observed queuing at the water points, but they said they are vending in Vingunguti and in small parts of Mnyamani. Existence of Plan donated boreholes has brought a relief in the area as the whole of this area is unplanned settlement and unlike Tanga (Mwamboni and Majengo); DAWASCO does not supply water in Buguruni.

In order to investigate the value of water for various users a descriptive survey tool was used as a tool to collect information on water consumption issues from various households in the study area through individual quasi structured questionnaire. The questionnaires were administered on selected households in different areas. The questions sought specific information on daily consumptions for the households and

money spent for water per day or month and other opinions regarding water delivery services. The price of water ranged between the average of 20 and 30TShs. for a 20 litres bucket in Buguruni and between 10 and 30TShs for a 20 litres bucket in Tanga. This design was to assist in the valuation of water equity criteria selection and planning purposes.

3.1.7 Sample Population

The methodology used to select the study sample population was based on the largest number of households presently within one area considering homogeneity and heterogeneity of the study population. This was aimed at gathering information with valid results. For a sample household to be selected, the respondent should have knowledge of how the water was used in the house. Another criterion was diversity in the households. Households with different characteristics e.g. household size, location of water sources as well as socio-economic differences like single permanent dwellings were also taken in consideration.

The objective of the study targeted at least a sample population of 150 households in each case study area. This was to be divided within the all hamlets found in the study area. However, in Tanga a sample of 108 households was selected and a sample of 7 selected urban poor was interviewed; while In Buguruni a total of 150 households was selected. This sample size was within the target and hence representative of the objective of the study. The population sample gave a tangible basis for non bias against any samples of the household population.

3.2 Secondary data acquisition and use

Secondary data was collected from Tanga UWSA. This includes: identified urban poor list for Tanga, map of the supply distribution areas, water service plan for the authority, and water tariff leaf lets. Also the review information was collected from different sources such as The Tanzania Ministry of Water and Irrigation official website, Water Aid home pages, Tanzania Bureau of Statistics official websites. The information obtained was used as supportive information to compliment other information collected. Other literature information was obtained from books, journals and publications from UDSM water resources library, and multiple articles and materials from the internet.

3.3 Data Analysis

All qualitative data from respondents were classified and summarized under thematic topics such as house type, willingness and ability to pay using descriptive statistics. Variables are summarized as frequencies or percentages. Measurable variables such as daily consumption and monthly water bills are tabulated. Data are also cross tabulated to establish relational comparisons for those attributes that are closely linked. MS Excel was used in the analysis to summarize and present the information in tabular and graphical forms.

CHAPTER FOUR

RESULTS AND DATA DISCUSSION

4.1 Socio-economic aspects of the urban poor

4.1.1 Education

Tanzanian law requires all children over the age of seven years to be registered in school. The level of education of people in the study area was generally low. Poverty levels are strongly correlated with the education level achieved by the head of the household. As it can be observed in the Fig.4.1-1, as high as 61% of the heads of households in Buguruni have attained primary education while in Tanga 55.1% have Primary education.

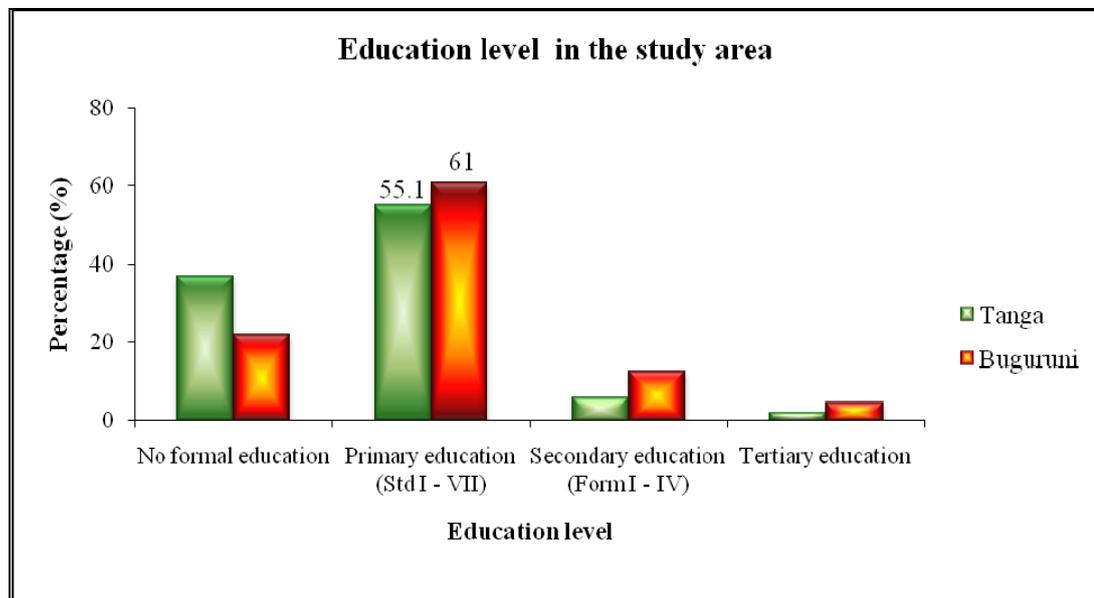


Figure 4.1-1: Education levels in the study area

Only 5.9% and 12.5% of the interviewed households in Tanga and Buguruni respectively had their education level ranging from form one to form four. This is

relatively a small number compared to those without formal education. Only 2% and 4.5% of the interviewed households in Tanga and Buguruni respectively was found to have attended further studies like technical education, diplomas in education and other skills like secretaries etc. There was nobody found with a university graduate qualification.

4.1.2 Sources of Income

The occupation of the majority of the people in urban areas is business. In order to supplement household income, most households seek out wage labor and informal income-generating opportunities such as food vending, brew local beers, petty trading. There are others who are depending on good Samaritans as it can be noted in the table 4 for the urban poor group in Tanga.

Table 4.1-1: Income regenerating activities

Category/Ward	Madenge	Mnyamani	Kisiwani	Urban poor	Mwamboni	Majengo
Income generating activity	Percentage (%)					
Employed (NGO/Government/Private company)	0	8	7	0	0	10
Businessman/woman	73	71	52	0	69	23
Petty trader	0	4	0	0	12	7
Others (get help from neighbors, self employed, hair dressers)	27	17	41	100	19	60
Total	100	100	100	100	100	100

4.1.3 Income levels and Expenditure

The study determined the level of incomes and how much is spent from this group i.e. people living in unplanned settlements. The current level of incomes gives an indication of their economic status and can be used to establish baseline indicator in

urban poor for future comparison. The results of this study shows that the average of 57% and 32% those interviewed earn between 0 and 50,000 TShs per month whereas 38 % and 34% earn between 50,001 and 200,000 TShs in Buguruni and Tanga respectively. 5% in Buguruni earn more than TShs 200,000 while in Tanga municipality it is only 4%.

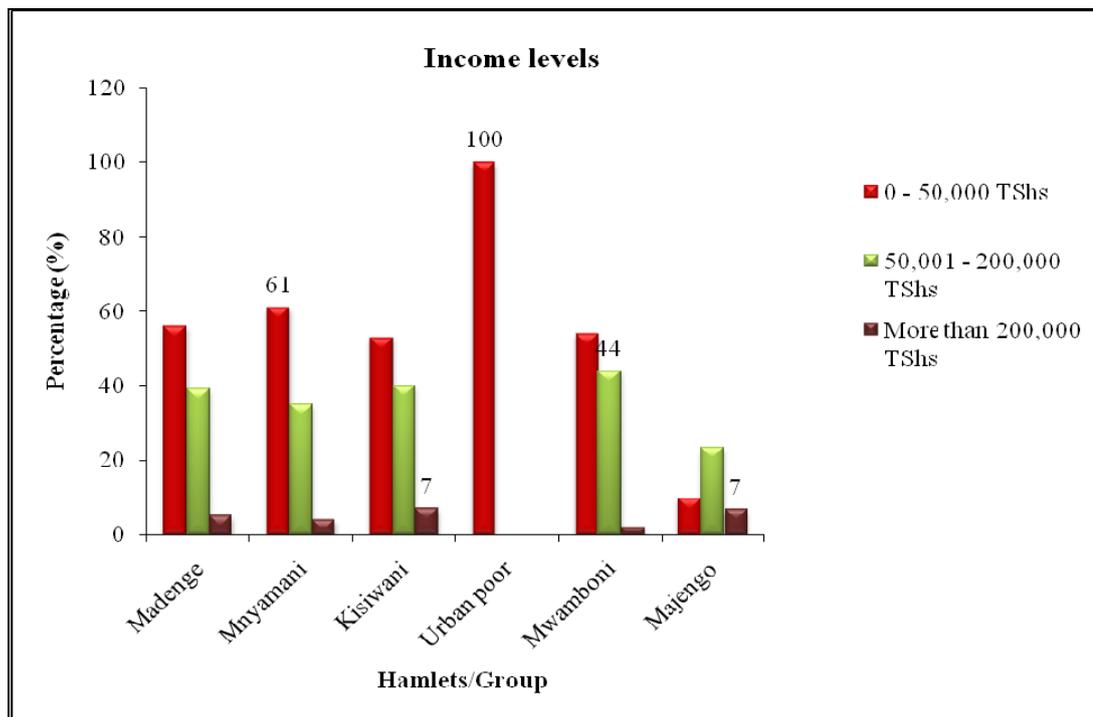


Figure 4.1-2: Income levels in different hamlets/group

With regards to average monthly expenditure, 52.4 % respondents in Tanga and 55% respondents in Buguruni spend less than TShs 100,000 per month while 38.1% and 40% in Tanga and Buguruni respectively spend between TShs 100,001 and 200,000. 9.5% of the respondents in Tanga and 5% in Buguruni spend more than TShs 200,001 per month.

4.1.4 Nutrition

It has been found that a large percentage of respondents fail to have three meals in a day. The number of days that the families miss a meal ranges from one to seven days a week. This is due to the fact that many people living in squatter areas are low income earners and thus categorized as urban poor. From Tanga, one woman namely Salama narrated that, *“Since the death of my child who passed away about seven years ago, I have no body to support me. I am depending on good Samaritans or if I manage to raise chicks and sell them then I can be sure of having a single meal. Otherwise I can take a cup of porridge made of maize flour only and call it a day or have a glass of water and thank God”*.

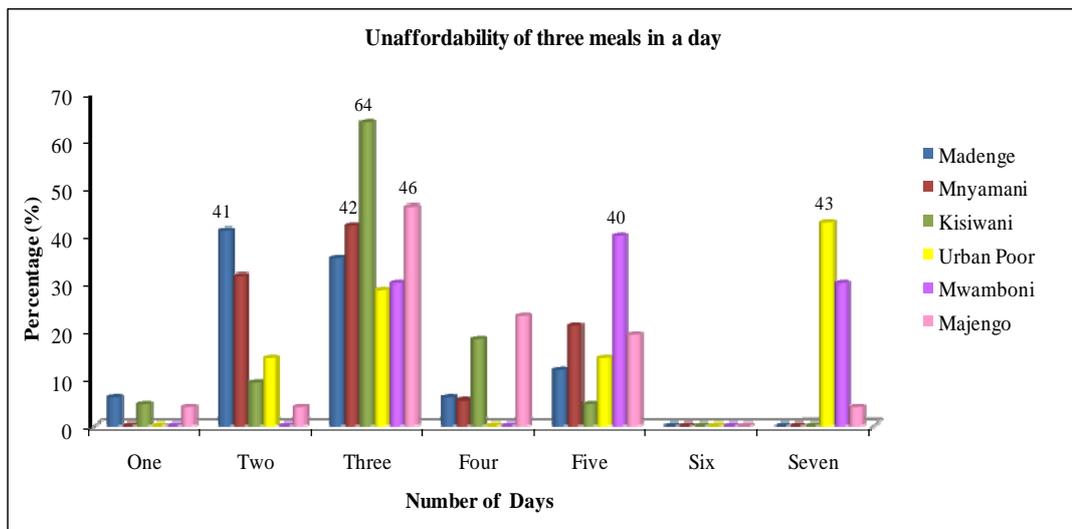


Figure 4.1-3: Unaffordability of having three meals in a day

People are living below poverty line and it is seriously hurting seeing people who cannot even afford a single in a day. The figure 4.1-2 above, illustrates in percentage how people are suffering, but for them it is a miracle to have a new day hoping they will get something which can sustain their lives in urban vicinity.

As high as 64% in Buguruni Mnyamani are missing a meal three days in a week while 43% of the urban poor are getting less than three meals for the whole week. In Mwamboni, Tanga 40% of the respondents lamented to miss a meal for five days in a week. Thus majority are missing meals three days in a week.

4.1.5 Health Services

Majority of respondents in the study area depend on dispensaries for health services. The better equipped ward health services were located far from most households in Tanga but in Buguruni it was within the ward in Mnyamani hamlet. 100% of respondents of the two study areas lamented of being depending on the government health facilities from which getting the prescribed medicines is a problem. This has a direct impact on the communities health as they also complained of the cost incurred in buying medicines; sometimes they don't buy medicine and others have died of treatable diseases due to the fact that they cannot afford to buy medicine.

Table 4.1-2: Household ability to pay for health services

	Percentage (%)					
	Buguruni			Tanga		
	Kisiwani	Mnyamani	Madenge	Urban Poor	Mwamboni	Majengo
Yes	76	58	59	29	62.5	73
No	24	42	41	71	37.5	27
Total	100	100	100	100	100	100

From the table 4.1 - 2 above, it can be observed that the urban poor afford to pay for the health services; this is due to the fact that they are given service free of charge. Most of them were aged ranging from 55 to 80 years of age and thus they are benefiting the free service from the National health policy.

4.1.6 Sanitation

Poor sanitation in the study area contributes significantly to health problem. Lack of drainage system was evidenced by uncontrolled dirty water flowing on the streets where children play bare feet. Poor sanitation is a source of diseases such as cholera, diarrhea etc.

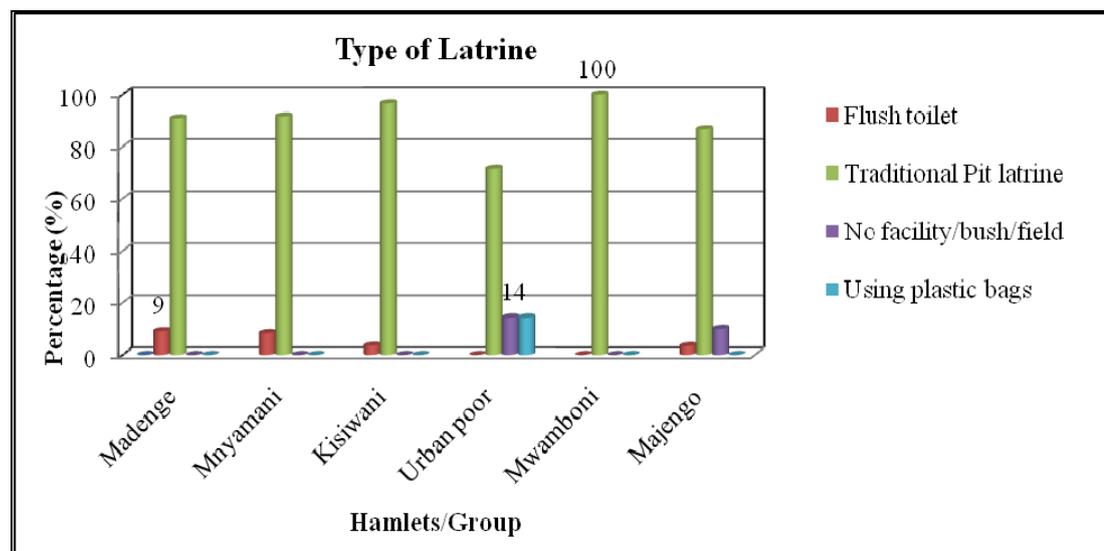


Figure 4.1-4: Types of latrines used in the study area

With regard to sanitation facilities, figure 4.1 -4 shows that an average of 93% of Buguruni households are using traditional pit latrines and a 9% of residents in Madenge use a modern flush toilet. Most of the observed pit latrines were in bad condition as the pits are not lined even the superstructure is not permanent. In Buguruni, outbreak of cholera is common. This is caused by poor sanitation.

In Tanga the average of 83 percent are using traditional pit latrines with as high as 100% use of traditional pit latrines being observed in Mwamboni , but there is also 14% of the urban poor who have no facility and another 14% are using plastic bags and then throw them in waste dumps. During field visit it was observed that a lot of

the sanitation facilities were poorly built and seems to be impermanent. The photo below shows a bath room and a pit latrine found in one of the urban poor household.



Plate 4.1-1: Bathroom constructed using plastic sheets and pit latrine constructed using Palm thatches

4.1.7 Solid Waste Management

Poor refuse disposal contributed to common diseases in the area like malaria and diarrhea. In Tanga 86% of the identified urban poor respondents throw household refuse to the open space and burn, while, 14% expose household refuse on open space. The case is different in the other two areas whereby an average of 48% put refuse in pit and burn, 14.5% take refuse to the communal dump, 11.5% throw refuse in a pit and cover the pit when full, 19% put refuse in containers and refuse collectors take it to the communal dump.

In Buguruni Madenge and Kisiwani they are mainly depending on the solid waste collectors. The private company which is responsible for refuse collection has put in place the collection points, normally a trailer in which individuals or self employed

people collect refuse from households and take it into the containers. Thus 100% of households in Madenge and Kisiwani; and 63% in Mnyamani are storing solid waste which then taken to the communal collection point. 33% of the households in Mnyamani put refuse in a pit and burn while the remaining 4% throw refuse in pits and burry it.

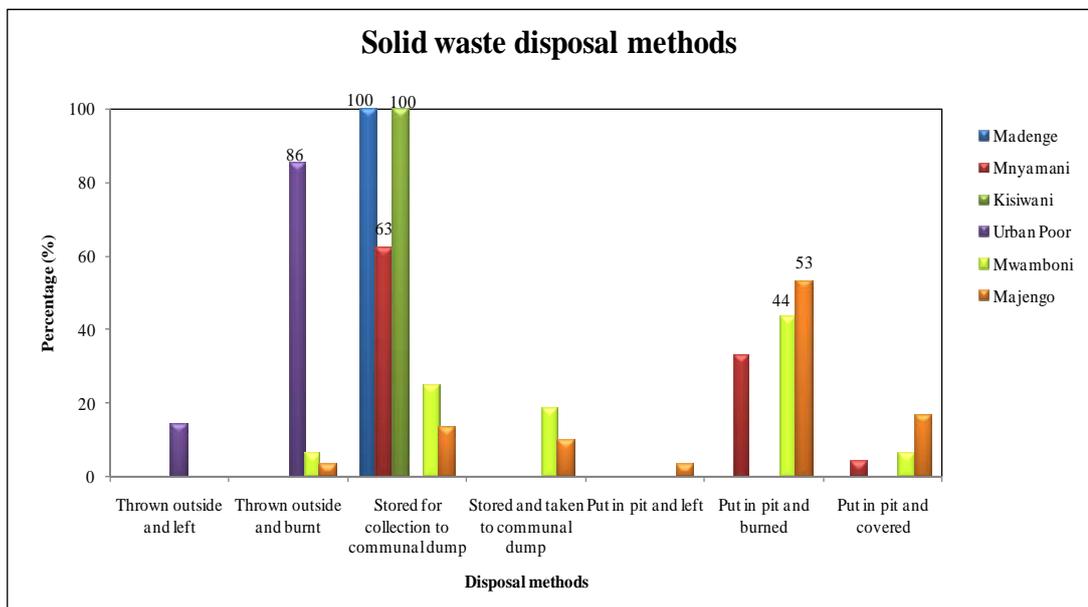


Figure 4.1-5: Solid waste disposal methods

4.1.8 Housing

Observations were made on homesteads to establish the type of construction materials utilized on their buildings. The observations on the walls revealed that an average of 96% and 81% was made of cement blocks in Buguruni and Tanga respectively. 71% of the urban poor houses in Tanga were made of mud and poles and only 5% was found in Buguruni Madenge. Majority of the houses were designed in such a way that the main house comprised of bed rooms and sitting rooms.



Plate 4.1-2: A typical house found in Buguruni Madenge

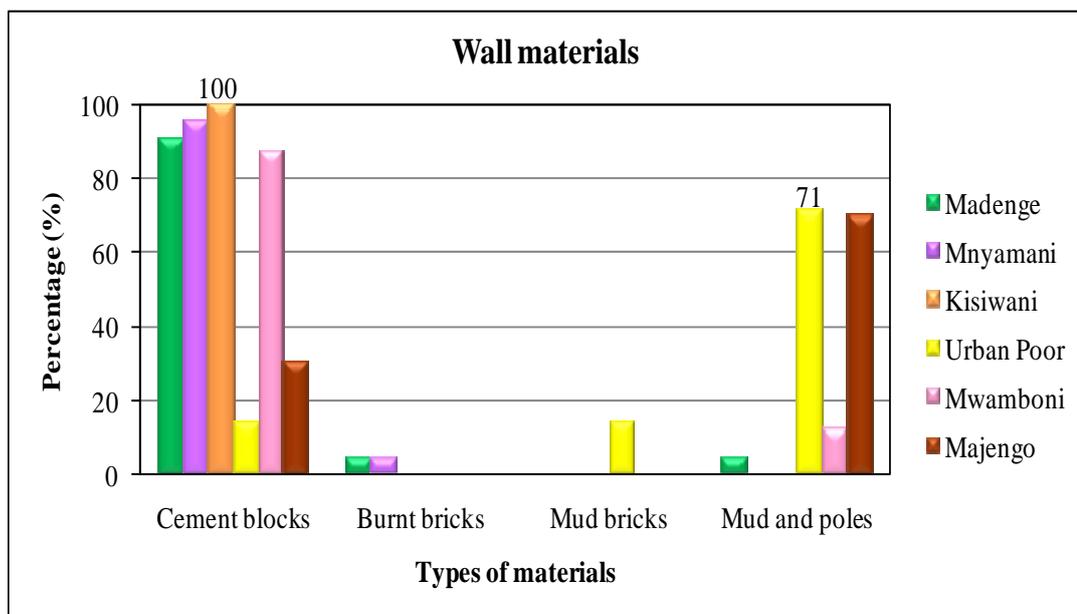


Figure 4.1-6: Type of wall materials used in the study area

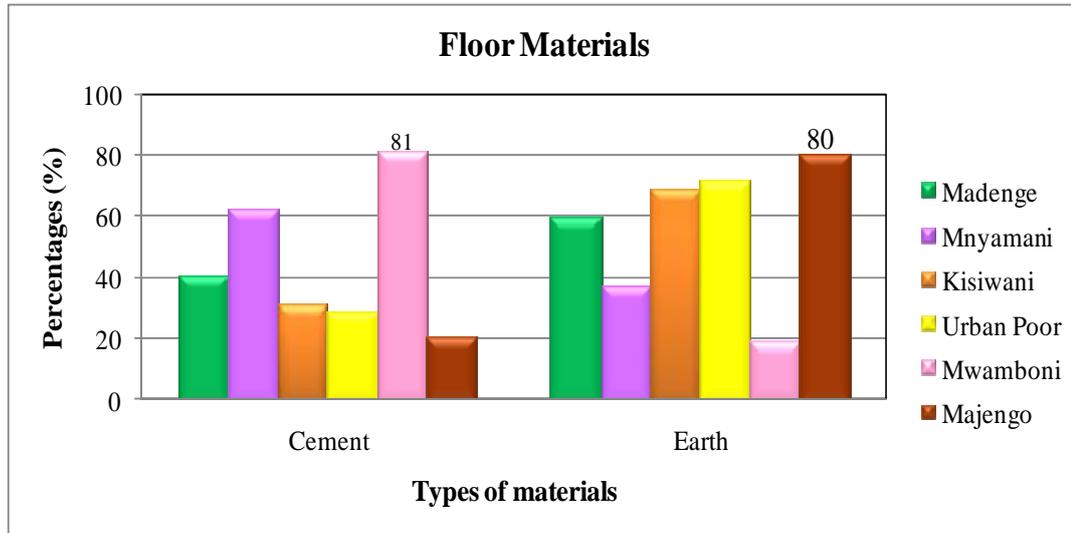


Figure 4.1-7: Type of floor materials used in the study area

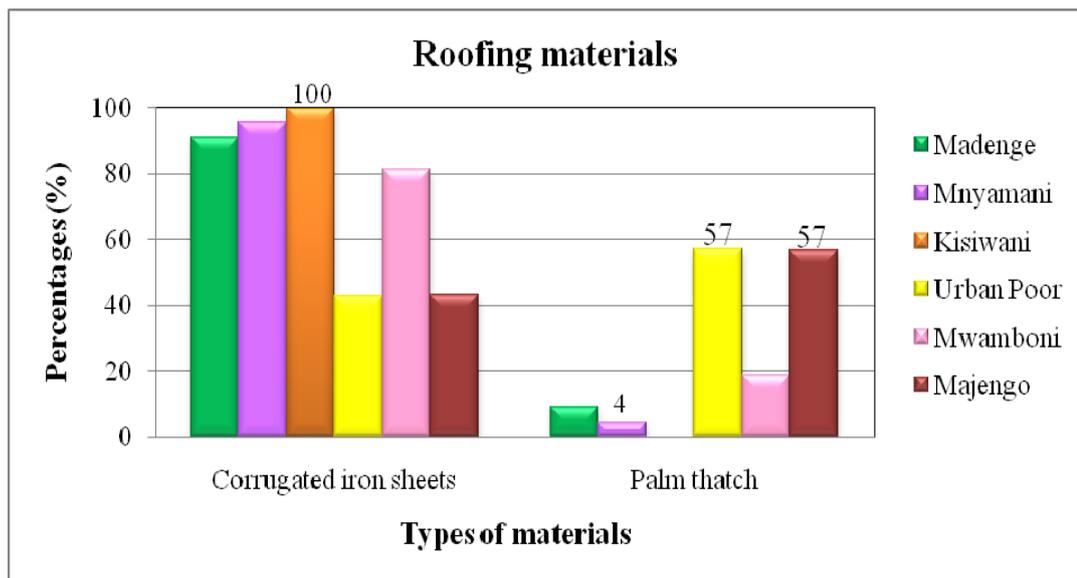


Figure 4.1-8: Type of roofing materials used in the study area

Main floor materials found in the stud area were cement and earth. An average of 56% and 43% of the respondent’s house floors Buguruni and Tanga respectively are made of cement, while 57% are made of earth/mud. The highest percentage (81%) were observed in Mwamboni where they use cement as their floor materials while 80% of the Majengo houses have earth as their floor material. This implies that most houses are outmoded and less expensive. It should be noted here that

building material of houses is one of the wealth indicators. Good houses with modern building material are owned by well to do families while low quality houses are owned by the poor. Plate 4.1-3 below shows a kitchen outside the house of an urban poor in Tanga municipality.



Plate 4.1-3: Showing a kitchen of the urban poor in Tanga municipality

Most of these houses are relatively old, though there are a good number of newly built houses. 21% of houses in Buguruni are occupied by owners while in Tanga it is 60% and the remaining while 79% and 40% are occupied by tenants in Buguruni and Tanga respectively.

4.2 Type of Water supply services

Freshwater is critical to the ever-growing urban populations around the world, as well as the industrial base upon which these modern societies are based. With rapid urban growth often poorly managed the delivery of adequate, clean, and reliable supplies of freshwater becomes an important development challenge.

4.2.1 Sources of Water and ownership

The source of drinking water is important because waterborne diseases including diarrhea and dysentery are prevalent in Tanzania. Sources of water expected to be relatively free of these diseases are piped water, protected wells, and protected springs (figure 4.2-1). Other sources such as unprotected wells, rivers or streams or ponds are more likely to carry disease-causing agents.

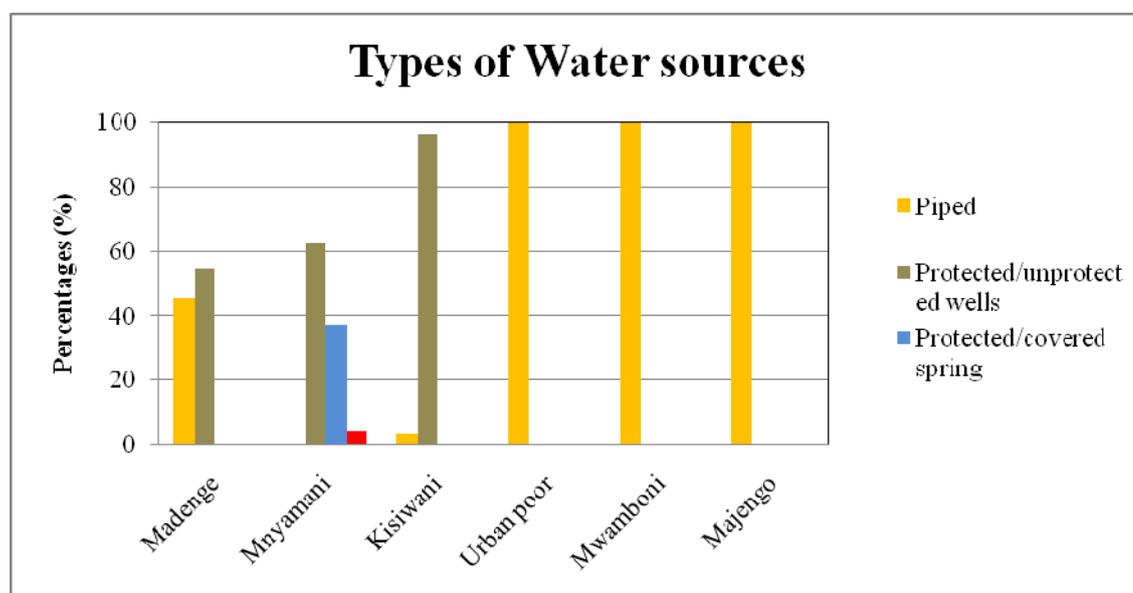


Figure 4.2-1: Types of water sources found in the study area

The majority of Buguruni households have access to clean water sources. The so called clean water sources are located few meters from the washrooms and thus contamination is suspected to be high (100 percent from protected wells). While in Tanga 100% of the respondents are depending on the piped water supplied by Tanga UWSA.



Plate 4.2-1: A typical borehole donated by Plan International at Buguruni Madenge

In Buguruni 80% of boreholes are owned by private people and some 10% of borehole donated by Plan International while the other 10% is donated by other NGOs like KIWOHEDE which are owned by the community under the supervision of water committee. They are located in Madenge, Mnyamani and Malapa; plate 4.2-1 shows a real borehole donated by plan. The project was aimed to carter for the whole four hamlets but in Kisiwani they have enough boreholes and thus they donate it to Vingunguti.

4.3 Water Supply Service delivery in the study area

4.3.1 Accessibility to Water Supply

The indicator ‘population with access to safe water’ is one of the core PRSP indicators (URT, 2001). Access involves being able to physically reach the source and being able to afford the water charges. It should be sustainable access - both financially and in terms of the reliability of the source yield.



Plate 4.3-1: Water kiosk at Buguruni Kisiwani

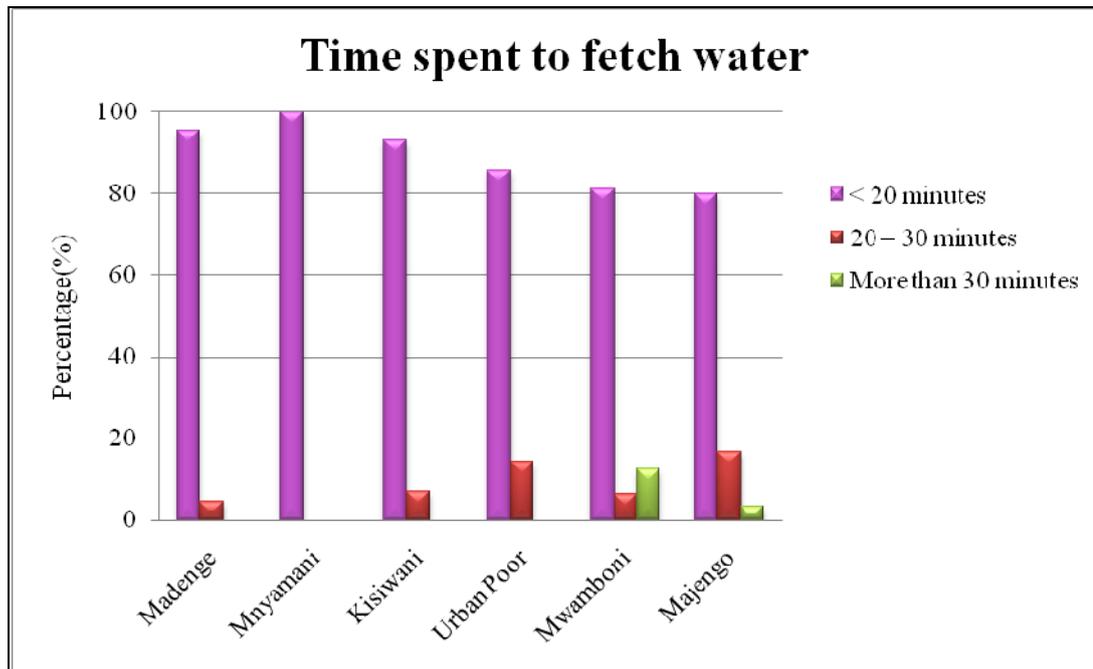


Figure 4.3-1: Time spent to fetch water

In Buguruni, more than 80% of the respondents narrated to spend less than 20 minutes time when going to fetch water (figure 4.3-1). This is due to the fact that there are a number of taps in the network of one borehole. Thus the neighbors to the tap owners benefits from walking longer distances.

In Mwamboni, Tanga 13% of the respondents declared to get water for more than 30 minutes of which according to the NAWAPO, 2002 this is time implies that the walking distance is more than 400m far. Also in Majengo, 17% of the respondents acknowledged to spend between 20 and 30 minutes for fetching water. The walking distance to the water source which is acceptable in the Tanzanian standard is 400m as noted in the water and sanitation in Tanzania report on poverty reduction monitoring indicators (WaterAid, 2002).

4.3.2 Quantity of water used in households

About 50 % of the interviewed people in Buguruni mentioned that they use up to 100 litres of water per day. 19% indicated that they consume less than 60 litres a day while 23% indicated that they consume about 100 - 200 litres a day and the rest 8% consume more than 200 litres a day. This is illustrated by table 4.3 -1. It is obvious that the amount of water consumed per household is not adequate. The normal requirement of water per person per day is estimated to be 60-70 litres a day for urban people.

Table 4.3-1: Amount of water used per day per household

Buckets of water (20litres)	Percentage of respondents	
	Buguruni (%)	Tanga (%)
Less than 3	19	12
3 – 5	50	23
5 – 10	23	50
Above 10	8	15
Total	100	100

4.3.3 Quality of water

The water users complained bitterly about quality of water in Buguruni area. 98% of the respondents reported that the water used is saline and had doubts about the level of cleanness. The salinity was different from one borehole to another. However, they did not specify their standard of categorizing water as not clean. The rest 2% had no complains on the water quality. The respondents were able to associate the water quality and some of diseases occurring in the study area. These diseases include cholera, diarrhea and typhoid.

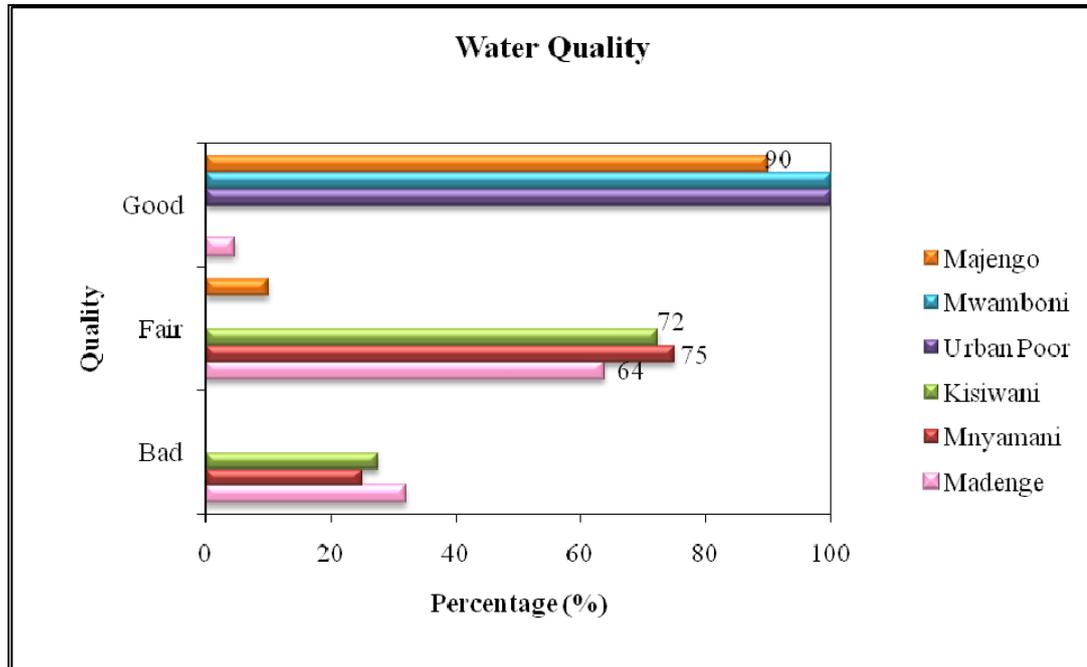


Figure 4.3-2: Showing the quality of water based on appearance and taste

It can also be noted that an average of 70% of respondents from Buguruni lamented on the quality of water to be fair and this includes the taste being saline. In Tanga there was no big issue on the quality of water as they are using water from the water supply network which is well treated and safe for drinking.

During the focus group discussions people lamented that water scarcity forced them to bath once a week or twice. Water scarcity hinders people's development; as families spend significant amount of their time searching for water. Girls support their mothers to fetch water at a cost of attending schools.

4.3.4 Water price

The highest price of water was found at Majengo where the unit price of water was 2500TShs with 3% of respondents claiming for a price of 50TShs per 20 litres bucket. It can be noted that there is a 6% of Mwamboni residents who are getting

free water from the good Samaritans as they cannot afford to pay for water. 71% of the urban poor in Tanga are fetching water at a cost of 10TShs per 20 litres bucket, while only 29% are getting water from the yard tap were paying to the Tanga UWSA which is 8TShs per 20litres bucket.

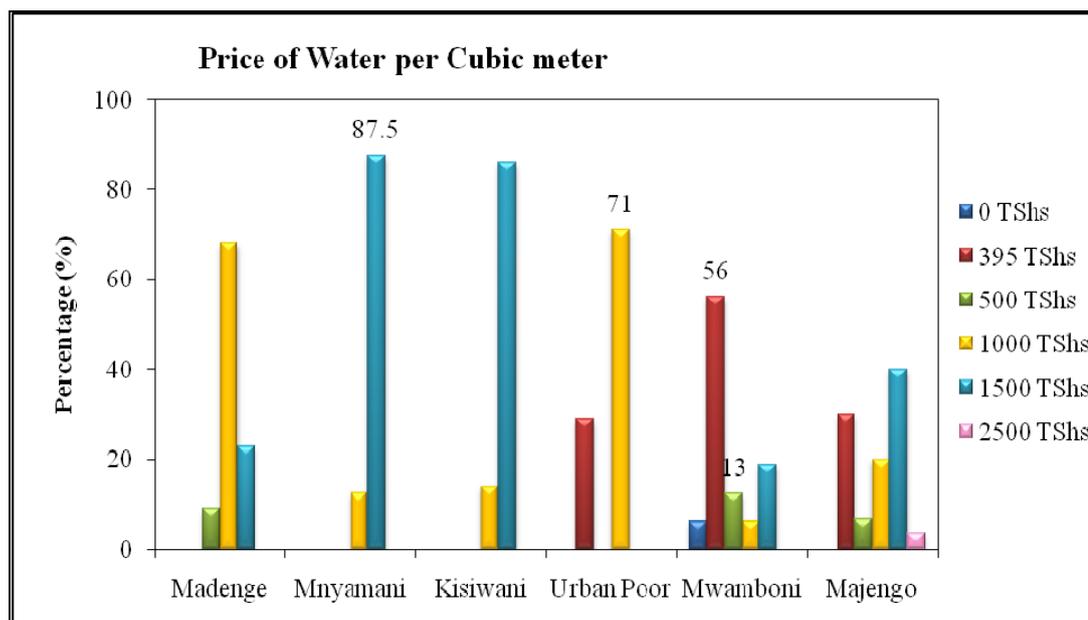


Figure 4.3-3: Different prices of water per cubic meter

When the types of water sources are different between two communities, such as between Buguruni and Tanga, there would naturally be a greater discrepancy in price of water. This is because pricing of water in Buguruni was determined solely by the owners of the public water faucets without considering the users' ability to pay and building a consensus between the owners and the users. In Tanga the owners of yard taps decides on what to charge based on their monthly water bills.

4.3.5 Ability and Willingness to pay (WTP)

4.3.5.1 Ability to Pay

The community claimed that they have no supplement for water and this is why they have to be able to pay for the service though at a high cost. The owners of the water points are keeping records so that even if you don't have money at that particular time you can fetch and make sure by the end of the day you are paying the debt or else you will not be allowed to fetch water in the following days.

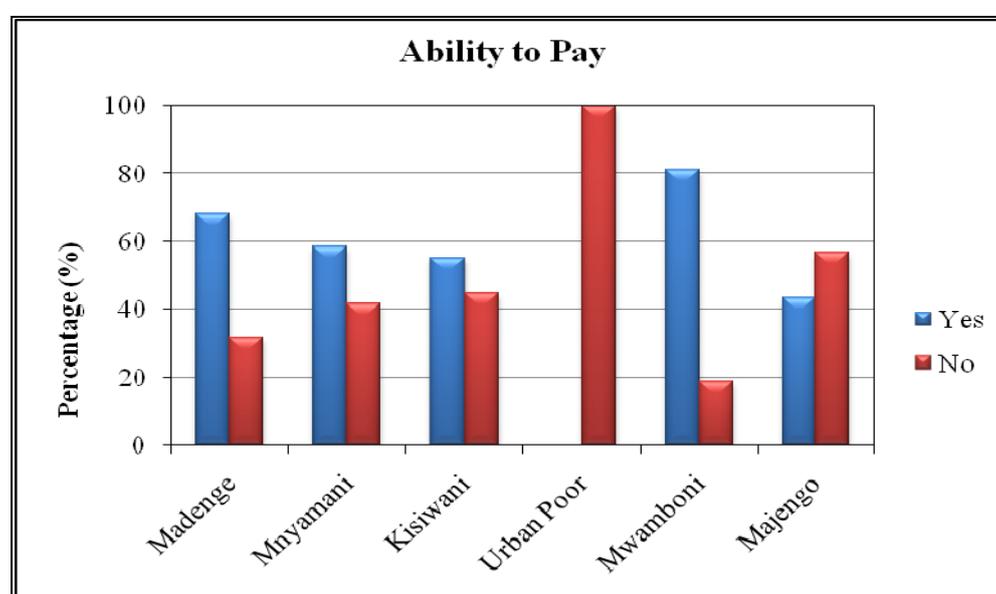


Figure 4.3-4: The ability to pay from the interviewed households

The interviewed households' respondents narrated to be willing to pay for the service if for instance they will get tap water from DAWASCO. Currently they are using water from wells which have not good quality as they are not sure of the hygiene of that area since it has been facing cholera outbreak for a long time.

The observation made on the urban poor considering the criteria set by the Tanga UWSA, the families are not able to pay for water services, as it can be observed in the presented figure 4.3-4 that 100% of them responded negatively.

4.3.5.2 Willingness to Pay

There was a real need of water supply scheme for the community as they are crying of the high price of water. Despite of the poverty that is prevailing in many households in the study area, 100% are willing to pay for the service if it is reliable, of good quality and at a reasonable cost with good water quality. By good water quality here it refers to the water that meets the required national as well as World Health Organization drinking water quality standard.

4.4 Water Service delivery for the urban poor

4.4.1 Urban Poor in Tanga Municipality

Water is considered as a key factor in the socioeconomic development and fight against poverty. Urban poor gets water from neighbors and generous people but others gets water from drainage trenches thus lead to increase disease such as cholera which may spread to all corners of the urban area. Therefore Tanga UWSA provided free water for the poor living in low income group citizens who cannot afford house connections by installing kiosks

4.4.1.1 Who are urban poor according to Tanga UWSA?

The water supply utility in Tanga went as far as to set some criteria to who should be considered as an urban poor. An Urban poor is anybody who falls within the following criteria:

1. Disabled person i.e. the blind who do not have assistance from any person
2. Elderly i.e. those who do not have relative or any assistance
3. HIV/AIDS and TB victims who do not have any relative of assistance
4. Widow, who do not have any relative or any assistance.

4.4.1.2 Evaluation

After setting the criteria, the utility personnel underwent the evaluation process which involved four wards namely: Pongwe, Chumbageni, Ngamiani Kati and Ngamiani Kaskazini. Out of the four wards, 16 hamlets including Tanga sisi, Pongwe, Guga, Kichangani, Kiomoni, Mizizima, Mabawa, Msambweni, Ngamiani kaskazini, Ngamiani kati, Majengo, Makorora were selected. Five Tanga UWSA staff and 4 WEOs were involved in the evaluation process.

At first the WEOs and hamlet leaders were given the criteria and identified 194 households. These were then screened by the Tanga UWSA staff and only 47 met the criteria.

4.4.1.3 Implementation

After the whole process of evaluation, the implementation phase followed. Each of the identified urban poor is given a free water coupon. One free water coupon is equivalent to a twenty (20) litres bucket. Eight coupons are given to cater for a single day which implies 8 buckets/day. Thus when they go to Tanga UWSA PROs office, they get a total of 240 coupons for a month. But it has been a trend that they are using less than 8 coupons per day thus it is when the coupons are finished that the poor has to go to collect another set for the following days. Customers who provide water to the poor people, their accounts are credited with the amount of water equivalent to the offer reflected in the coupon.

4.4.1.4 Cost incurred by Tanga UWSA for serving the Urban Poor

The National Water Policy (URT, 2002) calls for the UWSS to recognize the existence of low-income groups in the urban and peri-urban areas, and that the entities shall be required to provide them with appropriate WSS services. Given the importance of water for life and survival, appropriate social equity considerations shall be put in place so that a basic level of water supply and sanitation service is provided to the poor at affordable costs. Entities shall promote workable mechanisms whereby the water supply and sanitation needs of the urban and peri-urban poor are promoted in all initiatives that encourage public-private partnerships.

From these grounds, Tanga UWSA took the serious initiative to set out the criteria of who the urban poor should be and provide the group with water. By so doing, the Tanga UWSA is using about *27.45 Millions Tanzanian shillings* in a year for serving the urban poor as illustrated in table 4.4-1 below.

Table 4.4-1: Amount of water and money spent by Tanga UWSA for urban poor

Months	Total number of urban poor	Amount of water provided per day (buckets)	Amount of water provided per day/urban poor (litres)	Total number of days in a month	Total free water provided per month (litres)	Price of a 20 litre bucket (TShs)	Money spent/month (TShs)
January	47	8	160	31	233,120	10	2,331,200
February	47	8	160	28	210,560	10	2,105,600
March	47	8	160	31	233,120	10	2,331,200
April	47	8	160	30	225,600	10	2,256,000
May	47	8	160	31	233,120	10	2,331,200

Months	Total number of urban poor	Amount of water provided per day (buckets)	Amount of water provided per day/urban poor (litres)	Total number of days in a month	Total free water provided per month (litres)	Price of a 20 litre bucket (TShs)	Money spent/month (TShs)
June	47	8	160	30	225,600	10	2,256,000
July	47	8	160	31	233,120	10	2,331,200
August	47	8	160	31	233,120	10	2,331,200
September	47	8	160	30	225,600	10	2,256,000
October	47	8	160	31	233,120	10	2,331,200
November	47	8	160	30	225,600	10	2,256,000
December	47	8	160	31	233,120	10	2,331,200
Total	47				2,744,800		27,448,000

4.4.2 Urban poor in Buguruni

Currently a large number of Buguruni residents are depending on water from boreholes and shallow wells. According to the ward health officer, as of year 2006 there were 82 boreholes and 42 well in the whole ward. There is a small part of Buguruni which is still getting water from DAWASCO and it falls within Malapa hamlet.

In the three hamlets, Kisiwani, Madenge and Mnyamani DAWASCO have drilled boreholes which were then given to the hamlet water committee. The water committees are then responsible to run the borehole and in case of any borehole breakdown they have to provide money for fixing the breakdown.

In this case the water committees for different hamlets have different ways of serving those who cannot afford to buy water. Their criteria are different based on the leadership and are not well defined. They consider those who are older enough not to be able to go to fetch water, orphans who are child heads in their families and those who are disabled who are disadvantaged.

4.5 Comparing Water Service Delivery in Dar es Salaam and Tanga

As aforementioned in chapter one section 1.1.4.2.2 Tanga UWSA provides water to through its supply network on a 24 hours seven days basis. In Dar es Salaam, Buguruni the residents depends on the boreholes and availability of TANESCO power together with the functionality of the borehole at a particular time.

Considering the price of water, water in Tanga is relatively cheap when one is connected to the supply network as he/she would pay 395TShs/m³. But even one has to buy water from the nearby kiosk or from neighbors' tap he/she is always sure of the availability of the water.

The case is different in Buguruni where there is no water supply pipe network or if it is there; no water that is coming out of the tap as the infrastructure is not functioning. The cost of water if DAWASCO water supply pipe network was in place is 638TShs/m³. Now the residents in Buguruni are buying water at a price ranging from 30 to 50TShs per 20litres bucket. Converting these prices into cubic meters they read 1500 – 2500Tshs/m³. Considering the majority of residents in this area to be low income earners, water becomes very expensive for them and thus forces others to look for the cheap sources of water. The quality of these waters being poor it triggers water related diseases to be prevalent in the area. If

DAWASCO is to supply water to Buguruni community the following will be the requirements:

Population after being projected from 67,028 during 2002 census, to 87,500 by year 2008 and per capita water demand in urban areas being 70litres/day:

Table 4.5-1: Water demand in the study area

	Tanga	Buguruni
Population	255,000	87,500
Water demand (l/capita/d)	70	70
Total water demand (l/d)	17,850,000	6,125,000
Total water demand (m ³ /d)	17,850	6,125
Price (TShs/m ³)	395	638
Income to the Utility (TShs/day)	7,497,000	2,735,425

Unaccounted for water in Tanga is 27% and in Buguruni is assumed to be 30%

Since the area is unplanned, the use of water kiosks under the community water supply and sanitation programs can be of promising future. DAWASCO through public relations officer and the awareness campaigns can make it possible after community sensitization on efficient use of water, cost of mismanagement of the infrastructure put in place, etc.

4.6 Coping mechanism

Since in Tanga, Tanga UWSA supplies water to the municipal residents on a 24 hour seven days basis; the respondents are comfortable with the services. This made the whole community of Tanga to rely on water services from the Tanga UWSA utility. When the water utility expects to have a system shut down for maintenance they announce to the whole of municipal residents using media and also by sending a vehicle along the city streets to inform the community on the shutdown and thus

they have to store water for use when the system will not be in operation. Therefore in Tanga they are coping with the situation by storing water during the water supply system shutdown.

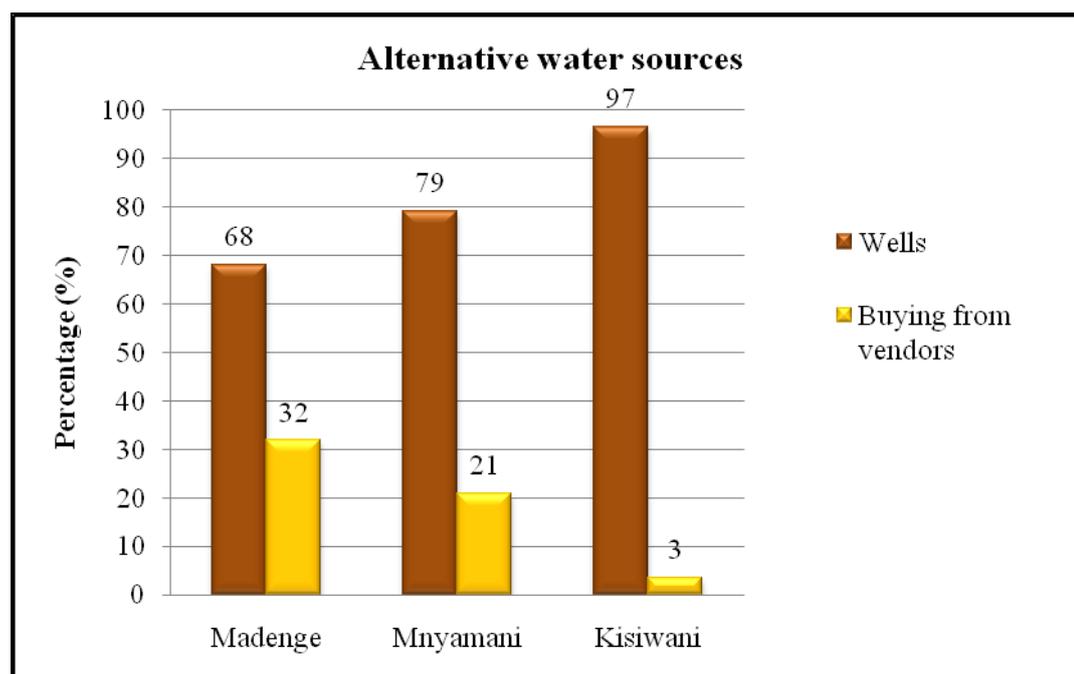


Figure 4.6-1: Alternative water sources for Buguruni residents

In Buguruni area, Dar es Salaam, 97% of the respondents in Kisiwani hamlet acknowledged to be using water from wells not being sure of the water quality when there is breakdown on the normal borehole that they normally fetch water. It can be noted in Madenge, 32% of the respondents are buying water from vendors.

Water vendors gets water from anywhere in other hamlets of Buguruni or from the nearby wards of Ilala and Vingunguti. The price of this water is high compared to the price that they normally buy from the nearby boreholes. One twenty litres bucket is sold at a range of 300 – 400TShs if it is from tap water (DAWASCO) and 150 – 200TShs if it is from a well. Most of the times when the boreholes are not operational, the problems were found to be failure of the pumps or electricity cutoff.

The case appears different in Buguruni Kisiwani because there are two boreholes which are located at a place known as “Kijiwe Shap” which are privately owned and have a standby generator thus water is available always unless it happens that there is pump/other equipment breakdown. During this period, the time taken to fetch water increases to more than 30 minutes due to increased number of people who comes to fetch water.

During rainy season they are practicing rainwater harvesting but sometimes due to the congestion of houses the harvested water is not of good quality and is used for washing clothes or bathing after being left to stand for some time.

4.7 Linking the findings with NSRGP

In its ambitious and determined pursuit to fight poverty, Tanzania has adopted the MDGs based National Strategy for Growth and Reduction of Poverty (NSGRP, of which its Kiswahili acronym is MKUKUTA); which is widely accepted among stakeholders and contain demanding, specific and quantified targets to be reached by 2010 and 2015. As a central strategic document for poverty reduction, MKUKUTA identifies tailored cluster strategies and intervention packages which are well suited to attain both sets of targets. Thus, for Tanzania’s development aspirations, there is consensus on what to achieve, and on how to achieve it.

4.7.1 MDGs and MKUKUTA Cluster Goals, Targets and Indicators

Not only is access to safe water and basic sanitation essential for the reduction of poverty, it is also an end in itself. Therefore, MKUKUTA and the MDGs set specific targets for water supply, sanitation and sewerage that must be achieved. The

attainment of these targets is also a fundamental condition for progress in other sectors.

Table 4.7-1 provides an overview of the indicators and quantified targets to be achieved. They refer to MKUKUTA goal 3 ('Increased access to clean, affordable and safe water, sanitation, decent shelter and a safe and sustainable environment and thereby, reduced vulnerability from environmental risk') in cluster 2 and to target 10 (Halve, by 2015, the proportion of people without sustainable access to safe drinking water and sanitation) under MDG 7.

Table 4.7-1: MDGs and MKUKUTA Cluster Goals, Targets and Indicators

Sub-sector	Indicator	2003 Value	MKUKUTA operational target 2010	MDGs 2015
Water Supply	% rural population with access to clean and safe water within 30 minutes of time spent on collection of water	53%	65%	76.5%
	% urban population with access to clean and safe water	73%	90%	90%
Sanitation	% of people with access to basic sanitation by 2010	87%	95%	95%
	Adequate sanitary facilities in schools	80%	100%	100%
	Access to improved sewerage facilities in respective urban areas	17%	30%	30%
	Reduction of number of cholera outbreaks by 50%			
	Reduce households living in slums without adequate basic utilities			

Basic Sanitation can be defined as the lowest-cost option for securing sustainable access to safe, hygienic, and convenient facilities and services for excreta and sullage disposal that provide privacy and dignity while ensuring a clean and healthful living environment both at home and in the neighbourhood of users.

Table 4.7-2: Water Demand vs water produced by the utilities in Dar es Salaam and Tanga Municipality

	Tanga	DSM
Population	255,000	3,252,968
Water demand (l/c/d)	70	70
Total water demand (l/day)	17,850,000	227,707,736
Total water demand (m ³ /day)	17,850	227,708
	Tanga UWSA	DAWASCO
Current production (m ³ /day)	26,000	347,206
Unaccounted for water, UfW (%)	27	50
Billable water (m ³ /day)	18,980	173,603
Population served after deducting UfW	271,143	2,480,043
% population served after deducting UfW	106	76
Income to the Utility (TShs/day)	7,497,100	110,758,714
Loss due to UfW (TShs/day)	2,772,900	110,758,714

From the computation made on water demand for Dar es Salaam and Tanga Municipality as noted in the table 4.7-2 above, the percentage that the two UWSA operates currently is 106 in Tanga and 76 in Dar es Salaam. This means that, Tanga UWSA is performing well while Dar es Salaam is still in a big query of meeting the targets set by NSRGP to be met by the year 2010. The performance of UWSAs is shown on the table 4.7-3 versus the NSRGP targets to be met by the year 2010 from

2005. From this perspective DAWASCO have to work hard for the remaining one and a half year so as to reach the 90%.

Table 4.7-3: Performance of UWSAs versus the Set Targets

NSRGP Operational Target by 2010 (from 2005)	Average coverage for Category A UWSAs			Average coverage for Category B UWSAs			Average coverage for Category C UWSAs		
	(% of population covered)			(% of population covered)			(% of population covered)		
	2002/03	2003/04	2004/05	2002/03	2003/04	2004/05	2002/03	2003/04	2004/05
1. Increased % of urban population with access to clean and safe water from 73% in 2003 to 90%	81.62	85.35	84.4	71.5	75.8	77.2	66.7	66.1	69.6
2. Increased access to improved sewerage facilities from 17% in 2003 to 30% in 2010 in respective urban areas.	10.2	9.3	8.4	2.5	2.5	3.25	0	0	0

Source: URT, 2006

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The study aimed at assessing water supply services for the urban poor community.

The following conclusions can be derived from this study:

- Social life of the urban poor has been affected by low level of education found in the study area. More than 70% of the residents in these two case studies have to work as casual laborers to earn a living. By so doing, they are not permanently employed and this gives no room for accessing credit facilities so as to improve the earnings.
- Many houses are of low quality. Considering the photos taken from the study area, the houses are made of cement blocks which are bear (no plastering made on the walls) especially in Buguruni; which provides a room for communicable diseases considering a large number of people in the households. The rooms are small and due the fact that each individual is trying hard to fight from poverty, they find themselves renting in cheap houses congested in an area where even a sanitary facility is to be shared among two different households.
- Most urban poor have access to health facilities but they do not afford to buy medicines prescribed by the health workers.
- The urban poor in Tanga are well served as they are provided with coupons so as to fetch water for free from the nearby water kiosks or neighbors who are connected to the water supply network.

In Buguruni, DAWASCO does not have a free water service to the poor; it neither has the piped water supply network laid in place. 100% of the respondents claimed to be using water from boreholes and wells. Water from the boreholes was said to be saline and the appearance is not adhered as 98% of the respondents narrated.

- The urban poor in Tanga and Buguruni are receiving different treatment as far as water service providers are concerned. In Tanga there is an effort done by the Tanga UWSA for identifying urban poor and take special consideration of such a group. In Buguruni, the community is responsible to take care of those who they consider to be the disadvantaged group and the water committee provides free water to them. Otherwise the good Samaritans are giving free water to the poor.
- The urban poor in Buguruni are relying on the available water sources which many of them are owned by private individuals who decide the price at which they can sell water and thus made them sometimes to buy water from vendors which is much far expensive to them. Due to this reason, others are fetching water from shallow wells and unprotected wells which results in to waterborne diseases being prevalent in this area.
- Tanga UWSA have shown a better example in providing water services to the whole of its community as even those who are living in unplanned areas are able to be connected to the water supply pipe network.

5.2 Recommendations

From the findings of this study, the following are recommended:

- Community water supply and sanitation mechanisms should be emphasized in order to ensure that improved water supply and sanitation are delivered to the

informal settlements, that arrangements need to be established for the sustainable operation of whatever system to build (e.g. standpipes or kiosks), and that better utilization of water and improved sanitation should be promoted, especially in the areas heavily affected by cholera and other water-related diseases.

- The most immediate need is to bring the water infrastructure closer to the poor communities in Buguruni. This means that tapstands built to within 10-50 meters of households should be prioritised over individual household connections. If extensions of the system are to be built in Buguruni, public tapstands could be installed first, and later on, as the demand arises, individual household connections could follow. Public tapstands are typically scorned by the business- or efficiency-minded, since they are often seen as a mechanism for giving free water. But tapstands need not necessarily be managed in this way. The community kiosks that have been set up in Temeke are the live models of how public tapstands can be managed.
- There is financial viability in investing in poor communities in Dar es Salaam. As a general principle, the study has shown that the poor are willing to pay for an accessible and reliable supply of safe water, and are in fact paying often five times more per litre for the water they get, than those with household connections. Donors and lenders should therefore not start from the assumption that investments in poor communities are high-risk. The risks are there only because the communities are not properly consulted, high prices are imposed and not negotiated, and there often is lack of transparency and accountability. Rather than focus on cash flow projections or income streams, I suggest that donors focus instead on measuring community participation, evaluate agreements on

roles and responsibilities, assess the potential for corruption and institute the necessary measures to address this, and so on. Lack of consultation, unclear roles and responsibilities, enforced pricing are the real sources of risks, not the poverty of the community.

- DAWASCO should learn from Tanga UWSA on how to consider the poor group and also the way they deliver service to their community. It should also learn on better way of giving incentives to the customers who will be providing information on the infrastructure vandalism.
- Since there had some political interference in water service delivery, there should be clearly defined boundaries during contract signing between the water supply service provider and GoT so as to avoid misconception between the community government leaders and the water committees.
- Since there are no studies on the water quality that the urban poor are using like the case of Buguruni, further studies can be carried out to identify whether the epidemic diseases are the result of poor quality of water or not.

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APPENDICES

Appendix 1: Household Questionnaire

Please answer the following questions. The information from this interview is for research purpose and will be confidential.

A. Preliminary information

1. Fill in your name {optional}.....
2. Gender a. Male b. Female
3. Are you the head of this household?
 - a. Yes b. No
4. If No, what is the gender of the head of this household?
 - a. Male b. Female
5. What is the household size? a. Adults..... b. Children.....
6. Name of the area of residence.....

B. Socio-Economic Aspects

7. What is the education level of the head of this household?
 - a. Tertiary
 - b. Form I-IV
 - c. Standard I-VII
 - d. No formal education
8. What is your source of income?
 - a. Employed (NGO/Government/Private company)
 - b. Businessman/woman
 - c. Petty trader
 - d. Others (mention)
9. How much income do you earn per day/month?
 - a. 0 – 50,000 TShs
 - b. 50 – 200,000 TShs
 - c. Above 100,000 TShs

10. What is your expenditure per month?

- a. Less than 100,000 TShs
- b. 100,001 – 200,000 TShs
- c. More than 200,000 TShs

C. Nutrition

11. Do you experience each year a seasonal food shortage? (Fewer meals)

- a. Yes
- b. No

12. If Yes, how long?days/week

D. Health Issues

13. Had there been any disease outbreak?

- a. Yes
- b. No

14. When was it?

15. What do you think was the cause?

16. Which group was most affected?

- a. Children under 5 yrs
- b. Children above 5 yrs
- c. Youth (18 – 35) yrs
- d. Elders (above 40 yrs)

17. What health facility does your household use most?

- a. Government facility
- b. Private facility
- c. Religious/NGO/CBO facility
- d. Traditional healer

18. What do you perceive as a major problem in relation to health care?

	No Problem	Big problem
a. Cost of treatment		
b. Availability of drugs		
c. Distance/time to reach facility		
d. Time waiting to be served		
e. Availability of maternity		

19. Did you experience a situation where you couldn't afford to pay for health services?

- a. Yes
- b. No

20. If yes, Reason.....

E. Sanitation

21. What toilet facility does your household use?

- a. Flush toilet
- b. Pit latrine (traditional or improved)
- c. No facility/bush/field
- d. Other - specify

22. If a pit latrine, what improvements have been made to the latrine? (can tick more than one)

- a. None
- b. Lined/stabilized pit
- c. Cement slab
- d. Vent pipe
- e. Durable shelter

23. How is the waste stored and then disposed of?

- a. Connected to sewerage system
- b. Septic Tank/Cesspit that can be emptied (by tanker/pump)
- c. Septic Tank/Cesspit that cannot be emptied (collapsed/not accessible)
- d. Pit that is emptied (by tanker/pump/by hand when decomposed)

- e. Pit that is filled in when full
- f. Pit that is abandoned when full as not possible to empty or fill
- g. Don't know
- h. Other.....

24. Does your household own that facility?

- a. Yes
- b. No

25. Does your latrine have?

- a. Water for hand washing
- b. Water and soap for hand washing
- c. Water and ash/equivalent for hand washing
- d. No hand washing facilities

F. Solid waste management

26. What does your household do with rubbish?

- a. Thrown outside and left
- b. Thrown outside and burnt
- c. Stored for collection to communal dump
- d. Stored and taken to communal dump
- e. Put in pit and left
- f. Put in pit and burned
- g. Put in pit and covered

G. Housing

27. Do you own a house?

- a. Yes
- b. No

28. Indicate the type of house

- a. Semi detached
- b. Flat
- c. Bungalows
- d. Other.....

29. What is the roofing material?
- Tiles/corrugated iron sheets/concrete
 - Thatched grass/palm thatch/mud
 - Plastic sheets
 - Other (specify).....
30. What is the wall made of?
- Cement blocks
 - Burnt bricks
 - Mud bricks
 - Mud and poles
 - Others (specify).....
31. What is the type of floor?
- Cement/tiles
 - Earth
 - Others (specify).....

H. Water Supply

32. What is the main source of drinking water used by household?
- Piped
 - Protected well
 - Protected/covered spring
 - Unprotected well
 - Unprotected spring
 - Surface source (lake/dam/river/stream/pond)
 - Covered rainwater catchment
 - Uncovered rainwater catchment
 - Water vendor
 - Tanker truck
 - Other (please specify).....
33. If piped, where does the water come from?
- Protected well/borehole

- b. Protected spring
 - c. Treated surface source
 - d. Unprotected (and untreated) source
 - e. Don't know
34. If water vendor, or tanker truck where does the water come from?
- a. Piped or protected source
 - b. Unprotected source
 - c. Don't know
35. Where is the source, in (1) above located?
- a. In own house
 - b. In own yard/ plot
 - c. In neighbors' house/yard/plot
 - d. A nearby community kiosk
36. Who managed the source in (1) above?
- a. An individual
 - b. Institution
 - c. Private company
 - d. Community
37. How long does it take you to fetch water from the main drinking water source (to go, wait, collect water and return)?
- a. < 20 minutes
 - b. 20 – 30 minutes
 - c. More than 30 minutes
38. What alternative source does your household use for drinking?
- a. Piped
 - b. Protected well
 - c. Protected/covered spring
 - d. Unprotected well
 - e. Unprotected spring
 - f. Surface source (lake/dam/river/stream/pond)
 - g. Covered rainwater catchment

- h. Uncovered rainwater catchment
 - i. Water vendor
 - j. Tanker truck
 - k. Other (please specify).....
39. When does your household use these sources?
- a. When main source dries up
 - b. When main source breaks down
 - c. During times of low household income
 - d. Other – (specify).....
40. How long does it take to fetch water from this alternative source (to go, wait, collect water and return)?
- a. < 20 minutes
 - b. 20 – 30 minutes
 - c. More than 30 minutes

I.Quantity and Quality

41. How many 20litres buckets of water are you/your household using?
- a. Less than 3
 - b. 3 – 5
 - c. 5 – 10
 - d. Above 10
42. How much is a price of a 20 litres bucket of water?
- a. At the water kiosk
 - b. At the neighbors' pipe
 - c. From water vendor
 - d. From tanker truck
43. What is the quality of water that you are getting?
- a. Bad
 - b. Fair
 - c. Good

44. Are you treating your drinking water?

- a. Yes
- b. No

45. If **YES**, how do you treat?

- a. Boiling
- b. Filtration
- c. Using Water guard
- d. Others (specify)

J. Affordability and Willingness to Pay

46. What is the mode of payment?

- a. On cash basis (when you fetch water)
- b. By bill, daily basis (the seller keeps record)
- c. By bill, monthly basis (the seller keeps record)
- d. By bill, yearly basis

47. Is your house connected to a water meter?

- a. Yes
- b. No

48. If yes, how much do you pay per cubic meter of water?.....

49. How much do you spend per month/day for water? (Please indicate daily/ or monthly).....

50. Is the price affordable?

- a. Yes
- b. No

51. If no, what do you think should be done?

.....

52. Did you experience in last 12 months, situation where you could not afford to pay for water bills?

- a. Yes
- b. No

53. If yes, reasons(s)

Appendix 2: Interview Question Guide to Water Utility Companies

(Kindly answer the following questions)

A. Information about the Authority

1. When did the Authority started?
 - a. History of Authority
 - b. Organization structure and functions

B. Water Supply Services

1. What is the current water supply coverage?
2. How is the supply distributed in your area of service?
3. What is your target group?
4. What are the sources of water for your production?
5. What is the current production of water per day?.....
6. What is current percentage of production v/s demand in water supply?.....
7. What is the estimation of unaccounted for water in percentage?.....
8. What is the total number of customers have been connected in the system?.....
9. How many out of them are metered?.....
10. How many community stand pipe do you have?.....
11. How many of them are they working?.....
12. Which months of the year do you have critical water shortage?.....

13. What are the main causes of this water shortage?

C. Operational and Cost Recovery

14. What is the unit operational cost of production?.....

15. What is average water tariff for different users?

16. What are the connection charges for new users?

17. Is there any categorization during connection?

18. What are the charges for different categories?

19. What are the total revenues collected per year?

D. Service Delivery to the Poor

20. Do you have any categories of consumers in your supply system?

a. Yes

b. No

19. If Yes, what are they?

20. Which low income area are you serving?

21. Which type of service are you providing?

a. Continuous

b. Intermittent

c. None

22. How many customers do you have in these areas?

23. How many of them are metered?

24. What is the amount of water supplied in this area/day?

25. During water shortages which group of consumers is given priority and Why?

.....

26. Do they pay for their water bills?
- a. Yes
 - b. No
27. If No, what do you do?
28. How much on average does a household pay/m³?.....TShs.
29. Is there any group of people that are given the service for free?
- a. Yes
 - b. No
30. How did you identify this group?

Challenges

31. What are the existing challenges (regulatory, institutional, structural, Historic or perceptual) to your efforts in water supply provision?
32. How do these challenges affect your organization's action related to the customer relation?
33. What market strategies do you have for your services?
34. What is the procedure used for establishing tariffs of the utility?
35. In your opinion, what problems do you see when you look at the management of your water provision? What do you think these problems can be/ should be solved?

Appendix 3: Interview Questions to Water Committee

Please answer the following questions

Water Committee

1. Have you got a water committee?
2. How did the committee come into existence?
3. Do committee members hold other responsibilities in the community?
4. Did committee members play a crucial role during the provision period of the borehole?
5. Has the membership of the committee changed within the last years?

Size and members of pump community

6. How many households fetch water from your pump?
7. Can all users access the pump during raining season?
8. Has the number of households using the pump reduced or increased within the last years? Why?

Financial Contributions

9. How much did the initial households pay for the provision of the borehole?
10. How much do people have to pay to use the pump?
11. Who has to pay? Who does not need to?
12. When are the fees to be paid?
13. Do you take fees for water use that is not household water use? For what and how much?
14. What will happen when people intentionally refuse paying their fees?

15. How many households cannot contribute fees but benefit from the pump?
16. Which ones are those? Why can't they pay? Do they receive other support from the community?
17. Does the committee have an account? Who is allowed to draw money from it?

Records keeping

18. Do you keep records?
19. Who keeps them? Does the record keeper need help by literates?
20. If he/she cannot read how you do know that people have paid?
21. What other information do you keep in your records?

Problems with the pump

22. Who is the in charge of repairs?
23. Has there ever been a breakdown of the pump? When?
24. How long did it take before it was repaired and functioned again?
25. Is the money collected enough to take care of the repairs?
26. Have ever had problems with the quality of your water? Which one?

Neighboring pump communities

27. Which ones are the next pumps from your pump?
28. Do you pay contributions to receive a new borehole?
29. Do you allow people and livestock, which are not from your community to fetch and drink water from your pump? Describe situations when you do and situations when you don't.
30. Are you allowed to use other people's pumps?

Community Labor

31. Does your community contributed labor work for the maintenance of the pump site?
32. Who is responsible for what?
33. Is it rather easy or difficult to call people for community labor (also apart from tasks which concern the pump)?

Problems in this pump communities

34. Did/ Do you have any problems within the pump community?
35. Are you pleased with the way your pump site looks? Have you got any idea how to improve it?

Opinions

36. What problems do you see when you look at your water provision?
37. What are the problems you see when you look at the management of your borehole?
38. How do you think these problems can be/should be solved?
39. Is there anything else that you would like to say?