water for people
RWANDA

Rulindo District

Water Social Economic Impact in Rulindo District

Assessment Report

November 2018

Contents

1. Introduction

In the framework of Rulindo Challenge Program, Water For People in collaboration with the District of Rulindo have been implementing Everyone Forever approach. Following the interim report on increasing water production options in Rulindo District in six sectors of Burega, Cyinzuzi, Masoro, Murambi, Ntarabana and Tumba revealed that water demand is higher than water supply as per design standards.

A survey was conducted to assess water social economic impact with the aim of understanding the current use and need of water versus standard requirements at households, and in the community. This report details the findings of an assessment carried in Rulindo District on water social economic impact in six sectors of Burega, Cyinzuzi, Masoro, Murambi, Ntarabana and Tumba in Rulindo District.

Objectives

The main objective of this assessment was to understand the current Water use by households, to inform future programming for water service delivery and service payment by the different categories of water users.

The specific objectives are:

- ✓ To determine the amount of water that households get from the piped systems;
- ✓ To determine the amount of water needed by households daily;
- ✓ To identify issues pertaining to Water service delivery;
- ✓ To understand how cost affect households in getting water services;
- ✓ To propose interventions needed to keep water service delivery effective.

2. Methodology of the Assessment

Data collection

This assessment was conducted through interviews using a structured questionnaire directed to households at village level, where households answered on how much water they need and use versus the standard requirement.

Secondary information

This assessment included the use of secondary data on systems, like water yield, population served, areas served by the systems in the six sectors of Burega, Cyinzuzi, Masoro, Murambi, Ntarabana and Tumba in Rulindo District. This information was used in comparison of current water production and the current need by the households and public institutions in these areas.

Sampling method

Using a sample size of 95% Confidence Level, 5 Confidence Interval, a total of 815 households were sampled randomly to be interviewed in 6 sectors. Where in every village of the six sectors 5 households were randomly surveyed.

Team of enumerators

A team of 21 enumerators with experience on conducting surveys and using the AkvoFlow were hired to collect data in the six sectors of Burega, Cyinzuzi, Masoro, Murambi, Ntarabana and Tumba in Rulindo District.

3. Assessment findings

Households surveyed

During the assessment 880 households were surveyed as distributed in the table below per sector.

No	Name of Sector	# surveyed Households	Name of Systems serving this sector
1	Burega	206 Households	Rwamugaza Gravity Water System, and Kararama Pumping Water System
2	Cyinzuzi	125 Households	Kararama Pumping Water System and Mutagata Pumping Water System
3	Masoro	136 Households	Marenge Pumping Water System, Mutagata Gravity Water System and Mutagata Pumping Water System
4	Murambi	142 Households	Mutagata Pumping Water System, Rwiseke Gravity Water System and Gakoma Gravity Water System.
5	Ntarabana	120 Households	Rwamugaza Gravity Water System, and Kararama Pumping Water System
6	Tumba	151 Households	Nyirambuga Pumping Water System, Matonyanga Gravity Water System

Source: Primary Data

Amount of water needed versus amount of water households can get

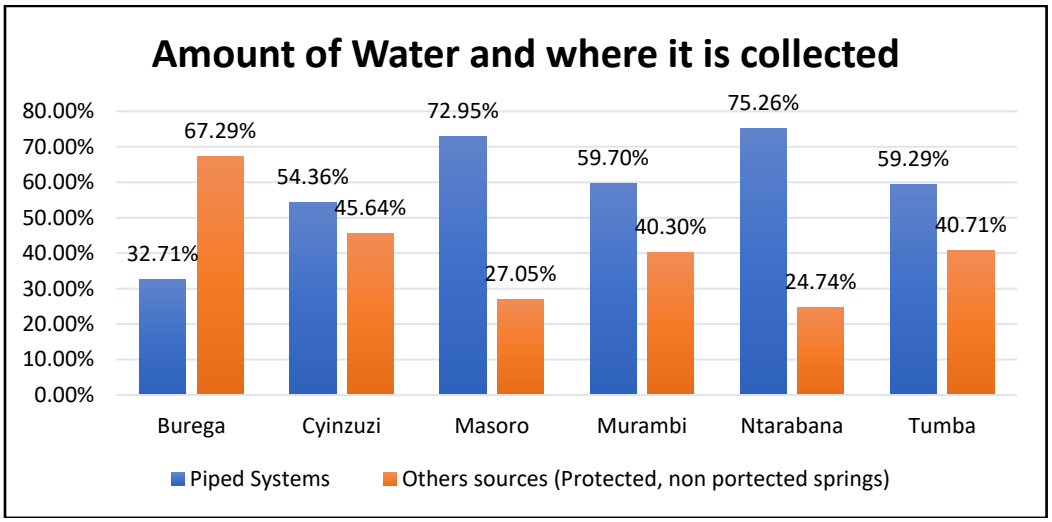
We asked households in the six sectors to understand how much water they need daily and how much water they can get daily and the results are distributed in the table below. From the table below on average households get less than 20 liters per person per day, Ntarabana sector has the highest average of liters per person at 16.1 liters per person per day from all sources both on piped systems and other sources like springs

No	Name of Sector	# surveyed Households	Average members in surveyed HH	Average amount of Water per HH needed in (liters) per day	Average amount of water That HH can get (In Liters) per day	Average liters per person
1	Burega	206 Households	5.7	91.5 Liters	56.3 Liters	9.8 Liters
2	Cyinzuzi	125 Households	6	93.8 Liters	71.5 Liters	11.8 Liters
3	Masoro	136 Households	5.3	86.6 Liters	69.0 Liters	12.9 Liters
4	Murambi	142 Households	5.6	114.4 Liters	72.4 Liters	12.9 Liters
5	Ntarabana	120 Households	4.4	92.3 Liters	71.4 Liters	16.1 Liters
6	Tumba	151 Households	5.1	74.4 Liters	60.6 Liters	11.7 Liters

Source: Primary Data

Amount of water and where it is collected

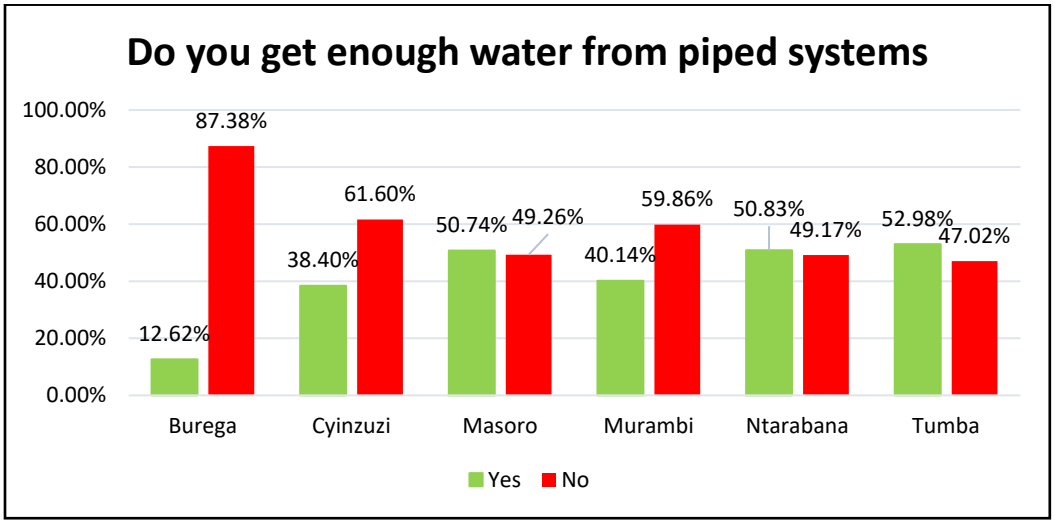
Of the average liters per households in each sector in the chart below is the breakdown of where the households get their water from. Masoro and Ntarabana sector get most of their water from piped systems where in Ntarabana sector 75.26% get their water from piped systems and masoro sector 72.95% get their water from piped systems. Burega sector has the highest number of users getting their water from other sources like springs and other non-protected water points.



Source: Primary Data

Do you get enough Water from Piped Systems?

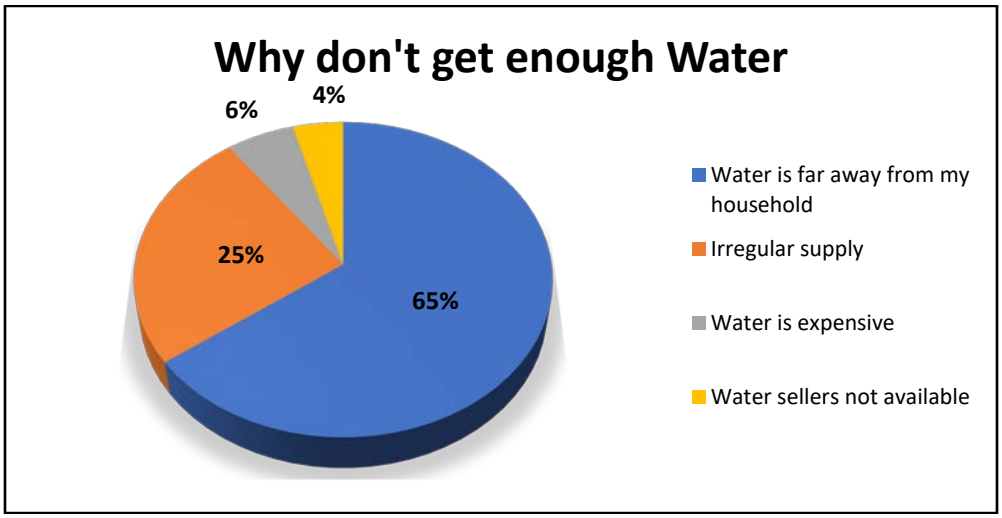
We asked households if they get enough water from the piped systems and Burega has the biggest population that don't get enough water from piped systems at 87.38% followed Cyinzuzi with 61.6% and Murambi with 59.86%, the others are between 50% and 30% who don't get enough water from Piped systems.



Source: Primary Data

Why don't you get enough Water?

To understand why households don't get enough water we asked households and of the 539 respondents who mentioned that they don't get enough water 65% mentioned the reason was water is far away from their households, 25% mentioned it is because of irregular supply, 6% mentioned that water is expensive and 4% percent mentioned that water sellers are not available so that they can get water.



Comparing Water needed, water from all sources and water from piped systems

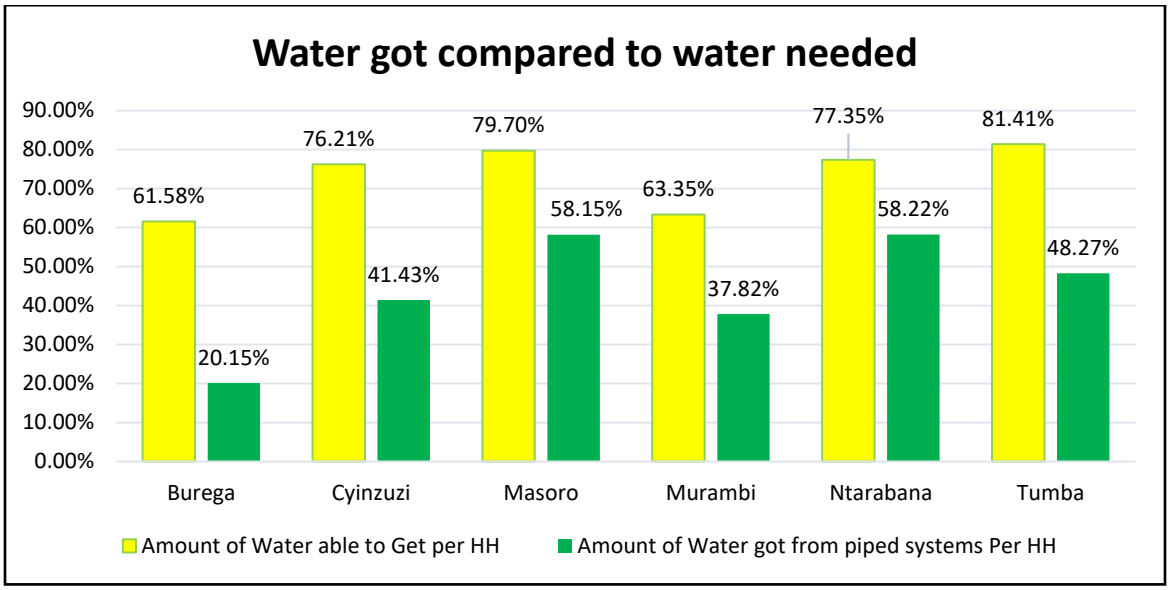
In the table below on average households in Burega sector get 18.43 liters from piped system compared to the 91.48 liters needed daily, Cyinzuzi sector get 38.33 liters from piped system compared to the 93.84 liters needed daily, Masoro sector get 50.37 liters from piped system compared to the 86.62 liters needed daily, Murambi sector get 43.24 liters from piped system compared to the 114.33 liters needed daily, Ntarabana i sector get 53.75 liters from piped system compared to the 92.33 liters needed daily, and Tumba sector get 35.93 liters from piped system compared to the 74.44 liters needed daily.

Name of sector	Burega	Cyinzuzi	Masoro	Murambi	Ntarabana	Tumba
Needed amount of Water per HH	91.48	93.84	86.62	114.33	92.33	74.44
Amount of Water able to Get per HH	56.33	71.52	69.04	72.43	71.42	60.60
Amount of Water got from piped systems Per HH	18.43	38.88	50.37	43.24	53.75	35.93

Source: Primary Data

In the graph below comparing the daily needed water per households in Burega sector households can get 61.58% of the needed water (all sources) and 20.15% from piped systems compared to the needed water daily per households, Cyinzuzi sector households can get 72.21% of the needed water (all sources) and 41.43% from piped systems compared to the needed water daily per households, Masoro sector households can get 79.70% of the needed water (all sources) and 58.15% from piped systems compared to the needed water daily per households, Murambi sector households can get 63.35% of the needed water (all sources) and 37.82% from piped systems compared to the needed water daily per households, Ntarabana sector households can get 77.35% of the needed water (all sources) and 58.22% from piped systems compared to the needed water daily per households, and Tumba sector households can get 81.41% of the

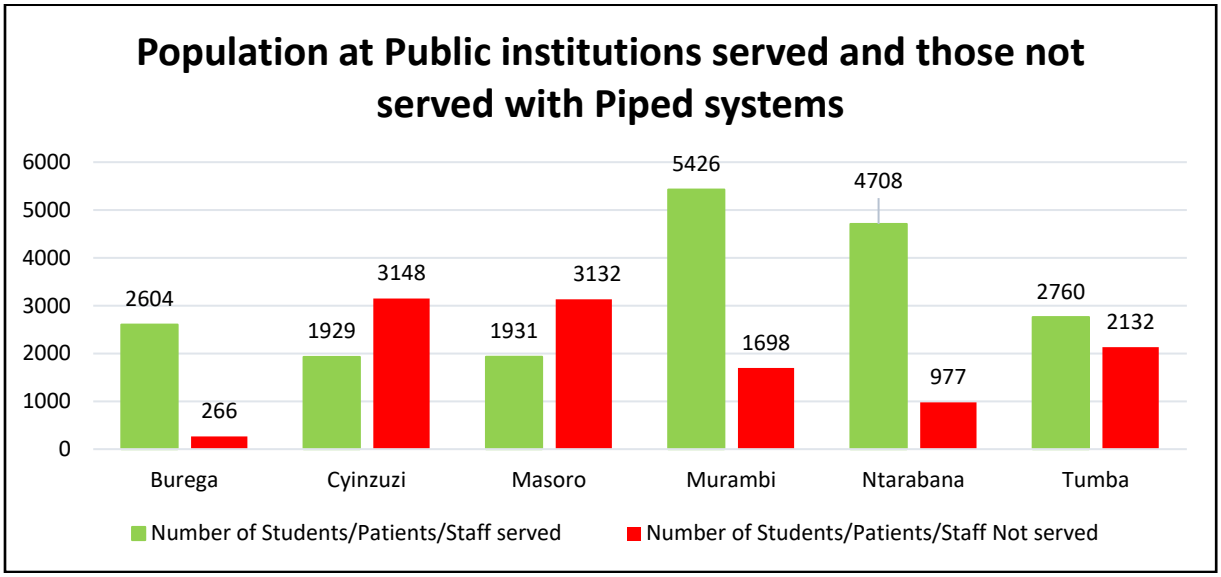
needed water (all sources) and 48.27% from piped systems compared to the needed water daily per households,



Source: Primary Data

Water used by Public institutions

For the public institutions to function effectively they need water on daily basis given that they have big populations in one place and from the graph below some institutions are not served with water where in Burega sector 2 public institutions with a population of 266 people don't have piped water, Cyinzuzi sector 5 public institution with a population of 3,148 people don't have piped water, Masoro sector 4 public institutions with a population of 1931 people don't have piped water, Murambi sector 3 public institutions with a population of 1698 people don't have piped water, Ntarabana sector 4 public institutions with a population of 977 people don't have piped water, and Tumba sector 4 public institutions with a population of 2132 people don't have piped water,



Source: Primary Data; Secondary data on institutions served from Ayateke Star Company ltd

Understanding water production versus needed water by households

From the secondary data got from Ayateke star company in total the systems that serve the six sectors under this assessment can offer a total of 841,882 liters per day.

System Name	Amount of Water Produced in Liters per day	Applying 30% Water loss compared to water produced	Percentage of water retained in the sectors under this assessment	Total Water production served in the sectors under this assessment in liters per day
Kararama Water System	362,880	108,864	70%	177,811
Rwamugaza Water system	198,720	59,616	100%	139,104
Mutagata Water System	276,480	82,944	90%	174,182
Marenge Water System	216,000	64,800	100%	151,200
Gakoma Water System	86,400	25,920	5%	3,024
Rwiseke Water System	120,960	36,288	40%	33,869
Nyirambuga Water System	544,320	163,296	30%	114,307
Matonyanga Water System	69,120	20,736	100%	48,384
Total Liters produced and served				**841,882**

Source: Secondary data, Ayateke Star Company ltd

Comparing current Households need with current water production

To satisfy the current need demand based on the average water usage in households there is a need 2,672,760 liters per day compared to current 841,882 liters produced and served per day. The current water production compared to need is 31.5% and thus there is a need to increase water production by at least three times the current water production.

Name of Sector	Average amount of water needed per HH per day (liters)	Total number of HH in sector	Total needed water per sector (in liters)
Burega	91.48	3247	297,035.56
Cyinzuzi	93.84	3547	332,850.48
Masoro	86.62	5491	475,630.42
Murambi	114.33	5596	639,790.68
Ntarabana	92.33	4956	457,587.48
Tumba	74.44	6312	469,865.28
Total amount of water needed per day			**2,672,759.90**

Source: Average liters; Primary data. Total Households; Planned settlement SLM reports.

Comparing current Households usage with current water production

To satisfy the current water usage if households were to get the water from systems would require 1,957,466 liters per day. The current water production compared to current usage is 43% and that means increasing the current water production more than double.

Name of Sector	Average amount of water used per HH per day (liters)	Total number of HH in sector	Total needed water per sector (in liters)
Burega	56.33	3247	182,903.51
Cyinzuzi	71.52	3547	253,681.44
Masoro	69.04	5491	379,098.64
Murambi	72.43	5596	405,318.28
Ntarabana	71.42	4956	353,957.52
Tumba	60.60	6312	382,507.20
Total amount of water used per day			**1,957,466.59**

Source: Average liters; Primary data. Total Households; Planned settlement SLM reports.

Comparing current Households and Public institutions need with current water production.

To satisfy the current need demand based on the average water usage in households and public institutions there is a need 2,826,315 liters per day compared to current 841,882 liters produced and served per day. The current water production compared to need is 29.88% and thus there is a need to increase water production by at least more than three times the current water production.

Name of Sector	Average amount of water needed per HH per day (liters)	Total number of HH in sector	Total needed water per sector (in liters) for Households	Total Number of Students/ Patients/ Staff etc	Total Liters needed liters per person per day at PI	Total Water needed at PI (in liters)	Total Water needed at both PI and HH
Burega	91.48	3247	297,035.56	2870	5	14,350	311,385.56
Cyinzuzi	93.84	3547	332,850.48	5077	5	25,385	358,235.48
Masoro	86.62	5491	475,630.42	5063	5	25,315	500,945.42
Murambi	114.33	5596	639,790.68	7124	5	35,620	675,410.68
Ntarabana	92.33	4956	457,587.48	5685	5	28,425	486,012.48
Tumba	74.44	6312	469,865.28	4892	5	24,460	494,325.28
Total amount of water needed per day			**2,672,759.90**			**153,555**	**2,826,314.90**

Source: Average liters; Primary data. Total Households; Planned settlement SLM reports.

Projected needed water in 4 years for both households and public institutions

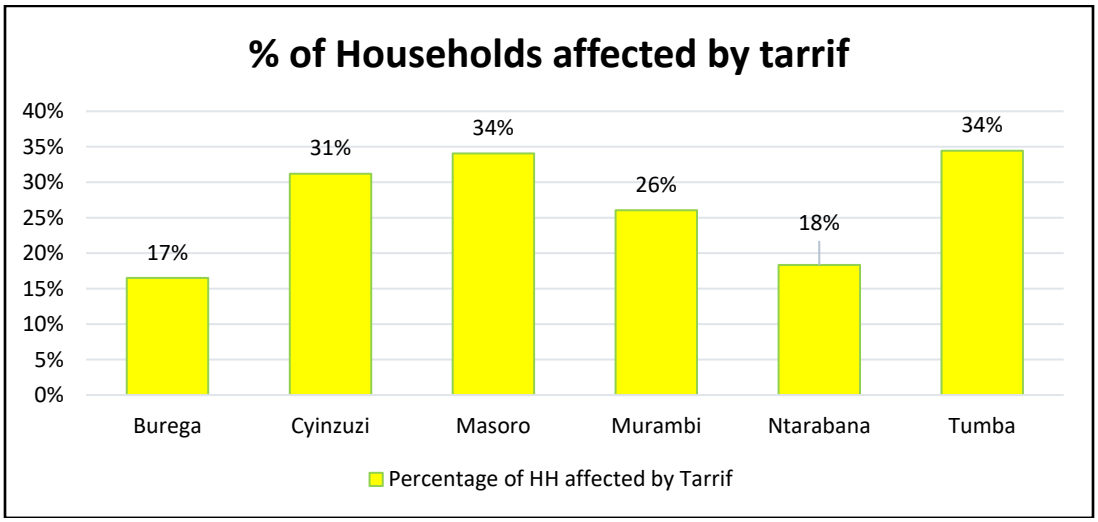
To meet a projected demand of water supply over the next four years in the six sectors of Burega, Cyinzuzi, masoro, Murambi, Ntarabana and Tumba sectors in Rulindo District a production of 2,980,066 liters is needed per day thus at least 2980.066 m3 per day and produce this water production means nearly increasing the water production by four times the current water production

Name of Sector	Total Water needed at both PI and HH	Projected population increase per year	Number of projected years	Total needed/required Water production per day to meet demand
Burega	311,386	1.36%	4	328,324.93
Cyinzuzi	358,235	1.36%	4	377,723.49
Masoro	500,945	1.36%	4	528,196.85
Murambi	675,411	1.36%	4	712,153.02
Ntarabana	486,012	1.36%	4	512,451.56
Tumba	494,325	1.36%	4	521,216.58
Total Needed/Required Water to meet demand				2,980,066.43

Source: Needed water; Primary data. Projected population increase; secondary data

Income and how it affects access to Water

In the table below to understand how tariff, affect how much water that households can fetch we asked households and from the table below in sectors where they mostly use pumping systems are most affected compared to sectors where they use gravity systems. And thus, households are unable to fetch enough water from systems. Burega sector has 17% of the households affected by tariff, Ntarabana sector 18%, Masoro and Tumba sectors 34% respectively, Cyinzuzi 31% and Murambi sector 26% of the households are affected by the tariff thus limiting them to the amount of water they need daily.



4. Conclusion & recommendations

Conclusions

This assessment highlights important information that helps to understand issues in demand and supply of water in the sectors of Burega, Cyinzuzi, Masoro, Murambi, Ntarabana and Tumba sector in Rulindo district.

From the findings, we can conclude that:

- Current water production is little compared to current demand of water where it only covers 31.5% of the households' demand and 29.88% if you combine both households and public institutions;
- To cover the current demand not including future projections, water production need to tripled, or doubled to match the current water usage if households are to use only water from piped systems;
- Average liters per person from the piped systems is still low compared to the government standard where it ranges from 9.8 liters to 16.1 liters per person compared to 20 liters per person;
- Households in places where they mostly use pumping systems are most affected by the tariff thus limiting them on the amount of water they can fetch;
- Households who are unable to get enough water from piped systems say the main issue is that water is far from their households seconded by irregular supply.

Recommendations

- Increase water productions where possible do get water from other systems in neighboring sectors;
- Review the tariff to accommodate households who access water from pumping stations;
- Do water extensions where possible and encourage household's connections to tackle the issue of distance;
- Encourage households to move to planned settlements where water systems are built and recommended to be;
- Private operators should improve rationing management plans and households are well informed on when the water is available;
- Encourage households to have water storing containers like tanks, so that they can mitigate the current shortage by using rainwater or storing water from piped systems.