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Shortage of Water Supply and Its Effects on Urban Households: A Case of Burayu Town.

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ABSTRACT

It is true that water is a natural resource without which all living things cannot exist. It is a natural requirement for all living things to have access to water if they have to be alive, if the scarcity of water supply is observed difficult for people to live. The provision of shortage of water supply in developing countries is becoming a challenge for most water utilities especially public service providers. This thesis under the topic of ''shortage of water supply and its effects on households: A case of Burayu town, Oromia Regional state'' Aimed tostudy status of water service deliver. To achieve the objective of the study, a total of 138 household heads were randomly selected and interviewed by questionnaire. The data were collected through questionnaire, personal observation, Focus group discussion and key informant interviews. In addition; different documents from secondary sources were reviewed. The collected data were analyzed using a descriptive method. Accordingly, the finding of this study shows there was water shortage in two kebeles (Burayu Gefersa and Keta Burayu) of the town. Consequently, in order to narrow shortage of water supply by expansion of water supply services that match with the town development must be carried out. The town water supply service enterprise should devise a mechanism (such as increase production and sources, accessibility and sustainability of clean water and time delivery for water. Government must work with concerned stakeholders (societies, the city administration, and NGOs) should charge their respective responsibilities properly.

Key words: Shortage, Water supply, urban livelihoods, Source, Quantity.

NTRODUCTION

1.1. Background of the Study

Water is extremely important for Living things (human beings, animals) and economic development (industrialization process and other sectors). Water is consumed by the animal itself in terms of drinking needs to support the physiological functions of the animal. Approximately 60-70 % of an animal body is water and animals need water for services that maintain vital physiological functions. The water intake of livestock is maintained by drinking and eating. Water leaves the body through respiration, evaporation, defecation and urination. Vital physiological functions will suffer from water deficit, which will result in reduced milk, meat and egg production (Steinfeld et al., 2006).

The water requirement of animals increase with increasing temperature and it is also shown that water losses tend to increase under such conditions (Lardy et al., 2008).Animals suffering from water deficiency can experience a depression of vital physiological functions more quickly and drastically than any other nutrient deficiency and domestic animals can only survive without water for seven days. Signs of dehydration are tightening of skin, weight loss and drying of mucous membranes and eyes (Lardy et al., 2008).

Sufficient potable water supply is one of the basic urban services, which highly affects the economic progress of towns and the health of their people. However, many urban centers around the world are facing serious problem of water supply. The problem in most of third world countries, including Ethiopia, is particularly worst and multidimensional (Getachew, 2002).

According to the Organization for Economic Cooperation and Development (OECD, 2010), throughout the world cities face the most sensitive challenges of service delivery because of fast growing populations. In many countries, developing countries in particular, the issue of service delivery is a challenge that needs to be addressed given the low quality of service provision and the pressing needs of the poor (Besley and Ghatak, 2007).

1.2. Statement of the Problem

The availability of water sources throughout the world is becoming depleted while populations are increasing, especially in developing countries. This has brought into focus the urgent need for planned action to manage water resources effectively for sustainable development (Khatri and Vairavamoorthy, 2007). According to (Getachew ,2002) water supply in Ethiopia is very poor and majority of the population do not have access to safe and adequate water supply.

According to the Organization for Economic Cooperation and Development (OECD, 2010) throughout the world cities face the most acute challenges of service delivery because of fast growing populations. Burayu city which is witnessing active industrialization, urbanization and population growth is also facing a challenge of providing basic services like drinking water supply and Sanitation, urban land, and infrastructure developments like roads, waste removal, public utility and social welfare. It is therefore important to study the service delivery opportunities in order to suggest ways that will improve service delivery and bring health growth in the city.

In Burayu town large population are living in different kebeles. People needs water for their daily life activities but they didn't get sufficient water for their life. In Burayu town there are six kebeles namely, Gefersa Burayu, Keta Burayu, Leku keta, Melka Gefersa, Gefersa Nono, and Gefersa Guje. Generally in Burayu town shortage of water supply problems are existed. From those kebeles the study was considered two Burayu kebels namely, Gefersa burayu kebele and keta Burayu kebele in these place Societies have no sufficient and sustainable water improvement for their daily life. Even the existing water supplies are not fairly distributed for the population of different kebeles in the town.

Therefore, the study was aimed to assess shortage of the water supply and its effects on service delivery in Burayu town.

1.3. Objective of the Study

The objective of the study was to assess the status of drinking water supply of service delivery of urban households.

1.4. Research Questions

What is the status of the Shortage of Drinking water supply in Burayu town?

1.5. Significance of the Study

The provision of clean drinking water have been remained the main problems in whole world predominantly in poor countries like Ethiopia. Hence, the study aimed to assess the water supply and its effects on service delivery of the livelihood of the people. The study also adds to the literature of urban water supply and its effects on urban livelihoods of Gefesa and Keta kebeles in Burayu Town. Over all, this study contributes to future researchers who want to carry-out an in-depth study in the future as a reference material.

1.6. Scope of the Study

This study was focused on Shortage of water supply and its effects on urban households Gefersaa Burayu and Keta Burayu kebeles. In Burayu there are six distinict kebele,but the research study was focused only Gefersaa Burayu(GB) and Keta Burayu(KB),those kebeles hold higher number of society but water supplied are insufficient. in those kebeles how the water distribution equity was under taken. The research didn't totally improved the water problem ,but only by identfying the main problem of shortage of water supply and its consequences on this kebeles households and suggested how these problems are decreased. Interms of methodology the research procedure conducted by descriptive analyses on both qualitative data and quantitative data.

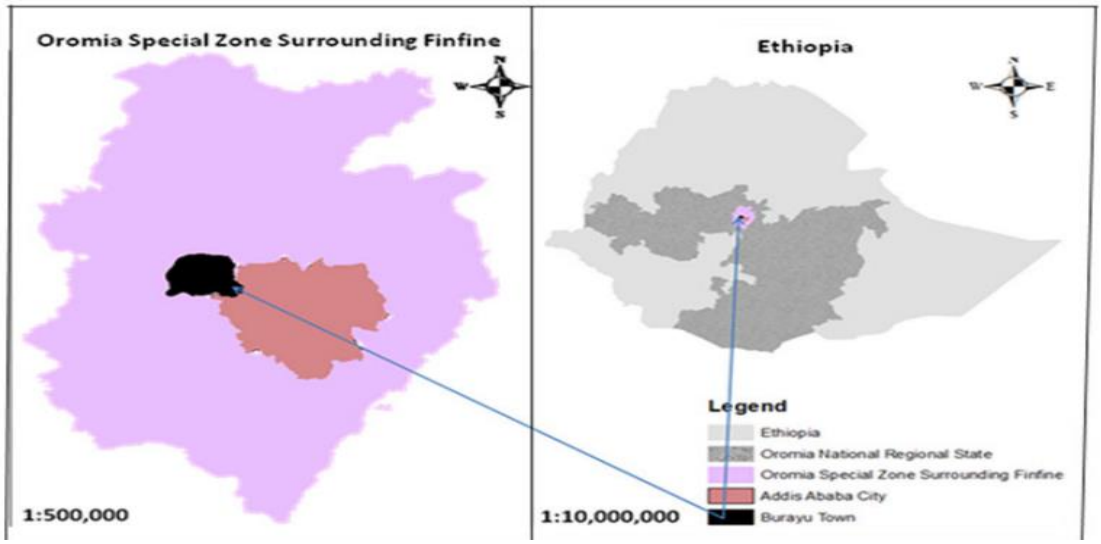
1.7. Limitations of the Study

There was no organized secondary data in the two offices; Burayu Town Water Supply Services Enterprise and the municipality office. The available data were fragmented and very difficult to access and get the necessary information. And also Shortage of finance was major challenges to accomplish this paper. The researcher faced with this problem on the process, it may difficult to conduct the research without sufficient amount of money.

2. METHODOLOGY AND THE RESEARCH DESIGN

2.1 Description of the Study Area

The study area is found in Oromia Special Zone Surrounding Finfine in Oromia National Regional State. Burayu town gets municipality reform in 2005 (Burayu Town Profile, 2017) According to the rank given by Oromia National Regional State to all urban centers of the region, the town is the first grade town in the region starting from 2006 and has got its master plan in December, 2007. The Town has a total land mass of about 90.57 square kilometers and shared more than 15 km of boundaries with Addis Ababa city administration. Astronomically, the town extends roughly from 9° 02′ to 9° 02′30″ N latitudes and 38° 03′30″ to 38° 41′30″ E longitudes.



2.2 Research Design

The research design used in this study was descriptive research method. The study employed mixed methods Sequencial explaratory method which include both qualitative and quantitative approaches. The quantitative approach was focused mainly on quantifiable data in terms of numbers and measures that was analysed statistically to data collection and analysis (Neuman, 2000).

2.3 Sampling Procedure

The sampling techniques and procedures were as followed; a sample technique was selected from using simple random sampling .The procedure of the work followed by house hold interview, Group discussion, and questioners distribution was conducted on each selected area and data was recorded for the analysis.

2.4 Sample Size Determination

The town has 147,605 populations or 15,458 households living in two kebeles; from this, 138 households were taken as sample study.

2.5 Data Sources and Methods of Collection

Primary Data Sources

Primary data included house hold in the kebeles, Kebeles office manager, and Burayu Water management office and Burayu Document Control center. A structured questionnaire was administered to the household the questionnaire was focused on the following major areas background information, household characteristics.

Focus group discussion that fully participate the different sections of the community was held including male and female ,household heads, elderly people and representatives of kebeles and Gare (including chairpersons) of water management committee members).Open-ended questions were used to guide discussions on issues like the problem of urban Water supply management and what was be next point solution. The last source of primary data was be field observation, thus, the researcher was conducted an observation through repeated as the reach water and waiting for the order to get water

Secondary Data Sources

To assist and verify the primary data secondary data was used and to this end several sources was accessed to generate secondary data. The secondary data were collected from different published and unpublished documents such as journal articles, statistical abstract, books, policy briefs, proceedings, study reports, magazines, websites, research findings, policy documents, different work manuals and other relevant documents to the research.

2.6 Procedures of Data Collection and Ethical Consideration

Firstly, the questionnaires and interview were prepared in English and then translated into Afan Oromo to collect feasible information from the sample respondents. Then the researcher gave clear orientation for the data collection before interview and questionnaires were conducted. It is also important to be aware of ethical consideration during data collection phase.

The ethical considerations were taken into account in the design and implementation of thesis project to prevent distress among the informants and for the successfulness of the study.

2.7 Data Collection Techniques

Interview , Key informants , Personal observation, was conducted with the selected sample households and officials to ask respondents opinion on current levels of water supply and its effects on service delivery like how they access to clean drinking water , how much they pay, at what distance they can get water and other related questions. It also gives opportunities' to the respondents' to express their feelings, ideas and opinions more about the problems at hand. Regarding the quantitative data, data were analyzed and presented using tables, frequency, percentages and charts which was done by Microsoft Excel to give clear understanding of the issue quantitatively.

3. RESULTS AND DISCUSSIONS

3.1 Socio – economic Characteristics of Respondents

Gender and age of the respondent

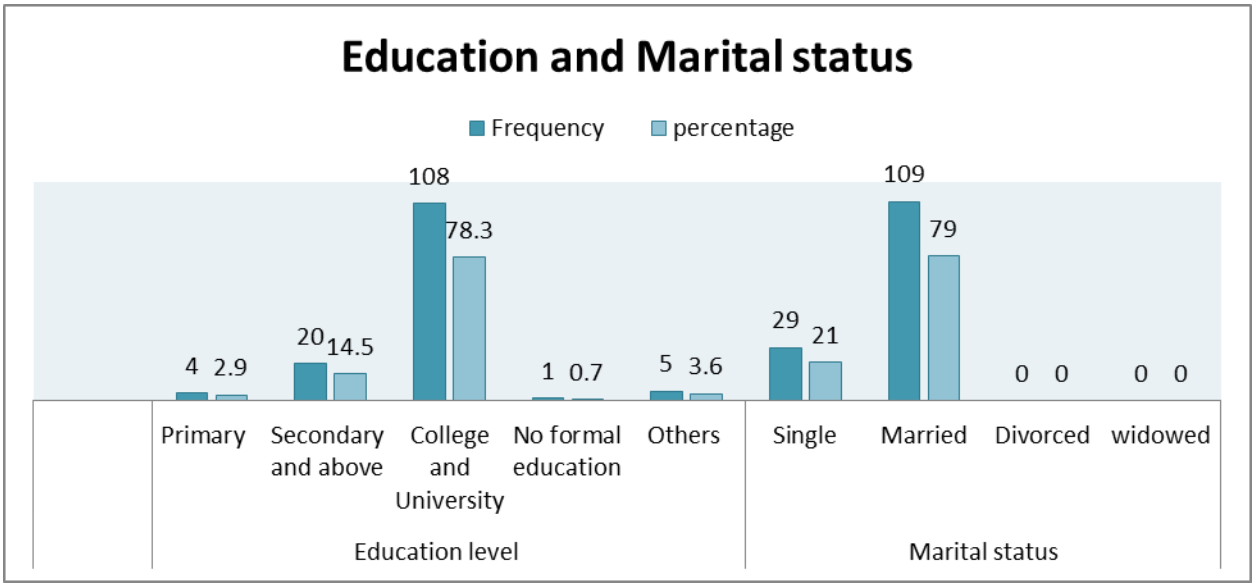
As shown in table 4, out of 138 interviewed sample households, 61.59 % and 38.41 % are male headed and female headed households respectively. The age of household heads ranges from the elder (65 years old) to the younger (18 years old).About 84(60.87%) of the households were between 18-30 years.

Households family size

From the table 5 the family size shows the highest 102(73.9%) households are less than 5 family size number. On the other hand, around 35 (25.4%) of the households had between 5 and 10 family sizes, ranging from one person to the family size of ten peoples. This large family size show that the water consumption at household level increases parallel as home family also increased.

Households educational background and marital status

According to table 6 about 108 (78.3%) household had education status of college and above. As well as most of households, 109(79.0 %) were married. They reportedly faced with shortage of water supply than single marital status comprising of 29 (21.0%).



Households year of live, occupational status and monthly income

Regarding the Occupational Status of households, Government Employee and Self-employed were 23.2%, 21.7% respectively and 64(46.4%) were private; only 8% of household were unemployed.

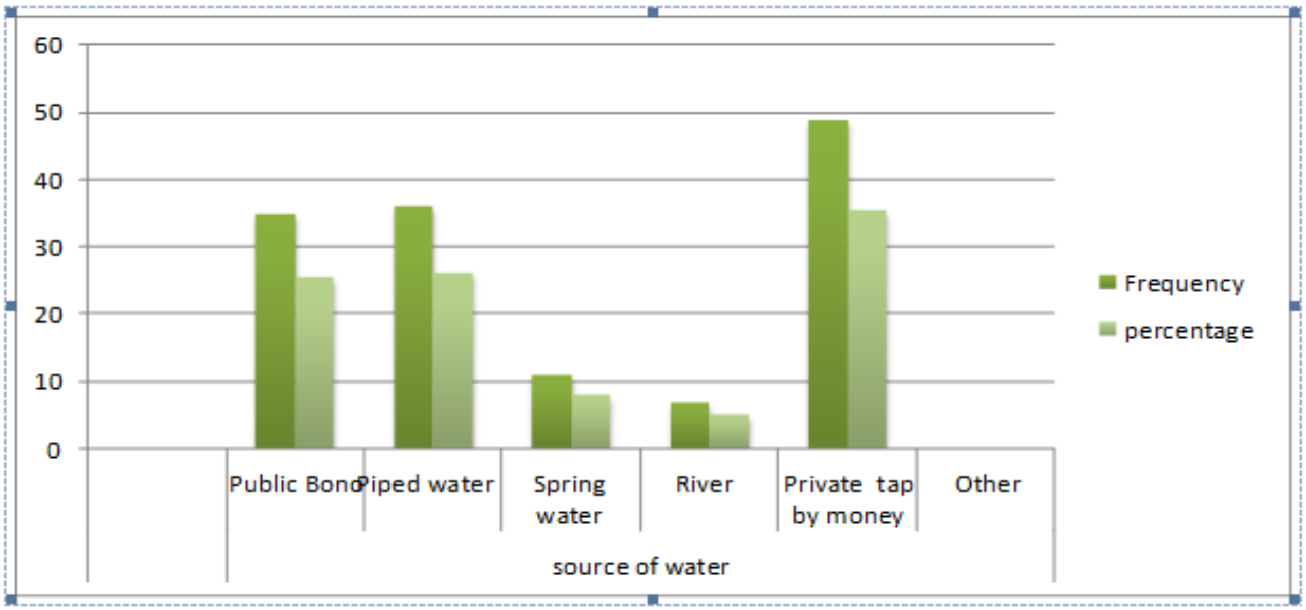
Accordingly, some of households were jobless and getting the water Seems difficult, because to buy from private deliverers requires money.

The monthly income of 73 (52.9%) households was less than 4000 ETB; by side its low income right now when economy is difficulty to survive. And about 16.7% obtaining between 4001-6000 as well as 30.4% of the households reportedly said they have got Greater than 6001 monthly income. And also finally from the characteristics of households around 38.4% of they have been lived in Burayu town 6 years and more than 6 years and the remaining of respondents are 5 and less than 5 years. Water is inevitable for all living things, so, every man run in challenge to get water, Even if most of households get low income.

3.2 Water Accessibility and Supply in Study Area

Water sources of sample households

Information obtained from the respondents show that they get water from Piped system and/or non-piped systems. Piped water supply is the safest and reliable sources of water like Public Bono and Piped water while non-piped systems are unprotected and unsafe, which include rivers River, Rainwater collection, Spring water and other unprotected sources. As table 8 household collects water from different sources. The highest percent of households 49(35.5%) reportedly said they collect from private tape by money and also around (13.1%) of household said they uses non piped source like spring water, and river. All of households whose use private tape they were expected to pay by money, and have impact directly on individual income economy.



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Household status of water service

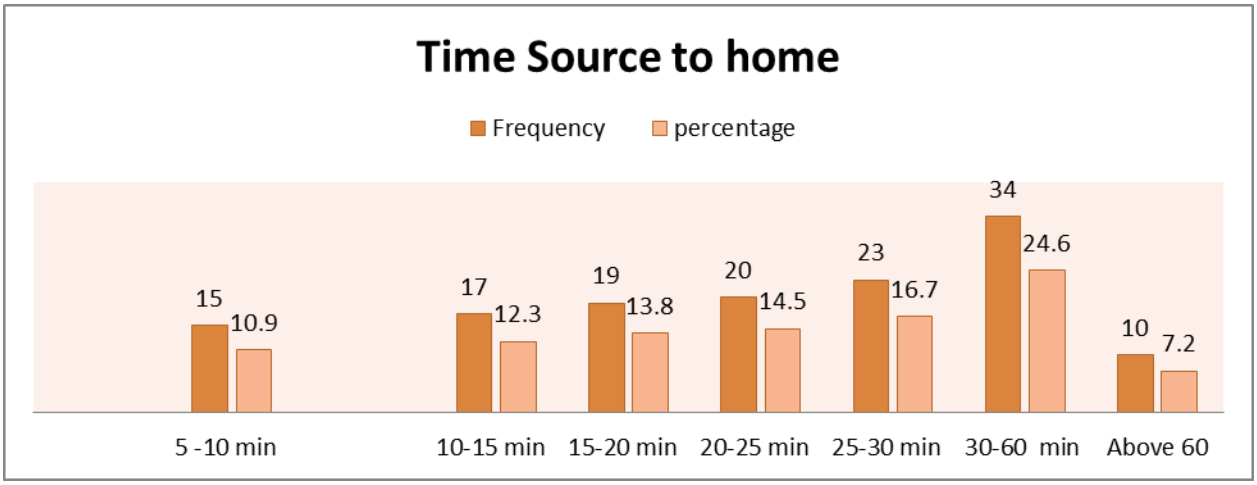
Safe drinking water is the birthright of all humankind (as much a birthright as clean air) (Rao, 2002), and hence access to clean water can be considered as one of the basic needs and rights of a human being. The status of water supply is assessed in terms of its access, amount, time delivered to customer. Regarding the status of water service almost all the respondents replied they had no satisfaction with the status of water services of Burayu town hence about 133(96.4%) said no satisfied with the status and only 2(1.4%) and 3(2.2%) Said they get satisfied with status of water services of the town. The value obtained was not measurable, but only the assumption or feelings of respondents was described by percentage.

Respondents Background		Frequency	percentage
Status of Water service	unsatisfactory	133	96.4
	Satisfactory	2	1.4
	Good	3	2.2
	very good	0	0

Source: Sampled household survey, (April, 2020)

Time required to collect water from the source

Time in collecting water from sources is the one factor of water supply services. At what time somebody go and come back to home by collecting water is the issue which must be considered. According to the report from the respondents, about 34(24.6%) of households said that they waste their time between 30 and 60 minutes and also 7.2 % used more than 60 minutes or more than one hour for same purpose. As well as (20-25), (25-30) minutes wasted by 20(14.5%), 23(16.7%) households respectively. And the remaining households reportedly said they used 5-20 minute to collect water (Table 10). This finding shows that about 17.2% of households take more than an hour to collect water in a single trip .Accordingly it could be conclude that they go for fetching water from source, assuming that they exercise 3 times per week, 12 times per month, this implies that more than 16 hours become waste by each household per month.



Source: Sampled household survey, (April, 2020)

Household distance from water source

Time and distance traveled to fetch water are also key indicators of water accessibility. To most communities of Africa, long distance travel to fetch water is common. Hence, they spend much time and money. According to WHO (2004) standards if households travel more than 200 meters far away from house in urban, there is no access. Distance traveled to fetch water is also one of the indicators of water accessibility. WHO standards in relation to time, more than 30 minutes no access 5 minutes - 30 minutes basic access and within 5 minutes intermediate access. Accordingly this study shows about more than quarter of households 41(29.7%) reportedly said they collect the water at distance of between (800M-1000M). On the other hand, about 18(13.0%) replied they walk more than 1km to collect water from its source. Not small number of household 24(17.45%) collect water from distance between 601-800M and few amounts of respondents 18(13.0) get water from distance between 50-200m. and generally 87% of households were no access in terms of distances

Household distance from home to water source

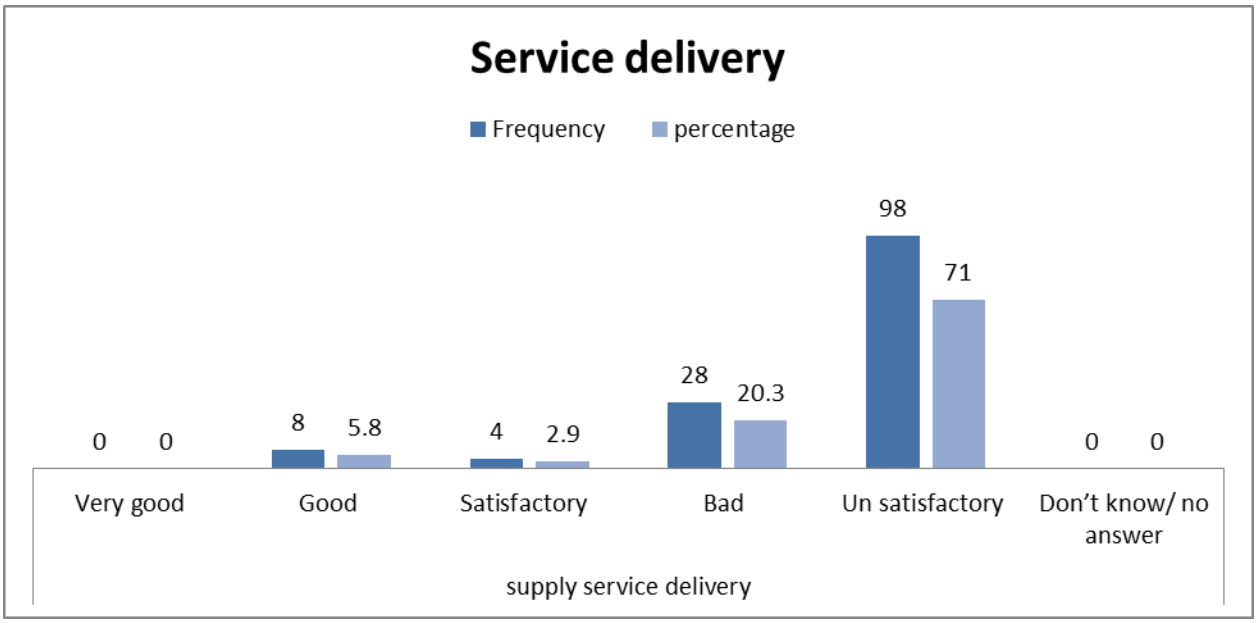
Respondents Background		Frequency	Percentage
Distance Home To water source	50M- 200m	18	13
	201M-400m	17	12.3

	401M-600M	20	14.5
	601-800M	24	17.4
	800M-1000M	41	29.7
	>1000M	18	13

Source: Sampled household survey, (April, 2020)

Household water supply service delivery

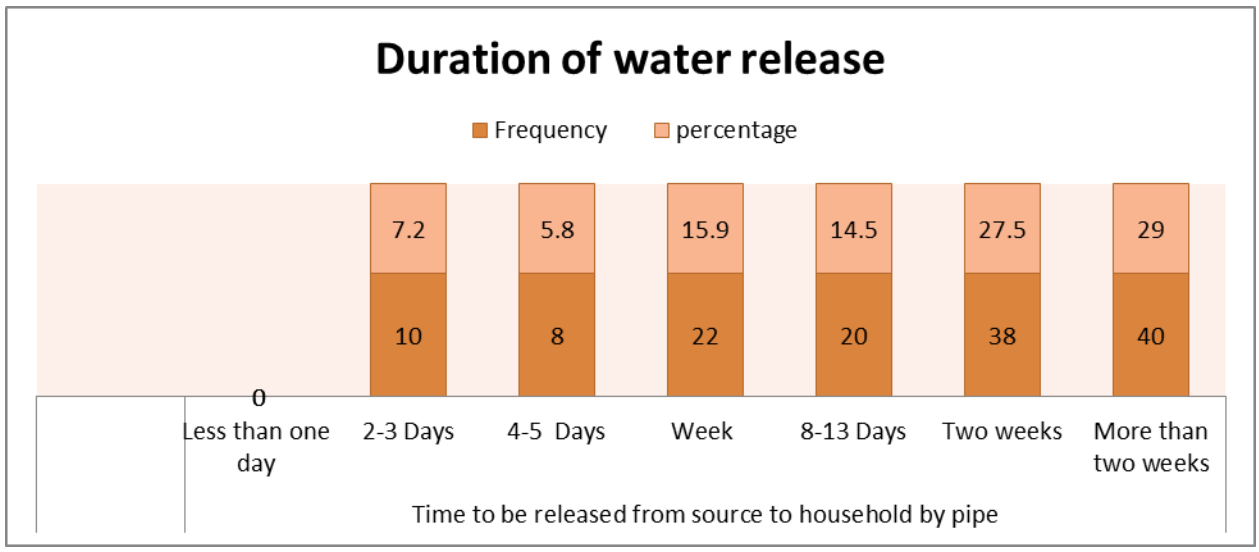
Concerning water supply service delivery table 12 shows 98 (71%) reportedly said the service delivery was unsatisfactory and 28(20.3%) said it was bad .and only 8(5. 8%) said the service delivery was good.



Source: Sampled household survey, (April, 2020)

Duration of water release

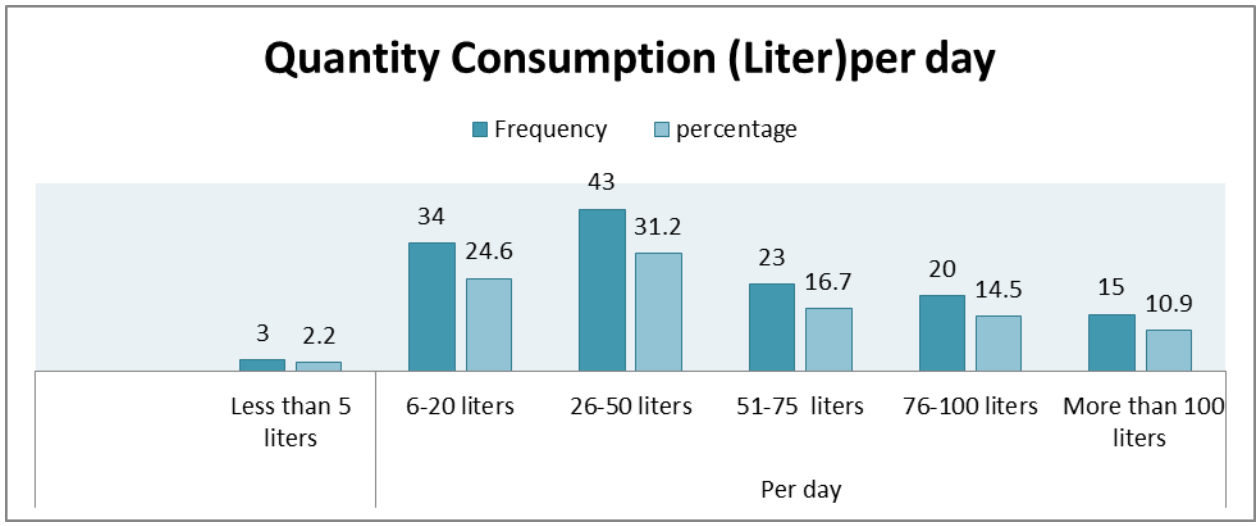
Water release from its source to household is not as to the satisfaction of the customer need, which is totally out of the demand need. According to table 13, household 40(29.0%) said they get the water after two weeks and about 38(27.5%) of respondents get distribution of water from the source to their home by pipe within two weeks. And not small amount of households 20(14.5%) percent, 22(15.9%) percent are received the water between 8-13 days and a week respectively.



Source: Sampled household survey, (April, 2020)

Quantity consumption of household (in liter)

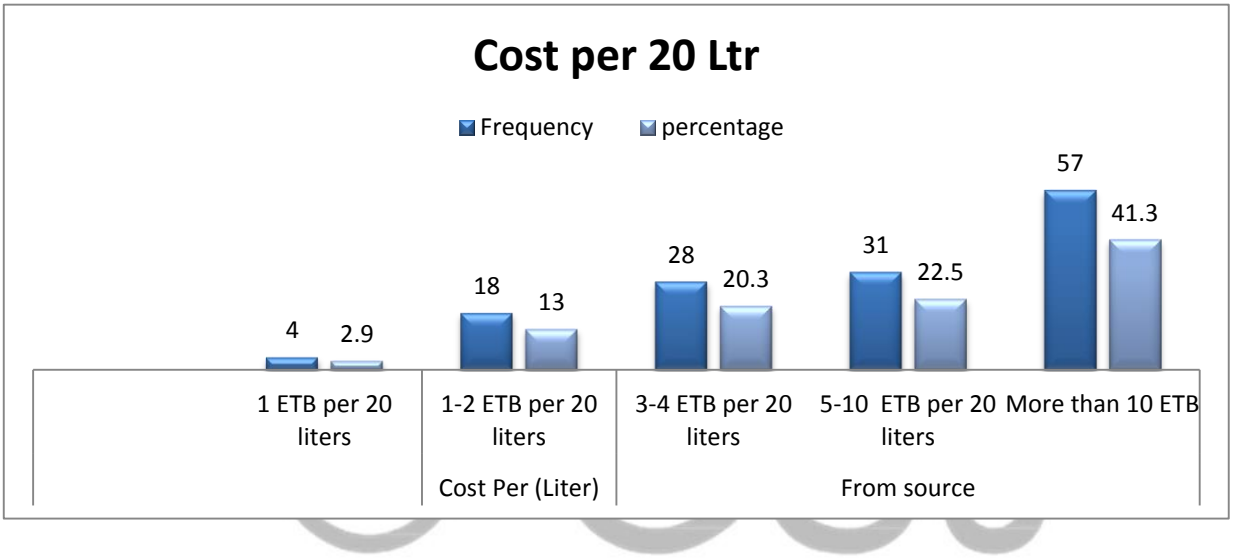
Water accessibility is an adequate amount of water, which is needed to satisfy metabolic, hygienic and domestic requirements at least 20 litters of safe water per person per day (UN-HABITAT, 2003).Similarly, the finding of this study shows that amount they need seems different as shown in table 14.Most of the households use water consumption of between 26-50 liters i.e. 43 (31.2%) percent, and 23(16.7%) of household Said they consume 51-75 liters within one days. Again 20(14.5%) of household require 76-100 liters. Not little amount of about 100 liters of water Reported to be is consumed by household 15(10.9%).



Source: Sampled household survey, (April, 2020)

Household cost per (liter) water from source

If the water services are well provided no need to pay extra cost for water, now but to live they have been paying additional costs. The surveyed households said they pay the money each day to buy water from different sources. The finding also shows they were paying to get water from individual private pipe. Accordingly, 57(41.3%) reportedly said they were paying more than 10 ETB for 20 liters water they use. Similarly about 31(22.5 %) of respondents reported they pay more than 5 ETB per 20 liters. And 28(20.3) of them reportedly said they invest 3-4 ETB per day for water bill.



Source: Sampled household survey, (April, 2020)

3.3 Data from Interview

Under these topics the data gathered from different parts are presented. About more than 60 key informants, group discussion, different with a position of office worker, technical officer and customer service management head were interviewed from the city water supply and the data collected from them analyzed as follows.

Status of water supply facilities in Burayu Town

The following points are gained from officials worker in Burayu water services bureau official respondents stated that; *The status of water supply services is not sufficient; because in Burayu Town there are only 21 water sources for each different kebels. So, It is not sufficient for the peoples because the sources and demands are not equal due to this matter the water released by the shift. He*

narrated the scarcity of fresh water supply by saying that it is really same to providing domestic water for community in spoon.

only 244075 meter cube will be produced for six kebeles. And more of public bonos were didn't work. Beside this From Burayu water services they were (18, 11) Public bono water for Gefersa Burayu and Keta Burayu, but from those only 8 and 3 were working in each kebeles respectively.As the finding reveals, for each Kebels 244,075 meter cube would have been produced per months which mean 244,075,000 liters per months. There are six kebels in Burayu town and 40,679,167 liters for each six kebeles. When this amount of water is distributed to two kebeles 81,358,333 liters are for (Gefersa and Keta Burayu) and per day this two kebeles have got 2711944 Liters. From the data we have more than 15458 households and more than 147605 populations in two kebels. So, when this much liters are distributed to the population of two kebels less than recommended liters for individual per days.

Source: Field photo of Lole 1spring water source, (April, 2020)

The highest percent of households 49(35.5%) reportedly said they collect from private tape by money. In terms of sources of water, at critical time they are forced to use unimproved sources like lole 1 and Lole 2 non-piped source.

From Group discussion and key informants the following general comments regarding water services in the following narrations. The respondents suggested that regarding accessibility and sustainability the clean water should be provide, Time delivery for water should minimized, water services officials should be strength, ability of technic department should be increased, Government must work with NGO or with different social classes who have interests, the number of source must be increased.

Photo of Group discussion on water source, supply and service in Burayu
Source: Field photo of Group discussion, (April, 2020)

Supply services and distribution

The information obtained from interview shows that, 96.4% interviewee replied, the current status of water services is unsatisfactory which is shown by the following indicators. No water service delivery for regular time, most of the time delivering time is after one month, the available source are low, the problem of stretching the line connection and etc. Are the reason behind why unsatisfactory in addition my observations confirms the existing the problems.

In terms of distribution the interview information show that in the same case more than 95% respondents notified the available resources are not fairly distributed to the population. Reasonably there identified ,increasing number of population from day to day, the effort of the enterprise to provide water that can satisfy the need of the population becomes difficult, the gap between the demand and the supply of the water is high, topography view or different land scape geographically, and delivery time.

3.4 Discussion

From the data collected the following are discussed. From the data 61.59 % are male; this high number noted that the researcher expected the data collected was clear and tangible because naturally males are stronger than females to express their feelings. Both age of the respondents and Households year of live in the study area show that as they have more experience about shortage of water supply. And also large family size show that the water consumption at household level increases parallel as family size also increased.

In case of their low monthly income and unemployed of households to get service buy money is very difficult. Accordingly, some of households were jobless and getting the water seems difficult, because to buy from private deliverers requires money. The highest percent of households 49(35.5%) reportedly said they collect from private tape by money. In terms of sources of water, at critical time they are forced to use unimproved sources like lole 1 and Lole 2 non-piped source

Status of water supply facilities are not good because ,only 21 water sources, 244,075M^3 produced per month , 8 out 18, 3 out11 Public bono are on function for Gb and Kb respectively. And also Water release from its source to household is not as to the satisfaction of the customer need water shiftily released. This finding shows that about 17.2% of households take more than an hour to collect water in a single trip .Accordingly it could be conclude that they go for fetching water from source, assuming that they exercise 3 times per week, 12 times per month, this implies that more than 16 hours become waste by each household per month.

Time and distance traveled to fetch water are also key indicators of water accessibility. To most communities of Africa, long distance travel to fetch water is common. Hence, they spend much time and money. According to WHO (2004) standards if households travel more than 200 meters far away from house in urban, there is no access. Distance traveled to fetch water is also one of the indicators of water accessibility. WHO standards in relation to time, more than 30 minutes no access 5 minutes - 30 minutes basic access and within 5 minutes intermediate access, accordingly this study shows no access

Water accessibility is an adequate amount of water, which is needed to satisfy metabolic, hygienic and domestic requirements at least 20 litters of safe water per person per day (UN-HABITAT, 2003).Similarly, the finding of this study shows that amount they need seems different. If the water services are well provided no need to pay extra cost for water, now but to live they have been paying additional costs. The surveyed households said they pay the money each day to buy water from different sources. The finding also shows they were paying to get water from individual private pipe.

4. SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

4.1 Summary of the Findings

This study it is intended to assessing of the status water supply and service provision water supply and services accessibility on the surveyed households. The water demand of the town is increasing due to urbanization and unprecedented population growth. The survey revealed that the town water supply cannot fulfill consumer demand for water since the number of the population and the existing water supply sources at the imbalance position.

The status of water supply services is not sufficient; because in Burayu Town there are only 21 water sources for each six kebels. But More than 75.4% of the households use water consumption greater than 25 liters up to 100 liters as reported.

Most of the surveyed households show that they have been using Private tap by money Around 41.3% reportedly said they were paying more than 10 ETB for 20 liters water they use and the left percent invest less than 10 per day for water bill.

Water release from its source to household is not as to the satisfaction of the customer need, which is totally out of the demand need because Household 56.5% said they get the water within two weeks and more than two weeks and the left percent are less than two weeks of respondents get distribution of water from the source to their home by pipe.

4.2 Conclusions

Based on the findings of the study the following conclusions were made.

The status of water services is found to be less than the recommended standard (Source: Howard & Bartram (2003), WHO (2004) Table1**)** and had no satisfaction. According to the survey results Regarding, the status of water service no satisfaction with the status of water services .The status of water supply is assessed in terms of its access, availability, distribution, satisfaction with service delivery, time delivery, distancing from water source, duration of water release, quantity consumption of household (in liter), cost per (liter) water from source and unfair water distribution.

4.3 Recommendations

Taking into consideration all the findings, the analysis and the conclusion drawn, the following points were made as recommended to solve the prevailing shortage of fresh water delivery service of the town: The study result indicated that, the current status of water supply and services accessibility in Burayu town is very low in any standards. Hence, it needs critical work to increase production and sources to provide behind the challenges and problems of the urban community.

4.4 Future Research Direction

A complete analysis of shortage of water supply and its effects on households: A case of Burayu town, Oromia Regional state requires an in depth and intensive investigation for all households and other livelihoods in the Burayu town for new researches on the same issue. A Further analysis of shortage of water supply and its effects on households requires an in depth and intensive investigation for each four left kebeles. But due to lack of finance, data, time, this study did not involve all of Burayu Kebeles.

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