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THESIS PROJECT WORK REPORT FOR MASTER OF ART IN

RURAL DEVELOPMENT (MARD)

ON

ASSESING POTABLE WATER COVERAGE

(THE CASE OF ADEA BERGA DISTRICT)

BY

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ADDIS ABABA

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## LIST OF ACRONYMS

ADP	Area development program
EDHS	Ethiopian Demographic and Health Survey
FY	Fiscal year
GTP	Growth and transformation plan
JMP	Joint Monitoring Program
MDG	Millennium Development Goal
PDD	Program Design Document
PADEP	Plan for Accelerated Development and End Poverty
RADWQ	Rapid Assessment of Drinking Water Quality
UN	United Nations
UNDP	United Nations Development Program
USD	United states Dollar
WHO	World Health Organization
WVNO	World Vision Ethiopia National Office

## **Chapter One: Introduction**

### **1.1 Back ground of the study**

Ethiopia has 12 river basins with an annual runoff volume of 122 billion cubic m<sup>3</sup> of water and an estimated 2.6 - 6.5 billion m<sup>3</sup> of ground water potential. This corresponds to an average of 1,575 m<sup>3</sup> of physically available water per person per year, a relatively large volume. However, due to large spatial and temporal variations in rainfall and lack of storage, water is often not available where and when needed. Only about 3% of water resources are used, of which only about 11% (0.3% of the total) is used for domestic water supply.

The health of the community entirely depends on the availability of adequate and safe water. Hence, water is primarily essential for life, health and human dignity. Therefore, in addition to public health benefits, all people have the right to safe and adequate water accessed in equitable manner for drinking, cooking, personal and domestic hygiene.

In this case, both adequacy and safety of drinking water are equally important to reduce the occurrence of water-related health problems especially diarrheal diseases. However, the access coverage of safe water provision and utilization in the country is not yet ensured to address the increasing water demands from a growing population, economic expansion and increasing mean water required per capita. The worst condition is that many communities in the rural part of the country are still using unprotected water sources by travelling long distances which determine the amount of water to be also scarce. Such water sources are constantly exposed to contamination from human and animal excretes in the process of economic activities and naturally occurring events. Drinking water is also liable for contamination during collection, transportation, storage and unsafe handling at household level. As a result, the concerted efforts made to reduce diarrheal diseases, which is the major contributor for under five mortality and morbidity, is countered by frequent occurrence of acute watery diarrheal particularly during the recent few years which was transmitted through fecal contamination of drinking water and food

The government of Ethiopia's interest for the provision of water, sanitation and hygiene services is reflected way back in 1995 when a new constitution was prepared. In this constitution, Article 90 states that "To the extent the country's resources permit, policies shall aim to provide all Ethiopians access to public health and education, clean water, housing, food and social security". Similarly Article 44 states that "All persons have the right to clean and healthy environment".

At the United Nations Millennium summit in September 2000, world leaders adopted the Millennium Development Goals (MDGs). Ethiopia is among the countries that have subscribed the MDGs. Target 10 of MDGs said that to halve by 2015 the proportion of people without sustainable access to safe water and basic sanitation.

The Government of Ethiopia accepted the Millennium Development Goals to provide water supply and sanitation for 37,917,142 and 43,800,000 people at the end of the development goals respectively. In other words, the current water supply and sanitation coverage will be 70 percent and 56 percent respectively in 2015. 19.42 billion Birr for water supply and 40 billion Birr for sanitation required to meet these targets.



In addition, the government has also laid out ambitious plans for water, sanitation and hygiene through its “Universal Access Plan II” which seeks to reach 98.5% access to safe water and 100% access to sanitation by 2015 (far more ambitious than the MDGs). With cost of USD\$ 2.5bn and meet the standard of potable water supply which is 15liter/capita/day with radius of 1.5km for rural and 20liter/capita/day with radius of 1/2km in urban. Memorandum of understanding was also signed b/n four government Ministries (Ministry of Water & Energy, Ministry of Health, Ministry of Education & Ministry of Finance and Economic Development, to support integrated wash program which benefits individuals, communities, schools and health posts holistically. Even though, improved drinking water coverage of the district looks at its infancy stage, Adea Berga district water office has been striving to contribute for the attainment of global and national potable water coverage target of MDG with construction of different water points through all partners’ participation.

## **1.2 Back ground of the area**

Adea Berga district is located in Oromia Regional State, West Showa Zone which is about 70 km from the capital city of the country Addis Ababa. The total area of the Woreda is 798.35 square kilometers (79835 hectare). It is located at 9°12' to 9° 37' latitude and 38°17' to 38°36' longitude.

The altitude of the area ranges from 1400 to 3500m.a.s.l. It is characterized by three agro ecologies, i.e., low land, middle and high lands which covers 37%, 34% and 29% of the area respectively. An annual average of rainfall ranges from 918mm to 1368mm while the minimum and maximum temperature reaches 10°C and 25°C respectively. The primary wet season extends from June through October; among these, July and August are the wettest months.

The district is bordered with Meta Robi district on west, Ejere district on south and Semen Shewa Zone on east and north direction. According to the Central Statistical Agency, 2007, the district has an estimated total population of 137,971.00. Average family size of per household is five/5 as per this census report.

The dominant ethnic group of the woreda is Oromo. Afan Oromo is the dominant language spoken by almost all of the district population. The religious groups are Orthodox and protestant Christianity followers where Orthodox covers 95% of it.

### 1.3 Statement of the problem

In rural Ethiopia in general and the research area in particular has been using surface water for drinking, cooking and personal hygiene. This imposed majorities for water based, water born and water based diseases.

Even though, the state planned to increase improved potable water coverage of its citizen as one of the component to meet MDG , people who are suffering with water based disease are not less still.

The other study reveals that water supply and sanitation coverage in Ethiopia is one of the lowest in the world, which is 39.4 percent and 11.5 percent in 2004 respectively. 63.9 percent of water supply came from unprotected source of water as compared to 35.9 percent water supply source that came from protected well/spring, public and private tap.

According to Ethiopian Demographic & Health Survey 2011 (EDHS), 50.8% of the population have access to improved sources of drinking water while it was 41.6% for rural population and 92.8% for urban. **(WVE NO strategy)**

The terminal report of World Vision Ethiopia Adea Berga area development program indicates as shortage of potable ranks the first priority problem of the district which is made using PRA tools during its phase in period.

Similarly, in the second design phase (FY'12-FY'16) of the same ADP insufficient potable water source is one of the top three problems. **(PDD of World Vision Adea Berga FY' 12-FY'16'P.60'' Terminal report World Vision Adea Berga FY'07-FY'11'P.8&9''**

The report of the district for 2005 E.C also indicates as the improved water coverage of the district is low which is 61.6% for woreda populations which is 58.5% for rural and 79.25% for the two rural towns.

#### **1.4 Objectives of the study**

The General objective of the study is to assess the extent of potable water coverage in the sample district.

#### **Specific objectives**

The following are the specific objectives of the study.

- To find out the extent of potable water coverage using different parameters like
  - Distance to fetch water
  - Source of water,
  - Amount of liter per day per capita
  - Time spent for water fetching
- To give recommendations based on the investigation.

## 1.5 Research questions

- What would be the distance covered by the respondents' to fetch water?
- What are the sources of drinking water?
- What is the quantity consumed daily?
- What was the time spent to fetch water?

## 1.6 Scope of the study

Since, touching all the population of the district in this case study was beyond the researcher's capacity, due to shortage in time, money, transportation constraints and other related costs needed to execute the field work, the study was handled in 11 kebele of sampled households.

## 1.7 Limitation of the study

- Since this project work was executed under supervision of single researcher it encountered many constraints like financial, logistics and man power which has its own impact on the quality of the work.
- Accessibility is the criteria for selection of sample kebeles where the research work was conducted. However, homogeneity of the community might be varied as the distance from the main road to the boundaries increase.
- Purposive sampling method has its own limitation on giving equal chance for residents of the district.

## Chapter Two: Literature Review of the study

### 2.1 Definitionsof Potable water

Even though definition of potable water varies from organization to organization; the word comes from the Latin *potare*, meaning "to drink." Potable water is water which is fit for consumption by humans and other animals. It is also called drinking water, in a reference to its intended use. Water may be naturally potable, as is the case with pristine springs, or it may need to be treated in order to be safe. In either instance, the safety of water is assessed with tests which look for potentially harmful contaminants

Drinking water, or potable water, is defined as having acceptable quality in terms of its physical, chemical, bacteriological parameters so that it can be safely used for drinking and cooking (WHO, 2004). WHO defines drinking water to be safe if and only if no any significant health risks during its lifespan of the scheme and when it is consumed.

Public standpipe, Borehole, Protected dug well, protected spring and Rainwater collection are considered as improved source of drinking water whereas unprotected well, unprotected spring, Vendor-provided water, Bottled water and Tanker truck-provided water are classified as unimproved source of drinking water as per the Definition of WHO and UNICEF JMP drinking supply definition.

**Potable water** is **water** that has been either treated, cleaned or **filtered** and meets established drinking **water** standards or is assumed to be reasonably free of germs, bacteria's,etc.

“Water treatment is the process of cleaning water. Treatment makes the water safe for people to drink. Because water is a good solvent, it picks up all sorts of natural pollutants. In nature, water is not always clean enough for people to drink. Treatment includes disinfection with chlorine or other chemicals to kill any germs in the water, boiling it over a fire, heating it in the sun, or by dipping a heated piece of iron into it. Filtering boiling water through sand and gravel and then allowing it to cool was another common treatment method. ”

## 2.2 Millennium Development Goal and potable water coverage

Between 1990 and 2008, the proportion of the world's population with access to improved drinking water sources increased from 77% to 87%. This constitutes an increase of almost 1.8 billion people worldwide and puts the world well on track for meeting the MDG drinking water target of 89%. Despite this progress, it is estimated that in 2008, there were still 884 million people that did not use improved drinking water sources. At the current rate of progress, 672 million people will not use improved drinking water sources in 2015. It is likely that many hundreds of millions more will still lack sustainable access to safe drinking water. ([JMP report of 2008](#))

According to the United Nations Development Program ([UNDP, 2006](#)), nearly one-sixth of the world's population obtains drinking water from unimproved sources, and in many developing areas, progress in expanding clean water coverage is modest. In Sub-Saharan Africa, for instance, the proportion of the population that depends on unimproved sources has declined only slightly, from 52 percent in 1990 to 44 percent in 2004 ([UNDP, 2006](#)).



Although the MDG drinking water target refers to sustainable access to safe drinking water, the MDG indicator –“use of an improved drinking water source” – does not include a measurement of either drinking water safety or sustainable access. This means that accurate estimates of the proportion of the global population with sustainable access to safe drinking water are likely to be significantly lower than estimates of that reportedly using improved drinking water sources.

The Government of Ethiopia is committed to fulfilling Target 10 of the MillenniumDevelopment Goal 7 that is reducing by half the proportion of the population without access to safe water supply and basic sanitation by the year 2015, thereby improving the overall health and socio-economic development condition and quality of life of the population, especially children and women. The provision of safe and adequate water supply and basic sanitation for the population has for reaching effects on health, productivity, quality of life , and at large to reduce poverty and ensure sustainable socio-economic development.

Ethiopia is also seeking to meet the UN Millennium Development Goals' targets on water, sanitation and hygiene through its Universal Access Plan II, which seeks to provide 98.5 percent of the population with access to safe water along with 100 percent access to sanitation by 2015.

As Ethiopia has a vision to reach the level of middle income countries by the year 2025, provision of these basic necessities as early as possible for the whole population in addition to improving health of the population has a synergetic effect to enhancing the socioeconomic development of the country to achieve its vision. Thus, the country has set very ambitious and stretched targets of reaching 100% coverage by the year 2015, in providing access to safe water supply and basic sanitation facilities which is now incorporated in GTP.

The proportion of Ethiopian households with access to an improved source of drinking water - categorized as a public tap or stand pipe, borehole, a protected well, spring water and rainwater - has reached 54 percent, according to the [Demographic Health Survey 2011](#). However, there are significant disparities between urban households, where 95 percent of people have access to an improved source of drinking water, and rural areas where just 42 percent access safe drinking water.

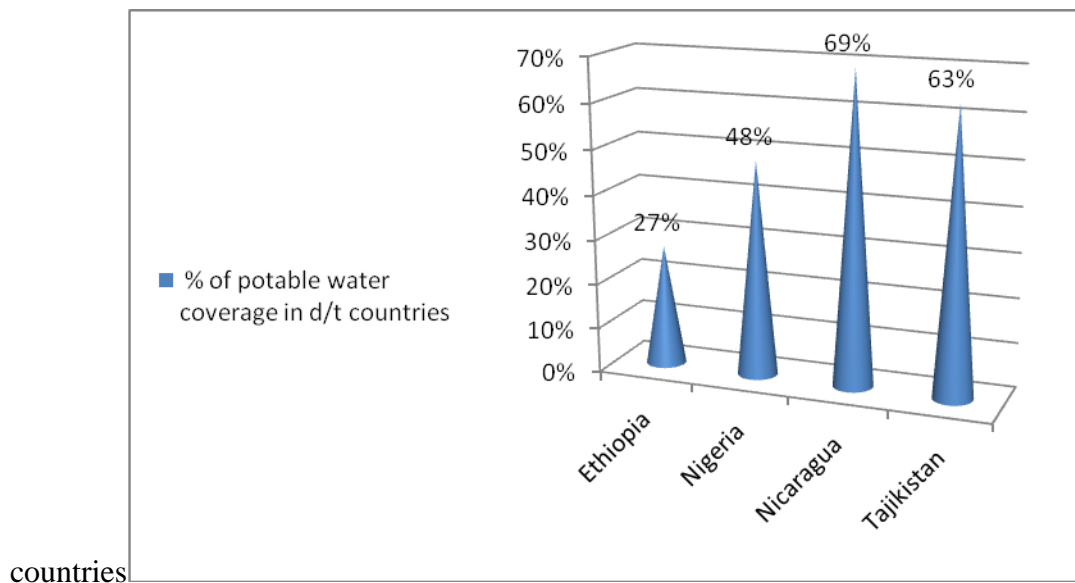
Some factors inhibiting the achievement of these goals are the limited capacity of water bureaus in the country's nine regions and water desks in the 550 woreda; insufficient cost recovery for proper operation and maintenance; and different policies and procedures used by various donors.

### **2.3 Trend of potable water coverage.**

Water covers 70 percent of the globe's surface, but most is salt water. Freshwater covers only 3 percent of the earth's surface and much of it lies frozen in the Antarctic and Greenland polar ice. Freshwater that is available for human consumption comes from rivers, lakes and underground source and aquifers. Together these sources account for just 1 percent of all water on earth. All people of the world depend on this supply and a significant portion of the world's population now face water shortages. Safe drinking water is a human birthright – as much a birthright as clean air. However, much of the world's population does not have access to safe drinking water. Of the 6 billion people on earth, more than one billion (one in six) lack accesses to safe drinking water. Moreover, about 2.5 billion (more than one in three) do not have access to adequate sanitation services. Together, these shortcomings cause waterborne diseases that kill on average more than 6million children each year (about 20,000 children a day).Currently, 31 countries representing 2.8 billion people, including China, India, Kenya, Ethiopia, Nigeria and Peru, confront chronic water problems. Within a generation, the world's population will climb to an estimated 8 billion people, yet, the amount of water will remain the same.

The challenge is as clear and compelling as pristine water cascading down a mountain stream: We must find new and equitable ways of saving, using and recycling the water (**Third World Academy of Sciences, annual report**)

Figure 1: Potable water coverage of different



**Source: WHO and UNICEFJMP/RADWQ report 2008.**

Applying the RADWQ water quality results to the JMP estimates results in a percentage point reduction for total access to safe drinking water in 2008 of 16% for Nicaragua, 11% for Ethiopia, 10% for Nigeria and 7% for Tajikistan.

This means that the proportion of the total population with access to safe drinking water was 69% instead of 85% in Nicaragua, 27% instead of 38% in Ethiopia, 48% instead of 58% in Nigeria, and 63% instead of 70% in Tajikistan. If similar corrections were to be applied across all countries this would significantly reduce the JMP global estimate for access to safe drinking water.

As the above figure indicates, **water supply and sanitation in Ethiopia** is amongst the lowest in Sub-Saharan Africa and the entire world. While access has increased substantially with funding from external aid, much still remains to be done to achieve the goal of halving the share of people without access to water and sanitation by 2015.

The majority of the community uses unprotected sources and rivers to obtain water for domestic use. These sources are shared by animals and humans alike, with resulting health risk.

Furthermore, the average amount of time spent looking for water from unprotected sources varies between 20 minutes and one hour per journey, and average water consumption in the majority of kebeles (villages) is some five liters per person per day, which amounts to 25% of the minimum recommended amount of accessing 15 liters per person per day within 1.5 km distance in rural areas where as getting 20 liters per person per day within 0.5km in urban areas of potable water coverage standard.

Clearly it can be seen that though the coverage have shown considerable improvement over the last decades, it remains far from adequate to fully satisfy the demand of the population for safe drinking water.

#### **2.4 Improved potable water coverage of Ethiopia & regions.**

The government's Plan for Accelerated Sustained Development and to End Poverty (PADEP), covering the period 2005-2010, aimed at increasing access to an improved water source to 84% and access to improved sanitation to 80% by 2010. These ambitious targets go well beyond the water and sanitation targets of the Millennium Development Goals, which aim at halving the share of people without access by 2015.

According to data from the Joint Monitoring Program/JMP for Water Supply and Sanitation of WHO and UNICEF, which are in turn based on data from various national surveys including the 2005 Ethiopia Demographic and Health Survey (DHS), access to an improved water source and improved sanitation was estimated as follows in 2008:

- 38% for improved water supply (98% for urban areas and 26% for rural areas)
- 12% for improved sanitation (29% in urban areas, 8% in rural areas)

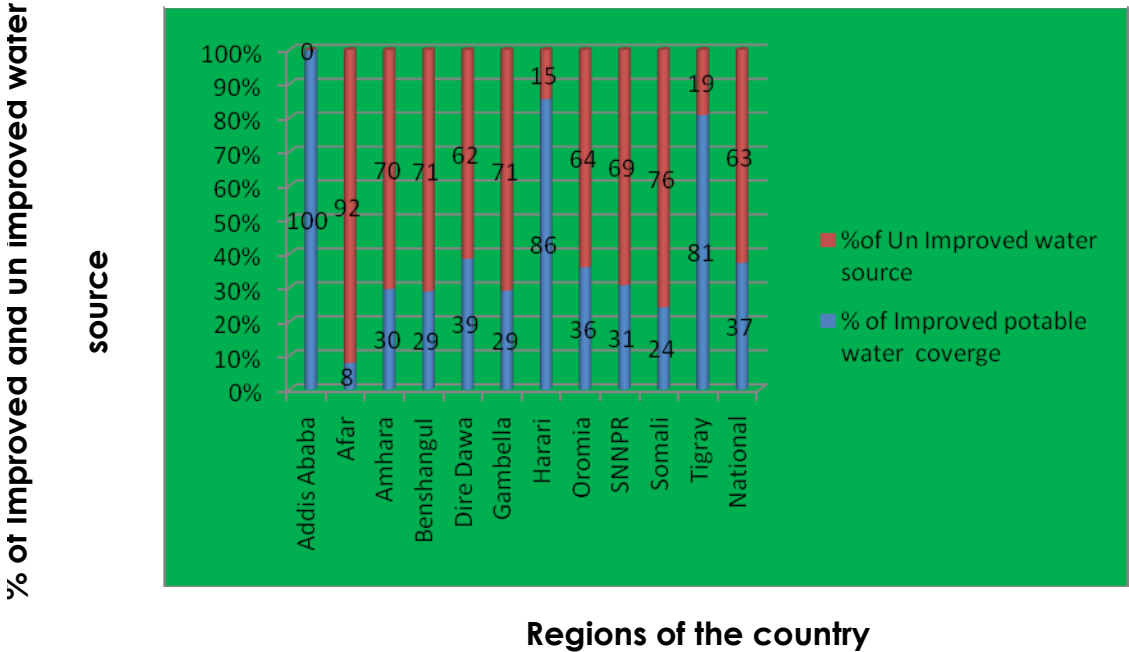
In 2010, access to drinking water was estimated at 68.5%: 91.5% in urban areas (within 0.5 km) and 65.8% in rural areas (within 1.5 km). The higher figure for rural areas may be because the distance to an improved water source used in this definition is higher than the distance used by the Demographic and Health Survey

Region	Total population predicted	Piped water (%)	Boreholes (%)	Dug wells (%)	Spring (%)	Vehicle trucing (%)	Roof catchment (%)	Total improved technologies (%)	Total unimproved technologies (%)
<b>Addis Ababa</b>	2,805,000	82.1	12.5	4.8	0.6	0	0	100	0
<b>Afar</b>	1,340,000	4.5	0.5	2.6	0.2	0	0	7.8	92.2
<b>Amhara</b>	18,143,000	10.2	2	9	7.4	0.9	0	29.6	70.4
<b>Benshangul</b>	594,000	5.1	6.7	14	3.1	0	0	28.9	71.1
<b>Dire Dawa</b>	370,000	29.4	0.5	5.1	3.5	0	0	38.5	61.5
<b>Gambella</b>	234,000	20	1	2.1	6	0	0	29.1	70.9
<b>Harari</b>	185,000	15	2.4	6.6	1.5	60	0	85.5	14.5
<b>Oromia</b>	25,098,000	26.1	3.4	1.8	4.7	0	0.1	36	64
<b>SNNPR</b>	14,085,000	10.4	3.1	3.1	14.1	0	0	30.7	69.3
<b>Somali</b>	4,109,000	9.9	4.5	9.5	0.4	0	0	24.2	75.8
<b>Tigray</b>	4,113,000	29.4	33.9	8.9	8.6	0	0	80.8	19.2
<b>National</b>	<b>71,076,000</b>	<b>19.8</b>	<b>5.1</b>	<b>5</b>	<b>7</b>	<b>0.4</b>	<b>0</b>	<b>37.3</b>	<b>62.7</b>

Table 1: Potable water coverage of Ethiopian WHO and UNICEF 2008 report



Figure 2: Potable water coverage of Ethiopia



## **CHAPTER 3: Methodology**

### **3.1 Research Design**

Survey research method is employed for the purpose of this research. Both probability and nonprobability sampling, Primary and secondary data collection and different instruments like computer and camera are employed for undertaking of the field data collection. For this study, mostly quantitative type of data gathering and some observations for qualitative analysis was also employed partially.

### **3.2 Source of data**

Mainly quantitative data from both primary and secondary sources was generated. The primary data was collected from randomly selected sample rural kebeles, officials of the woreda's and sample rural kebeles' water bureau and from field visit. In an effort to supplement the primary data and make this research work more valid and worthy, relevant secondary sources relevant to the study were also collected from annual reports of the district water and energy sector office.

Moreover, different written documents both published and unpublished- books, journals, research works, government policy and strategy in relation to the issue were googled through internet access to supplement the study.

### **3.3 Method of Data collection**

To meet the intended objectives of the research, primary data was collected from households selected randomly from sample kebele of the district using standard questionnaire prepared for these purpose. Prior to the commencement of the actual data collection, pilot test was conducted to check the workability of the household survey questionnaire. Close ended questionnaire was employed to collect primary data from the households about water source types; time required and amount of water fetched per household per day.

In addition, related data was also collected from district water resource office annual report of the recent reporting period.

Review of different relevant information from different website through internet access was also handled to get the necessary information.

### 3.4 Sampling

To undertake this study both purposive and non-purposive sampling was employed.

#### **First stage: Selection of Sample Rural Kebele Administrations**

From the existing 34 rural kebeles of the woreda, a total of 11 rural kebeles were selected as a sample purposively based on availability of transport access to conduct the study.

#### **Second stage: Selection of Households**

As beneficiaries are the main primary data sources of this study, from total of 6950 households of the eleven sample rural kebeles a total of 110 households were proportionally allocated, (Probability proportional to size(PPS), for the respective sample kebeles were interviewed representing the sample kebeles selected for this study(Table 2). To select households at field level segmentation method is employed dividing the selected sample kebeles based on geographical boundaries with in the kebele specifically" GOT" was employed in this survey. Once one got is selected randomly using lottery system then total numbers of households needed in that kebele were interviewed from the selected GOT.

**Table 2: Summary of Household survey sample size**

Woreda	Sample Kebeles	House Holds	
		Number of total house holds	Number of sample house holds
Adaberga	MaruChebot	527	8
	BishanDimo	478	8
	Dekukito	696	11
	Etaya	347	5
	Sireberga	549	9
	Waraillu	596	9
	Gatira Nabe	1140	18
	Ulagora	713	11
	Rejimokoda	622	10
	ChanchoBirate	730	12
Biyowegdi	552	9	
<b>Total sample size</b>		<b>6950</b>	<b>110</b>

### 3.5 Tools of data Analysis

The quantitative data collected through household survey/questionnaire/ was organized and analyzed by editing and feeding close ended questions response to computer by applying Microsoft office excel 2007 Program. Statistical methods such as tables and chart were employed based on the descriptive presentation. Analysis of charts was manipulated using simple Microsoft office excel 2007 program. In this case, the techniques used are percentage and mean/averages to calculate the extent of potable water coverage and the time spent for fetching water in the sampled kebeles.

On the other hand, the qualitative data collected using informal discussions with the user communities was organized and analyzed qualitatively through content analysis. For this, the note from the informal discussion and field observation was transcribed and translated from the local language (Afan Oromo) to English, was reviewed and organized to develop a general understanding. Then, through narrative description the results of the entire qualitative data was analyzed and interpreted.

## CHAPTER 4: Results and discussions

### 4.1. Overview of Water Supply Schemes in the district

According to the statistical report of the woreda rural water resource bureau, so far a total of 179 water supply points (65 hand dug wells, 84 spring development, 21 shallow well and 3 deep well, 2 Motorized spring, 4 extension work of water points) were constructed in the 34 rural kebeles of Adaberga woreda. Of these water points, according to the district report, 173 were functional and 06 were found to be non-functional.

Table 3: Water schemes in the district and their functionality

S/N	Types of technology	Functional	Non Functional	Total scheme	Functional Rate (%)	Non-Functional Rate (%)
1	Deep well	3		3	100	0
2	Spring Motorized	2		2	100	0
3	Shallow well	21		21	100	0
4	Hand dug well	64	1	65	98.46	1.54
5	Spring on spot	79	5	84	94.05	5.95
6	Extension of water pipes.	4		4	100	0
	<b>TOTAL</b>	<b>173</b>	<b>6</b>	<b>179</b>	<b>96.6%</b>	<b>3.4%</b>

Source: Adaberga district water and energy office annual report of 2006E.C (2014G.C).

The above table indicates district improved water sources constructed till 2014 with contribution of nongovernmental organization, governments and beneficiary community. Out of the total schemes in the district 96.6% (173) are currently serving target communities where as 3.4% (6) of the total schemes in the district needs maintenance to further serve the community as report indicates.

**Table 4: Adaberga district potable coverage of 2006 E.C**

<b>S/N</b>	<b>Description</b>	<b>Beneficiary</b>	<b>Population</b>	<b>Coverage (%)</b>
1	<b>Urban</b>	<b>19,499</b>	<b>21,870</b>	<b>89.15</b>
2	<b>Rular</b>	<b>89,840</b>	<b>124,560</b>	<b>72.12</b>
3	<b>Woreda</b>	<b>109,339</b>	<b>146,430</b>	<b>74.66</b>

***Source: Adaberga district water and energy office annual report of 2006E.C (2014G.C).***

The report indicates as total population of the district is one hundred forty six thousand and four hundred thirty/146,430.00 out of which 74% of the population is addressed with improved potable water sources according to the district water resource report of 2006 E.C.



## 4.2 Water schemes and potable water coverage of sampled kebeles.

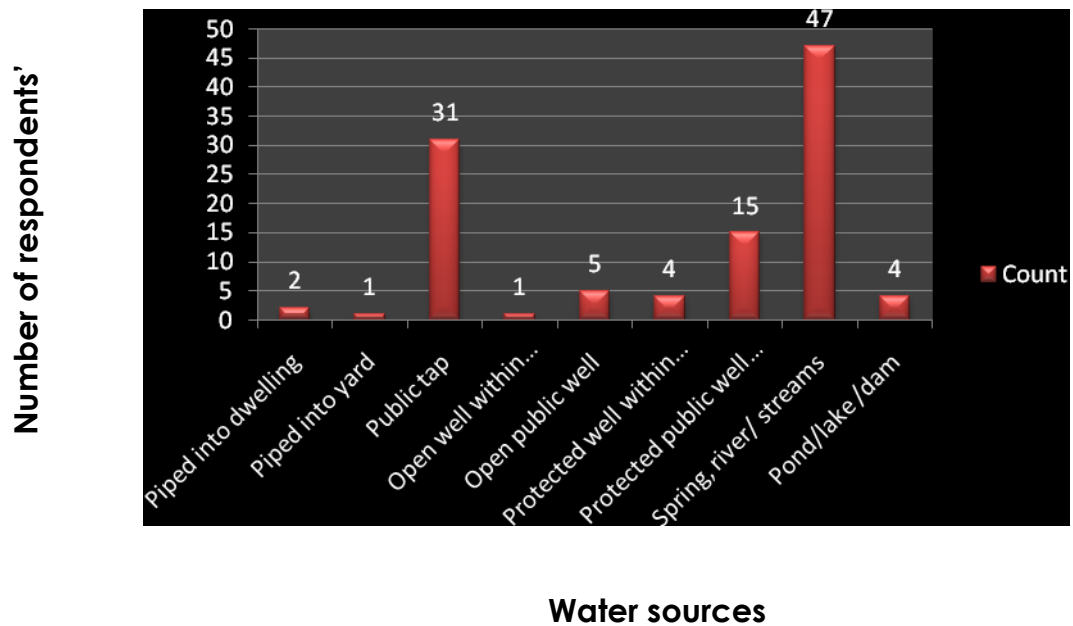
**Table 5: Total water schemes in sample kebeles**

S.NO	Sample Rural Kebeles	Water Scheme Types						Total
		HDW	Shallow Well	Spring	Extension of water points	Motorised Spring	Deep Well	
1	Deku Kito	3	2	9				14
2	Bishan Dimo	2	1	3	1			7
3	Biyo wegdi	1		5				6
4	Chanco Birate	4	6					10
5	Gatira Nabe	5	1	1		1		8
6	Itaya	2						2
7	M/Chebot	1	3				1	5
8	R/Mokoda	4		3	1		1	9
9	Sire Berga		3	4				7
10	Ula Gora	7		3				10
11	Wara Illu			5				5
	<b>Total</b>	<b>29</b>	<b>16</b>	<b>33</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>83</b>

**Source: Adaberga district water and energy office annual report of 2006E.C (2014G.C).**

The report of the District for 2006 E.C indicates that out of the 83 schemes of the sample KA only five of them are nonfunctional, Namely two spring at dekuquito, one spring at Itaya and one Hand dug well at Hula Gora are non-functional which is 6% of the total schemes in the sample kebeles.

Figure 3: Number of respondents' by water sources



**Table 6: Percent of respondents' by water sources**

<b>Scheme Type</b>	<b>Count</b>	<b>Percent</b>
Piped into dwelling	2	1.8%
Piped into yard	1	0.9%
Public tap	31	28.2%
Open well within dwelling	1	0.9%
Open public well	5	4.5%
Protected well within dwelling (properly built)	4	3.6%
Protected public well (properly built)	15	13.6%
Spring, river/ streams	47	42.7%
Pond/lake /dam	4	3.6%
Total	110	100%

The survey finding on the current water source indicates that, hand dug well, developed springs, public tap; rivers; lake and open well with in and out of dwelling are the major water sources in the sample kebeles.

It was found that, out of 110 house hold interviewed to identify their source of drinking water, only 48.1% of the totals have access to potable water. Whereas the left 51.9% of the respondents are using from unprotected sources like natural rivers, lake, open well within dwelling and open public well

Figure 4: percent of respondents' by water sources

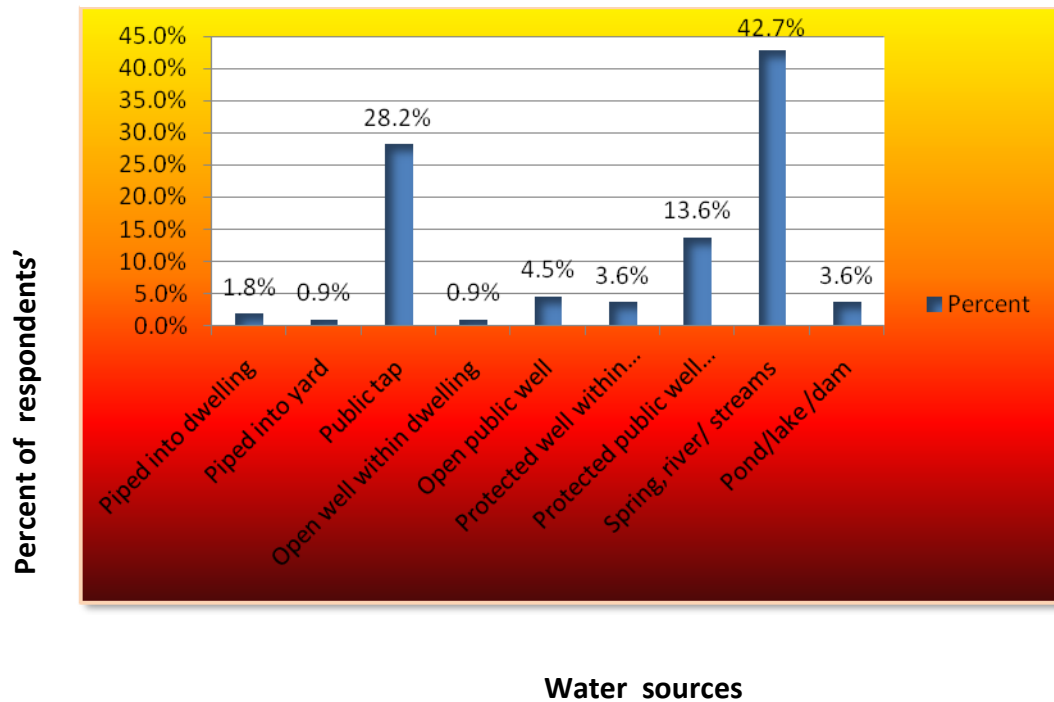


Table 7: Time spent for fetching water

<b>Time spent</b>	<b>Count</b>	<b>Percent</b>
0-30 minutes'	72	65%
30-60 minutes'	25	23%
More than 60 minutes'	13	12%
<b>Total</b>	<b>110</b>	<b>100%</b>

Regarding to the average time taken for a double trip to fetch water from the current water source the statistical finding of the survey indicates that 65 % of the total respondents spend less than 30 minutes. About 23 % of the respondents reported as they need between 30 minutes and 60 minutes. The remaining 12 % travel more than an hour for fetching water for their consumption

Even though, the above statistics is the time required for double trip to water sources with the assumption there are no persons who are waiting to fetch water. However, majority of respondents' replied that the time required for waiting is greater than the time required to travel to the water sources. Mostly, Public tap beneficiaries encounter this problem than who are using from unprotected sources.

**Table 8: Amount of water per capita per day**

	Total liter fetched	N	Mean
How much water did you fetch yesterday?	7669.2	110	69.72

According to WHO, basic access can be defined as the availability of drinking water at least 20 liters per day per person at a distance of not more than 1 km from the source to the house and a maximum time taken to collect round trip of 30 minutes.

Accordingly, amount of water consumed per day was the other area of interest. Respondents were asked about the average amount of water they use per day for domestic consumption (drinking, cooking, bathing, washing clothes and dishes). The statistical finding indicates amount of water fetched per day per household was 69.7 liters which is 12.6 liters per individual of the average family size 5.5 of the district as per World Vision Ethiopia Adaberga area development program Baseline report for 2013fiscal year. This indicates as amount of water per head is below the standard.

## **CHAPTER 5: Conclusions and Recommendations**

### **5.1 Conclusions**

Since the establishment of the Federal water resource ministry, 1995, potable water coverage of the country is increased from 17% to 38% in 2008 according to government figures based on national survey data and used by the WHO and UNICEF to monitor the Millennium Development Goals and to 68.5 % in 2010 which is used by the Ministry of Finance and Economic Development for planning purposes.

Despite such improvements, water borne diseases are among the leading health problems the country is facing across all regions. Thus, this research is an attempt designed to assess the extent of this problem in specific district the so called Adaberga.

From the research finding of this specific district, it was indicated that out of 110 house hold interviewed to identify their source of drinking water, only 48.1% of the totals have access to potable water. Whereas the left 51.9% of the respondents are using from unprotected sources like natural rivers, lake, open well within dwelling and open public well.

Regarding to the average time taken for a double trip to fetch water from the current water source the statistical finding of the survey indicates that 65 % of the total respondents spend less than 30 minutes. About 23 % of the respondents reported as they need between 30 minutes and 60 minutes. The remaining 12 % travel more than an hour for fetching water for their consumption.

Amount of water consumed per day was also the other area of interest. Hence, respondents were asked about the average amount of water they use per day for domestic consumption (drinking, cooking, bathing, washing clothes and dishes).

Accordingly, the finding indicates the amount of water fetched per day per household was 69.7 liters which is 12.6 liters per individual of the average family size 5.5. This indicates as amount of water per head is below the standard.



## 5.2 Recommendations

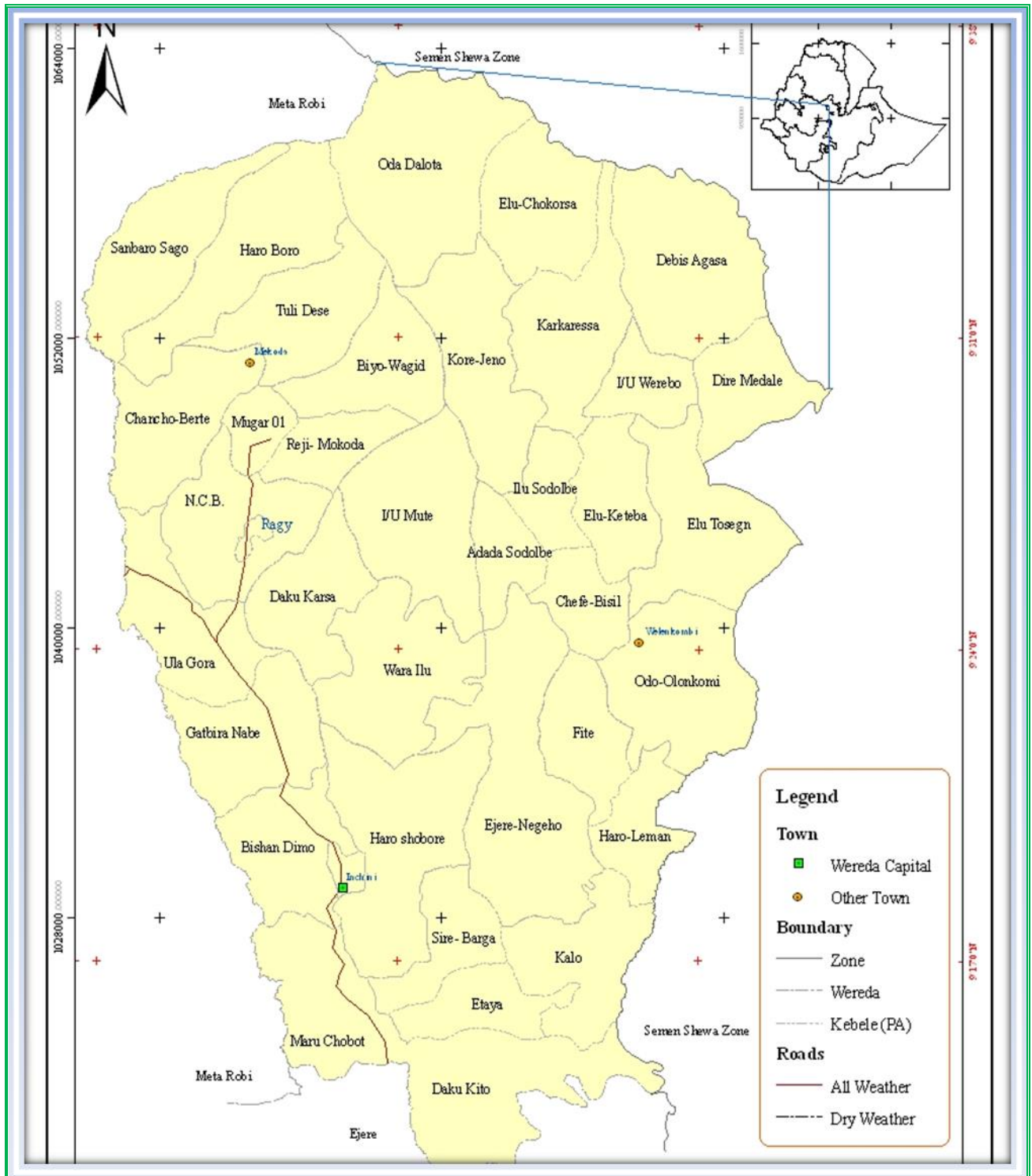
To bring improvement in potable water coverage of Adaberga district, the governing body, concerned sector office and development partners should give due attention on the following major actions:

- ❖ Construction of improved water schemes like hand dug wells, spring development, shallow wells and the like for enhancing access of rural households for improved water sources
- ❖ Capacity building training for the community on the ways of water filtration and purification with locally available resources.
- ❖ To keep the available water schemes sustainable, there should be a system in place for prevention and regular maintenance of schemes by beneficiaries themselves. It is, therefore, suggested that the woreda water resource bureau in coordination with the community should have water management committee for each scheme who will take timely measure in maintaining the non-functional water schemes.
- ❖ Finally, further detailed research to explore the hydro-geological aspect of the water supply sources in the district is recommended.

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# Annex 1: Map of Adaberga District



Source: Adaberga District Administration Office

## Annex 2: Questionnaires

### Questions

#### **Section One: Questions for Woreda water resource office**

1. What are sources of drinking water in the district?
  
2. Are there improved water sources in the rural kebele of the district? If yes? Please list the major once.
  
3. Could I get improved water schemes list in each kebeles of the district?  
a/ Yes b/ No  
If no, Why? .....
  
4. What percent of these schemes are currently functioning?  
.....
  
5. Could I get the potable water coverage of the district?  
a/ Yes b/ No  
If yes\_\_\_\_\_%. If no, what is the reason?.....

## Section Two: Questions for sample households

1) What is the main drinking water source for your household? Only the major one source is chosen here.

- a) Piped into dwelling    b) Piped into yard    c) Public tap
- d) Open well within dwelling    e) Open public well    f) Protected well within dwelling (properly built)    g) Protected public well (properly built)
- h) spring, river/ streams
- i) Pond/lake /dam

2) How long does it take to go there, get water and come back?

- A) 0-30 minutes
- B) 30-60 minutes
- C) More than 60 minutes

3) How much liter of water you fetch each day? \_\_\_\_\_

**Thank you!**

## Gaaffii Afaan Oromoo

### **Kutaa tokkoffaa: Gaaffii biiroo bishaan anaaf qophaa'e.**

1. Maddi bishaan dhugaati aanaa kanaa maalfaati ?
2. Maddi bishaan dhugaati ammayoon(improved water sources) gandoota baadiyaa aanaa kana keessatti argamuu? Yoojjiraatan, warren gurgudoo naatarreessamee.
3. Maqoota Madda bishaan dhugaati ammayoo (improved water sources) gandoota tokko tokkoo baadiyaa aanaa kana keessa jiran anaaf laachu dandeesuu ?Yohindandaa'amne maali?
4. Maddoota bishaan dhugaati ammayoo gandoota baadiyaa aanaa kana keessaa,peereseentii meeqatu tajaajilaa jira ?  
.....
5. Bal'ina dhufinsa Bishaan dhugaatii qulqulluu aanaa kana argachuu naan danda'aa ?Yoo Eeyee ta'e....%, Yoo argachu hindanda'u ta'e, maaliif ?

**Kutaa lammaffaa: Gaaffiilee Abbaa waroota filatamaniif qopha'e.**

1. Bishaan dhugaati maatii keessaniif eessaa argatu ? Tokko qofaa filatu !
  - a) *Bishaan Boomba naanno manaa jireenyaa jiru*
  - b) *Bishaan Boomba dallaa keessa jiru*
  - c) Boonoo
  - d) *Bishaan banaa dallaa mana jireenyaa keessa jiru*
  - e) *Bishaan banaa kan uumataa/dallaa kan hinqabne*
  - f) *Bishaan dallaa mana jireenyaa keessa jiru (kanseeranijaarame)*
  - g) *Bishaan uumataa/dallaakanqabu*
  - h) *Burqaa, bishaan yaa'u.*
  - i) *Galaana/haroo/*
- 2) Bishaan kana waraabbatanii deebi'uuf yeroo ammamii isiniitti fudhata ?
  - A) Daqiiqaa 0-30
  - B) Daqiiqaa 30-60
  - C) Daqiiqaa 60 ol.
- 4) Guyyaatti bishaan dhugaati litira meeqa waraabbattu? \_\_\_\_\_

**Galatoomaa !**