



UNIVERSITY OF AGDER

Water supply and Sanitation

Development Impacts of Poor Accessibility of Potable Water Supply and
Basic Sanitation in Rural Ethiopia: A case study of Soddo District

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at the University of Agder and is therefore approved as a
part of this education. However, this does not imply that
the University answers for the methods that are used or the
conclusions that are drawn.*

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Declaration by Candidate

I hereby declare that the thesis: *'Water supply and sanitation-Development impacts of poor accessibility of potable water supply and sanitation in rural Ethiopia: A case study of Sodd District'* has not been submitted to any other universities than the university of Agder for any type of academic degree.

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Mekelle, Ethiopia, 1st June 2011

Date

Abstract

It is well known 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. It seems so why the 70 percent of our planet, earth, covered by water though the world population is facing water scarcity. Such scarcity of water is urging people to use water from unprotected sources which the world urban poor and rural population are highly affected by. As it is known 'water is life' because it gives life for all, on the contrary many are dying as a result of unsafe drinking water. The consequences of unsafe drinking water are in general negatively affecting the environmental and socio- economic development of a nation. As the world urban poor and rural population suffering from water, access to basic sanitation is also a challenge to these groups of world population. The combination of poor accessibility to potable water and basic sanitation is negatively impacting the economic, environmental, and social condition of a country. Ethiopia is one of the poorest countries in the world whose citizens have poor accessibility to potable water and basic sanitation. As it is in many countries the rural population of Ethiopia is more affected by the problem of water and sanitation than the urban population. Soddo district is one of those rural places which more than 90 percent of the district population lives in rural areas. Michael Semero peasant association is one of the rural peasant association which, taken as a sample study site, far lag behind any other peasant associations in the district. In this peasant association the access to potable water and basic sanitation is a privilege rather than rights which this paper discussed in details the impacts of the poor accessibility to potable water and sanitation on the economic, social and environmental condition of the area.

Key Words

Ethiopia, Economic Impact, Environmental Impact, Michael Semero Peasant Association, Soddo district, Social impact, Water supply and sanitation

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List of Abbreviations

AACCSA	Addis Ababa Chamber of Commerce and Sectoral Association.
BOFED	Bureau of Finance and Economic Development
CSA	Central Statistical Authority
CDC	Center for Disease Control and Prevention
DPPC	Disaster Prevention and Preparedness Commission
FDRE	Federal Democratic Republic of Ethiopia
FGD	Focus Group Discussion
GDP	Gross Domestic Product
HDI	Human Development Index
HDR	Human Development Report
HEP	Health Extension Programme
HEW	Health Extension Workers
JMP	Joint Monitoring Programme
MDGs	Millennium Development Goals
MWR	Ministry of Water Resources
NGOs	Nongovernmental Organizations
SNNPR	Southern Nations and Nationalities of Peoples Region
SNNPRS	Southern Nations and Nationalities of People's Region State
UNICEF	United Nations Children's Fund
UNESCO	United Nations Educational Scientific and Cultural Organization
UNDP	United Nations Development Programme
USGS	United States Geological Survey
WHO	World Health Organization
WWC	World Water Council
WSSCC	Water Supply & Sanitation Collaborative Council
WSP-EAP	Water and Sanitation Programme-East Asia and the Pacific

Glossary

Areq: a locally distilled spirit

Br.-Birr: Ethiopian Currency

Ensete: a type of crop, also known as false banana, serves as a main source of food in Soddo district

Idir: non-profit self-help organization. Originally established as a funeral society

Iqub: is a traditional rotating savings club

Jerikan: a container used to hold water

Kocho: traditional food made from ensete

Tela: a locally brewed beer

Zone: sub regional administrative areas

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Water is an essential resource for survival and to secure good health. But people around the globe face a problem of water scarcity. As the HDR of UNDP (2006) stated, currently 700 million people in 43 countries live with water scarcity, of these many are in sub-Saharan Africa which represents one quarter of the global population that faces water scarcity live in developing countries. This scarcity of water forced people around the world to use unsafe water for drinking and other domestic uses (WHO, 2009). In schools and in some public places, we are getting familiar with a slogan which states '*water is life*'. Of course, it is true without which any living things cannot exist, but it would have been better if the slogan is replaced by '*clean water is life*' because we have learnt that everyday many people are dying because of water borne and water related diseases. Thus, it is not only the availability of water that guarantees life but it is also its quality. Like water, sanitation is also a basic need and a way to ensure healthy populations. Though having access to improved sanitation is a basic need, it is registered that by the year 2004, 611 million people in urban and 2 billion people in rural area did not have access to improved sanitation (JMP, 2006). Parallel to water, lack of proper sanitation is a serious health risk and an affront to human dignity. Thus, as WHO (2011) stated people are forced to defecate in open fields, in rivers or near areas where children play and food is prepared because they do not have access to improved sanitation.

Even though all human beings have the right to life, the right to education, the right to food...etc, but these fundamental human rights cannot be fully realized unless people have access to potable water and basic sanitation. Independent of the other fundamental human rights, all human beings also have the right to access potable water and basic sanitation (WWC, 2009). Since people in the developing countries are suffering from lack of access to water and basic sanitation, we cannot talk much more about the so-called 'rights' before survival. Thus, the question of having access to potable water and basic sanitation goes beyond rights, rather it is a question of survival.

The question of accessing potable water and basic sanitation also touches sustainable development. The Millennium Development Goal 7 of target 7.C can be a simple case to see how important water is for sustainable development (UNDP, 2010). Therefore, any country

without assuring access to potable water and basic sanitation cannot realize sustainable development. On the other hand, it is developing countries that are facing the problem of potable water and basic sanitation. Thus, availability of potable water is both a means to attain sustainable development and a symptom of development. That is why many developed countries do not have a problem of accessing potable water and basic sanitation as it exists in developing countries. In other words, poor accessibility of potable water and basic sanitation is both a cause and symptom for poverty. Therefore, access to potable water and basic sanitation and development are mutually dependent.

1.2. Statement of the Problem

According to UNDP (2006), in the world almost 2 million children die each year because they do not get a glass of potable water and basic sanitation. And millions of women and young girls are forced to spend hours fetching and carrying water. Sub-Saharan African countries are at the front of the water scarcity problem, one of which is Ethiopia despite the fact that the country has abundant groundwater, major lakes, and large volumes of rainfall (UNDP, 2006). This reminds us what is stated in the same report '*globally there is more than enough water to go around...*' but the mismatch between population and water, time variability in rainfall, and, in countries like Ethiopia, limited infrastructure for storage are some factors which have limited equal accessibility of water to all citizens.

Even though water scarcity is a worldwide problem, urban poor and rural inhabitants are at the forefront to be affected by the problem of poor access to potable water and basic sanitation. This is also the situation in rural Ethiopia, where women and children walk for hours to collect water. Many people in rural places walk for hours to collect polluted water from shallow and unprotected ponds, unprotected springs, and rivers, and in some areas they share the same water sources with their animals. All of these sources are subject to contamination as rainwater washes waste from surrounding areas into the sources. Additionally, young girls spend hours to fetch and carry unsafe water to drink when they are at the age they are supposed to be in school. Because they do not have access to potable water nearby, a girl in rural Ethiopia spend hours fetching water but a girl at the same age in an urban area spends time in school. In addition to the time they spend, as a result of poor access to potable water and basic sanitation, people are becoming unhealthy which leads to lost

productivity. The harsh environment because of poor sanitation is causing chaos to agriculture and gender inequality, since in rural parts of the country it is women and young girls who are responsible to fetch water.

It is not debatable that the poor access to potable water and basic sanitation is affecting lives of many in rural Ethiopia. The Soddo District is one of the Ethiopian rural districts where the community does not have access to potable water and basic sanitation. Thus, the communities are forced to use water from unprotected ponds which they may share with their animals. During the dry season, they are expected to go further to access water; and to defecate in an open field which undermines their dignity and impairs their health. Consequently, poor access to improved water and sanitation has adverse effects on economic well-being of the community and on creating an environment to live in.

The researcher has developed the premise that towns and rural areas near the national capital may have a much greater probability of having easy access to potable water supply and basic sanitation. The researcher believes that the water supply coverage in the national capital, Addis Ababa, is more than the coverage in other cities in the country. The study area is not far from the national capital but it is highly affected by lack of access to potable water supply and basic sanitation. Thus, the community uses unimproved sources of water for drinking, cooking, and maintaining adequate standards of hygiene. It is quite easy to understand how necessary water is, but it is believed that unsafe drinking water is as risky as water scarcity. Though they have access to water but those sources of drinking water are unimproved and unsafe. Thus, people are easily exposed to water borne and water related diseases and diseases related to poor access to basic sanitation. Therefore, the issue of ease of access to potable water and basic sanitation has to get attention from the responsible authorities as well as the community itself.

Thus, this study assessed the impacts of the poor access to potable water and basic sanitation on the economic wellbeing of the community in the district and its environmental consequences.

1.3. Objectives and Research Questions

1.3.1. Main Objective

The main objective of the research was to assess the impacts of poor accessibility to potable water and basic sanitation on rural development using Soddo District, Gurage Zone, Ethiopia as a case.

1.3.2. Research Questions

To fulfill the objective of the study, the following specific research questions were employed;

- What are the factors hindering the community to have access to potable water and basic sanitation?
- How does the poor accessibility to potable water and basic sanitation affect the economic wellbeing of the community?
- How does the poor accessibility to potable water and basic sanitation affect the environment of the area?

1.4. Thesis Organization

In order to have a clear background of the study area the thesis has included a presentation of the study area in Chapter Two and Chapter Three deals with the conceptual and empirical review of related literature so as to rest the thesis on scientific grounds. The thesis continues with Chapter Four which basically focuses on the methodological review of the whole study. It provides a description of the nature of the household survey, key informant interviews, focus group discussions, personal observation and document review. The main part of the thesis which is the empirical findings and discussion is presented in Chapter Five. In this chapter issues under the broad topics of water use and accessibility, toilet use and accessibility; the impacts of poor accessibility to potable drinking water and sanitation, and the possible recommendation measures forwarded from the community members are discussed briefly and it also includes the limitations and challenges the researcher faced during the thesis work. Finally the thesis includes conclusions and recommendations.

1.5. Scope of the Study

The thesis focuses basically on the water supply and sanitation of the rural places of Ethiopia particularly in the Gurage Zone, Soddo District. The emphasis is to identify the impact of the current water supply and sanitation situation on the social, economic, environmental and health situations of households in the sample study site. The study also investigates what the water supply and sanitation situation looks like from the perspective of the community members, HEWs and district water desk officers. In this regard, the poor access to potable water and basic sanitation on the above listed components are discussed on a qualitative basis. The study confines itself only to issues of poor potable water accessibility and inadequate basic sanitation and its health, socio-economic and environmental impacts.

1.6. Limitations and challenges of the study

As the thesis is based mainly on primary data from a household survey and documentation from the limited stock in the district, there was reluctance in displaying the list of all community members in the process of selecting a representative sample from the villages in the peasant association. The inadequate availability of recorded secondary data about the water supply in the district particularly in the peasant association was a limitation faced. There are a limited number of data recorded in the district office concerning water supply and sanitation. In the peasant association we can say there was no recorded data relating to the water supply and sanitation and also no names of dwellers except tax payers. Rural households have not yet understood the purpose of scientific study and at times they have been confusing my study with that district policy measures and expecting something new to happen after the finalization of the data collection.

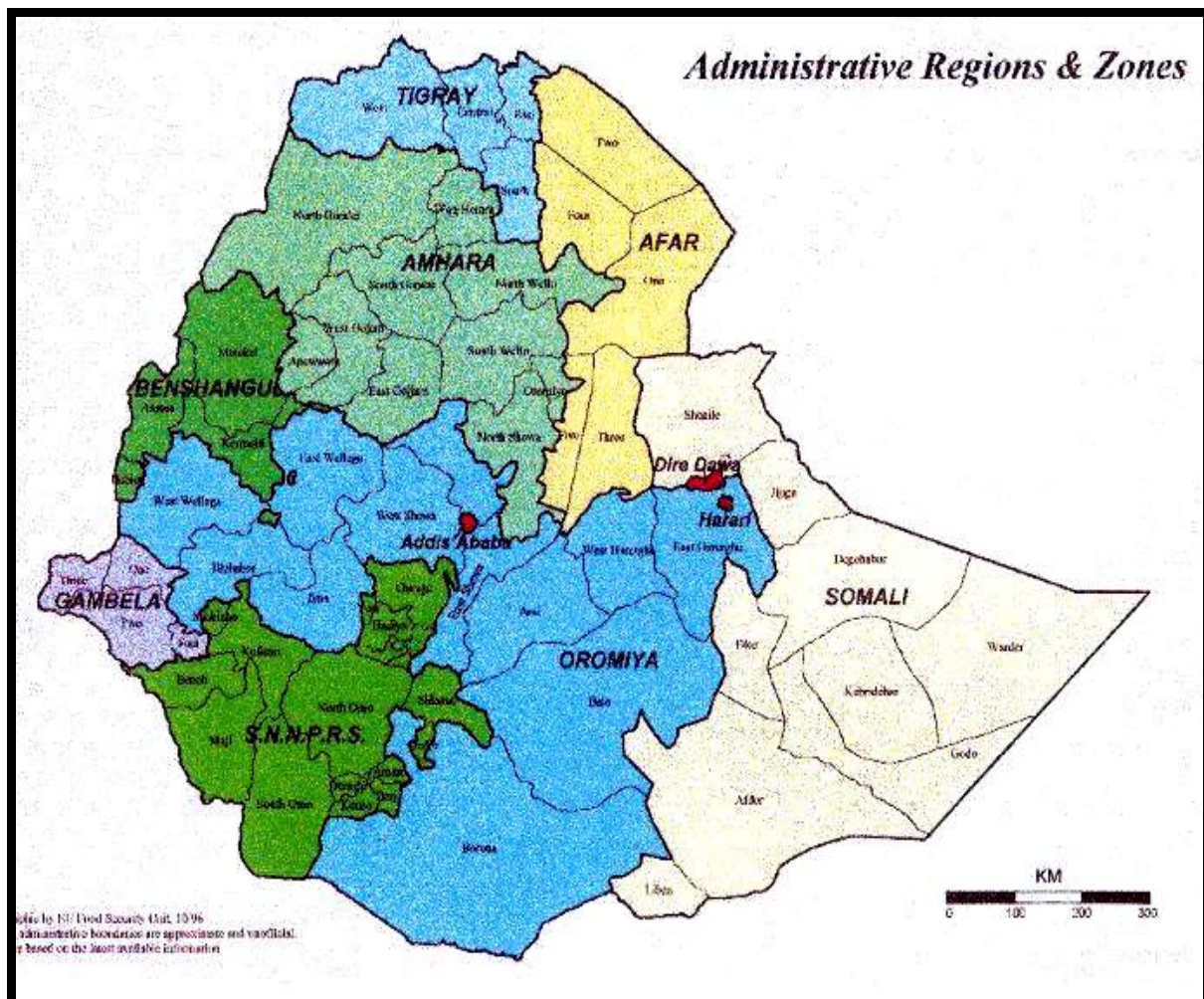
It was a challenge for me to stay in the rural community during the data collection to see how people live. I managed to spend some weeks within the community that does not have electricity, telephone and internet services. During my stay I drank spring water which people said was clean but I got sick and was forced to return to Addis Ababa to get medical treatment and two weeks later I went back to finalize the data collection process. Generally, adapting to their way of living, knowing their culture and their status in terms of water supply and sanitation was a huge asset I learned with many challenges.

Finally this thesis reflects a variety of opinions, values and personal experience. Still, it is not possible to represent all different and contradictory opinions expressed by the people who participated during the research. Also the main findings are limited to the answers and translations received by other people and own interpretation. Therefore generalization of findings is only possible to a certain extent, and findings have to be understood in the current context of this research.

CHAPTER TWO: PRESENTATION OF THE STUDY AREA

2.1. Profile of Ethiopia

This study was conducted in Ethiopia which is a landlocked country located in the Horn of Africa. It covers an area of approximately 1.14 million square kilometers and borders Djibouti and Somalia to the East and South East, Eritrea to the north, the Sudan to the West and South West, and Kenya to the south (AACCSA,2011). The national capital is Addis Ababa.



Source: Wardheer News Editorial, 2007

Figure 2.1: Map of Ethiopia

Ethiopia is a country of geographical contrasts from 116 meters below sea level in Danakil depression to more than 4572 meters above sea level in the mountains regions. As AACCSA

(2011) stated Ethiopia has various agro-ecological zones and three main climatic zones: Tropical rainy region, having an altitude of over 2500 meters above sea level; Dry climatic region of hot low land lying up to 1500 meters above sea level; and Warm temperate wet region lying between 1500-2500 meters above sea level. Ethiopia is an ecologically diverse country, ranging from the deserts along the eastern border to the tropical forests in the south. Normally, the rainy season lasts from mid-June to mid-September (longer in the southern highlands) preceded by irregular showers from February or March; the rest of the year is generally dry.

According to the Encyclopedia of earth (2008) the Ethiopian economy is based on agriculture, which contributes 42 percent to GDP and more than 80 percent of exports, and employs 80 percent of the population. The major agricultural export crop is coffee, providing approximately 26 percent of Ethiopia's foreign exchange earnings, down from 65 percent a decade ago because of the decrease in coffee prices since the mid-1990s and increases in other exports.

Ethiopia has the third largest population in Africa with a growth rate of 2.7 percent. The country ranked 170 out of 177 countries in 2004 HDI (JMP, 2010). According to the census of the 2007 the total population comprises 73.9 million of whom 49.5 percent are female and 50.5 percent are male with 2.6 annual growth rate of 1994-2007 which showed a decrease from the previous periods (CSA, 2008). Of these 85 percent estimated to live in rural area. The country has more than 77 ethnic groups in the country with their own distinct languages, of which 56 ethnic groups believed to be in the SNNPR. Most of the country people speak a Semitic or Cushitic language, Amharic is the official language.

The Administrative division of the country has nine ethnically based regions and two self-governing administrations: Addis Ababa and Dire Dawa. The other nine regions are Afar; Amhara; Binshangul Gumuz; Gambella Peoples; Hareri People; Oromia; Somali; Tigray; and Southern Nations, Nationalities and Peoples Region (SNNPR) (CIA, 2010). All these regions have their own administrative division which they further classified into zones, districts (Woredas) and peasant associations (Kebelles). This study particularly focused on the SNNPR administrative region; in Soddo district of Gurage zone which taken Michael Semero peasant association as a sample study site.

Ethiopia-->9 regions--->zones---->Districts (Woredas) ----->peasant associations (kebelles)
Ethiopia--->SNNPR-->Gurage zone-->Soddo Woreda-->Michael Semero peasant association

2.2. Geographical Location of SNNPRS

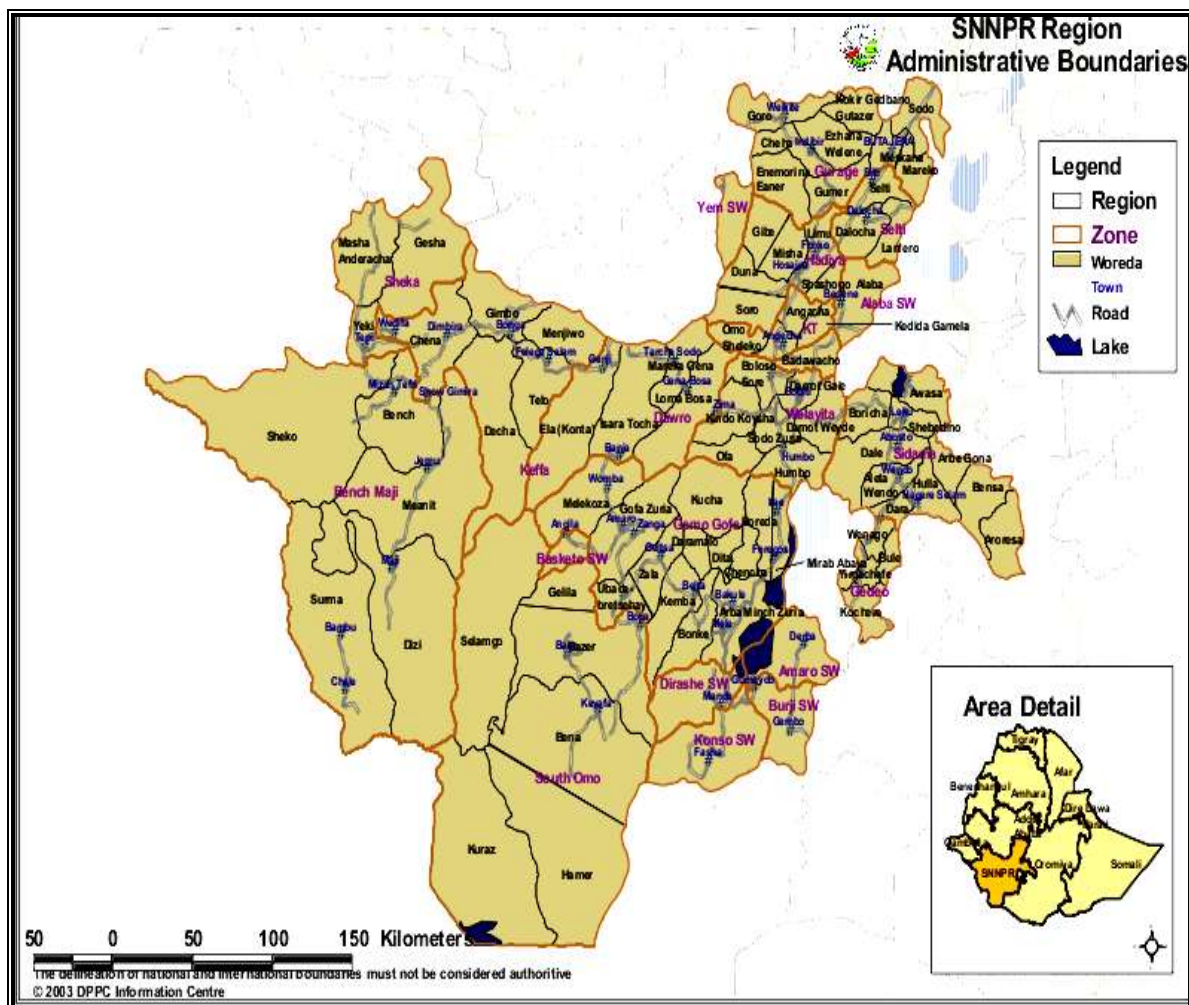
SNNPRS located at the south west part of the country bordered with Kenya in South, the Sudan in West and Southwest, Gambella region in Northwest and surrounded by Oromia region in Northwest, North and East direction (SNNPRS, 2010). According to the region BOFED (2007), the region covers an area of about 110, 931 square kilometers which is almost 10 percent of the total size of Ethiopia. The altitude of the region ranges from the lowest point at Lake Turkana, which is 376 meters above sea level, to Mount Guge of Gamo Highlands which is 4200 meters above sea level. The region has 7 big rivers and 5 major lakes. The capital of the region is Hawassa which is 275 kilometers from Addis Ababa, the national capital. Based on ethnicity and language identities, the region is divided into 13 zones. These zones are Sidama, Gedeo, Gamogofa, South Omo, Wolayta, Dawero, Kembata - Tembaro, Hadiya, Keffa, Sheka, Benchi Maji, Gurage, and Siltie. There are 125 districts under each zones; and 8 special districts. So this study conducted in Soddo district, one of the districts of Gurage zone.

2.3. Population

According to CSA (2008), the region has a total population of 15,042,531 in 2007, which means about 20 percent of the total national population, of which 92 percent lives in rural area and 8 percent in urban area (BOFED, 2007). More than half of Ethiopia's ethnic composition is in SNNPR; so far about 56 ethnic groups (with distinct languages, culture and traditions) have been identified which makes the region a variety of people and culture (BOFED, 2007). According to Regasa & Yusufe (2009) the population profile of the region is depicted by large number of children under 15 (46.7 percent) while those in the age group 15-64 and above 64 accounts for 50 and 3.3 percent respectively. The same writers further stated the overall life expectancy at birth is about 52.4 years (51.35 for males and 53.45 for females) and about 43.2 percent of the population is estimated to be economically active.

2.4. Economy and Climate

The Ethiopian economy is dominated by smallholder subsistence agriculture, which almost the entire sector depends on rainfall. The major crops cultivated are cereals pulses, permanent crops, and oilseeds which are the same for the SNNPR. The region experiences five agro-ecological zones: Hottest, hot, warm, Cool & coldest with Mean annual rainfall ranges from 400 - 2200 mm. as temperature is inversely related to altitude; it decreases from South to Northeast; Mean annual temperature ranges from 15°C - 30 °C (BOFED, 2007).



Source: DPPC, 2003 *the study area is located at the northeast of region in Gurage zone.

Figure 2.2: Map of the SNNPR

Gurage zone is one of the 13 zones in the SNNPRs. As all the zones in the region have, the Gurage zone has many districts one of which is Sodd district. The Sodd district is located in the northeast part of the region, bordered by the Oromia region.

CHAPTER THREE: RELATED LITERATURE REVIEW

3.1. Water Supply and Sanitation Worldwide and in Africa

According to UNESCO (2006), every person needs 20 to 50 liter of potable water a day for their basic needs: drinking, cooking and cleaning, but more than one in six does not have access to such amount of potable water. Africa has the lowest total water supply coverage of any region, with only 62 percent of the population having access to improved water supply. The situation is worst in rural areas, where coverage is only 47 percent. According to the JMP (2010), around 2.6 billion people do not have access to basic sanitation; and as a result of poor access to basic sanitation 1.5 million peoples die each year. Many of these people live in south East Asia and sub-Saharan Africa. Sanitation coverage in Africa also is poor, only 60 percent of the total population in Africa has sanitation coverage, with coverage varying from 84 percent in urban areas to 45 percent in rural areas (JMP, 2010).

Table 3.1: Water and sanitation coverage by region, 2000

Region	Water supply (%)	Sanitation (%)
Africa	62	60
Asia	81	48
Latin America and Caribbean	85	78
Oceania	88	93
Europe	96	92
North America	100	100

Source: WHO/UNICEF/WSSCC, 2000

As the table 3.1 shows the sanitation coverage of Africa is better than Asia, but it is not at stage to be called sufficient since 40 percent of the region population do not have access to sanitation. As we can easily understand from the table 3.1, the water supply coverage is the lowest.

As we can easily notice from table 3.2 Africa has the lowest coverage of water supply both in urban and rural area and has low coverage of sanitation in urban and rural areas but better in

sanitation coverage than Asia.

Table 3.2: Water supply and sanitation coverage in urban and rural by region, 2000

Region	Water supply coverage (%)		Sanitation coverage (%)	
	Urban	Rural	Urban	Rural
Africa	85	47	84	45
Asia	93	75	78	31
Latin America and Caribbean	93	62	87	49
Oceania	98	63	99	81
Europe	100	87	99	74
North America	100	100	100	100

Source: WHO/UNICEF/WSSCC, 2000

Ethiopia's water and sanitation coverage is also the lowest in the world. The water supply coverage in the country is 22 percent, of which the rural coverage is only 11 percent. The sanitation coverage is 6 percent which the rural coverage is 4 percent (JMP, 2010). The country's low health status, high population growth, and low literacy rates bring to bear a heavy burden on the state to increase delivery for water, health, education and other social services. In comparison with the neighboring countries Ethiopia's water and sanitation coverage is even lower than Eritrea (formerly part of Ethiopia) which has 57 percent water coverage and 9 percent sanitation coverage. Another neighboring country, Kenya's water and sanitation coverage is much better than Ethiopia which is 62 and 48 percent respectively. Though, as the data taken from UNICEF and WHO show most Sub-Saharan African countries have the lowest coverage of water and sanitation of any world region, Ethiopia's water supply and sanitation coverage is the lowest (JMP, 2010).

3.2. Water and Sanitation in Rural Areas

According to the World Bank (2010) 70 percent of the world's poor people live in rural areas. Thus, if development is to be achieved, attention should be given to rural water supplies and sanitation since any development activities address the poor. The 2010 updated estimate of JMP (2010) shows that rural Ethiopia has 8 percent access to basic sanitation and 26 percent have access to potable water in 2008 which shows an improvement from previous years. Of

the total population of Ethiopia, 85 percent is estimated to live in rural areas, thus, the above data explains that only 26 percent from these 85 percent of population have access to potable water and basic sanitation. The SNNPR total water coverage is reported to be 48 percent which is according to the 2005 projection among 14,507,098 people 6,935,649 have access to clean water coverage (BOFED, 2007).

When we come to the data of the study site, Soddo district, only 8 percent of the population estimated to live in towns but the rest 92 percent lives in rural area. According to BOFED (2007), the district clean water coverage is 63 percent in rural and 100 percent in urban but more than 90 percent of the district dwellers live in the rural part. The district has 22 hand dug well, 8 medium dug well and 6 deep dug well in rural areas.

Therefore, if the 70 percent of the world poor population, 85 percent of Ethiopian population, and particularly 92 percent of the Soddo District population do not have easy access to potable water and basic sanitation, the MDGs for sustainable development goal 7 targets 7C may not be achieved. Thus, what we can conclude here is that the water and sanitation coverage in rural areas is very low but 70 percent of the world poor population live in such areas, and therefore for development to be achieved due consideration should be given to these 70 percent of the world's poor population.

The World Bank has outlined some challenges in scaling up the ease of access of the rural potable water supply and basic sanitation. The basic challenge is 'how to scale up water supply and sanitation to the rural poor?' In order to address the question, Ethiopia is one of the poorest countries which get assistance from the World Bank to address the issues of water and sanitation to achieve the MDGs. The approach taken is different between urban and rural areas. In urban areas water boards have been established to have responsibility for increasing the water supply and sanitation. In rural areas, efforts are made to provide financial assistance to rural districts which helps to establish water supply and sanitation committees and build facilities (World Bank, 2011). Despite this assistance by the World Bank and other aid organizations, and the Ethiopian government to increase the easy access to potable water supplies and basic sanitation in rural areas, there are still rural districts that do not get potable water and basic sanitation. There are rural areas which consider having ease access to potable water and basic sanitation as a privilege rather than as a right.

The other challenge in providing potable water services and increasing basic sanitation access to rural areas are infrastructural problem. As Buddeke (2010) stated, socio-economic development is closely linked to infrastructure which many rural areas lag far behind. Ease of access to potable water and basic sanitation is one type of infrastructure which also depends on the other types of infrastructure like roads. Thus, the unavailability of such infrastructure is a challenge to any private or government organizations.

3.3. Ethiopia's Surface Water Resources

Ethiopia has many surface and groundwater resources though the amount of groundwater resources not known with any certainty. However, the MWR (2002) reported that it is estimated that the country has a potential of approximately 2.6 billion cubic meters of groundwater. Table 3.3 which is derived from the MWR highlights the surface water resources of the country.

Table 3.3: Surface-water resources of major river basins

No.	River basin	Catchment area (km ²)	Annual runoff (BM ³)	Specific discharge (l/s/km ²)*
1	Abbay	199 812	52.6	7.8
2	Awash	112 700	4.6	1.4
3	Baro-Akobo	74 100	23.6	9.7
4	Genale –Dawa	171 050	5.80	1.2
5	Mereb	5 700	0.26	3.2
6	Omo-Gibe	78 200	17.90	6.7
7	Rift Valley	52 740	5.60	3.4
8	Tekeze	89 000	7.63	3.2
9	Wabe Shebele	200 214	3.15	0.5
10	Afar-Danakil	74 000	0.86	-
11	Ogaden	77 100	0	-
12	Aysha	2 200	0	-
	Total	1 136 816	122.00	

* /s/Km² : Liters per second per square kilometers

Source: Ministry of Water Resource (MWR), 2002

With all the above listed surface water resources, the country is far lag behind of many African countries in the water supply coverage. As it is listed in the global water supply and sanitation assessment report of 2000 financial difficulties, institutional problems, inadequate human resources, lack of sector coordination, lack of political commitment, insufficient community involvement, inadequate operation and maintenance, lack of hygiene education, and insufficient information and communication may be hindering factors (WHO/UNICEF/WSSCC, 2000).

3.4. Water Sources and Sanitation Classifications

Water for drinking purpose can be found from natural sources like surface water, ground water and rain water. Water from all these sources to use for household activities need treatment based up on their impurities. Though the treatment and the degree of cleanness of the water make the water safe or unsafe to drink, WHO and UNICEF classified water sources as improved and unimproved based on their purity to drink. Table 3.4 elaborates about the improved and unimproved water sources.

Table 3.4: Definition of improved and unimproved water supply and sanitation facilities

Water supply		Sanitation	
Improved	Unimproved	Improved	Unimproved
Household connection	Unprotected well	Connection to a public sewer	Service or bucket latrines
Public standpipe	Unprotected spring	Connection to a septic system	Public latrines
Boreholes	Vendor-provided water	Pour-flush latrine	Latrines with an open pit
Protected dug well	Bottled water	Simple pit latrine	
Protected spring water	Tanker-truck provided	Ventilated improved pit latrine	
Rain water collection			

Source: JMP, 2006

3.5. Progress in Water and Sanitation Coverage

Despite the fact that the change in coverage is encouraging, it is clearly inadequate.

According to JMP (2006), in 2004 83 percent of the global total population had access to water from improved sources up from 78 percent in 1990 and of these 84 percent lived in rural areas.

The water coverage in sub-Saharan Africa countries showed a change from 49 percent in 1990 to 56 percent in 2004. The sanitation coverage of the world also shows a change from 49 percent in 1990 to 59 percent in 2004. In rural areas coverage with improved sanitation facilities rose from 26 percent in 1990 to 39 percent in 2004. The Sub-Saharan Africa sanitation coverage is estimated to be the lowest of any developing continent, on an average the sanitation coverage of developing country is estimated to be only one person out of two has access to improved sanitation. As Kumie & Ali (2005) stated the latrine coverage of Ethiopia, the increase rate in proportion of population coverage in latrine use was less than 0.2 percent per year over the last 30 years at the national level since 1970.

The MDGs which are targeted for fulfillment by 2015 include a target of halving the proportion of people who do not have access to potable water and basic sanitation. According to the progress evaluation of the MDGs, the sub-Saharan Africa countries coverage needed in 2006 was 65 percent but actually the coverage registered was 58 percent. In that case though many Sub-Saharan African countries are not on track to achieve the MDGs regarding providing potable water and basic sanitation to their citizens, Ethiopia is included with the groups which are on track to achieve the MDGs. As JMP (2006) stated it requires a doubling of the effort of the past 15 years to reach the MDGs by 2015. Thus, though the world is on track to achieve the MDGs by 2015, it requires an additional provision of services to 300, 000 people per day which is almost more than doubling of effort. Particularly, it is unlikely that some Sub-Saharan countries will achieve the MDGs for potable water and basic sanitation given the disparity between urban and rural, low coverage and slow progress.

There are two points raised concerning being on track to achieve the MDGs of potable water and basic sanitation. The world is reported to be on track to achieve the MDGs. But the disparity between urban and rural coverage is very significant since rural areas lag far behind urban areas while the increase in urban population is a serious challenge in the process of

achieving MDGs for providing potable water and basic sanitation (JMP, 2006).

3.6. Approaches to Sanitation

According to Ilesenim (2006) sanitation management is a concept as old as humanity and is still crucial to human well-being today. Concerning human waste management, the Israelites gave specific instructions in the Bible which was serious enough to be included among other vital issues for existence. The International Bible Society (1973) of New International version put it this way:

“Designate a place outside the camp where you can go to relive yourself. As part of your equipment have something to dig with, and when you relive yourself, dig a hole and cover up your excrement. For the Lord your God moves about in your camp to protect you and deliver your enemies to you. Your camp must be holy, so that he will not see among you anything indecent and turn away from you.” Deut 23:12-14

The above verse taken from the Holy Bible shows how old is the concept of managing human excreta and very important to be given as instruction. As Ilesenim (2006) explained there is a conventional approach to sanitation which developed as a result of threats to public health. The same writer discusses that the conventional approach has three systems for managing human waste. These are:

- **‘Do nothing’ system:** in this system there is no defined method of waste management and no technologies used. In this approach people give due consideration to human health by removing excreta far from the immediate dwelling areas but they do not consider the environmental health issue. Example: open defecation
- **‘Drop and Store’ system:** in this system the excreta is simply collected in a hole out of sight and stored for an indefinite period. Example: pit latrine.
- **‘flush and discharge’ system:** this system uses water to transport human excreta through underground sewers to treatment facilities where the ‘pollutants’ in the waste water are removed and using a combination of physical, biological and chemical

processes before the treated water can be discharged into the environment. This approach is mostly applicable and effective in the developed worlds.

According to the above writer, the disadvantages of the first two approaches are environmental degradation through soil and water (underground and surface) pollution and the exposure of human and animals to the pathogenic organisms in human excrement and the consequent spread of diseases. When we look at the sanitation of developing countries from the perspectives of the above approach, 'do nothing' and 'drop and store' systems are the most common conventional approach as applicable in the developing world.

3.7. Reasons for Poor Sanitation

3.7.1. Economic Reasons

According to McConville (2003) each day two million children die because of diarrheal disease which its main source is human excreta. Thus, it is clear that human waste is potentially dangerous material which needs to be managed properly. But there are some factors which may prohibit people from adopting latrine services, of which economic reason is to be listed as the main and the first. Poor people rely on subsistence income, of their income they prefer to spend on food and goods, than spending it on latrine construction. Of course it could be expensive to build a latrine for someone who doesn't secure his food. Even if people understand having latrine is beneficial, they may not be able and willing to spend high cost on it.

Though economic status inhibits people to build their own latrines, on the other hand this shows that, people do not realize the costs they spend on treating diseases cause of unsanitary environment, which the costs for curing might be higher than preventing. Thus, if people had aware of the consequences of unhealthy environment, the costs to prevent its consequences like diarrheal diseases would be the easiest than treating the diseases. So investing on latrine is also a means of minimizing expenses of medication comes after unhealthy living environment because of poor sanitation.

3.7.2. Socio-cultural Reasons

There are also socio-cultural reasons why people do not adopt latrine use; '*what is dirty and clean can vary from culture to culture*'. Many people view latrines as evil and dirty places. As a result people may prefer to defecate away from their houses in the fields which are considered more sanitary. Of course, it might be difficult to change long ingrained behavior dictating defecation practices; without proper support people will revert to old habits. The practice of open defecation is ritualized and bound in tradition (Mcconville, 2003). Both the economic and socio-cultural reasons for unimproved sanitation do not outweigh the costs of the consequences because of unimproved water and sanitation.

In addition to the above reasons the study conducted in three African countries: Zambia, South Africa, and Zimbabwe; illiteracy, lack of strong linkages between sanitation service providing agencies and communities, supply-led approach in providing sanitation service, and lack of effective communication between the local authorities and the communities are found to be some of the causes for poor sanitation (Manase, G., et al, 2001)

3.8. Water and Sanitation versus Development

The inclusion of access to potable water and basic sanitation in the MDGs for sustainable development shows that water and sanitation are important development indicators. It is a fact that infrastructure development and socio-economic development are much related. Infrastructure development may include road construction, water and sanitation improvements, and irrigation development. Thus, having access to such services is considered as a precondition for economic development. Accordingly water and sanitation infrastructures also have impact on the economic, social and human development of a nation.

According to UNDP (2006) the water and sanitation crisis has a role of reducing income poverty. National governments are very aware of the expenditure needed to increase the access to improved water and sanitation but they are not curious about the economic costs of the negative consequences of unimproved water and sanitation. If the world population had access to safe drinking water and appropriate sanitation, the child mortality rate would be minimized. As a result of poor water and sanitation many people in the world are insecure;

additionally potable water and basic sanitation is the easily preventable way of reducing child mortality. Access to clean water and sanitation is also a means to reduce health related costs, improving girl's education, and it also ensures a sense of human dignity. Generally, access to clean water and improved sanitation '*can make or break human development*' and it is a condition for all human development goals achievement.

3.9. Benefits of Improving Access to Water and Sanitation

According to Postnote (2002) increasing access to water and sanitation is an input of development and poverty reduction, as it has major health benefits as well as associated social, economic and environmental benefits. Public health will be guaranteed if there is access to potable water and basic sanitation since the highest causes of illness and death in developing country is related to poor access to potable water and basic sanitation. As a result of this, illness and deaths reduce the productivity of the economy of a nation; poor sanitation has an adverse effect on the environment which in turn may affect the source of the economy like agriculture and tourism.

One of the major benefits of water and sanitation improvements is the time saving associated with better access. Time savings occur due to, for example, the relocation of a well or borehole to a site closer to user communities, the installation of piped water supply to households, closer access to latrines and shorter waiting times at public latrines. These time savings translate into either increased production, improved education levels or more leisure time (Hutton & Haller, 2004).

WHO figures asserted that improved water supply reduces diarrhea morbidity by 6 percent to 25 percent, and improved sanitation reduces morbidity by 32 percent (WHO cited in Omya Healthcare limited, 2009). Thus, the improvement on water supply and sanitation has a direct and concrete impact on health. As Hutton, G., et al, (2007) explain the occurrence of diarrheal diseases caused by unsafe drinking water and improper sanitation would be reduced if improvements were made in water and sanitation. Since diarrheal diseases are highly associated with unsafe drinking water and sanitation and poor hygiene, the improvements in water and sanitation would have a significant outcome.

The improvements in water supplies and sanitation also have an impact on poverty and economy, as it is logical that only healthy people are strong enough to work and fulfill their needs. As Hutton, G., et al, (2007) stated the improvement to water and sanitation will have economic benefits of three types: direct economic benefits of avoiding diarrheal diseases, indirect economic benefits related to health improvements and non-health benefits related to improvements in water and sanitation. The direct economic benefits of avoiding diarrheal diseases include cost savings due to the reduced incidence of diarrheal disease, full health care costs, and non-health sector direct costs. The indirect economic benefits include productivity effects of improved health and the non-health benefits.

Table 3.5: Primary and economic impacts associated with improved sanitation options

Improvement	Primary impacts	Economic impacts
closer latrine access and improved latrine population ration	<ul style="list-style-type: none"> • less open defecation • less latrine access time • intangible user benefits • improved health status due to less exposure to pathogens • less use of public latrines 	<ul style="list-style-type: none"> • saved health care costs • improved aesthetics (visual effects and smells) • increases school participation • better living standards • household income rises • labor productivity • value of saved lives

Source: WSP-EPA, 2008

CHAPTER FOUR: METHODOLOGY

To extract the required information needed to meet the objectives of the study, four major techniques were employed in the study: household survey questionnaires, key informant interviews, focus group discussion, personal observation and secondary data or document review.

As the objective of the household survey was to extract data about the practice of potable drinking water and basic sanitation in the district, out of the 52 peasant associations in the district, Michael Semero peasant association has been selected on a purposive basis. It is because the district includes both urban and rural areas and due to its vast area the researcher decided to focus on the rural peasant association. Thus, *Michael Semero kebele (Peasant Association)* was taken as a sample rural area to perform the study on purposive sampling for which the community in the peasant association is highly affected by poor accessibility of potable water and basic sanitation. Therefore the Michael Semero peasant association was believed to be the most representative rural peasant association in the district which includes eight villages. On this basis, the researcher used a sampling design for the household survey in those eight villages.

4.1. Household Survey

As Bryman (2008) noted, in order to reduce the error due to inconsistency of interviewers, structured interview or questionnaires designed by the researcher distributed to three trained interviewers and/or research assistants. These three research assistants taken from the local communities were very familiar with the language and culture of the community. So the respondents did not face any difficulties concerning language and unintentional disgracing of culture. The sample respondents were selected by systematic sampling. The systematic sampling applied to 402 households of Michael Semero peasant association from which 80 sample households selected. Thus, the structured interviews have been applied to 80 sample residents of the selected households of the peasant association. The interviewers have managed to provide the questions according to the level of understanding of the local community since they were from the local area. During the data collection, the researcher has

to walk for many hours with the research assistants for the houses in the community are far placed one from the other. Almost all the community knows 'Amharic' which is the national working language but to some of the respondents who do not understand the Amharic language the research assistants helped to explain the questions in their local language.

4.2. Focus Group Discussion (FGD)

The researcher utilized FGD, which the group formed on purposive sampling. The groups were formed on a gender and age basis. This systematic grouping was selected because males may have an influence on females' opinions since the tradition of the country does not allow females to speak in front of males and in public. Thus, the researcher perceived it was better to divide the focus groups by gender. Additionally, the age gap may show a huge difference between the attitude and experience of the older people; thus the researcher wanted to offset the gap by categorizing the groups on the basis of age. Generally, as Bryman (2008) noted the focus group has enabled the researcher to address the opinion of the community towards access to potable water and basic sanitation and its impact on their daily activities. Therefore, the researcher created four groups based on age and gender basis: older women, older men, young males and young females.

4.3. Key Informant Interview

There are main actors in the supply of potable water and basic sanitation. The district water desk officers and the community HEWs have direct contact with the community in providing them with access to potable water and basic sanitation, and creating awareness. Thus, the researcher has addressed these groups of individuals using personal interviews on what has been done to help the community to get access to potable water and what has been done to reduce the communities vulnerability to water borne diseases and how the poor accessibility is affecting the well being of the community. Then, the interview has been conducted on a one-to-one basis with the HEWs and in groups with the district water desk officers. In order to have in-depth interviews with these responsible individuals, the interview was conducted by the researcher herself. There were two reasons for doing this: One reason is to allow in-depth interviews as mentioned above and the second is that these responsible individuals are aware of the issues water and sanitation and they do not have a problem of speaking the

national working language which the researcher is more acquainted with.

4.4. Personal Observation

The researcher has used observation as an additional means to the data collection which helped to have a general understanding of the area and how the community perceives the environment, to what extent the community is aware of the right to water, and how poor access to potable water and inadequate sanitation affects the livelihood of the community. Additionally, the researcher has observed the activities of the community which may reduce their vulnerability to water borne disease and negative impacts of poor sanitation and unsafe drinking water. Since observation comprises subjective judgement the researcher did not completely depend on the results of the observation in the empirical finding and analysis part of the study unless supported by the other data collected by other means. To perform this observation, the researcher spent time during data collection in the community which did not have light, water, toilets, telecommunication and internet services. This helped the researcher to understand how it feels to spend all your life without access to these basic infrastructures.

4.5. Document Review

In addition to the primary data, the researcher has tried to collect written documents from the district, reports and publications on potable water and basic sanitation worldwide, in Africa and Ethiopia to see the rank of Ethiopia, as supporting means of the data collected by the primary sources.

4.6. Method of Data Analysis

In assessing the case of Soddo District, the researcher has applied a case study design which is concerned with the complex nature of water and sanitation (Bryman, 2008:53) in which the researcher has utilised mainly a qualitative approach, although some quantification was used with percentages.

This research work has focused on the significant impact of poor access to potable water and

basic sanitation on health, economic, social and the environmental situation of the study site. Thus, the use of percentages is the major mathematical tool that was used to analyze the data to show the poor water and sanitation accessibility in the study area and its impact, and Microsoft Excel was used for computation of the data. Then the result of the excel outcomes have been interpreted for the study.

4.7. Frame work for Analysis

The aim of this thesis has been to evaluate the impact of the poor accessibility to potable water and basic sanitation on the economic, environmental and social situation of the Sodd District particularly to the Michael Semero peasant association. The needs which identified are related to improved water quality and treatment, quantity of water used in the household, distance to the water source, human dignity, community participation and responsibility. The impacts followed these unsatisfied needs were summarized in Excel (Microsoft office 2007, windows-xp version). Data was organized and the sum and averages for each variable was further analyzed using pie charts, graph and tables. Based on these findings the room for improvement in clean water supply and proper sanitation is discussed.

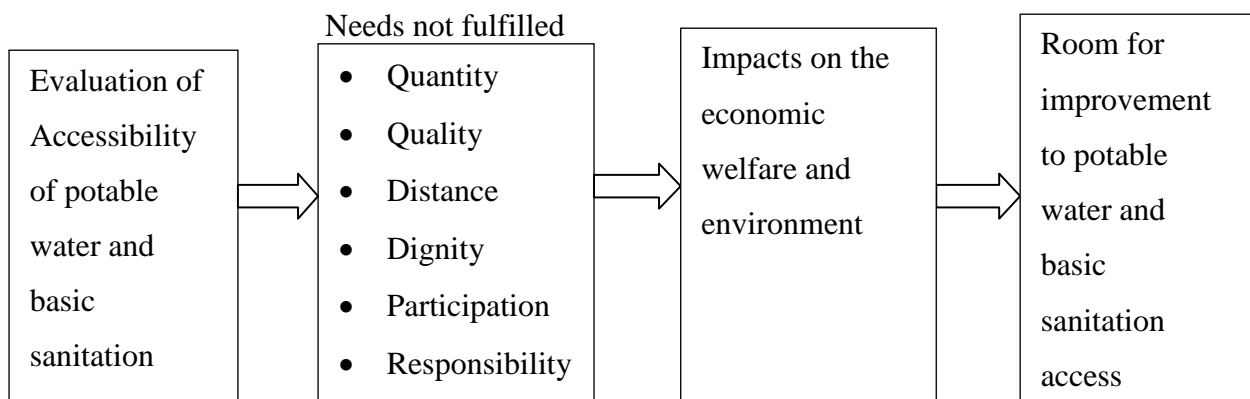


Figure 4.1: Frame work for analysis

CHAPTER FIVE: EMPIRICAL FINDINGS AND ANALYSIS

Based on various information collected from the sample respondents some topics are discussed under broad headings of general backgrounds of the respondents, water use and accessibility, sanitation use and accessibility, the impacts of poor accessibility to potable water and basic sanitation; and possible measures of recommendations given from the respondents.

5.1. General Backgrounds of the Respondents

In the data collection process, the data were collected on a house-to-house basis, only 24 percent female respondents were included because of the availability and a culture of giving priority to males to respond on issues concerning their households, but as the data in the CSA shows the number of females in the district is almost equal with the number of males.

However the ideas of female are included more in the FGD method of data collection, in that case only females had their own group to discuss. Thus, the number of females included in this data does not show the total percentage number of females in the community. But all the respondents are the bread winners to their family. But this does not mean that in the households with female bread winner may not necessarily mean the households are female headed. In addition as we can see from the table 5.1 the age distribution of the respondents is 18-50 which is 76 percent of the respondents are believed to be at the productive age.

Among the backgrounds in Table 5.1, the following variables education, household size, household income per month, are believed to determine the water use and demand in the households. It is logical that the increase in household size will increase the demand for water. The collected data also show that as the household size increases the demand for more water increases. As the researcher simply comprehend from the collected data, households with 1-5 members need a maximum of 80 liters of water per day; on the other hand households with 6-10 members need a maximum of 120 liters of water per day. Thus, this variation in the liters of water needed per day shows that the household size determines the liters of water need per day. This means that as the size of households increases, the amount of water needed per day increases.

Table 5.1: General background of the respondents

Respondents Background		Frequency	Percentage
Gender	Male	61	76
	Female	19	24
Age	20-30	18	22
	31-40	25	31
	41-50	18	23
	Greater than 50	19	24
Education	Primary	17	21
	Secondary	4	5
	College	1	1
	Never been to school	58	73
Marital status	Single	33	41
	Married	44	54
	Divorced	1	1
	Widow	2	3
Household size	1-5 people	44	55
	6-10 people	36	45
Main occupation*	Farmer	77	75
	Farmer and trader	21	21
	Private worker	2	2
	Government employee	2	2
Household income per month**	Less than 150 Br.	14	18
	150-500	57	71
	501-1000	4	5
	1001-2000	3	4
	No income***	1	1
	Don't know	1	1

*respondents may have more than one occupation

**by the time the study was carried out; 1\$=16.58 Birr.

*** Respondent with 'no income' represents a person who does not have permanent means of earning money.

Table 5.1 shows, the literacy level in the district is very low; 73 percent of the population are illiterate (no formal or informal education), some 21 percent only had the opportunity to attend the primary school but they are forced to drop out from the primary school level. The primary school is divided into two as the first cycle (one to fourth grade) and second cycle (fifth to eighth grade) primary school. And many of the community members who drop out from primary school do so from the first cycle primary school level. Only 5 percent of the population continued further until they graduated from high school.

This might be for many reasons - poverty and education are highly inversely correlated. Thus, the high poverty level prevents them from attending formal primary or secondary school. Since the researcher does not have an objective of analyzing the reason for dropping out from the primary school and why they choose to be illiterate, the researcher cannot pursue this topic further. But, in general, as the researcher observed during her stay in the community, only one first cycle primary school (up to fourth grade) is available in the peasant association. After fourth grade they have to walk for hours in order to join the second cycle primary school, which might be another reason for people dropping out from primary school. In addition, and this is highly related to the topic under discussion, girls are forced to drop out from school because they are expected to help their parents with household activities. Particularly, one of my respondents told me that he forced his daughter to drop out from school because her mother has no one else to help her with household chores which includes fetching water. Such actions which forces girls to stop attending school were very common, though currently the community level of awareness is showing progress in this regard with the help of HEWs. But as we can see from my respondent reply there are still remnants of such backward attitudes in the community which takes girls out of school to help their parents.

As Table 5.1 shows 75 percent of the community source of income is generated from agricultural activities only. These farmers use traditional technology which needs their full time and energy. In addition they should wait for the rainy season to sow their seeds. As the researcher observed during her stay irrigation is not used in the community. Some 21 percent of households are engaged both in farming and trading activities. The long distance to the market place may prohibit farmers from trade activities to 21 percent. As a result, farmers prefer to sell their products to other well known merchants at minimum price than going to the market place. Though many types of crops produced in the community like '*teff*', wheat,

sorghum etc, the main source of food comes from the traditional tree named '*Ensete*' or 'ensete edulis', also known as false banana, which is very strong and can even survive during the dry season. All the community members use the food named '*Kocho*' which is made from '*ensete*' (false banana) for household consumption. This is because farmers want to sell the crops rather than using them for household needs. Thus, farmers and those who involve themselves in trade, sell '*teff*' and other crops but use '*enset*' (false banana) as their source of food for their households.

As the data shows 71 percent of the population earns 150-500 Eth. Birr per month. When we see it in terms of US dollars 71 percent of the populations in the community earn 9-31 dollars per month. This household income puts the community members below the poverty line though it could be difficult to draw such a conclusion only from the basis of household income. Since poverty is measured not only in terms of income, but it is also measured by expenditure.

5.2. Water use and Accessibility

5.2.1. Water Sources for Drinking and Other Purposes

As the Figure 5.1a & 5.1b shows, more than half of the populations in the community use water from unprotected traditional ponds for drinking, cooking, washing and other household activities as their main source. In addition to the traditional ponds the community members have access to spring water source for drinking and for other domestic use which accounts 19 and 20 percent respectively. Though, only limited numbers of the community members are lucky to get access to spring water, they believe the water from the spring is potable relative to that of the traditional ponds. The rain water is another source of water for drinking and other household activities. Rainwater runoff from roofs can be collected and stored for drinking and other household activities. Unless the rain water is affected during collection, it is believed to be of good quality and the only source of contamination is airborne microbes that exist in very small amounts. Likewise, in the community the rain water is perceived to be the cleanest water.

But the availability of rain water is limited to only the rainy season and they should have

corrugated-iron sheet roofs to collect it. Thus, the availability of rain water is depends on two conditions. The first and the natural phenomenon that makes the rain water conditional is it is only available during the rainy season when the community members would have access to it for a limited period in a year. The second condition is that households should have iron roofs in order to collect the rain water since it is cleaner and healthier to drink than that of spring and traditional pond water.

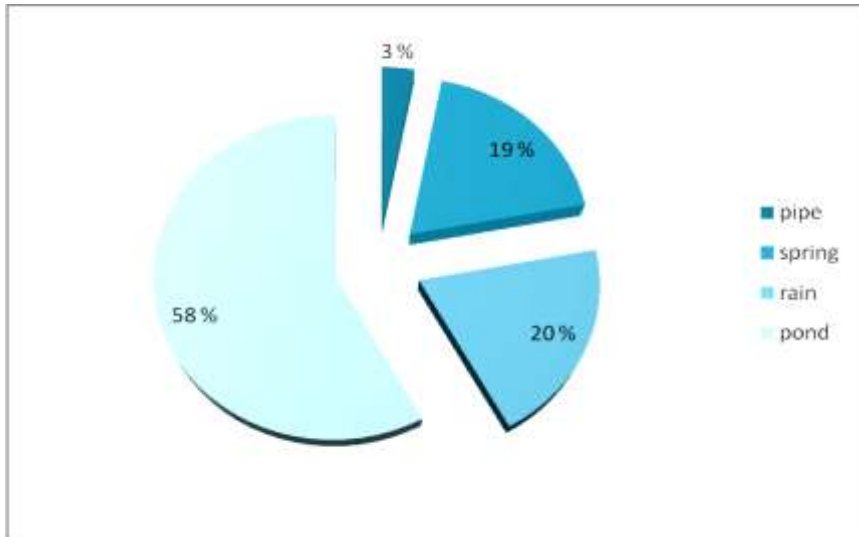


Figure 5.1a: Descriptions of water source for drinking purposes.

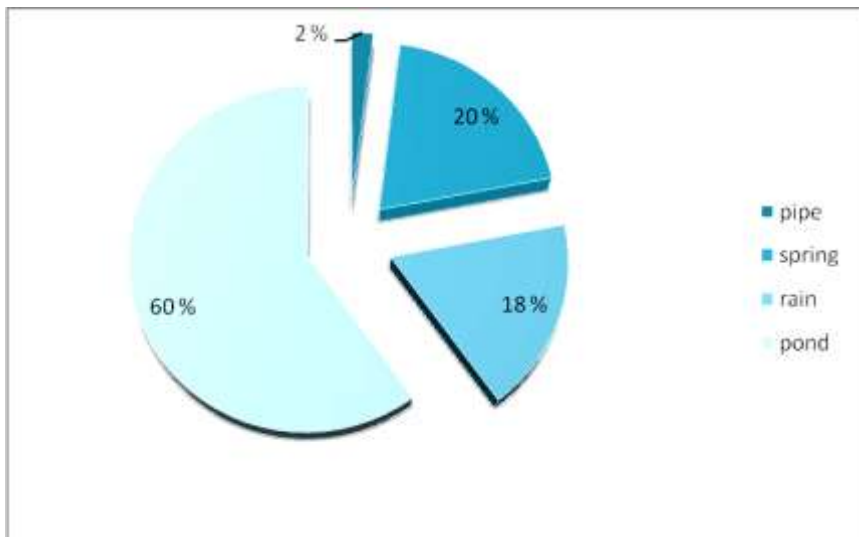


Figure 5.1b: Descriptions of water source for other purposes.

Accordingly, people in the community who are fortunate to get access to rain water are only those who have houses with iron roofs. As the researcher observes most of the houses of the community were made of the local grasses for roof which makes them unable to collect rain

water even during the rainy season covers a period of mid-June to mid-September. As the photo 5.1 clearly shows, the community members of Michael Semero peasant association are not even lucky enough to collect the rain water from roofs since their roofs are made of local grasses. Even if they collect the rain water, it can easily have contamination with microbes around the environment.



Source : Author, 2011

Photo 5.1: Houses in Michael Semero peasant association

People in the community who have access to piped water for drinking purposes comprise only 3 percent of the total population. These people live around the pipe but there are some people who travel far to get piped water for drinking purposes. As we observed and the district water desk officers articulated, this piped water is not treated by chlorine; it is the spring water which comes through a pipe. As the data in figure 5.1.a & 5.1b show only 2 percent of the community populations are privileged to get access to that source of water for both drinking and other household activities. This means only a limited number of the community has access to piped water for both drinking and other household activities.

According to the district water desk officers, there is insufficient water both in terms of quality and quantity for all the community in the district which they can get it at any time they want to. The district water desk officers further explained, in the district there are 134,634 people of whom only 40 percent get access to water which is treated by chlorine. But the rest 60 percent people get water from unprotected traditional ponds, and rivers like the Michael Semero peasant association. Thus, the water in Michael Semero peasant association

is not sufficient both in terms of quality and quantity at all which is also believed by the district administration. Therefore, all agree that there are problems of poor infrastructure like electricity, roads, telecommunications, health and educational institutions; but above all poor accessibility to potable water is the burning issue which greatly threatens the community well-being.

According to CDC (2009) the access to potable water is measured by the percentage of the population having access to and using improved drinking water sources. As the literature review shows, the WHO and UNICEF classifies water sources as improved and unimproved. The sources for improved drinking water are categorized as piped household water connections, public standpipes, bore holes, protected dug wells, protected springs and rain water collection. The sources for unimproved drinking water are unprotected dug wells, unprotected springs, surface water, and vendor provided water. Therefore, as we can see from the above classification the Michael Semero peasant association water sources are unimproved except for rain water collection which depends on some conditions like the seasonality of rain and unavailability of iron roofs. Many houses in the community have roofs made of local grasses which prevent them from collecting the rain water easily while keeping its quality. In addition, the rainy season is from mid-June to mid-September which means it is limited to only three months. As a result, if we even can classified the rain water collection as improved, the community has access to the rain water is for a limited period.

Table 5.2: Water scheme data to year 2008/09

No.	Scheme	Functional scheme	Beneficiaries
1	On spot spring	54	19505
2	Spring with distribution	5	7208
3	Hand dug well fitted with hand pump	24	8895
4	Shallow well fitted with hand pump	26	14195
5	Hand dug well with robe pump	6	246
6	Deep well with distribution	14	31172
	Total	129	81221

Source: Soddo District water resource office 2008/09

The data in Table 5.2 taken from the district administration office does not show the distribution of these functional water schemes among the peasant associations. If the data were complete, we would have been able to know how many water schemes are available in each and every peasant association. Thus, based on the only available data we can see the population to water scheme ratio. That means, in ratio to the number of population in the district, those who get access to water treated by chlorine near their area are far less than half of the total population considering that all the above water schemes are not treated by chlorine. According to the CSA of Ethiopia (2008) the total population of the district is 134,634 of whom 120,919 live in the rural parts of the district which shows that 90 percent of the district people live in rural area in which potable water accessibility is very low.



Source : Author, 2011

Photo 5.2: One of the traditional ponds in Michael Semero peasant association

5.2.2. Distance from the Water Sources

Almost more than half of the populations obtain their drinking water from traditional ponds

which are unimproved sources. But they should also walk for more than half an hour to collect water from these unprotected and unimproved sources. The number of visits to the water sources depends on the amount of water they require per day. Thus, the questions how many liters of water do the households use per day and how far the sources are from their houses are two important questions which need answers. According to the data, 95 percent of the people in the community need a minimum of 40 liters and a maximum of 120 liters of water per day. When we classify the amount of water needed per household size: households with 1 to 5 members require a maximum of 80 liters of water per day and households with 6-10 members require a maximum of 120 liters of water per day. In order to fetch this much water, people have to go to the water source at least twice a day. The distance from the water source takes a minimum of 5-10 minutes for those nearby to the water sources which comprises 24 percent of the total population. But as the data show, more than 60 percent of the community has to walk for more than 25 minutes to fetch water from the unprotected traditional sources. This much time is just for one trip but as many in the community want to have 40 or more liters of water per day this obliges them to walk for almost an hour.

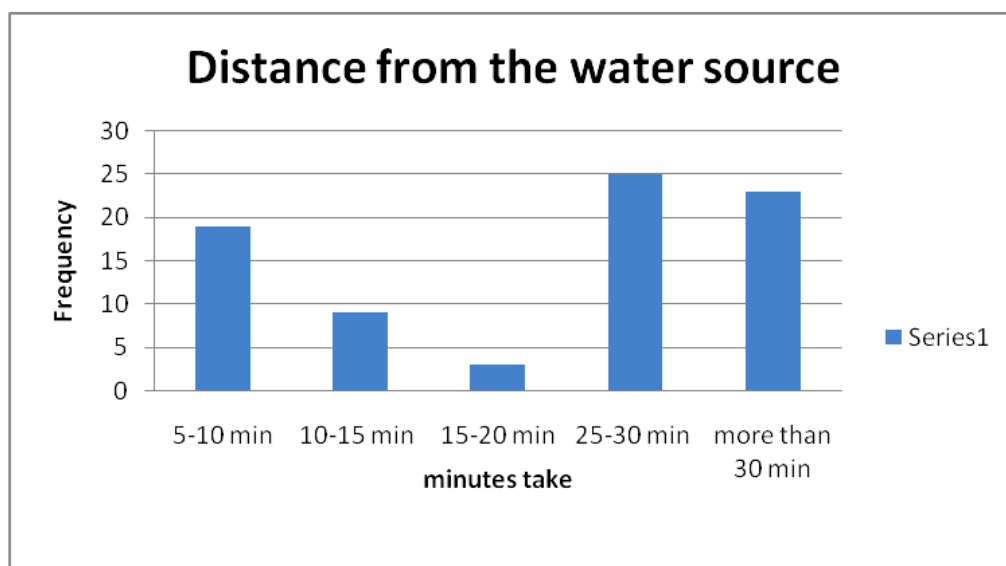


Figure 5.2: Distance from the water source

On average to fetch water in one round from the sources listed above, it takes 26.3 minutes and if they have a donkey, they can handle 40 liters of water in one round; if they don't have they only can handle 20 liters of water at once. Thus, they are expected to return to fetch the other 20 liters of water which means it takes more than 50 minutes to collect 40 liters of water. In order to fetch these amounts of water, some who has donkey do not carry the jerikan

(container) on their back because their effort limited to fill up the water into the container at the water source. Otherwise people have to carry 20 liters of water on their backs from the source to their houses which takes almost one hour to collect the minimum of 40 liters per day. Therefore, all the household members have to visit the water sources as many times as possible to satisfy their water needs. On the other hand, the distance from the source determines the amount of water they can collect. As the JMP (2006) stated if the distance from the source is 30 or less minutes to reach to and get back, most of the householders at least fetch enough drinking water to satisfy their basic needs. But if it takes more than 30 minutes, people collect less water than they need to meet their basic needs. Thus, as the figure 5.2 above shows there are many members of the community whose water needs per day are determined by the distance to the water source.

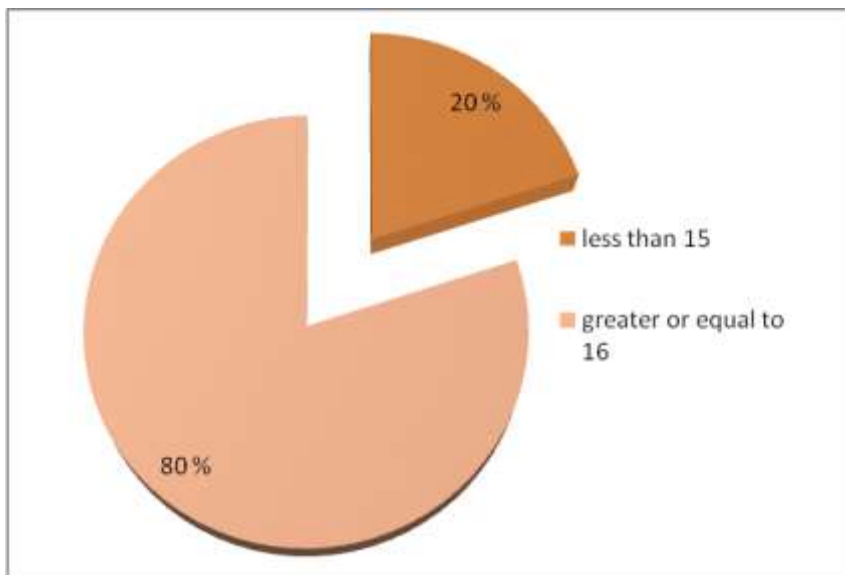


Figure 5.3a: Responsibility of collecting water by Age

The responsibility of collecting water in the community is given to women. As the data revealed 96 percent of people who collect water for household activities are females. When we see water collecting responsibility in terms of age, 20 percent of those who are responsible to collect water are under the age of 15. In terms of age they are not capable of carrying such amounts of water, alongside which they are expected to be absent from school to help their parents fetch water. The case has worst consequence in the households which parents are not able to fetch water by themselves; they force their children to drop out from school. One of my respondents also told me that his daughter quit school because they do not have someone else who can help them fetch water and other household activities. In addition,

though children who are at the age of below 15 are allowed to go to school, they are not allowed to do any school work at home because they have other responsibilities to do - one of which is collecting water from traditional ponds.

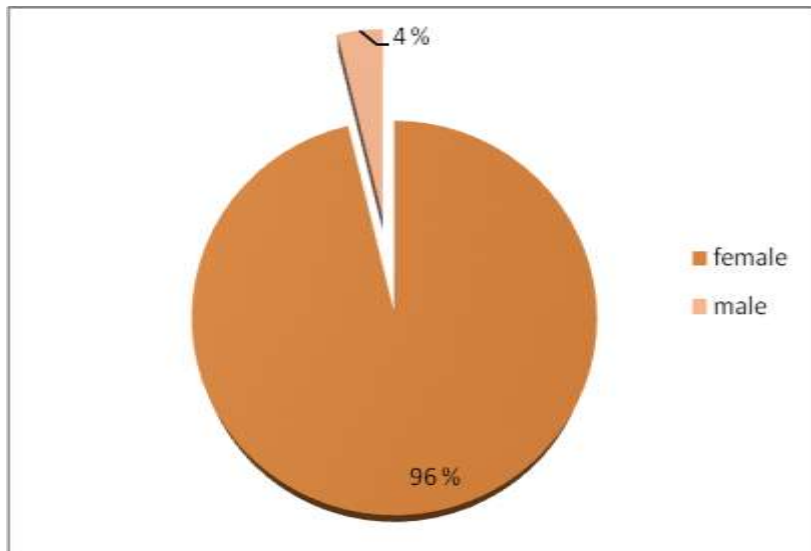


Figure 5.3b: Responsibility of collecting water by Gender

Women's contribution to household activities is not only limited to collecting water but it also includes preparing food, cleaning the living room, taking care of children, helping their husbands in farming and many more household activities are on women's shoulder. As the researcher observed the community way of living during her stay, preparing the food named '*kocho*' is a very long process which is almost mainly done by females. In addition to all the burdens at home, they have to walk for hours to fetch water to satisfy their family members' water needs. In general, women do not even have time to maintain their own hygiene.

5.2.3. Water Quality

According to USGS (2011) water quality is a term used to describe the chemical, physical, and biological characteristics of water, usually in regard to its suitability for a particular purpose. Although scientific measurements are used to define water quality, in this study it is difficult to inspect the chemical and biological purity of the water used by the Michael Semero peasant association, of course it doesn't have an objective too. As the Photo 5.2 on the previous topic shows the physical lack of purity of the water is beyond argument. Such kind of water cannot be even used for car washing in the urban areas of the country let alone

for drinking purposes. Therefore, as the respondents said and the researcher observed the water quality is extremely poor for drinking, cooking or for any other household activities.

As we have seen in the previous paragraphs, the water sources for the community for both drinking and other activities is from unprotected traditional ponds for more than 50 percent of the population; spring and rain water comprise 20 and 18 percent coverage respectively keeping in mind that rain water is only available during rainy seasons. So how the community perceives the quality of water which they get from the above sources is the main point to discuss. The researcher believed that the community's perception towards the water quality determines the way they treat the water they get from these sources.

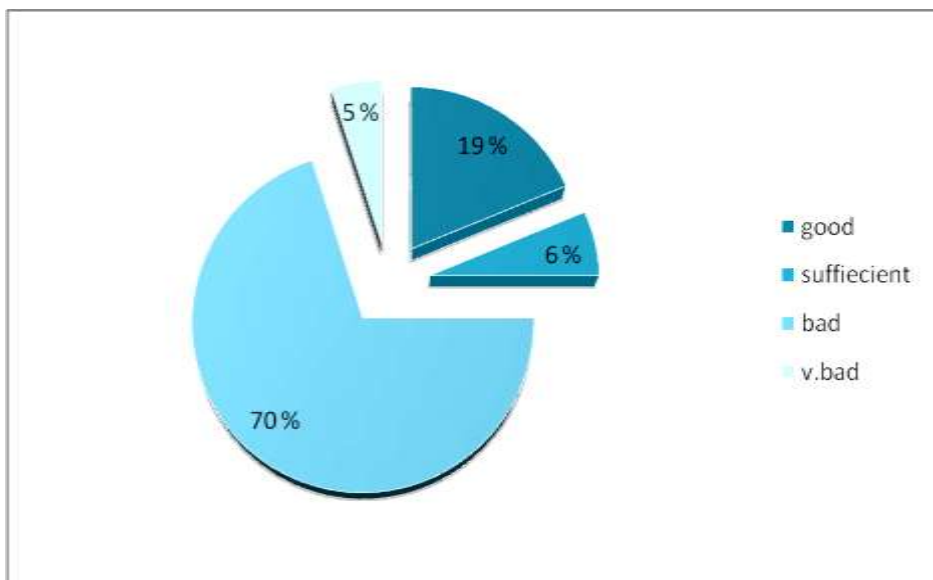


Figure 5.4: Respondents' Perception towards water quality

Among the respondents 70 percent and 5 percent of them think the water quality is bad and very bad respectively. The rest 19 percent and 6 percent of the respondents responded that the water quality is sufficient and good respectively. The respondents' response is not based on scientific knowledge rather on the basis of their perception which may include observing the clarity, sediments availability, taste or smell. Though the above number of respondents believed the water quality is good, as the researcher tried to probe further the respondents, their reason is not directly related to the quality of the water rather there is a tradition which prohibits calling water 'bad'. Actually there is a saying which shows respect to water equivalent to mothers '*water and mothers do not have bad*'. This implies that from wherever the water comes the community has a culture of respecting water and drinks it while knowing

it is not safe for their health. In addition to that, there is a tradition of keeping or appreciating what they already have; it is like praying '*do not even take what we have now away from us*' since they are afraid of losing that 'poor quality' water even for drinking. This is one of the reasons why members in the community accept the water quality they have as good and sufficient for they are afraid of losing that.

5.2.4. Water Treatment

As we have seen from the Figure 5.4, the water quality is perceived as bad and very bad by 75 percent of the community but how many of them treat the water to make it safer to drink matters most since they do not have alternatives. Hence, as the researcher asked the sample respondents, only 19 percent of them treated the water to make it safer for drinking. The methods of water treatment includes boiling the water, adding tablets, straining it through cloth and letting it stand and settle. Such treatments may not make the water absolutely safe to drink, but it gives relief at least in the eyes of the one whom drinks it. As data show, boiling the water takes the highest percentage and the easiest to apply. For some of the community members adding the tablets may have some negative implications because they believe that the tablets given to them may not be a means to treat the water, as a result many are reluctant to apply it in their drinking water. Other than the negative perception towards the tablets, there is a shortage of water treating tablets in the community though some of the community members want to use them in their drinking water. It is well understood that the treatment of drinking water at home minimizes the exposure to water borne diseases; but it is neither a guarantee for great health benefits nor a replacement for a sustainable potable water infrastructure (JMP, 2006).

According to MOH (2007) the HEP is designed to improve the health status of families, with their full participation, using local technologies and the community's skill and wisdom. The philosophy of HEP is that if the right knowledge and skill is transferred to households they can take responsibility for producing and maintaining their own health. To perform the HEP, HEWs are assigned to each rural peasant association where one of their responsibilities is to teach the community about hygiene and environmental sanitation in which water supply and excreta disposal are included. Based on the above premises, there are two HEWs in the community whose jobs are teaching the community about health and hygiene. The

responsibility of creating awareness among the public concerning health and hygiene related issues is given to these HEWs. These HEWs are only two in the community which means there are two HEWs to 402 households. According to Bekele et,al (2008) HEWs spend more than 70 percent of their time making home-to-home visits and communicating health messages in their communities. They try to exploit every opportunity to create awareness concerning all health related and hygiene issues. In most cases they arrange meetings with the community, social gatherings like 'Idir', 'Iqub', and religious gatherings to teach the community members. So creating awareness concerning water treatment and sanitation is on the shoulders of these two female HEWs, who walk for hours on a home-to-home basis which makes the job tiresome and ineffective.

One of the teachings these HEWs give to the community is water treatment, in order to create awareness concerning the side effects of drinking unsafe water. In order to make the water which the community members collected from the traditional ponds safer to drink, HEWs provide them with tablets and teach them other means of treating water like boiling and straining it through cloth. But many of the community members are reluctant to apply what they learn. The HEWs listed some reasons for this including the fact that community members do not have time to apply everything they learnt from the training since females are responsible for all the household activities, in addition to collecting water. They are unwilling and they do not have a positive attitude towards the tablets given to them and as a result they fail to apply the tablets to the water they drink. The other reason is even if some of the community members want to apply the tablets the district administration does not provide them with sufficient quantities of tablets which is satisfactory to all community. Thus, the easy and only option to treat water is boiling the water but many complain that they do not have time to boil the water since they have lots of other responsibilities at home.

Despite all the reasons for not treating the water, the limited number of HEWs may be one reason for not being as effective as expected. It is more than five years since these HEWs begin work in the community but still there are many people who do not have a basic understanding of using potable water or how to build their own latrines. This may be because '*health system is a labor intensive work*' (WHO, 2000) which needs many more qualified and experienced staff to function well and it needs a balance between the physical resources and the health workers to function well (WHO, 2000). In the district the HEWs to population ratio is 1:2228 (SNNPRS, 2008) which makes the health service difficult to address all

community members. In this case the number of HEWs in the Michael Semero peasant association seems fair but still there is an imbalance between the HEWs and the resources they need to perform their duties. As HEWs stated there is a shortage of water treatment tablets to be distributed to all the dwellers of the peasant association which could be a prohibiting factor in the performance their responsibilities very effectively.

5.2.5. Water Pricing

The poor water quality makes the community believe they should not pay anything for their water. But as some respondents said they are willing to pay if the government helps them to access potable water. Thus, for the water they get either from the pond or the spring, they do not pay. But those who use water from a piped source have to pay 0.25 cents per Jerikan (20 liters container) in order to keep the water source area clean. But when we look at the data above in the water source for drinking and other purpose, users of piped water amounts to only 3 percent of the total population which means that 97 percent of the populations do not pay for the water they get from other sources. There are some reasons which are given by the respondents when they asked ‘why?’ It is because the traditional ponds are dug by the community members. Since it is all their effort to collect the water in the traditional ponds, they convinced that they should not pay. In addition they think the spring water is natural and therefore should be available free of charge. It sounds here like what they got naturally should be free from any payment since they are not asked to pay for rain water and they don’t think it is appropriate to ask them to pay for spring water.

5.3. Toilet use and accessibility

5.3.1. Toilet Availability

According to the HDR of UNDP (2006), *'sanitation is safe disposal of human excreta'* and it is also one of the basic human needs. As we said previously people have the right to water and they should also have access to basic sanitation. In Soddo district particularly in the sample site, Michael Semero peasant association, the Figure 5.5a explains the current sanitation status.

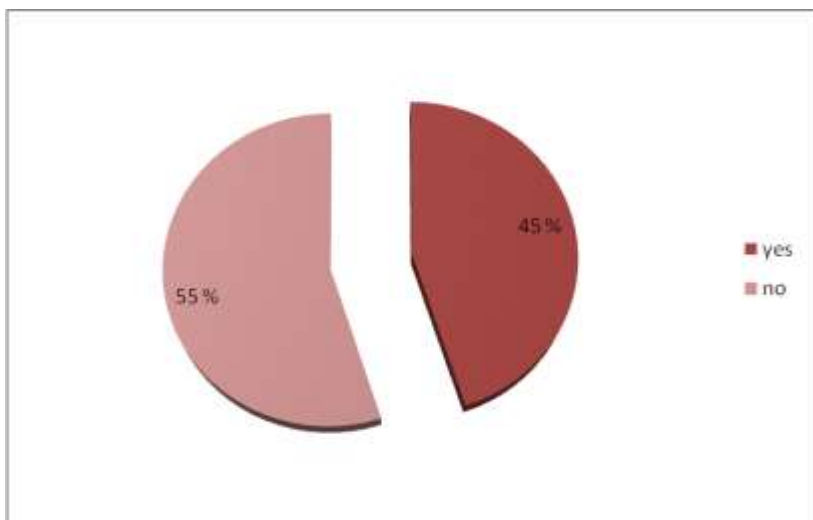


Figure 5.5a: Toilet availability

The data collected from the sample respondents shows that 45 percent of the community has a toilet; even those who have a toilet, the toilets do not have any facilities. They are just simply made of digging a hole in the ground down and putting some woods on it. Among the 45 percent of the population with toilet, 19 percent of them share the toilet with other households. As the data shows the maximum numbers of households who share a single toilet are two. But the rest 81 percent do not share their toilet with other households.

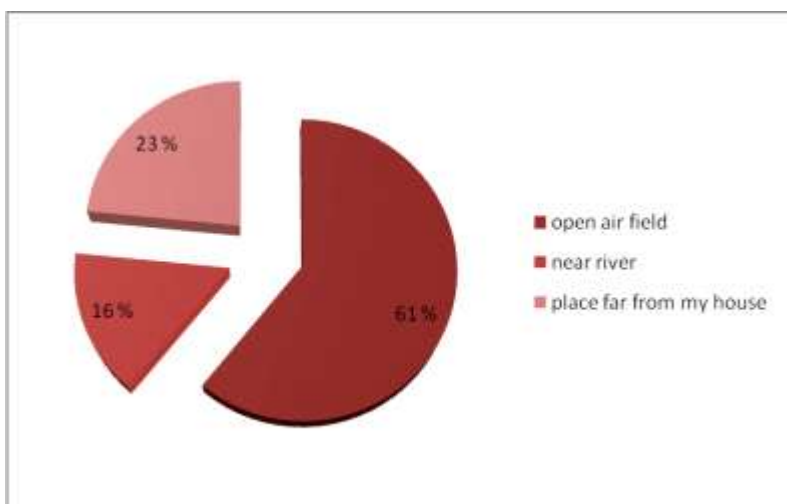


Figure 5.5b: places to defecate

Those who do not have toilet which means 55 percent of the community defecate in an open air field, near river, and in a place where far from their house. Among these 55 percent of the population, 61 percent of them defecate in an open air field, 23 percent and 16 percent of

them defecate in place far from their house and near river respectively.

Though still adults may defecate in an open air field which is far from their house or near rivers, it does not work for children. As the researcher observed children are not expected to go far or to use toilet to defecate, rather they are expected to defecate in a place near to their houses and may be in a place where they play. The reason children defecate in a place where near to the living houses is not only limited to those who do not have toilets but it also works for those with toilets. Since the toilets are simply made of local materials without any facilities, it is not safe for children to use it.



Source: Author, 2011

Photo 5.3: Toilets in Michael Semero peasant association

As it is applied to water sources, people in the community can be classified either people with access to improved sanitation or people with unimproved sanitation. According to WHO (2008) improved sanitation facilities are defined in terms of the types of technology and levels of services that are more likely to be sanitary than unimproved technologies. Improved sanitation includes connection to a public sewer, connection to septic systems, pour-flush latrines, simple pit latrines and ventilated improved pit latrines. Not considered as improved sanitation are service or bucket latrines (where excreta is manually removed), public latrines and open latrines. Therefore as we have seen from the collected data of the Michael Semero peasant association, they do not have access to improved sanitation. As the percentages shown above in the Figures 5.1a & 5.1b demonstrate, people do not have access to toilets and even those who have access to toilets the toilets do not have any facilities. The UNDP (2006)

also noticed that Ethiopia's sanitation coverage is less than one in every ten people who has access to sanitation. As we have seen in the literature review, the approach to sanitation in the sample study site relies on 'do nothing' and 'drop and store' approach. That means 55 percent of the community uses the 'Do Nothing' approach and the rest 45 percent uses 'Drop and Store' approach.

5.4. Impacts of Poor access to Potable Water and Basic Sanitation

The poor accessibility to potable water and basic sanitation has many negative impacts on the community daily activities. Though the negative impacts of poor accessibility to potable water and basic sanitation is not debatable, the degree of understanding the negative consequences attached to it may vary from person to person. In this study, many agreed with the negative consequences of the poor accessibility to potable water and basic sanitation; so the following social, economical, environmental and health impacts are some which were identified by the community members of the sample study site, Michael Semero Peasant Association. As we can easily notice the social impacts may have some relationship with the environmental, health and economic impacts and the reverse will also be true. Therefore though each topic is discussed separately in the following paragraphs, they are not mutually exclusive

5.4.1. Social Impacts

Increases Conflict over Water Resources

As we have seen in the topic water sources, part of the community uses the spring water which is believed to be clean relative to the traditional ponds. During the past years the community members have been using the spring water freely for both drinking and other household activities. The water from this source is preferable by many to drink, not only because it is clean but it also believed to be '*holy*' by one of the religions, Orthodox Christian, in the community. But now people are not allowed to use water from that source as they used to, the reason is the religious leaders came to realize that it should only be used for religious activities. Though it seems many, especially followers of this religion, are agreed with the

idea of water being '*holy*' it becomes a source of conflict when they are not allowed to collect it at any time they want. In addition, even in the case of religion, members of the community who are followers of Orthodox Christian are allowed to drink from the spring water; but people who do not belong to the aforementioned religion are not allowed to use it even for drinking purposes. This source of water used to serve all the community without any religious prejudice but recently followers of other religions are not allowed to drink the spring water. As a result, conflicts have arisen because people are not allowed to collect the water at any time they want to from the spring water source. Such conflicts result in discrimination among members of the community who follow different religions and the dominant religion has control of the water source.

In addition to that as the district water desk officer articulated, there is a conflict among villages in the peasant association and between peasant associations in the district. There are eight villages in the Michael Semero Peasant Association and these villages often get into conflict because of water resources. During the data collection, the researcher got an opportunity to observe how people respond to the water resource projects; there was one project group who came to the study site to drill for groundwater. In this case the researcher had the possibility to see the conflict between villagers concerning where the drilling for the groundwater is to take place. The conflict is not only limited to the villages but the peasant associations in the district are also involved in conflicts to access water resources. The conflict arose when one peasant association acquired drilling services for ground- water and constructed a well that the other peasant associations felt like they were ignored and rejected by the government. And sometimes they prevented the trucks with the drilling equipment to pass by their villages unless they also drilled their land to locate groundwater. This conflict seems to demonstrate a lack of awareness concerning drilling for groundwater resources, which they think they can easily access by drilling and without any feasibility studies.

Such conflicts arise because of competition over scarce water sources. On the top of that it shows how eager the community members are to get easy access to potable water. As the district water desk officer explained, such conflicts are happening very often which shows that the need for potable water is increasing rapidly. There may be many reasons for such a scarcity of potable water in the district, which we will see in the coming topics.

Increases the Number of Drunk People

In order to survive people need potable water but when they do not get it, they may expose themselves to other means for satisfying their thirst which threatens their survival. In Michael Semero Peasant Association when people are unable to get potable water, alcoholic drinks are taken as alternatives. Thus, the poor quality of water is taken as an excuse to drink local alcohol. Many members of the community especially men, exploit any possible alternatives not to drink water from the unprotected traditional ponds and springs. Some of these alternatives are 'Tela' and 'Areq' which are locally produced alcoholic drinks. These drinks distort the social values of the community by not showing respect to others in the community, and not living in a peaceful and orderly manner. Thus, community values are becoming distorted as people turn away from unsafe drinking water and many, especially men, are becoming obsessed with the local alcohol shops. These local alcohol shops are social places which help the community to get to know each other and help them to spend some time since they may not have time during working hours. However, these places also make the community exposed to conflicts which erode the social values of the community. Regardless of the negative consequences of alcoholic drinks, as the data collected shows, many of the community members still prefer to drink 'Tela' and 'Areq' than the water from the unprotected sources. As people turn away from the poor quality water they are becoming addicted to alcohol which has negative consequences. What we should keep in mind here is it does not necessarily mean that all people who are drunk are running from the poor quality of water, rather some are addicted to local alcohol drinks which means they wouldn't stop drinking 'Tela' or 'Areq' even if they had potable water.

Increases Fear of Death

The traditional ponds are not well protected, either to protect the quality of the water but they are also not well protected to keep people safe when collecting pond water. As a result, a number of people have drowned collecting pond water. In this case, the problem is a dichotomy: once the community knows that somebody drowned in that pond, they do not stop drinking from the pond. It is only for a limited period of time that people stop collecting water and drinking from the pond. After some time, religious leaders come to the pond, prayed and blessed the water which they then believe will be fine and safe to drink. This has a huge negative impact on the psychology and dignity of the community. The treatment they

use to keep drinking from the same source is '*praying and blessing it*'; they do not even completely remove the previous water to collect new water. Therefore, the problem is that they lost a person in the pond but they do not stop drinking from that pond which greatly threatens human dignity.

There was a pragmatic situation in one of the traditional ponds of the community where a father and son dies the same day when a father tried to save his son from drowning. Such tragic situations happen because the water is collected in a particular place which is not protected even to prevent children from entering it. The most difficult is drinking water from a source in the knowledge that a body was found in it very recently. This is not only a question of having potable water but it is also a question of human dignity. Nobody prefers to drink water from such sources. It becomes worse drinking while knowing that someone drowned in the water, but the community has no choice other than drinking it.

People Do not Have Privacy to Relieve Themselves

Government or non-government organizations encourage people to build their own toilets for a multitude of reasons, beyond keeping the environment clean and ensuring a healthy environment, people will also wish to have privacy when they relieve themselves. As we have seen in the above topics, the sanitation coverage in the community is very low. Thus, many of the community members defecate in an open field or in a place far from their dwelling houses. As a result, people are not free to defecate where they want to during the day because there is no privacy to defecate in such places. The situation is much worse for women because of lack of privacy and they have to wait until sunset to relieve themselves. And of course there is no privacy in defecating in an open field. This obliges the community members, especially adults, to wait until sunset.

5.4.2. Health Impacts

The poor access to potable water and basic sanitation greatly affects the well-being of the community. It is obvious what the health impacts of poor sanitation and poor quality water have on the community especially to women and children. The health effects of unsafe drinking water and poor sanitation are not limited to illness; some have even died because of

diseases related to water and poor sanitation.

The community members are greatly exposed to diseases. Most of the respondents are aware that their inability to access potable water is a source of their poor health. Diseases related to unsafe water and poor sanitation are common in the community. Diarrheal diseases and diseases like trachoma are affecting the members of the community. Trachoma is a preventable eye disease but can be a cause of blindness which is spread by flies that breed in an unclean and dry environment. Some diseases are also life threatening because of water and sanitation problems. As we saw in the general background of the respondents, the monthly income of many is insufficient for them to access a clinic if they become sick. As a result, some members of the community are forced to suffer at home with easily treatable and preventable diseases. The health of the community is greatly threatened because they do not have access to a hospital or clinic nearby. In order to reach to the 'closest' clinic, they have to walk for hours. Because of the non availability of a clinic and no road construction, people are forced to use horses or donkeys to transport sick people to the clinic.

As one of my respondents explained

'Many are dying from easily preventable disease because they do not get potable water and basic sanitation; and they do not have a clinic in their vicinity after they are affected by these preventable diseases.'

This is all because people do not have access to potable water and basic sanitation, and less accessibility to clinic at the nearby.

As the HEWs stated many of the community members are repeatedly affected by water borne and water related diseases like amoeba, malaria, and the like. Of course, sanitation related diseases like trachoma is one of the preventable diseases which impact the community greatly, including children. In addition to that the collected water provides ideal breeding areas for mosquitoes and it is also a very conducive environment for flies to breed.

According to the BOFED (2007), malaria is the top killer disease in the region which accounts 31.69 percent of all diseases. The traditional ponds in the study area and the unsanitary environment provide malarial mosquitoes with ideal breeding grounds. In addition, parasitic and infectious diseases are also among the two top killer diseases of the region.

Generally we can say that the combination of unsafe drinking water and inadequate sanitation leads to a deterioration in the human resources of the district and the country at large.

5.4.3. Economic Impacts

There are some economic impacts which were stated by the community. Some of them are directly related to their health and some others are related to the time spent in collecting water and their choice not to drink water from the unprotected sources.

Reduced Productivity Due to Absenteeism

Water related and water borne diseases are diseases which affect the community members' health. As a result they are forced to be absent from work for they are unable to work because of the diseases to which they are highly exposed. This reduces the household income for almost all the community households which depend on agriculture. Thus, when one of the household members becomes sick, the others have to invest some money to make him healthy. And if the patient is the household head, the income of that household is highly negatively affected. Children are greatly exposed to unsafe water and poor sanitation related disease since they spend their time playing in a place where they defecate. Thus, parents have to take their children to a health station if they get sick. This means that parents have to be absent from their jobs, which lessens productivity.

Increasing Medical Expense

Regarding the household income of the community, 89 percent of the households have a monthly income which is less than 500 Br. With this low income they are expected to pay for their own treatment and that of their children when they get sick. Thus, high medication costs are one of the economic costs which the community regards as a great burden.

Expenses for Alternative Drinks

As we have seen under the topic social impact, some members of the community drink a good deal of alcohol. These people believe that rather than drinking the water from the

traditional ponds, they prefer to drink alcohol. As a result they use their money on other alternative drinks. Thus, as they use the limited amount of the household income on ‘Tela’ and ‘Areq’ the other members of the household suffer from a lack of food, in most of the cases household heads or males are the ones who control the household income. And of course it is the household heads that often go to alcohol shops and spend their limited amounts of money.

Spending a Great deal of Time

The other economic related impact is that almost all of the community members are required to spend hours collecting water from the unprotected sources which could have been spent on other productive activities. Because people do not have latrines nearby they have to walk for some hours to get far from their houses which could be saved if they had a latrine nearby.

Impact on the Household Income

It is well understood that the economy of a country is negatively affected by the poor accessibility to potable water and basic sanitation. But how many of the community members in Michael Semero Peasant Association realize that unsafe drinking water and unimproved sanitation has a negative impact on their household incomes – see Figure 5.6.

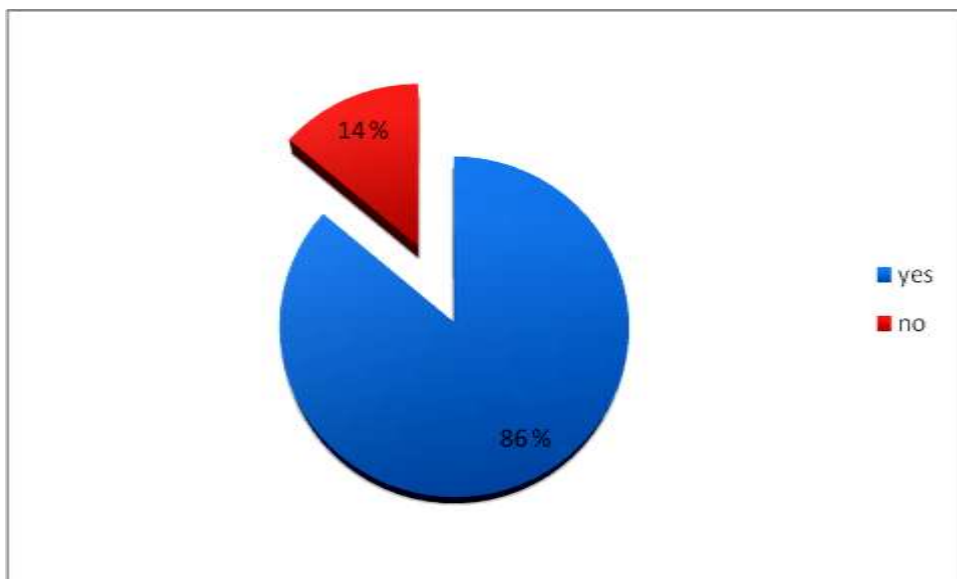


Figure 5.6: Impacts on household income

As the Figure 5.6 shows, there are people who believe that the poor accessibility of potable

water and basic sanitation has an impact on their household income. This group accounts 86 percent of the respondents while the rest believe poor accessibility to potable water and basic sanitation does not have any impact on their household income. Those who believe as it has impact identify how the poor accessibility of potable water and lack of basic sanitation affects their livelihood. If they do not get potable water then they get sick, thus they are not productive at work which will decrease their income.

One of the respondents explains the consequences of unsafe drinking water and unimproved sanitation:

“If I get sick because of unclean water, for at least two months, my family does not get food to eat let alone to have all basic necessities for I am the bread winner for my family. Thus, lack of access to potable water and basic sanitation has a huge negative impact on my household income”.

Another respondent says:

“Many times my children get sick from water related diseases which force me to invest my little income for their medication. This is happening because of poor drinking water and unclean environment. If we had safe water to drink and basic sanitation, we would have healthy life and what we spend on medication would have been for our other basic necessities. When my children got sick I invest not only my money, but I should also be absent from work which reduces my productivity which in turn reduces my household income”.

For some members of the community, the traditional ponds are very far and they spend hours walking to fetch even unsafe water to drink. Thus, the community dwellers believe the time they spend on collecting water would have been better invested in other productive activities which might increase their household income if they had potable water and basic sanitation nearby.

The economic impact of poor sanitation is discussed also in the WSP-EPA (2008) research report in relation to health impacts. According to the research report health care costs, productivity costs, and premature mortality are costs sub-categorized under health impacts which are followed by economic costs of full costs of health seeking, welfare loss due to adult and children sickness time, and discounted lifetime income losses for adult and child

deaths. This is the study result of consequences of poor sanitation in Philippines, Vietnam, Cambodia, Indonesia and Lao PDR. The case is not very different from Ethiopia, as the research respondents tried to point out these are the impacts which they face due to poor sanitation and unsafe drinking water. According to the research report of WSP-EPA (2008), the loss due to poor sanitation amounted to US\$ 1.4 billion among which 72 percent of economic costs accounted for health impacts. Therefore the costs which are related to poor sanitation cannot be overlooked in Ethiopia which is one of the countries with the lowest access to basic sanitation and potable water.

In contrast to the above idea, there are still 14 percent of the community members who believe unsafe drinking water and unimproved sanitation does not have any negative consequences on their daily activities or on their household income. The background for this attitude explained in the following sentence:

'we have been drinking water from the same sources since our childhood and we have been relieving ourselves in an open air field and in a place far from our houses but nothing happened yet'.

These people are relating water related diseases not directly to the quality of water or the access to basic sanitation, rather they relate it to adapting to it or not. That means when a stranger comes to the community and drinks the same water, he may get sick because he is unaccustomed to it.

5.4.4. Environmental Impacts

The FDRE constitution of article 44 sub-article 1 stated that *'All persons have the right to a clean and healthy environment.'* Despite what is stated in the constitution many people in rural Ethiopia do not have a healthy environment. There are still significant numbers of people who do not have access to a toilet to defecate in a proper place. Since 55 percent of the community do not have toilet, they defecate in an open field, near a river or in a place far from their houses while children are not obliged to go far to defecate, rather for their safety they are encouraged to defecate in a place near their houses or in a field where they play. Consequently, the environment is not clean and is uncomfortable to live in. Thus, flies and disease transmitting insects can easily breed and cover the area. As the researcher observed,

children play in a place where they defecate while their faces are covered by flies.

Apart from the environmental, economic, social and health impacts which the water accessibility and sanitation level has on the everyday activities of the community, this issue also affects their human dignity. So when people have a natural call, they cannot defecate whenever they want to, rather they have to wait until other people leave the place or if they are female they should wait until sunset. In addition, because there are no separate ponds in the community, people are forced to use the same source of water as their animals. On top of that, during the dry season the sources of water which are nearby might dry out and people have to go far to collect water which is a big challenge to the community.

Though most of the respondents agreed that the poor accessibility of potable water and basic sanitation has impacts, there were very few respondents who argued that poor accessibility of water and sanitation does not have a negative impact on their daily lives. Thus, this attitude towards the current water and sanitation status helps them to easily adapt and accept the situation by drinking water from unprotected sources and defecating in an open field. Some others think though they are facing the problem of water and sanitation, they argue that they already adapt it and learn how to live with it. Thus, they believe the poor access to water and sanitation is not considered as a big challenge which the community currently faces.

Therefore there are three groups of people based on their perception towards the impact of poor water accessibility and sanitation: people who know and understand the negative consequence of the poor quality of water; people who know the negative consequences of the poor quality water but adopt themselves to it and are fine with it; and the third group is people who do not understand the negative consequences of the poor quality of water and believe it does not have any negative impacts on their livelihoods. People who belong to the third group may never have been convinced of the desirability of new water sources or new excreta disposal facilities.

5.5. Factors Hindering Access to Potable Water and Basic Sanitation

When respondents were asked if they know why they do not have get access to potable water and basic sanitation, they forwarded the following reasons. Some of the factors given do not have any scientific grounds which may not be sound reasons in professionals' point of view.

These factors are discussed in the following paragraphs.

5.5.1. Factors Hindering Access to Potable Water

Ground Water Resources

It is known that ground water resources are a source for many hand dug wells in Ethiopia. The community members believe that one of the reasons which do not enable them to have access to potable water is unavailability of ground water resources. So, this coupled with the seasonal arid climate means that the community suffers from lack of potable water, especially during the dry season. Often professional workers come from the district administration to drill for ground water but such efforts have failed many times. Though the community thinks so, the district water desk officer said, these kinds of projects failed because they did not have accurate pre-feasibility studies. Thus, this lack of studies does not indicate whether the district has ground water resources or not. In contrast to the community's thought, the former minister of the Ethiopian MWR stated that in spite of its quantity and quality, ground water is believed to be available throughout the country though he believed '*the use of groundwater in Ethiopia is hampered by a lack of understanding and information*' (Dingamo, 2008).

The Encyclopedia of Earth (2008) stated that the groundwater potential of Ethiopia is not known with any certainty, but so far only a small fraction of the groundwater has been developed and this is mainly for local water supply purposes and traditional wells are widely used by nomads. As UNDP (2006) stated Ethiopia has several major lakes and rivers, abundant groundwater and a large volume of rainfall, though the groundwater resource is not yet known. As we tried to trace the topic of Ethiopia's surface and groundwater resources in the previous chapters, Ethiopia has abundant surface water resources but has not yet exploited them to the fullest. With regard to the groundwater, the MWR has stated that the true potential of ground water resources is not yet known but it is expected to be approximately 2.6 billion cubic meters (MWR, 2002). Thus, when we see what the experts said in this regard, we do not have any accurate basis to say the district is running out of ground water resources.

Geographical Location of the Peasant Association

The geographical location of the peasant association was also identified as a reason for not having potable water and basic sanitation infrastructure as the neighboring peasant associations have the advantage of having infrastructure like roads, electricity and to some extent water. As the country background in the first chapter shows; the administration of the country is divided into nine regions. These nine regions have zones and districts; the geographical location of the regions also bordered by other regions. Thus, this peasant association is located in the SNNPR but it is bordered by the Oromia Region. For this reason, people in the community convinced that being located close to the border of the neighboring region means that they do not benefit from the budget of the SNNPR as the other peasant associations do.

Administration Problem and Less Capability of the Peasant Association

Administration problems of the peasant association and the district administration were also identified as additional hindering factors preventing access to potable water and basic sanitation. People in the community believe that the peasant association does not have any influence on the district to focus attention on this underprivileged peasant association. In addition, some said the district administration has a problem of allocating the budget equally to all peasant associations.

Some other groups also believe that people in the community do not have the capability to do anything concerning water and sanitation than drinking the water they get nearby and defecate in a place which they think is appropriate. These groups of respondents think that the community has striven to their utmost to access potable water and basic sanitation but that the government is not responding to the needs of the community, because the peasant association administration is not capable of articulating the needs of the community to the higher authorities.

Failure in Community Participation

One of the criticisms of the community members is that the district and peasant association authorities do not involve the community in the development activities of the area. This was

one hindering factor for not having potable water and basic sanitation in the community. As the literature shows community participation has been a key factor for rural water supply and sanitation provision. The WSSCC (2011) encourages involvement of the community at the early stages of the water supply scheme and discusses with the community whether the type of contribution should be either in kind or cash. Thus, failure to involve the community in development activities has been a very significant factor in not having access to potable water and basic sanitation.

Thus, the community and the peasant association failed in working together. Then people in the community perceive that they do not have any role in the development of overall infrastructure in the peasant association. This makes them wait for what the government can bring to them. So the participation of the community in any kind of development activities in the district is very low. As the respondents said the community members are becoming dependent only on what the government provides them rather than contributing their efforts in the development of the area.

The Peasant Associations Do Not Exploit the Opportunities

The current situation of the country encourages people to participate and invest in their birth places which in turn help the community to get access to much infrastructure. The community dwellers believe that there are some people who were born in the rural areas who eventually became rich. The respondents believed that if the peasant association encouraged them to be part of the development movement of the area, particularly at their birth places, the return by involving them could be huge. But the peasant association office failed to involve these rich people to invest and help their birth place in overall infrastructure development. While the respondents think this was the responsibility of the peasant association and district administration office, both failed to do so.

Unavailability of Infrastructure

The infrastructure problems are also given as another factor which prohibits the access to potable water. It is because the peasant association has a poor infrastructure, especially roads and electricity, that people are not attracted to invest their money in the development of the area. In addition, some believe that private businesses and NGO's which work in

development activities are not capable of penetrating most rural areas because of poor infrastructure though the reality should be the opposite. It is anticipated that private businesses do not move into rural areas if they are not going to make profits and if the place is not technology friendly to adopt their business, private business people will not be willing to start a business in that area. As stated in the literature, socio-economic development and infrastructure are closely linked. In this case, rural areas are very isolated and have inadequate infrastructure like roads, health, education and potable water and sanitation services, which is a challenge to government and private organizations to provide such services to rural communities.

Unavailability of NGOs in the Peasant Association

As Clark (2000) stated, human development and poverty alleviation is the core agenda of many NGOs working with development. Members of the Michael Semero peasant association believed that the existence of NGOs could have a positive impact on the infrastructural development of the area. It took five years with the help of an NGO, government and community contributions before they were able to get a first cycle primary school in the peasant association. Therefore, they have witnessed that the existence of one NGO can demonstrate such a difference in the educational sector that they expect it to lead to an expansion in the water and sanitation sectors. Thus, some others also viewed the unavailability of an NGO working with development issues within the peasant association as restricting their access to potable water, basic sanitation and other infrastructure.

Budget Shortage

According to the district water desk officers, there is always a budget shortage to do what is planned to each peasant association especially with water and sanitation at the beginning of the year. Though the district has a plan for digging at least one well in each village, these plans cannot be realized because it does not have a sufficient budget to implement it.

Failure of Prefeasibility Study

There has been many examples where drilling for underground water failed because of failures in pre-feasibility studies. Thus, the failures in pre-feasibility studies result in a loss to

the peasant association and the district administration, which would have served many members in the community if the pre-feasibility study results had identified the appropriate places to dig. As the district water desk officers explained, this happened because the district administration does not have highly skilled human resources and modernized technology to perform accurate pre-feasibility studies.

5.5.2. Factors Prohibiting Building a Toilet

Some community members believe that having a toilet is a good thing which inspires them as they are modernized which makes them safe and provides privacy during defecation. But still there are some factors which prevent them from not having their own latrines. These factors are discussed below which is given by the respondents.

As Figure 5.7 shows, 45 percent of the respondents are not able to build their own toilet because it is too expensive. Another 25 percent have another toilet available; these toilets may belong to their neighbors or relatives since they do not have their own. Other groups of people are those who do not have a proper place to build is the next highest percentage; people who do not want to have a toilet and who think forests or rivers are suitable places to defecate accounts 8 percent each.

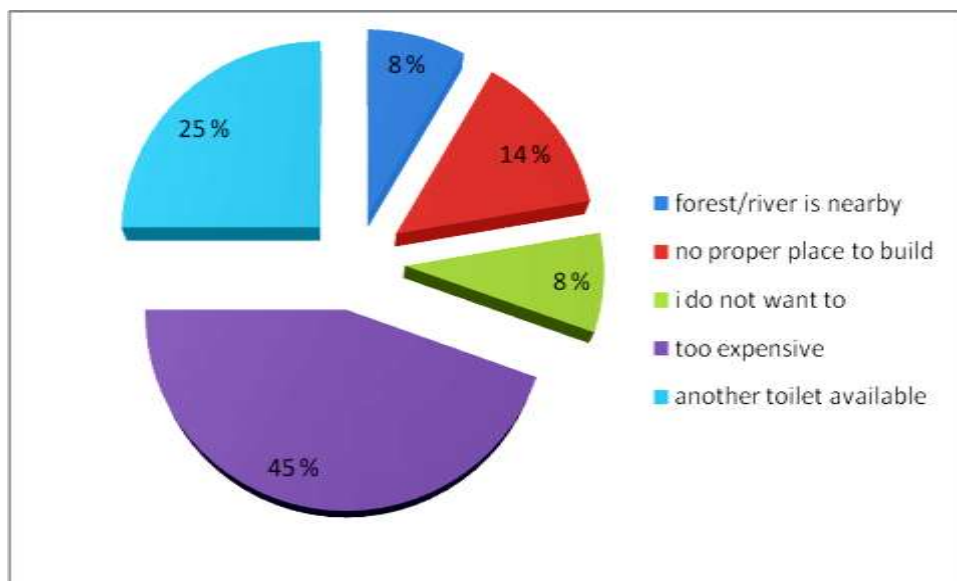


Figure 5.7: reasons for not building a toilet

Other than the above reasons, there are also factors which prevent the community members from building their own toilet. These are discussed in the following paragraphs:

Time and Ability

As we have said earlier the toilets in the community are simply constructed by the household owners for it is simply digging a hole in the ground and lining it with wood. Thus, some people give the reason for not having a toilet as not having the time and ability to dig a hole for a toilet. This is because all the agricultural work is done by the household head while the digging of a toilet would be an additional job to do. In addition, they are not capable financially of building the toilet if they have to pay those who do the digging. As we can see from the general backgrounds, the community members' monthly income is less than 50 US dollars per month which makes building a toilet quite expensive.

Lack of Awareness

Some others say '*I do not understand the importance of having a toilet while we have a place to defecate*'. These people consider that any place is appropriate to defecate as long as people are not around. These parts of the community consider those who defecate in a toilet as not brave. They even think that 'using latrines' is an insult. This is also a challenge for the HEWs to change the attitude of which defecating in a house (they think the latrines are houses) is a sign of being afraid and on the contrary, defecating in forests or in an open field is considered as being brave.

The JMP (2006) raised a practical case of Ethiopia in expanding the coverage of improved sanitation. In this case, the government of Ethiopia began a new approach in Amhara Region to increase the sanitation coverage which was 3.8 percent before the project began where only 100 latrines were being constructed per year but after the community mobilization started it reached 26,400 latrines being constructed per year. Such a great shift was registered because the government worked on increasing the community knowledge and understanding of improved sanitation and its linkage to health. Thus, lack of awareness means that the community lags far behind what is expected to be achieved. Therefore, in the Michael Semero Peasant Association, there are people who do not understand the importance of building a latrine and its linkage with health.

Lack of Facilities

It is well known that in order to build latrines, some inputs like cement, steel and other materials are necessary. In this case many toilets in Michael Semero Peasant Association are frequently destroyed because the latrines are not durably constructed. The peasant association does not provide the community with any materials apart from teaching them how to build a toilet. The materials required for latrine construction are quite expensive in comparison to the community's household income which does not even cover their expenses for food and other basic necessities. As a result, even if the community members build their own latrines, they do not last long. It is because they build a simple pit latrine based on their knowledge with the local available materials which is destroyed when the rains arrive. Consequently, based on their previous experiences, people do not rebuild their latrines.

Factors Related to Land

As the researcher observed, in the community those who have a latrine build it on their own land. The difficult ground and soil condition which makes it difficult to dig deeply, means that a latrine rapidly becomes full, and a new one has to be dug. Thus, some people use the lack of suitable land as an excuse for not constructing a toilet of their own. As a result they forced to defecate in an open field.

Traditional Attitudes

In the traditions of the Michael Semero peasant association, a latrine is defined as '*a house where people defecate when they are not brave enough*'. This unwritten definition of latrines in the community overlooks the advantages of latrines in ensuring a healthy generation and creating a healthy environment to live in. As a result of such cultural attitudes among the members of the community people defecate in an open field or in the forest. People with such attitudes even discourage other community members when they try to build their own latrines. Especially adult males are not even expected to defecate in the latrines for they are considered as 'gutless'. Though these negative attitudes towards latrines are changing, there are still people who consider defecating in a latrine or literally what they call a 'house' as a sign of weakness. As HEWs explained, some households with such primitive attitudes present big obstacles in their attempts at training on sanitation and hygiene issues.

5.6. Recommended Improvement Measures From the Community

The community members also forwarded a recommendation which may serve to prevent negative consequences for the poor accessibility to potable water and basic sanitation in the short run; and in the long run they recommended what should be done to help the community to have sustainable access to potable water and basic sanitation.

Government and people have to work together to improve the infrastructural development in the area if development is to be a reality. Since the community members have seen from experience, they think they lag behind other districts in potable water accessibility because of unavailability of infrastructure. Thus, infrastructure like roads, electricity, and telephones are taken as an excuse for poor accessibility to water supplies and sanitation. The respondents recommended that the infrastructure can easily pave the way to ease access to potable water supply and basic sanitation.

There are some trends of rehabilitating natural environments in the country. This rehabilitation has to include water schemes. Thus, strengthening water scheme rehabilitation can provide a solution to the problem of unsafe drinking water in the district. On top of that stakeholders in the district administration should be strengthened and this includes health institutions, educational institutions, finance and economic development institutions which may facilitate the progress towards ease of access to water supplies and sanitation, and minimize the negative consequences of the current unsafe drinking water and poor sanitation. Though the relationship between these institutions and water supplies and sanitation seems to have less of a direct contribution, the district water desk officer is believed to have a significant role in increasing water accessibility and minimizing the severe consequences of unsafe drinking water and poor sanitation.

Despite the number of NGOs in the district, there are no NGOs in Michael Semero Peasant Association. Hence what the community members believe is if the NGOs working in development activities which are currently in the district are evenly distributed within the peasant associations, this may increase their role in alleviating the problems of poor access to potable water and basic sanitation. Thus, the district administration has to encourage NGOs to increase their roles in terms of money, training and knowledge transfers. On top of that, the community members have to be aware of being part of the development activity and this

could be done by the district administration and peasant associations through awareness-creating campaigns and community mobilization. In addition, the district administration should prepare project proposals on water scheme developments and has to play a greater role in community mobilizations.

All recommendations given by the community members and the district water desk officers focused on what is to be done in the long run. But HEWs are curious about the impacts of unsafe drinking water and poor sanitation. Thus, they suggest that the community members have to treat their drinking water and build their own toilets. They urge the community members to apply the possible water treatment methods to protect themselves from easily transmittable water related and water borne diseases. This assignment is going to be to the peasant association and district administration offices, and mostly to the HEWs.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. Conclusions

During the household survey, far fewer than 50 per cent of respondents were women. This was because the culture does not allow females, while their husbands are around, to talk about matters pertaining to their households. Thus, the females included in the household survey were either because their husbands were not at home or their husbands were unable to respond because of lack of the time. As we tried to see in the previous chapter, educational background, household size and household income were considered as determining factors for water demand and use. In simple terms the low educational background and the low household income show that the quality of life of the community can be categorized as very low.

Traditional unprotected ponds, spring, rain and piped are the sources of water for the Michael Semero Peasant Association. The water they get from the above listed sources is used for both drinking and other household activities. In terms of coverage the traditional ponds amount for the highest coverage for both drinking and for other household activities in the community which is more than 50 percent of the community gets their drinking water from the traditional unprotected ponds. The responsibility for collecting water from these sources is almost all on the shoulders of women while their frequency of visits to the water sources depends on the amount of water they need per day. As we have seen from the analysis, every woman has to visit the water source, which takes 26.3 minutes on average for one trip, at least twice a day. The worst case for the responsibility of fetching water is children whose ages are less than 15 at the age they supposed to be at school. Though there are different definitions to the word quality, as most of the respondents agreed the purity of the Michael Semero Peasant Association water is not enough to be called good quality. Though most of them agreed on the poor quality of water, very few of them treated their drinking water, for which lack of awareness, time shortage, being reluctant and unable to get water treatment tablets are some of the reasons given.

It is well understood that the safe disposal of excreta is a means to ensure a healthy environment to live in. But as the study shows, only less than half of the population of the Michael Semero Peasant Association managed to have access to simple pit latrines. These

latrines are made of the local materials which do not include any facilities. The rest means more than half of the populations, use open fields to relieve themselves.

Health, economic and social impacts which are related to poor accessibility to potable water and basic sanitation were the main points of the thesis. Under the topics of social impacts villagers get into conflicts over water resources. Alternative drinks like local alcohol increases the number of people drunk when people try to avoid drinking water from the available sources in the peasant association. There is a fear of death because people sometimes drown when they collect water in the ponds. People lack privacy to relieve themselves is also an important consideration. Under economic impacts productivity losses due to absenteeism and high medication costs are the highest; health problems like diarrheal diseases, malaria, and trachoma are common in the Michael Semero Peasant Association. Environmental consequences cannot be overlooked with children's faces covered with flies because of the unclean environment.

The members of the Michael Semero Peasant Association also identified the unavailability of ground water resources, geographical location of the peasant association, administrative problems of the peasant association, community participation, other infrastructure problems and lack of awareness are some points listed under reasons for poor accessibility to potable water and basic sanitation. The recommendations from the key informants are what can be implemented in the short run and in the long run.

6.2. Recommendations

Based on the empirical findings and analysis discussed in the previous chapter, the following recommendations are given:

Water, sanitation and hygiene education programmes should be in place. As we have seen in the empirical finding and analysis, HEWs in the community are not enough to train all the households concerning water and sanitation. Thus, the number of HEWs has to be increased if the training given is to be effective. In addition to increasing the number of HEWs, the education given to the community should focus on attitudinal changes towards water treatment using tablets and building their own toilets, and there should also be a focus on

creating awareness concerning consequences of using poor quality water and unimproved sanitation systems. As we have discussed in the previous chapter some people in the community do not have positive attitudes towards the tablets provided for the treatment of water and building latrines. Thus, the awareness creating campaign and training would have a significant role in shaping the community's mindset.

The reasons for the poor supply of potable water and sanitation discussed in the empirical findings and analysis are taken as an excuse for accepting the current water supply and sanitation situation of the society, which the peasant association administration and the district administration should give due consideration. One of which is community participation, the peasant association and the district administration should work with the community and they should let them to participate in every development activity of the district. The district administration and the region as well should use the experience of community mobilization from other regions in order to enhance the community's role in development of their local place.

The measures to be taken can be classified as long run and short run measures. In the long run the peasant associations and district administration should work on expanding the water scheme projects to the rural parts of the district and encourage NGOs to work in the development sectors of the district. In the short run people in the district have to be secure from the negative consequences of the poor access to potable water and basic sanitation through awareness-creating campaigns in order to minimize the community's exposure to preventable but easily communicable water borne, water related and poor sanitation related diseases. The responsible bodies at peasant association and district level should consider that every dweller of the community has the right to have access to potable water and basic sanitation. Thus, the responsible authorities should strive to the best of their ability. In addition, it is the constitutional right of all Ethiopians to live in a healthy environment, thus there should be no excuses for the rural people to suffer from the negative consequences of an unhealthy environment. Therefore, it is the responsibility of the peasant associations and the district administration to teach the society to take care of their environment and to supply them with potable water.

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Appendices

Annex A: Household Questionnaires

My name is Betelhem Sisay. I am taking household surveys which are being conducted for the purpose of pursuing Masters Degree on development management study completion on the topic of “*development impacts of poor accessibility of potable water and basic sanitation in rural Ethiopia: a case study of Soddo district*” your information is very important for the study . So, I kindly request you to provide me with your answer. The information you give will be used only for academic purpose. I hope that you will answer these questions as honest and complete as possible.

I would like to emphasize that any information you give will be processed anonymously and no personalized data will be handed over to local authorities or other authorities. I guarantee that your privacy will be protected.

Thanks in Advance!!

Part I: Household characteristics

1. Sex of respondents Male_____ Female_____
2. Age of respondent (years)_____
3. Education levels of respondents

Education level	Tick
Primary	
Secondary	
College	
No formal education	
others	

4. Total household members_____

5. Marital Status

Marital status	Tick
Single	
Married	
Divorced	
Widow/widower	
Others	

6. What is your main occupation?

Occupation	Tick
Farmer	
Farmer and trader	
Private worker	
Government employee	

7. What is the average income of the household per month?

Income	Tick
150-500	
501-1000	
1001-2000	
Above 2000	

Part II: Water Use and Accessibility

8. What is the main source of drinking-water for members of your household?

Water sources	Tick
Piped water	
Spring water	
Rainwater collection	
Pond	
River	
Dug well	
Others	

9. What is the main source of water used by your household for other purposes, such as cooking and hand washing?

Water sources	Tick
Piped water	
Spring water	
Rainwater collection	
Pond	
River	
Dug well	
Others	

10. How long does it take to go there, get water, and comeback?

Time	Tick
5 -10 min	
10.15 min	
15-20 min	
20-25 min	
25-30 min	
Above 30 min	

11. Who usually goes to this source to fetch the water for your household?

- a) Is this person under age 15 years? Yes _____ No _____
 b) What sex? Male _____ Female _____

12. What is your opinion about the water quality [*main source of drinking water*]?

Quality	Tick
Very good	
Good	
Satisfactory	
Bad	
Very bad	
Don't know/ no answer	

13. Do you treat your water in any way to make it safer to drink?

Yes _____ No _____

14. What do you usually do to the water to make it safer to drink?

Methods	Tick
Boiling	
Add tablet/chlorine	
Strain it through a cloth	
Use a water filter (ceramic, sand, composite, etc.)	
Let it stand and settle	
Other (Specify)	

15. How much water do you use per day? _____

16. How much does it costs you? _____

Part III: Sanitation use and accessibility

17. Do you have a toilet?

Yes _____ No _____

18. If your answer for Q.17. 'Yes', what kind of toilet facility do members of your household usually use?

Toilet facilities	Tick
Pipe sewer system	
Pit latrine	
Bucket	
No facilities	

19. Do you share this toilet facility with other households?

Yes _____ No _____

20. How many households use this toilet facility? _____

21. If your question for Q.17. 'NO' where do you and your household members defecate?

Part IV: Impact of water and sanitation accessibility

22. Would you explain the impacts attributed by the poor accessibility of water to your household?

a. Social impacts

b. Economic impacts

c. Health Impacts

d. Environmental impacts

e. Others

23. Would you explain the impacts attributed by the poor accessibility of sanitation to your household?

a. Social impacts

b. Economic impacts

c. Health Impacts

d. Environmental impacts

e. Others

24. What is the reason behind not building your own toilet?

Reasons	Tick
A forest/river is nearby	
There is no proper place to build one	
I do not want to use a toilet	
Too expensive	
Have another toilet available	
Others...	

25. Does the peasant administration office present you option for constructing toilet?

Yes _____ No _____

26. If 'yes' for Q-26, what options for toilet were presented by peasant administration to construct one toilet?

Options	Tick
Pit	
Double pit latrine	
Pit latrine attached to biogas	
Private septic tank	
Community septic tank	
Don't know	

27. Do you know about any current sanitation activities in your community?

Yes _____ No _____

28. What should be done to improve the sanitation situation in your community?

Measures	Tick
Increase awareness programmes	
Increase number of toilets	
Introduce proper solid waste management system	
Develop wastewater treatment facilities	
Make proper rules and regulations	

29. Is there any Non Governmental or governmental organizations who work on this rural development?

Yes _____ No _____

30. What infrastructure you have in the community, like telecommunication service, electricity, and road?

31. In your opinion what barriers do you have not to have potable water and basic sanitation?

32. Do you think neighboring villages are more privileged than yours in terms of water and sanitation accessibility?

33. What role do you play to increase the accessibility of safe drinking water and sanitation service in the community?

Annex B: Questions for Group Discussion

1. What are the basic problems in the community?
2. Do you think these problems are negative impact on the community members' economic welfare?
3. Do you think the current water and sanitation facilities situations are satisfactory to the community members?
4. What initiatives does the community take to increase the availability of safe drinking water and sanitation?
5. What are the priority infrastructures in the community?
6. What is your opinion in the relationship of infrastructure and economic development?

Annex C: Interview Questions for HEWs in the Community

1. Background: age, sex, education, etc.
2. Year of service, in other place and current kebele
3. Major activities of health extension worker
4. What are the basic problems in this community?
5. Are the diseases are related to unsafe drinking water and poor sanitation?
6. What role do you play to minimize the exposition of the community members to water borne diseases?
7. Do you think unsafe drinking water and sanitation have negative impact on the economic welfare of the community members? If 'yes' in what way?
8. Do you believe that the training you have had allows you to address most problems you encounter at community level?
9. Do you contribute to creating awareness about using safe water?
10. Do you advise and train community members to take care in preventive actions?
11. What are the perceived health problems owing to reliance on unsafe water?
12. Which types of diseases are the most prevalent – water-borne, water washed or water-related?
13. What are the perceived health problems because of poor water and sanitation?
14. What types of households are most susceptible to water-related diseases?
15. Do you think there is a linkage between poor accessibility of water and sanitation and the

economic welfare of the community?

16. Health worker suggestion to improve the health of the people – in terms of water supply, hygiene and sanitation, attaining sufficient and quality food, and in general improving living standards

Annex D: Interview with the District water Desk Officers

1. What are the basic problems in the community?
2. Is there sufficient water for all community members at any time?
3. Is the water quality sufficient for drinking?
4. Is the water supply system technically sound and feasible for the needs in the community?
5. Do you think there is a linkage between poor accessibility of water and sanitation and the economic welfare of the community?
6. What initiatives does the community take to increase the availability of safe drinking water and sanitation?
7. What are the priority infrastructures in the community?
8. Do you contribute to creating awareness about using safe water?
9. Are there NGOs working on water development activities?
10. What do you think are the main constraints to improving water supply and sanitation?
11. Are there competition and conflicts over water by the kebele inhabitants?
12. Have you recognized any problems caused by unsafe water consumption?
13. Do the government and NGOs attempt to promote public participation in water related development activities, and in what ways?
14. What are the major problems in relation to water supply
15. Your suggestions for improving water and sanitation, and thereby improving food security, health and overall standard of living.