

Assessing the Challenges and their Management aspect for Sustainable Usage of Rural Water Supply Practices: In Case of Babile Woreda

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Abstract: Abstract-This study is believed to be an important study as it expects to assess the main challenges and their management aspect of sustainable usage of rural water supply practices. For all communities of the world, the access to get safe, sufficient and affordable water is one of the basic indispensable human right as well as a prerequisite for improving the overall life of a society. Adequate and sustainable water supply in rural areas of Babile woreda is very low. For this reason, different efforts made so far to improve the existing water supply situation have been threatened by multiple interlinked problems. Thus, the researcher used descriptive and cross-sectional survey research design to obtain the necessary information by applying both probability and non-probability sampling designs to identify the sample households and kebeles, by using both primary and secondary data collection methods as a tool to collect valuable information for the study. This household survey was conducted in four selected kebele administrations and 150 sample size of household heads. For data analysis a combination of both quantitative and qualitative methods of analysis were employed. The main results of this study implies that, the average frequency of water collection was 1.58 times per day with the mean per capita water consumption of 6.82 liter per person per day and the mean amounts of time taken to fetch water from the sources in single trip is 56 minutes and also there is large queuing time. This results can contradict the guideline of WHO and MoWR define at a minimums adequate water supply to mean 15 liter of water per person per day and accessible with the range of 0.5 km to 1.5 km from their dwelling places. But Majority of the communities especially women and children fetch water from the water points by going approximately 1.933 km distances from there the dwelling places. In conclusion, various factors are interacting to maintain the intended objectives of the study. The study revealed that weak institutional capacity, poor financial management and weak linkage stakeholders are identified as the main problems in the study area. The evidence in the study area also indicates that poorly managed water supply structures has adversely affected access to potable water supply practices, especially where access to water supply interruption was with high frequency. Thus, the study will serve as a reference for those working in the planning and design of rural water supplies, communities to manage the existing water structures in efficient and effective ways. The future policy implication of the study is strengthening of the institutional capacity (technical, financial human recourse and management capacity at woreda level), improving construction quality, strengths community participation and capacity building of the community in order to improve the rural water supply practices management is recommended for the futures.

Keywords: Access to water service, Challenges, Management aspect, Sustainable, Water Supply practices.

INTRODUCTION

The provision of sufficient potable water for peoples within reasonable distances from a reliable and acceptable source is essential for people's wellbeing and sustainable economic progress. Water is among the most essential natural pre-requisites for sustenance of plants, animals and humans. It is a basic

requirement for the healthy functioning of the entire world's ecosystem. The total quantity of fresh water on the earth could satisfy all the needs of human population if it was evenly distributed and accessible (Melkamu, 2008). Water supply has an important role in both social and economic developments. Improved public healths, better living standards and economic developments are intimately related to the availability and accessibility of adequate water supply with good quality. However, in many parts of the world people lack enough water supplies (UNDP, 2006). It is estimated that 800 million people do not have access to safe drinking water and almost 2.6 billion have limited accesses to adequate sanitation. Unavailability of safe, adequate and affordable water accessibility seriously affects social, economic and health conditions of a society. More specifically children and women, who are directly involved in water collecting and managing activities at households levels are more vulnerable to problems (Tefesse, 2009) In sub-Saharan Africa the proportions of people with access to potable water supply and adequate sanitation is very low. Safe water supply coverage in rural parts of Ethiopia is very marginal (Mengesha et, al. 2002). The great majority of rural population use unsafe and polluted water, because of this, the communities are exposed to large variety of water borne diseases. To solve this problem the government of Ethiopia is implementing universal access plan (UAP) program for water supply hygiene and sanitation sector since 2006. The objective of this program is to achieving universal (98%) access to safe water supply for the country's 77 million people by 2012 (MoWR, 2006). This would mean providing services to 50.9 million new users in just 7 years. To achieve the success, community's active participation in the provision and management aspects on the existing water sources is the key issue to sustainability. According to (CSA, 2004) Lack of safe water is the major cause of water borne diseases and deaths in most developing countries, including Ethiopia. In Ethiopia rural water supply program, which affect the majority of the population, had not been given sufficient attention until recent time. The sources of nearly all-domestic waters in rural areas are generally said to be ground and surface waters. However, the potential of ground water in the country is not known due to lack of adequate study. The rural populations in the country largely obtain its waters from unprotected springs, open ponds, wells, rivers, etc. which are usually vulnerable to pollution. They also cover long distances during drought and dry periods when ground water level is lower. This means that for many month of the year, water has to be carried from long distance (MoWR, 2006). As part of the solution to lack of coverage, governments, non-government, international and local organizations from all over the world are trying to implement the programs of safe water supply and sanitation for many years. However, these endeavors in most areas are constrained by lack of sustainability of the water supply infrastructures (ADF, 2005). These problems are even worse in Ethiopia where it is quite common phenomena to observe non-functional water supply structures without adequate protections. The study is believed to be an important study as it expects to assess the main challenges of sustainable rural water supply and their management of the schemes. Thus, the study will serve as a reference for those working in the planning and design of rural water supplies, communities to manage the existing water structures in efficient and effective ways and it may initiate interested researchers to undertake a more comprehensive investigation of a greater understanding of the issues.

BASIC CONCEPT AND DEFINITION OF RURAL WATER SUPPLY

The term rural water supply covers all measures taken to satisfy the demand for water in predominantly rural area. Rural areas of this kind may be categorized by nomadic way of life, peasant way of life, peri-urban peasants' way of life. Rural water supply embraces the supply of drinking and house hold water to rural population (UNDP, 2004)

The concept of rural water supply also refers to access to a verity of water sources mainly, surface, underground, rain water that are used for various household purposes, like drinking, food preparation, hygiene related purposes, washing cloths and body, as well as for livestock drinking, etc. Drinking water is one of the indispensable human rights and governments have a duty to make their citizens water secure. These duties have different care components constituting water security right to sufficient, safe, physically accessible affordable and acceptable water for personal and household uses (UNDP, 2004)

APPROACHES OF RURAL WATER SUPPLY

There are two approach mainly used in the provision of rural water supply. These are supply driven approaches and demand drive approaches.

SUPPLY DRIVEN APPROACH

This approach has been adapted from its own elements to expand water services in the developing nations. The assumption behind supply-driven approach refers to the idea that provision of clean water would contribute to economic growth and government agencies should construct and maintain subsidized water services. This means that majority of decisions concerning the improvement of a community water supply have been from outside. Because of this, communities have become dependent on external support to keep improved water supplies working. The role for project planning implementation cost recovery, operation and maintenance and water supply schemes ownership are poorly defined and less communicated to the beneficiaries. (Evans E., and Appleton, 2003). According to the UNDP and World Bank working paper (1995), summarized the features of supply-oriented approaches are-

- [1] Supply driven: staff of implementing agencies alone decided to construct water supply facilities to the communities based on existing facilities to the communities and prevalence rate of water borne diseases.
- [2] Top-down decision making; intended beneficiary communities had no role in determining design; no financial stake and no sense of owner ship.
- [3] Construct and hand over; no attempt was made to organize the community and build its capacity for operation and maintenance of water supply schemes.
- [4] Overall results: the emphasis was on increasing coverage without the necessary safe guard at community and government level to ensure sustainable operation and maintenance of service facilities to water supply programs with limited attention hence, on the intended objectives many of the facilities did not last longer.

DEMAND- RESPONSIVE APPROACHES (DRA)

Now a day there is paradigm shift in rural water supply approach from centralized ownership or government oriented approach to decentralized community based economic and environment friendly approach considering the user communities' desire and sustenance and evolve different solution for maintenances, managements and financial options.

Demand Responsive Approach represent a shift form top-down state centered to communities centered approach, whereby, government was setting the target with little involvement of the intended beneficiaries or communities for genuine demand responsive approach to rural water supply system (MoWR, 2006). The Demand-responsive approaches associate a number of issues. The provision of improved water supply to communities should not only base on their need. Nevertheless, communities' should also take the initiative to improve their water services. The range of technical options should also relate to cost implications. Furthermore, the basic principle of cost sharing need to be specified and capital operation and maintenance has been made clear from the outset. The involvement of communities in all aspect of the project cycle will help to create a sense of ownership. DRA is more time and money requiring approach. The advantages that it builds capacity of community members, its easiness to reach more communities and the achievements of sustaining established facilities are more valuable (Muluken, 2005).

According to (Francis B. C., 2004) the characteristics of demand responsive approach to rural water supply are as follow:

- [1] Informed decisions-Community members make informed choices and decisions about planning, allocating, constructing, managing and maintaining the supply schemes.

- [2] The role of the government it is in facilitating the service provisions thorough, designing, clear national policies, strategies, encouraging stakeholders' participations and consultation and enhancing building processes.
- [3] Willingness-to-pay: It establishes clear linkages between the type and level of service people want, and how much they are willing to pay for these services.

COMMON CHALLENGES OF RURAL WATER SUPPLY

Despite the concerted efforts of the government, the communities and sector partners, the water supply situations have not improved substantially. According to (Francis B. C., 2004) mention that the following as the main causes for marginal rural water supply coverage in developing countries:

- [1] Weak policy environment: leaders of most developing countries lack strong organizational framework, and good governances that result in weak policy environment for water supply and sanitation sector. Underinvestment, undefined ownership, poor participation, weak regulations, and conflict priorities are the outcomes of weak policies.
- [2] Insufficient financial and human resources despite sharply increasing demands for rural water supply services has been constrained by insufficient investment and human resources, lack of capacity to mobilize resources from user community, local government and private sectors.
- [3] Environmental accessibility and management accessibility of the limited fresh water resources, in most cases, is not easy because of the physical and climatic conditions of the areas. In addition to this, changes in land use/ land cover around the supply sources are affecting the quality and quantity of the sources.
- [4] Gender and community involvement there is lack of community participation in all phase of the projects moreover the participation of women is very limited.
- [5] Weak involvement of private sector in the process of water supply has resulted in lack of accountability, lack community ownership, poor sustainability and weak management of supply systems. The involvement of the private sector can ease large burden of expanding the services by government.

In addition to this (Melkamu, 2008) reported that the difficulty in finding appropriate water sources coupled with scattered settlement pattern and nomadic ways of life styles, significantly influence the opportunity to increase and sustain access to water for rural population.

KEY ISSUES OF SUSTAINABLE USAGE OF RURAL WATER SUPPLY SCHEMES

Broad ranges of definitions of sustainability in rural water supply are used. In different studies on the topic majority of these definitions are similar in nature but there are slight differences in emphasis. Sustainability of rural water supply schemes refers to whether or not the schemes continue to function over time. It also refers to the provision of safe, adequate, water supply facilities at reasonable costs on long-term basis. It is evaluated on different dimensions such as, the extent to which the new scheme continues to supply at same rate the quantity needs as planned at the beginning and the environmental aspect of the supply continues to be improved (Carter et, al, 2000).

A sustainable rural drinking water supply system involves a number of issues that are internal and external to the community. A number of studies have identified various determinants of water system sustainability, grouped in to technical, financial, institutional, environmental and social aspects. Some of them are as follow:

TECHNOLOGICAL/TECHNICAL ISSUES

If a community is to manage a water supply system, the technology used needs to be the type that community caretakers can maintain with little outside assistances. The technology must suit the locally

available skills or community members can acquire that. Technology is considered suitable if it is socially acceptable, economically viable, technically effective and environmentally sound. Appropriate technology selections, construction quality of the schemes, technical skills needed to operate and maintain the system, availability, accessibility and affordability to spare parts and toolkits are important technical and/or technological factors that contribute or undermine water supply program in the rural areas.

FINANCIAL MANAGEMENT ISSUES

In order to cover operation and management costs and other important expenses of a particular water scheme, the collected money from user communities should be managed properly and used for the intended purposes. Regarding this, (Brikke F. 2000) argued that necessary training should be given for water committee for prudent financial management.

INSTITUTIONAL ISSUES

According to (Brikke F., A and bredero M., 2003) policies and legislations, institutional capacity, availability of technical assistance to local communities, and capacity of technical staffs are among the important institutional factors that affect rural water supply programs. At national level, there must be clear and well-articulated policies and strategies that support rural water supply projects implementation and/or investment and managements. In addition, it should be practical at grass root levels. However, (Bahabdari B., Watnable S., and Manandhar D., 2000) stated that in rural areas the lack in the part of the government to set up an enabling environment for the development of a system and management of drinking water supply services through effective community participation is seen as the reasons for the poor progress of rural water supply. (Dessalegn, 2000) also argued that lack of comprehensive legislation as one reason for the slow pace of progress in water supply services in rural areas of Ethiopia. The presence of strong responsible government institution is a crucial factor for any development activity particularly in RWS program. Coordination among stakeholders is crucial but difficult unless there is a formal organizational agreement and framework (Brikke F., 2000).

According to the study of (Lock Wood H., 2003) Rural water supply problems beyond the community level need to be addressed by supporting agencies like government and NGOs. However, studies conducted on the sector indicated that lack of institutional support to local community management body has been undermining the provision of adequate water to the rural community. In this case, technical staff capacity is a particular factor.

SOCIAL ISSUES

The central role played by women in the provision, management and husbandry of water, primarily in the domestic and household context, has gained widespread recognition in recent years; especially since the UN Decade (1980-1990). One of the main reasons for this is that usually women are the main collectors and users of water. The way to find out women and decision-making in water related matters might be too simply to ask how, by custom, women do contribute to community matters. Even though the division of labor between men and women shows both cross-cultural (or cross-country) as well as cross-regional variations (within a country), it is a widely accepted fact that women, in most cultures, take the responsibility of collecting water from various sources and managing it at home.

ENVIRONMENTAL ISSUES

Quantity and quality problems of water sources are the most commonly quoted environmental problems of water supply projects in the rural areas. Regarding quantity problem of water sources, Davis et, al. (2003) said the continued functionality of water supply schemes depends on a reliable source and a reliable system of obtaining water from the source. The reliability of the source is often determined by seasonal changes. Some springs and wells may fail towards the end of the dry season owing to a drop in

the water table. This is the time when water is needed most but supplies are least reliable. (Lock Wood H., 2003) also indicated one of the external factors for post project sustainability is rather obvious, but one that nonetheless tends to be over locked is the sustainability of the water sources itself.

Regarding quality problems of water sources, (Dereje, 2007) said the quality of water source determines whether the water needs to be treated or not. It also influences the technology choice. Thus, domestic water should be available in acceptable quality to satisfy minimum requirements for drinking, cooking and food preparation as a priority in addition to water for washing clothes and utensils, bathing and personal hygiene and for watering small plots and/or small number of livestock or poultry. Therefore, water source to be developed should fulfill a minimum set of quality standards.

FUNCTIONALITY STATUS OF WATER SUPPLY SCHEMES IN ETHIOPIA

One of the indicators of communities' managements of the scheme is the functional sustainability of the water supply schemes. According to (MoWRD, 2005/6) annual report in the proportions of non-functional schemes in the country is 25% on an average. However, the rate varies from region to region (Afar, Somali, Gambela, Dire Dawa, Harari) all are 30% of their water supply schemes are non-functional to (see from the table 1.1 below). In addition, 6950 existing non-functional or semi-functional water schemes were maintained and rehabilitated during the 2005. This has reduced the percentage of rural non-functional water schemes by 5% from 30% in 2005; to 25% in 2006 for the more it is possible.

Table 1.1: Regional Distributions of Non-functional Water Supply Schemes in (2005/2006)

Region	Rural coverage	Urban coverage	Total	% of Non-functional schemes
Amhara	36.6	80	41.5	23
Oromia	40.2	87.6	46.5	25
SNNPR	53	64.5	54	17
Tigray	42.8	50.9	44.3	20
Afar	41.1	73	44	30
Somali	21.5	60	28	30
B/Gumuz	46.0	66.2	48	30
Harari	29	21	24	30
Gambela	41.4	37	40.6	30
Addis Ababa	57	72	68.2	=
Dire Dawa	-	90.1	90.1	30
National level	42.2	78.8	47.3	25

Sources: MoWR (2005/6)

CONCEPTUAL FRAMEWORK OF THE STUDY

As the main objective of this research has been to assess the main challenges and their management aspect for rural water supply and its progress, community participation in the provisions and management systems to achieve its sustainability the researcher has developed the following modified conceptual framework (fig 1.1 below).

MATERIAL AND METHODS

DESCRIPTION OF THE STUDY AREA

Babile woreda is located in the Eastern part of Ethiopia, East Hararghe zone. It is geographically located between 809' and 9023'N latitude and 42009' and 42055'E longitude to the south east of Harar town. The woreda bordered to the north and northeast by Gursum woreda, Harari regional state to the north and North West, Fedis woreda to the west and Somali Regional state to the south, southwest and southeast directions. It is located at a distance of 31 km from Harar town to the south east direction and 49 km far from Haramaya University. The district has a total area land of 3169.06km², which accounting for 14.01% of the total area of East Hararghe zone. The woreda has 21 rural and 2 urban kebeles, which is classified into woinadega and kola agro-climatic zones, covering about 10% and 90% of the total area of woreda respectively.

RESEARCH DESIGN

The researcher focuses on descriptive and cross-sectional survey research design where different data at points in time are collected to obtain the necessary information by applying both probability and non-probability to sampling designs to identify the sample kebeles and water supply schemes as well as the sample households.

METHODS OF DATA COLLECTION

The researcher has used primary and secondary data for collection of data for the assessments of the challenge of water supply practices.

SAMPLING PROCEDURES AND SAMPLE SIZE

The researcher employed different stages in the sampling procedures to determine sample kebeles, district villages and households. Out of the total 21 rural kebele administrations of the Babile Woreda, 18 rural kebeles having water supply and sanitation interventions. Thus, except three rural Kebeles of the woreda were taken as a sampling frame. As for the size of the sample households was concerned the researcher decided to select 150 households. It was approximately 15.32 % of the total number of households. This totally was allocated proportionately from four sample kebeles.

METHOD OF DATA ANALYSIS

Quantitative and qualitative methods of data analysis were used to analyze the data gathered from field by using statistical package for social science (SPSS version 13 software). Descriptive statistics such as frequency, percentage, mean and standard deviation were used to analyze the data quantitatively and secondary data obtained from different offices were analyzed qualitatively.

RESULT AND DISCUSSION

BACKGROUND INFORMATION OF THE RESPONDENTS

Understanding the socio-economic and demographic background information about sample populations is very important to know their characteristics. As stated earlier the size of sample households for this study is 150, covered by 4 sample kebeles and 12 village from all villages in the woreda was selected. Each sample Kebele respondents were select based on proportional allocation method. From these sample population 87(58 %) are male and 63(42 %) female respondents.

With regard to age composition, 57(38.0%) recline in the age category of 36-45, 43(28.7%) in the group of 46-55 years, and 35(23.3%) category of 26-35 years, 9(6%) of the respondents in 56-65 years and 6 (4%) in the 18-25 years (Table 4.1). The availability of economically active work force is particularly important in areas where capital is scarce and labor-intensive development activities, like small-scale water supply projects need to be encouraged. Thus, based on the result of the survey, it is safe to say that the community in the study area can share labor and involve in development and management of water supply projects.

Sex						
Age Group	Male		Female		Total	
	No	Percent (%)	No	Percent (%)	No	Percent (%)
18 - 35	4	2.67%	2	1.33%	6	4.0%
26 - 35	19	12.67%	16	10.67%	35	23.3%
36 - 45	31	20.66%	26	17.33%	57	38.0%
46 - 55	27	18%	16	10.67%	43	28.7%
>56	6	4%	3	2%	9	6.0%
Total	87	58%	63	42%	150	100.00

MARITAL STATUS AND FAMILY SIZE

Marital status has to do with family size and family heads, which, in turn, has an impact on water consumption and participation in projects targeted to water supply. The organization of collected data (Table 3.2) reveals that that 138(92%) respondents were married, whereas 7 (4.7%), 3(2.0%), 2(1.3%) of the respondents is divorced, widowed and single respectively. Family size of households has to do with initial investment of water supply projects, water consumption and payment for its. With regard to the household family size, those respondents with family size less than 4 comprise about 42(28%), family size between 5- 7 constituted 80(53.3%), are 25(16.7%) of the respondents their family size between 8 -9 and only 3(2%) of household respondents indicate that their family size above 9. From this, the mean and standard deviation of the family size is 5.64 -SD1.940. In principle, despite the differences in socio-economic status and other related factors, households having large family size consume large volume of water. (Table 3.2)

Table 3.2: Distributions of Respondents by Marital Status and Family Size

Marital status			Family size		
Category	Frequency	Percent	Category	Frequency	Percent
Married	138	92.0	0- 4	42	28.0
Divorced	7	4.7	5 -7	80	53.3
Widowed	3	2.0	8 -9	25	16.7
Single	2	1.3	Above 9	3	2.0
Total	150	100.0	Total	150	100.0
			Mean 5.64	SD1.940	

Source: researcher's own survey results

OCCUPATIONAL PROFILES OF HOUSEHOLDS

Sample households were also asked about their main sources of income and the result of survey households are presented in Table 5.3, almost 140(93.3%) of the respondents report that farming is the main sources of income, whereas 6(4.0%) and 1(0.7%) of the respondents report that in addition to farming, commercial trade and daily labor were additional sources of income respectively. There is only 1 (0.7%) of the respondent their main sources of income is government employees (Table 3.3).

Table 3.3: Distribution of Respondents by Occupational profiles

Current occupation	Frequency	Percent (%)
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Farming	140	93.30
Commercial /Trade	2	1.30
Government employee	1	0.70
Farming and trade	6	4.00
Farming and Daily labor	1	0.70
Total	150	100.00

EDUCATIONAL LEVEL OF THE RESPONDENTS

Education is an instrument for socio-economic development of a nation. It is a basic parameter for any development activity particularly water supply programs. This is because literate citizen can be better participants and involve in projects targeted to water supply and management. Knowledge and technology transfer are also easier in a community that constitutes educated peoples. Educated individual demand for better services and toward improvement of their living condition. As it is shown on Table 3.4 out of the total households 55(36.7%) were found to be unable to read and write (illiterate) and those who can only read and write were 65(43.3%), and 24(16%) of the respondents were having primary school (1-8) and only 6(4%) of the respondents have secondary school level of education (9-12). Based on the findings, we can conclude that the literacy level in the rural setting to the Woreda is very low. This in turn could be one main reason for poor management of rural water supply schemes.

Table 3.4: Distribution of Respondents by educational level in kebele wise

Educational level	Frequency	Percent (%)
Unable to read and write (illiterate)	55	36.70
Can only read and write	65	43.30
Some primary school (1-8) grade	24	16.00
9-12 Grade complete	6	4.00
Total	150	100.00

DEMAND FOR SOCIAL SERVICES

The presence of community demand for social services calls for investment. It also shows the extent of community involvement in development and management of social services like water supply projects. Thus, concerning the need for social services 81(54%) of the respondents indicated potable water, 33(22%) of the respondents potable water and roads, 7(4.7%) asserted for health institutions, 6(4%) and 3(2%) indicated road, electricity; telephone and educational institution respectively (Fig 3.1). From this we can conclude that potables water is still the main problem in the study area

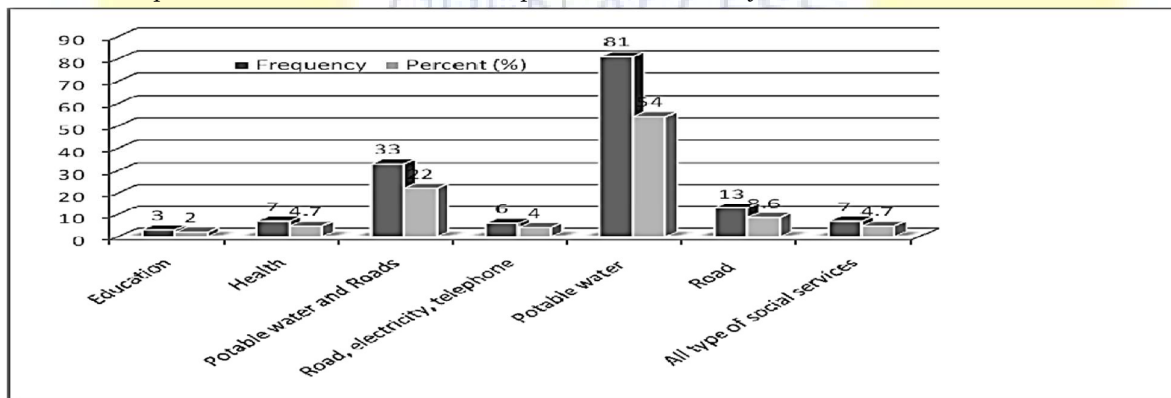


Figure 4.1: Distributions of respondents by demands for social services

WATER SUPPLY RELATED ISSUES

Provision of potable water is all about access to safe and adequate quality of drinking water to the people within a reasonable distance. Assessing the current situation of rural water supply helps to know the supply level, factors against the provision and to set directions aimed at adequate water supply to the target community on sustainable basis. Accordingly, data on water supply projects` inventory, alternative water supply sources, and distances traveled and time required for collecting water, means of water transportation, volume of water collected and consumed daily were gathered to look at the existing rural water supply in the study area.

WATER SUPPLY SOURCES

In rural area, there are several sources of water such as unprotected well and protected Hand Dug wells, shallow wells, unprotected spring and protected (developed) springs etc. On the other hand, water supply is not only necessary for drinking and cooking but also for personal Hygiene and livestock watering. Concerning the sources of the domestic water during wet and dry seasons, the result revealed that 34.9% and 15.6% had their main sources as unprotected springs and unprotected traditional wells, respectively, while 3.3% and 6.5% depended on rivers and unprotected open ponds the remaining respectively, 46.7% of the respondents report that their sources of water is protected Hand Dug well, protected spring, and shallow wells (Table 3.5).

From this, we can conclude that more than half 53.3% of the respondents report that traditional sources of water as their main sources of drinking water were due to inadequacy and frequently interruption of the developed water supply schemes and distances from the sources water points are the main reason forced the communities to use unprotected sources water.

The researcher also observed that in sample kebeles and sample villages such as in Tula Kebele (Dega village), in Bishan Babile kebele (Maru villages), in Abdibueci kebele(Caloo village) most of the residents use traditional sources of water points even if there is developed water supply schemes. Because most of the water supply schemes are non-function due to frequent break down of the protected water sources and extended longer period of time maintenances for the single water supply schemes are the main reason of that forced the villagers to use unprotected traditional sources.

During of focus group discussion with water committees in the Dega village of Tula Kebele, the main cause of the frequent break down of the water points is large number of households using a single water points during dry season.

Table 3.5: Distributions of responses of Households by Sources during dry and wet Season

Source	Frequency of responses			
	Dry Season		Wet Season	
	No	(%)	No	(%)
Rivers	6	3.3	3	1.6
Unprotected Traditional Wells	23	15.6	18	12.2
Unprotected Ponds	9	6.5	2	1.1
Unprotect Springs	53	34.9	66	43.9
Protect Spring	19	12.9	25	16.4
Protected hand dug and Shallow Wells	40	26.9	31	20.6
Roof Catchments	-	-	6	4.2
Total	150	100.00	150	100.00

As the Figure 3.2 depicts 67(44%) number of respondents make use of developed potable water to drinking and food making only, 44(29.33%) respondents use it for bath in addition of drinking and food preparation. However, 39(26%) of respondents use for washing and watering animals. The beneficiaries also expressed

their views regarding protecting the hand pups from damage by frequent uses. Hence, they prefer the diverse sources as well.

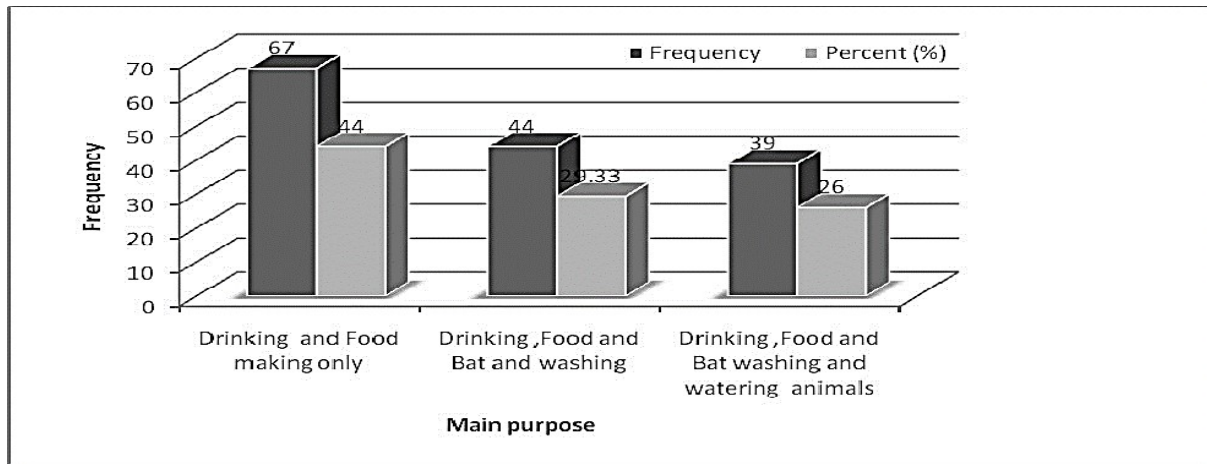
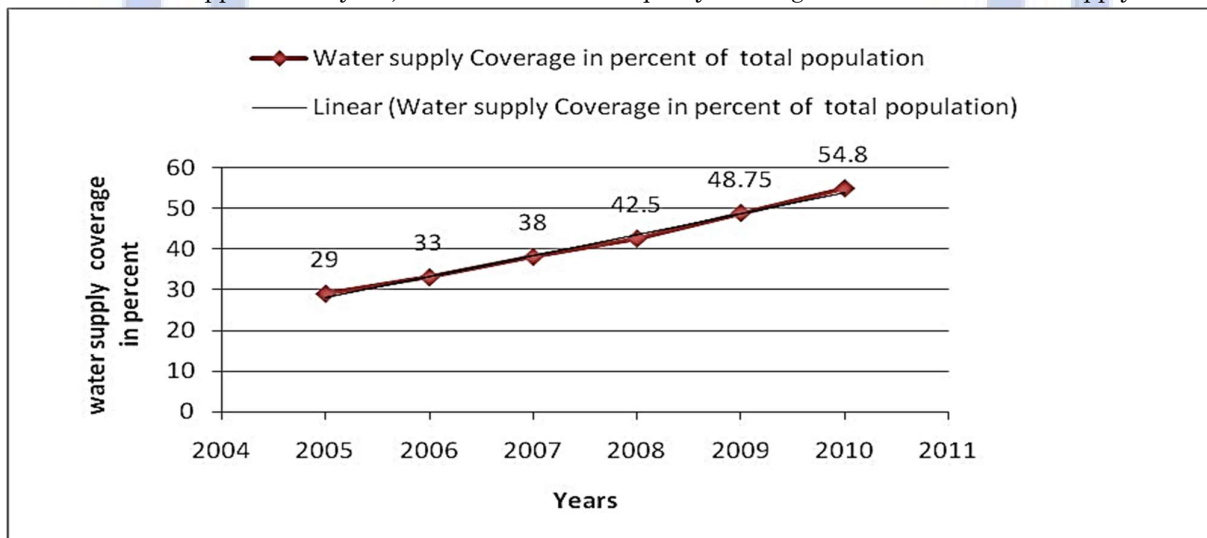


Fig 3.2: Distribution of Responses of sample households on the different water uses.

FUNCTIONAL STATUS OF RURAL WATER SUPPLY SCHEMES IN BABILE WOREDA

As data collected from Woreda water resources office and survey households indicate, the existing water supply coverage in each Kebeles in the Woreda is very low although recently water supply intervention is better than any other time in the history of the Woreda. Available data from Woreda office of for 1993 -2010 concerning rural water supply schemes show that there were 126 water supply schemes; out of these were 59 Hand dug wells, 44 Shallow wells, and 23 spring developments. Even if the Water supply intervention in Woreda was started in 1993, 101(80.15%) of the schemes were constructed after 2004 with the intervention of different organizations. In the recent years there had been increase in rural water supply coverage of the Woreda from 29% in 2005 to 54 % in 2010 (Fig 3.3). Even if there is also a progress in rural water supplies each year, all kebeles are not equally sharing the benefits of water supply.



Source: - Babile Woreda office of water resource development (BWOWRD, 2010)

Fig 3.3: Trend of Rural Water Supply coverage between 2005 -2010 Years

The KII respondents from the BWoWRD concerning the low coverage status of potable supply, and improvement of the problem of sustainability rural water supply schemes the offices has plane to constrict number of different schemes and rehabilitation non-functional water supply schemes within the next five years. Most of the water supply schemes are concentrating in the kebeles that were accessible to the

roads, and Woreda centers. In addition to unfair distribution and low coverage of rural water supply schemes, there is the problem of sustainability of the schemes. This problem mainly arises out of several factors simultaneously financial, technical, institutional, and environmental.

The development and continuous service delivery of developed water supply projects are two important issues of adequate water supply to the target community on sustainable basis. Unless without properly managed; investing on water supply projects cannot accomplish the aims. As data collected from BWoWRD and field observation made by the researcher during the time of survey the physical status of rural water supply schemes in the sample area have been identified as functional, semi-functional and non-functional. This non-functionality of the developed water supply projects not only lowers the water supply coverage of the Woreda but also forces the beneficiaries of these non-functional schemes to fetch water from traditional sources.

During field observation in sampling kebeles, 15 water points were observed, out of which only 7(46.6%) are properly functional, the remaining were either non-functional or semi functional. This result was matching with the opinions of the sample households where 84(56%) reported that their schemes were not functional year due to major break dawn during the time of survey. The remaining 66(44%) reported that their water supply facilities were functioning but with frequent interruptions.

Failure to provide proper service is a common feature of RWS projects, particularly in developing countries like Ethiopia. Such failures of projects not only compromise with the goal of potable water provisions to all on sustainable basis but also force the community to look for alternative water sources. Thus, assessing the status of the developed water supply schemes and the availability of alternative sources that can be used in case of systems failure and insufficiency is important in rural areas.

CHALLENGE AFFECTING THE SUSTAINABILITY OF RURAL WATER SUPPLY

Access to water supply is fundamental human rights. However, rural water supply is constrained by multiple factors related to socio-economic (community and financial), technical, institutional, environmental.

The effects of development activities like water supply programs particularly in rural areas of developing countries including Ethiopia may not reach the intended beneficiaries over night for many reasons. Some reports from Ethiopia, as well as other developing countries showed that insufficient and inappropriate technology accounts for the failures of some of the water schemes and projects, along with insufficient water sources (facilities) and poor physical structures (Mengesh et, al. ,2002) .

Each respondents also pointed out those main problems of rural water supply schemes are multidimensional. They under lined the main problems as “Weak coordination between different services delivery such as Woreda, local NGO, water committees, weak capacity of the Woreda in financial, logistics ,and human power, in appropriate use of the existing schemes by the committees, inappropriate technology, the water committees are weak and unable to operate the water points in sustainable ways, the woreda water offices are not equipped with adequate transportation equipment’s tool, spare part and official to provide and human resources the needed services and access majority of the population of rural area are very difficult due to weak infrastructure development for rural water supply schemes.”

Based on this the researcher conducted the survey to see the main problems that influence functionally of rural water supply schemes in the following table as follows.

Table 3.9:-Distribution of responses of sample households by the main causes of failures of rural

Main reason for failure of water supply	Targeted responses	
	No	Percent (%)

Insufficient water sources	2	0.9
Poor construction of schemes	13	8.4
Lack of communities participation in the water points management	23	14.9
Lack of provisions spare parts	18	11.7
Lack of qualified technician for operation and maintenances	25	16.6
Lack of support and supervision from the water offices	22	14.5
Lack of finances for O& M services activities	17	11.2
Due to Large number of households using the single water point	14	9.3
Most of the water supply scheme technologies are easily breaking parts	19	12.6
Total	150	100.00

Source: - Field survey of the researcher

In addition to the above discussions on the table, the researcher can conclude that water supply options for community by the village level, which might have contributed to non-functionality of systems rural water supply at large. At the time of field visit, the major and common problems for non-sustainability of rural water supply services in the study area are absence of drainage facilities, poor site selection, insufficient discharge (low yield) especially in the protected hand dug well, poor construction leading to leakage of spring boxes, pipes and reservoirs of the schemes, lack of protection faces, some of developed water supply schemes are completely covered by soil, vegetation and water which privies easy enter of frogs and insects to spring boxes in the schemes specially developed springs.

INSTITUTIONAL SUPPORTS GIVEN TO COMMUNITIES IN MANAGING WATER SUPPLY SCHEMES

During management of water supply structures, the communities can take up a substantial share of the responsibilities, external support series are still required. Because the community may play an active role in managing the system but still does not own repair jobs and decisions on the future of the system could also be beyond community capacity. Therefore, in addition to covering costs of the construction, the office should continue to provide support to the community. Such support may include adequate training on system administration, financial management, carrying out of operation and maintenances on major of technical procedures, ensuring availability and affordability of the spare parts, closely follow up the water committees and equipped with the necessary toolkits, which are beyond the technical capacity of the beneficiaries. Besides, regular water supply system inventory, and water quality control needs to be carried out by the external agency or governmental agencies to properly and sustainably functioning of the schemes.

Key informant interviewees from BoWRD and EH20WRD also acknowledged that absence of institutional supports provision services given to communities in managing rural water supply is mainly because of the resources limitation, which include human, financial, material and transport facilities. They indicated that though it is not stated they provide support like provision of spare parts whenever available, carrying out major repairs, when it was beyond the technical capacity of the local technicians and provide trainings.

Based on the above findings it can be concluded that limited institutional capacity and support is one way of influencing the functionality of rural water supply schemes. In this case, the capacity of the technical staff at Woreda Water Office level is also very important. The more the staff is capable, trained and more professional; the better would be their effect on the water sector. As data obtained from the WoWRD, there are only two operators and maintenances workers to provide supports in 24 rural kebele administrations in the woreda and 126 water supply schemes.

CONCLUSION

As a conclusion different efforts have been made so far to improve the existing water supply situation adequate and sustainable water supply in rural areas of Babile Woreda which is very low. The average frequency of water collection was 1.58 times per day with the mean per capita water consumption of 6.82 liter per person per day and the mean amounts of time taken to fetch water from the sources in single trip is 45 minutes and also there is large queuing time. This results can contradict the guideline of WHO and BoWR define at a minimums adequate water supply to mean 15 liter of water per person per day and accessible with the range of 0.5 km to 1.5 km from their dwelling places. But Majority of the communities especially women and children fetch water from the water points by going approximately 1.933 km distances from there the dwelling places.

This study revealed that traditional sources are the main sources of drinking water and the developed water supply schemes are providing services with frequent interruptions, which clearly show poor functioning of water supply schemes, which in turn affect the sustainability. In the study area, three technologies (shallow well, Hand dug well and protected springs) were the major technology options that give services for potable water in the rural area. But Lack of community skill to operating and maintain the schemes, because of absences of trained local technicians, unavailability of tools, spare parts either at woreda level are the problems they have faced.

The study also found that unavailability of adequate and reliable sources, poor qualities of water sources, drown water table, going for distance to fetch water, and the large number of households using on single schemes, scattered settlement pattern of the community, unsuitable and/or inaccessible natural topography of the area were environmental factors militating against potable water provision in the rural areas of Babile Woreda.

Beside lack of adequate training and follow up from the office, lack of power to enforce roles of the water committees, absences of working manuals are identified as major problems that consternate the communities to managing their schemes properly. Limited capacity of woreda to provide support to the community in the development and management of water supply; shortage of skilled manpower, lack of logistics and lack of sufficient budget for monitoring and follow up, operation and maintenance, lack of post construction external support are the major institutional threats to the sustainability of rural water supply in the study area.

RECOMMENDATION

Based on the finding of the study, the following practical suggestions are forwarded to improve problems of rural ware supply in the study area.

- [1] Adopting demand responsive approach (DRA); This approach is tested feasible practically in different countries as having a merit of minimizing most problems created by supply driven approach, capital cost sharing, and information people the various technological options with their respective cost and benefits, so as to enable them, grasp the level of services to which they are willing and able to pay and enhances sense of ownership.

- [2] Woreda Office Water resources should ensure that whether communities are aware of their roles and responsibilities in the development and management of rural water supply systems from the very beginning of the project.
- [3] Water supplying agencies should ensure that women are actively involved in all phase of the project management and selecting water committee's member who have capacity and skill to manage and administer the shames.

At present the operation and maintenance of rural water supply are in the lowest performance margin due to various reasons among which technical and financial short comings are the major one in the study area. In order to keep a water supply system sustainable, both governmental and non-governmental organizations should give greater emphasis on institutional support to solve problems that are beyond the capacity of the community such as re-training and resources allocation (material resources, financial and human resources) after the construction of water schemes. This support should encourage long-term management strategies built on clear relationships between institutions and communities to utilize and manage the water supply schemes sustainable basis.

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