

**Fieldwork Report on
Community Level Assessment
on the Understanding of the Existing Multiple-Water Uses System
Northern Ethiopia
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1.0 INTRODUCTION

The core concept of Multiple Water Supply Service (MUS) is defined as an effective water-based intervention for poverty reduction that accommodates both productive and domestic water use facilities and up scaling the institutions that will manage them in order to meet the multipurpose demands of the water by the community.

The first principle, which states that services provision should be based on a thorough understanding of people's livelihoods, in particular poor women's and men's livelihoods, recognizes and builds upon the identification of the myriad of current and potential ways of using water, as people have already done for centuries for themselves (van koppen and others, 2005, p17). This principle stretches to one of the basic and important ideas on the implementation of MUS principles i.e. the understanding of the community towards MUS services; sense of ownership, responsibility and commitment.

In line to the above fact, a community level survey is conducted to address the level and magnitude of understanding of the people upon the nature and cause of existing mus facilities and the demand of the community at equal level to the benefits, costs and risks of the water services.

2.0 BACKGROUND INFORMATION

2.1 Study Area

The Adidaero watershed is located some 30 km southwest from the town of Mekelle in the Enderta Woreda, Southern Tigray Region. The watershed is one of the seriously drought affected areas of the region. Among the main cause of this problem are low level of agriculture production, degradation of natural resources, poor family health and planning, poorly developed infrastructure, the late and erratic rain fall etc.,.

This watershed is one of the sub-catchments of the Mekelle outlier underlined by Mesozoic Sedimentary formations(Limestone, Shale-Limestone intercalations and Calcareous Sandstone). Generally the altitude is below 1500m. a.m.s.l with lowland 'Kola' agro-ecology. The rainfalls are moderately low to very low, from 700 mm to 1100 mm annually and erratic nature.

Due to its steep and rugged landscape and its karstic and at places shale dominated geology, capacity of the land to keep water naturally is low; where the possibility lies only along waterways and depression areas. On the other hand, the thin soils profile did not allow sufficient water storage in the soil profiles.

As a result, main source of water for domestic and productive uses of the community is relied on the perennial rivers besides to the low yield hand dug and shallow wells fitted with hand pumps.

2.2 Water related Previous Works

The Mekelle Branch of the Ethiopian Catholic Church Social Development and Coordination Office of Adigrat (ECC-SDCOA), also referred to as Adigrat Diocese Catholic Secretariat (ADSC) is implementing an integrated watershed development project since 2002 with the main goal of improving food security to all households.

Among the water interventions, 5 motor pumps have been distributed for irrigation, while for domestic water supply springs, roof water harvesting(at the health post) and wells(Hund-dug and shallow drilled boreholes) have been constructed. In addition, two diversion weirs were built in seasonal rivers, benefiting a total of 250 farmers by irrigating 40-50 ha.

One of these weirs was designed as an integrated multipurpose system with separate canals, one feeding a filtration gallery followed by storage well for drinking water, washing basins and cattle troughs, and the other for irrigation.

3.0 ADI DAERO ASSESSMENT

3.1 Justification of the Work

The first justification to conduct this survey is the misunderstanding of the community on the actual multi-purpose system service particularly on the infiltration gallery that is used for drinking water. This instant and unbiased observation during the field trip that had been done in the presence the intermediate level stockholders was a treat to the upscaling of mus in the region.

The lack of willingness of the community to use the infiltration gallery water besides its purity and potability as per the Regional Water Laboratory analysis was the second reason, to perform the survey, which shall be looked with the overall sustainability and effectiveness of the mus service in the study area and in the region as a whole.

3.2 Objectives

The general objective of the fieldwork is to assess and to have a clear and comprehensive understanding of the community towards the mus facilities that aims on the integrated use of water systems in regard to its quantity, quality, gender and livelihood aspects in the watershed.

Specifically, the survey aims on the following key points;

- The assess the source and nature of misunderstanding
- To assess the turn back on the mus facility in its effectiveness and sustainability
- To show up the procedural gap (if any) that have not been done by the stockholders
- And finally, to highlight and commend on the measures that should be taken on the creation of awareness.

3.3 Methodology

The fieldwork in Adi Daero Watershed was conducted between 13/03/2006 - 20/03/2006 to collect primary data on the understanding and response of the people on the multi purpose service (domestic and irrigation scheme) and single-purpose service (hand-dug and shallow wells) that are available and used in the watershed.

Prior to the collection of primary data, secondary data from the Tabia Administration (Lowest governmental body of the country) was collected

and organized. As per the data, a total 474 households in 5 sub-villages named Adidaero, Atrona, Adiankelle, Adignayesus, and Adigogen are currently registered.

Questionnaires were developed based on the MUS frameworks that focuses in identifying on the ownership and understanding of the multiple water use systems, the poor people's water based livelihood, available water resource and service, technology and the institutional framework.

A total of 50 households were selected randomly with positive purposively inclination to include female-headed households both from the multi-purpose and single-purpose services users. Accordingly, 20 households from Agi Gogen, 18 from Adi Dearo, 7 from Atrona and 5 from Adi Genayesus sub-villages were interviewed.

The field data were organized in a way to understand quantitatively the awareness of the community towards mus services by giving emphasis on the main characteristics and measuring parameters such as household education level, main household activities, type of water sources, satisfaction level in quality and quantity, cost and preferences towards the systems etc,.

4.0 RESULTS AND ANALYSIS

4.1 Livelihood of Households

The principles of mus is expressed through the emphases given towards building the poor peoples livelihoods by integrating the domestic and productive sectors and therefore, the sound understanding of the overall position of the household in terms of family size, welfare status, main activities of the household etc is a clue for precise and crucial evaluation

of the community on matters of poverty alleviation and gender equity that expands to the level of attaining development.

Site Name	Wealth Status			Family Size			Main Household Activities			
	<i>MV</i>	<i>V</i>	<i>W</i>	<i>2 <</i>	<i>3-5</i>	<i>> 6</i>	<i>RF</i>	<i>IV</i>	<i>LH</i>	<i>OA</i>
Agi Gogen	8	10	2	7	11	2	20	10	17	8
Adi Daero	7	10	1	9	6	2	18	12	13	-
Atrona	4	2	1	2	2	3	7	3	4	-
Adi Ginaysus	2	3	-	2	1	2	5	-	5	-

Coding: RF- Rain fed Agriculture, IV- Irrigation Vegetables, LH- livestock herding, OA- Off farm Activities.

From the above summarized data the main family activities rely more on rainfall that is not harvested or stored but exclusively on erratic and late amount used by rain fed crops. On the other hand the irrigation scheme have a significant share as food and income generating through irrigated vegetables and agriculture in Adi Daero and Adi Gogen sub-villages respectively.

Some households have other sources of food and income generating activities such as small number bee-keeping, chicken husbandry and masonry works in Mekelle City,

Generally, the households in the watershed engaged in diversified activities that utilized different labor sources and multiple water sources.

4.2 Educations

Education is a human right and an essential tool for achieving the goal of equality, development and peace. Non-discriminatory education benefits both girls and boys and thus ultimately contributes to more equal relationship between men and women.

Out of the total households surveyed 72 % of the household heads had no formal education in which from 24% female headed 92 % and 66 % male headed 70 % are without formal education.

28 % had some level of education in either in primary schooling or religious education with 2 respondents who completed the primary level.

Site Name	Household Heads		Primary Incomplete	Primary Complete	No Schooling	Religious Education
Adi Gogen	MHH	15	6	1	7	1
	FHH	5	1		4	
Adi Daero	MHH	13	4		9	
	FHH	5			5	
Atrona	MHH	5		1	4	
	FHH	2			2	
Adi Genayesus	MHH	5			5	
	FHH	1				
Total		50	11	2	36	1

The educational condition of the household members show some positive deviation in the enrollment in which out of the total 171 family members

25% female family members and 31 % male family members are attending the formal schooling.

4.3 Type of Water Source

For century's peoples make efforts in using single or multiple water sources in proportion to its quantity to meet their demand for both domestic and productive uses.

The survey shows 75% of the total households use water across the watershed from the conjugate sources domestic and irrigation purposes. While the rest 25 % use from single source i.e. either from hand pumps or infiltration gallery.

Options of Water Resources	Site Names			
	Adi Gogen	Adi Daero	Atrona	Adi Ginaysus
Hand Pump	-	1	-	4
Filtration Gallery	10	-	-	-
River	-	-	-	-
Ponds, Hand Pump & River	-	7	-	-
Filtration Gallery & River	9	-	-	-
Filtration Gallery & Hand Pump	1	-	-	-
Hand Pump & River	-	17	6	1

4.4 Cost and Affordability

This parameter has crucial impact on the overall sustainability of the service in delivering the intended purpose in reliable and constant way.

Focusing the poor and poorest their ability and willingness to pay should be the key concern in setting the tariffs.

Site Name	Wealth Statues	Affordability			Total
		Cheap	Fair	Expensive	
Adi Gogen	MV	2	5	1	8
	V	7	3	-	10
	W	2	-	-	2
Adi Daero	MV	-	6	1	7
	V	2	8	-	10
	W	-	1	-	1
Atrona	MV	2	-	2	4
	V	2	-	-	2
	W	1	-	-	1
Adi Ginaysus	MV	1	-	1	2
	V	2	-	1	3
	W	-	-	-	-
<i>Total</i>		21	23	6	50

From the total survey data, regardless the wealth categories 88 % of the respondents confirm the cheap and fair price for the water provision service.

While form the total 46 households categorized under the most-vulnerable and vulnerable wealth status 87 % accepted the price as cheap and fair.

4.5 Satisfaction on the Services

The acceptance of single purpose or multi purpose services within a given community is indicated by the responses of the users on the satisfaction of the services provided that is measured in terms of quantity and quality in both sectors (domestic and productive uses), particularly the quality is highly noteworthy in domestic sector which uses a very small quantity for drinking.

Accordingly, the majority of the households in the Adi Daero and Adi Ginayesus sub-villages were found to be satisfied both in terms of quality and quantity. Out of the 18 households of Adi Daero, 14 respond to be satisfied by the quantity while 17 respond to be satisfied by the quality which accounts for 77.7% and 94.4% of the sub-village respondents respectively. Similarly, 100% of the respondents in Adi Ginayesus are satisfied with the quantity while 80% are also satisfied with the quality of the single purpose service.

On the other hand, more than half of the respondents (55%) in Adi Gogen sub-village were unsatisfied with the quantity while only 30% of the respondents show unsatisfaction towards the quality of the multi purpose services that delivered from the sand infiltration gallery.

Level of Satisfaction			
Quantity		Quality	
<i>Satisfied</i>	<i>Unsatisfied</i>	<i>Satisfied</i>	<i>Unsatisfied</i>
9	11	14	6
14	4	17	1
4	3	5	2
5	-	4	1

4.6 Preference to the Services

For the last decades the water sector has been molded with rigid sub-sectoral water provisions that targeted to a single use, either domestic or

irrigation, were neglecting the livelihood demand that could harvest from them. This sectoral driven barrier threatens the existence and functioning of schemes through damaging the infrastructure, distorting the targeted use and being as a source of conflict in the community. Besides its vulnerability to the above shocks, the community demand-based needs transformed them into de facto multiple use schemes.

In response to the above failures, multiple water use systems approach are being implemented by NGO's that give adequate attention to the interest and understanding of the community with the nucleus principle to fairness and water needs in their livelihood context.

Site Name	Preference of the Service		
	Single Purpose Use	Multi Purpose Use	No Comment
Adi Gogen	4	16	-
Adi Daero	5	6	7
Atrona	3	4	-
Adi Ginaysus	2	3	

From the total surveyed households within the watershed, 58 % of the respondents show their preference towards the multiple water use service.

At Adi Gogen sub-village community where the multi purpose scheme is implemented with sand filter gallery, stored in well and fitted with hand pump for drinking purpose, cattle trough and washing basin facilities, 20 % of the respondents prefer to single purpose services.

Many respondents in the watershed appeared to be quite unaware and in lack of information on the overall multi purpose system service that aimed and put into practice to improve the agriculture-based livelihoods, reduce poverty and enhance gender equity.

5.0 DISCUSSION

Based on the main parameters and results so far known, discussions are set forwarded on the advantage and disadvantage of mus services, the breakdowns and breakthroughs on the livelihood of the people, the strengths and failures on the implementation of the existing multi purpose water provisions with respect to the community's understanding and its future opportunities and threats in the up scaling and broadening the horizons of the mus services.

The better enrollment of the family members than the family heads and the positive deviation of parents reluctance to enroll children particularly girls could be attributed to the presence of female teachers, locality schools and the community involvement to supplement school resource mainly donation of labor to construct building and to maintain school facilities.

A more remarkable condition in this community where all assets of poverty is duplicating by the cyclical occurring drought every two-three years, the acceptance and willingness on the price tariff that goes to the water guards and sometimes maintenance clearly outweighed by the benefit of the water provisions.

The response of the community varies from sub-village to sub-village which is mainly attributed to the variation of water provision services

within each respective sub-village. Those parts of the community (Adi Daero, partly Atrona and Adi Ginayesus) served with single use systems, have a strong inclination towards mus services due to its integrated services that minimize time and work load, especially for women.

In the surveyed area due to the low potential of the groundwater, some sub-villages (Adi Gogen and partly Atrona) depend on sand filtered surface water for domestic purposes. This application concerned some people about the water quality that prolonged to use and accept the untreated river water as equal as the sand filtered potable water. Due to this fact, some respondents show preference towards the single use service and they suggested that water for drinking purpose should be from borehole because it is free from contamination and pollution.

From the surveyed data, the existing planned multiple water use service placed in the watershed appeared to play a vital roll with respect to family food security and alleviating work load.

6.0 CONCLUSIONS

- The genuine interest of the community, the poor and the poorest, to pay the fee allocated by the water committee is not only due to its affordability but also the awareness and the belief developed by the community on the need of water in their livelihood. This is the potential justification for up scaling one of the mus cornerstone principles, livelihood-based approaches, followed to develop the water resources in local context.
- The misunderstanding and denial of the community in the quality and potability of the sand filtered water should have not been neglected. Worse than that, people in practice are using the

untreated upstream river water that can lead the system to miss the glimmering opportunity.

- The strong positive experience emerged out of the planned mus service in tackling poverty and improving livelihood of the community to its maximum level will be an instrument in persuading the system to its climax stage in the watershed and will be used as a case study for the region as a whole.
- The need for more water supplies for productive use extends to use more profitable water supply options i.e. watering at night that avoids evaporation loss and reserving the system from using washing basin and cattle trough which demand considerable amount of water.

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