Briefing note – No. 2

Wisdom at the source of the Blue Nile - MUS

Learning and Communications in WASH in Amhara

Introduction

Faal et al (2009)[1] shows that rural water supplies can be built to provide a range of services in addition to the domestic supply. These additional services are usually termed as Multiple Use Water services (MUS), which include water for livestock, irrigation, home gardens or other small-scale productive uses in addition to water for drinking, washing and cooking. Multiple-use water services are intended to meet the domestic and productive demands of the poor in a more comprehensive manner. If appropriately planned, designed and managed, MUS have a much greater potential to reduce poverty, to lesson health hazards and to circumvent the vulnerability of rural households.

Therefore, multiple use water services are part of an approach within the concepts of Integrated Water Resources Management (IWRM) considered in the water policy in Ethiopia (MoWR[2], 2004 and Faal et al 2009). In recent years, Water supply, Sanitation and Hygiene (WaSH) implementers in Ethiopia also have shifted to MUS although the WaSH water supply points are often not implemented in an integrated way (Adank et al 2008)[3]. Aschalew (2009)[4] showed that there is some effort in Achefer *Woreda* of the Amhara Region to apply MUS, but there is no other documentation of it in other parts of the Amhara Region.

Thus, understanding and documenting the current status and future potential of MUS is important to improve the implementation and sustainability of WaSH services.

To improve the documentation of different issues of Water Supply, Sanitation and Hygiene (WASH) in Amhara Region, the School of Civil and Water Resources Engineering at the Institute of Technology (iOT) of Bahir Dar University (BDU) with support from WaterAid Ethiopia has conducted research on community participation, technology, implementation, operation and maintenance, monitoring and evaluation, sustainability and impact of WASH project in Amhara Region. This research was conducted at 24 schemes located in different *woredas* in the Amhara Region.

This briefing note, extracted from the main research, provides an overview of the research specific to the current situation and implementation of multiple-use water services with key findings and recommendations that could improve the application of MUS in Amhara Region. The main research document will soon be available at www.wateraidethiopia.org and http://www.bdu.edu.et

Functional MUS spring at Degameske locality of Yilmana Dense Woreda (Photo by: Teshale T., 2010)

[1] Faal,J., Nicol, Al, and Tucker, J. (2009). Multiple-use Water Services (MUS): Cost-effective investments to reduce poverty and address all the MDGs: RiPPLE briefing paper. www.rippleethiopia.org

[2] MoWR, National Water Development Report for Ethiopia (ENWDR), 2004. United Nations Educational, Scientific, and Cultural Organization, World Water Assessment Program, UN-Water/WWAP/2006/7, Addis Ababa, Ethiopia

[3] Adank, M., Jeths, M., Belete, B., Chaka, S., Lema, Z., Tamiru, D. And Abebe, Z. (2008) The costs and benefits of multiple uses of water: The case of Goroguto woreda of East Hararghe zone, Oromiya Regional States, Eastern Ethiopia: RiPPLE Working Paper 7. www.rippleethiopia.org

[4] Aschalew Demeke (2009) Determinants of Household Participation in Water Source Management: Achefer, Amhara Region, Ethiopia. A Thesis presented to the Faculty of the Graduate School of Cornell University in Partial Fulfillment of the Requirements for the Degree of Master of Professional Studies, Ithaca, NY

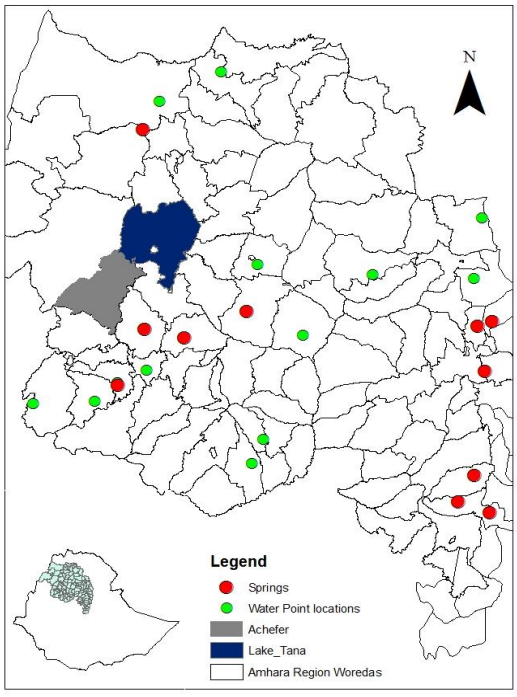
Background

Although the fundamental priority use of improved water sources is human consumption, these sources can provide additional water for livestock, irrigation, home gardens or other small-scale productive applications. However, the extent of these additional services depends on the capacity (quantity) of the water supply and the particular geographical location of these sources. Around 220 million people in sub-Saharan Africa (about 52% of the rural population), for example, could significantly benefit from MUS if it is properly designed and integrated (Faures et al, 2008)[5].

MUS can be implemented by upgrading the existing system, by developing a system that can be expanded in the future or by implementing MUS at the onset (Faal et al 2009). Such cases are documented in areas of Eastern Hararghe and have shown a rewarding cost-benefit analysis of MUS compared to single use (Adank et al 2008). There are some efforts underway by different implementers or NGO's to implement MUS in the Amhara Region, but the particular implementation practices and the consequent benefit to the sustainability of the water supply service is not well documented in the region.

Therefore, documenting these practices of developing water supply to link with income generating activities in the region will help to gain important insight from past experiences as well as to improve future efforts in implementing MUS water services. This would also help to understand practices that could be adopted in different areas and to identify how multiple use of water services are provided or missed in different rural water supply schemes.

Learning about MUS and then effectively practicing it (by various implementers of WASH, such as government and other stakeholders) in the region would highlight an increasing recognition of water as economic and social good, and facilitate sustainability of the water facilities.



Location map of water points monitored in this study (Map by: Seifu A., 2011)

Methodology

Structured interviews were conducted with the beneficiaries of the improved water supply scheme, the district WASH committee and *woreda* Water Resource Development office members in 24 schemes located at different zones and *woredas*. The schemes are selected after discussing the objectives of the research with the office members of zones and *woredas*. The beneficiary interview covered topics on level of services, type of water supply facilities, type of additional facilities, implementation procedure, and particular use of the services provided. The MUS practices and benefits were elicited from the interview responses and follow up with the scheme's implementers and observation on sites. Two days site visit by a team of two faculty members from the School of Civil and Water Resources Engineering was conducted at each site. A total of 8 professionals were involved in the evaluation of the 24 schemes. In addition, a master's thesis on the determinants of household participation in water source management in the Achefer area was reviewed to supplement the findings of the research. Sixteen water sources of which 8 are springs were selected in this study (Aschalew, 2009). Therefore, a total of 40 schemes were assessed to evaluate MUS practices and benefits in the region.

Key Findings

The majority of the protected springs have additional facilities and services, such as water for clothing, cattle trough and irrigation. Only those springs in difficult topographical locations did not include additional services beyond the domestic water supply. For example, a spring development at Sali Sefer in Chilga lacked multiple uses because its implementation was limited by topography and its proximity to the edge of a cliff.

It is observed that implementers opt for hand dug wells because of their low cost and short construction time although there are possibilities of applying MUS by developing a nearby spring. Gondi locality in Meket *Woreda* of North Wolo zone is a good case where Gondi first cycle school and surrounding communities

[5] Faures, J.M., Santini, G., and Nepveu de Villemarceau, A., (2008) 'A livelihood approach to water interventions in rural areas and implications for Multiple Use Systems' in Multiple-use Water Services (Eds. J, Butterworth, M. Keitjizer, I. Smout and F. Hagos) Proceedings of an international symposium held in Addis Ababa, Ethiopia, r-6 November 2008. MUSGroup.

are using unprotected spring in place of dis-repaired hand dug well. None of the hand pumps observed in this study has any of the additional services.

MUS at the onset

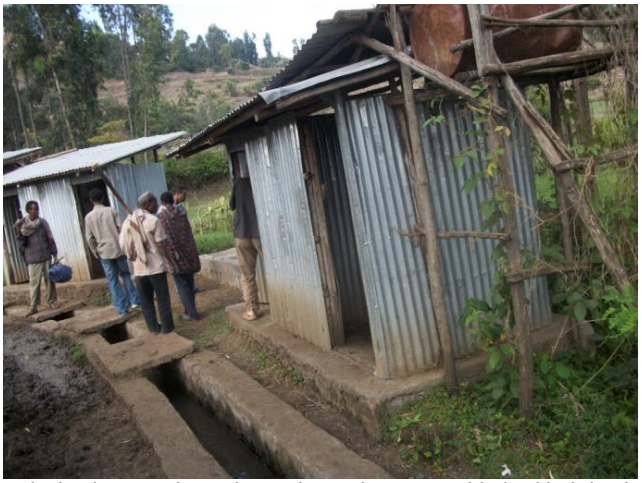
In areas where MUS has been implemented at the onset, communities are receiving various services from the scheme. Users in Degameske locality of Yilmana Dense *Woreda* have improved their hygiene through the availability of shower facilities and clothes-washing stations. They are also generating income by providing the service to outsiders and collecting a fee of 0.50 ETB per person. Furthermore, an astonishing example in Kalu *woreda* where the Fontenina springs have been developed by Water Action has shown that the strong revenue generated from irrigation activities has triggered the willingness of the community to pay more to sustain their water services. A single managing committee collects monthly flat rates for the different services provided by this spring: 2 birr per month for house connections, 10 birr per month for irrigation use and hotel connections and 1 birr per month for water point users. At Luhudi located in Kuala Baka village in Achefer, water scheme users have benefited greatly from MUS. Some households in this village have taken advantage of the additional water by growing fruits and vegetables. The single water user committee in the village has enforced regulations that require households using water for irrigation to safeguard the water source on a rotational basis. This is the only spring source that has been implemented with multiple uses in Achefer Woreda.

Upgrading the existing system to MUS

Upgrading a single use spring development to MUS requires community participation and proper technology selection. Tigo Spring in Tehuledere *Woreda* was initially developed for domestic water supply but an upgrade of the system was implemented in order to provide three shower huts, a clothes-washing station, and an irrigation diversion. The water fetching site was moved further downstream from the spring box and consists of a three-tap fetching station. However, the fetching station had to be situated below the ground surface in order for the spring water to flow by gravity. Now runoff floods the excavated site forcing women to wade through stagnant water to reach the taps. Furthermore, the roof-level tanks for operating the showers must be filled manually from below. Because of the heavy lifting necessary to fill the tanks, the showers were quickly abandoned and often used as latrines. Only the irrigation channel continues to operate as intended partly due to a separate management committee operating and maintaining the irrigation services from the ten birr contribution of irrigation users. On the other hand no fees were collected for the domestic use by the separate domestic water supply committee.

Ultimately, despite ample water quantity, this WaSH water supply scheme has failed due to insufficient community input into the choice of the water services and technologies and a lack of commitment by the water committee.

On the other hand, even when the users realize a need to enhance their scheme and add more services, as upgrading was not part of the initial planning phase it becomes impractical. For example, users in the locality of Kaba and Sayemeskel in Menzemama and Mojana Wadera, respectively, have an interest to upgrade their scheme in order to exploit the potential for irrigation in addition to providing cattle drinking troughs and clothes-washing sinks. Unfortunately, future upgrades of the scheme were not considered in the initial planning and development, but users are planning to divert the overflow of the tanks for traditional irrigation.



Poorly implemented gravity spring scheme provided with irrigation canal and shower at Tigo spring in Tehuledere Woreda (Photo by: Wondimu P., 2011)

Pitfalls of lack of MUS

Water supply policy dictates that water supply schemes should be planned with domestic water supply as the main priority although many spring developments are suitable for multiple uses. The limitation in the scope of the water supply scheme has been partly responsible for the complete failure of the system in Koyou locality, Rime *Kebele*, Mecha *Woreda*. The community from Koyou formerly collected water from a site downstream of the spring where pipes and a faucet were designed to fetch water. However, due to the demand for irrigation water and livestock drinking water, the system was destroyed and covered by mud forcing women to fetch water from failed system. Similarly, Gedero spring in Werebabo *woreda* had no additional services, thus the owner of the land where the spring originates began to irrigate near the spring box and ultimately damaged the scheme.

Furthermore, the particular water supply technology may limit the scope of the services provided. For example, developed springs are much more likely to have MUS, but none of the hand dug wells observed had additional services besides domestic water supply. Unless hand dug wells are exploited for additional services, the development of springs is the water supply technology of choice for MUS.

Recommendations

1. MUS as key principle

In areas where topography allows and there is sufficient water quantity, implementers should take multiple use of water as the standard in the development of water sources for water supply. When users are not capable to incorporate MUS at the onset, the sources should be developed in a way that can be upgraded in the future when opportunities arise.

Implementers of water supply points should discuss a community's priorities when it comes to water. Although water supply schemes are developed commonly with a priority on domestic supply, a community's priority may be different. However, multiple water services can be built into a spring development.

2. Integration among sectors

To link rural water supply development to income-generating activities, the integration and better coordination between different sectors at any level of institutional arrangement is important. This helps to understand the opportunities available in the market. Integration must also involve the development of a common user committee for the different water services and an appropriate management approach for the services as seen at Fontenina spring but not at Tigo. In addition, implementers should be flexible enough to provide other services in addition to drinking water supply.

3. MUS to the willingness to pay

Providing additional services gives an opportunity to increase user's income through vegetable, fruit and other horticulture crops cultivation and in turn positively affect their willingness to pay more cash and labor. This helps the operation and maintenance of water supply & ensures the sustainability of rural water supply services.

4. MUS as a conflict resolution mechanism

MUS, if properly planned at the onset, can be used to enhance user satisfaction by providing various water services at the demand of different community members. This in turn will likely prevent future disputes between users as seen at the Koyou spring where the domestic water component was destroyed for the sake of irrigation demand. Furthermore, if the land owners of the scheme at Gedero spring were allowed from the beginning to utilize the water for irrigation in return for the use of their land, the disputes between land owners and users could have been resolved.

5. Considering users' choices on technology

The majority of the protected springs have additional facilities, whereas none of the hand-pumps observed have any of these services. Because of the lack of these services, the low system reliability and the frequent pump failures, many users complain about hand pumps and seem unwilling to manage them properly. In addition, technologies for additional services should be based on choices of the community, but they should not be designed in a way that requires a lot of extra time and effort for users to effectively utilize them.

Key Words:

Multiple uses, spring, Irrigation, shower, topography

Authors:

Briefing note: Seifu A. Tilahun and Amy S. Collick, May 2011

Research Contributors: Aschalew Demeke, Atikelte Abebe, Abeyou Wale, Essayas Kaba, Elias Sime, Habtamu Addis, Seifu Admassu, Tammo Steenhuis

For more information, please contact:

Seifu Tilahun
Bahir Dar University, Institute of Technology
School of Civil and Water Resources Engineering
P.O.Box 26
Tel. +251 582 203612 Fax. +251 582 266418
www.bdu.edu.et
Bahir Dar, Ethiopia

Manyahlshal Ayele
WaterAid in Ethiopia
Debre Zeit Road
P.O.Box 4812
Addis Ababa
Ethiopia
Tel. +251 114 661680
Fax.+251 114 661679
email: info@wateraidet.org
www.wateraidethiopia.org