Sustainability of water supply schemes: A case from Mirab Abaya

This summary is based on RiPPLE Working Paper 4: The Sustainability of Water Supply Schemes: A case study in Mirab Abaya woreda available for download at: **www.rippleethiopia.org**

Introduction

The sustainability of community-managed rural water supply schemes is a key factor in meeting the Millennium Development Goals (MDGs), in terms of ensuring environmental sustainability, improving health and eradicating extreme poverty. To sustain water supply schemes, it is vital to have the involvement of all segments of the community in the form of full participation and control over the scheme's operation and maintenance (O&M), overall management, strategic decision making, ownership and cost sharing for O&M and construction activities. Moreover, such community management has to be supported by external agents over a long period of time with regard to technical issues for O&M, training, monitoring, information collection, coordination and facilitation.

This study was conducted in Mirab Abaya woreda under one of RiPPLE's thematic areas, the Governance and Planning theme (GaP). The aim of this theme is to identify appropriate and scalable approaches to strengthening local water governance and planning in the context of Ethiopia's Universal Access Plan (UAP) and other development planning frameworks.

The non-functionality rate of water supply schemes in the country and the Southern Nations Nationalities and Peoples Region (SNNPR) is 33%

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and 22%–24%, respectively. With this in mind, RiPPLE undertook a sustainability case study in Mirab Abaya woreda with the objectives of examining functionality and service level of existing water supply schemes; identifying factors impacting on sustainability following a bottom-up approach; and recommending best approaches and practices.

Methodology

In total, 70 schemes were developed between 1983/84 and 2006/7 in the woreda, using four types of technology. These include 11 boreholes (BH), 20 hand dug wells (HDW) fitted with hand pumps, 26 machine-dug shallow wells (MSW) fitted with hand pumps, and 13 protected springs (PS) sources, with a total of 65 network and on-spot distribution points. Two major factors – scheme technology type and functionality – were employed as the main parameters for the selection of sample kebeles. From the 23 kebeles that have water supply schemes, 9 kebeles that had both functional and non-functional schemes as well as all four types of scheme technology were selected.

Qualitative and quantitative data collection instruments were employed for focus group discussions (FGDs), interviews, knowledge, attitude and practice (KAP) surveys, institutional/stakeholder mapping, resource mapping and observation at kebele and wereda levels. In total, 18 FGDs (nine with WATSANCos and nine with women in the community) and 18 interviews – including kebele chairpersons, key informants from Water Resource Development Office (WWRDO), Wereda Council, Health Office or World Vision Ethiopia (WVE) – were conducted in the nine selected kebeles.

Findings

A total of 40 schemes were functional and 30 non-functional at the time the study was conducted (Nov 07–Feb 08). Of the 30 non-functional schemes, 37% have been completely abandoned, 40% are non-functional owing to various technical problems, 13% have stopped service because of a drop in the water table, 7% have failed owing to water quality problems and 3% are new and have not yet started service.

All of the abandoned schemes served for more than 20 years without rehabilitation. Of the 65 network and on-spot distribution points, 39% are non-functional. Of all the schemes, 14% are in the dega agro-climatic zone and 86% are in the kolla agro-climatic zone. In the kolla area, 55% of schemes are functional; in the dega area, 80% are functional.

The non-functionality rate of schemes, excluding abandoned schemes, is 32%. The majority of the scheme developments were financed by the Catholic Relief Mission (34%) and WVE (26%). The rest were financed by governments, such as Ethiopia (13%), China

(10%) and Canada (6%) and donor agencies such as the UNICEF (4%), UNDP (3%) and the Safety Net Programme (4%).

Most (63%) hand pumps use Afridev technology, and 28% are Indian Mark II (InMrk II) pumps. The rest use the oldest type of rotary hand pump technology. Of the motorised schemes, 55% are fitted with submersible pumps and the other 45% with mono-lift pumps. 73% of the engines in the motorised schemes hold the Lister Peter brand (England). Out of the 13 protected springs, 46% are on-spot developed springs and 54% use a gravity distribution system.

Communities use on average 54 litres of water per household per day for domestic activity (on average 11 litres per capita and day). An individual walks for about two hours (roundtrip) to and from a water point. An individual waits for water for an average of three hours at the scheme site, and one household fetches water twice a day. The water points are open for an average of nine hours per day. Women and girls bear the main responsibility for fetching water.

In the woreda, 63% of the technical positions in the Health Office are vacant and 57% of the technical positions and 50% of the support staff positions in the WWRDO are unoccupied. Moreover, sector offices do not have sufficient material capacity to enable them to be involved in better service delivery. All this leads to extremely long periods before a non-functional scheme is maintained. On average, it takes between two and three weeks to fix minor maintenance problems, but up to one year for major technical problems.

Generally, the high non-functionality rate of schemes forces communities to rely on unsafe sources of water for basic consumption. Most schemes have failed as a result of abandonment, but water quality problems, lack of proper understanding of the hydrogeology of the area (design problems), landslides, pressure on schemes and poor capacity and low backstopping support from the WWRDO are also factors determining non-functionality and the (slow) speed of maintenance. Other

factors contributing to schemes being unsustainable are poor communication and coordination of woreda stakeholders and line offices; lack of clarity on the roles and responsibilities of the different actors in the woreda; lack of legitimacy, accountability and skills of WATSANCos; lack of guidelines on technology standards; absence of specialised spare parts suppliers in the woreda; and poor information management systems leading from the WATSANCo to the woreda sector offices.

Recommendations

Initial recommendations based on this study with regard to improving functionality and sustainability of water schemes are as follows:

- Involving all segments of the community (women, poor and better off households, near, distant users) in all aspects of scheme development and management activities;
- Institutionalisation of WATSANCos into an independent and accountable organisation;
- Capacity building (including technical skills to maintain water schemes) at WATSANCo and woreda level;
- Integration of relevant stakeholders at woreda level for effective and efficient service delivery, avoidance of duplication and optimum resource utilisation;
- Supporting the private sector to play a more prominent role in the spare parts supply chain;
- Working on a needs assessment of community scheme preference;
- Development of scheme technology standardisation policy/regulation/rule;
- Rehabilitation of existing schemes, expansion of motorised schemes and construction of new schemes to satisfy the high water demand;
- Working on integrated watershed management to conserve water resources and prevent contamination of groundwater owing to human activities;
- Regular disinfection of water sources;
- Undertaking a water potential mapping for the woreda;
- Creating a proper information exchange system among stakeholders;
- Developing appropriate system monitoring and evaluation; and
- Developing a computerised database system of documentation.

Researchers

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