Impact Evaluation of the Rural Water Supply and Sanitation Program in Ethiopia

2006–2014

Executive Summary

September 2016
IDEV conducts different types of evaluations to achieve its strategic objectives.
The African Development Bank (AfDB) supported the Rural Water Supply and Sanitation Program (RWSSP), one of the major water supply and sanitation development programs in Ethiopia for the ten-year period 2005–2015. The RWSSP aimed to increase access to and the use of improved water supply and sanitation services in 125 Woredas/Districts across Ethiopia’s nine regions, using a community demand-driven approach to (i) deliver improved water supply and sanitation services to selected local communities, and (ii) strengthen local, district, regional and national capacity for effective water and sanitation development and management. The RWSSP’s beneficiaries include rural sedentary and nomadic populations, artisans, entrepreneurs, and local and federal governments.

The RWSSP had three components: (i) constructing new water schemes, rehabilitating malfunctioning schemes or expanding existing schemes; (ii) building institutional latrines for schools and health facilities and communal latrines in areas with crowded settlements; (iii) community sensitization, awareness raising, and facilitation, and capacity building of different water and sanitation services providers at the community, woreda, regional and federal levels. The program also encouraged and supported the participation of private sector agents.

Approved in 2005 and implemented during 2006–2014, RWSSP cost a total of UA 54.24 million, of which the AfDB contributed an African Development Fund (ADF) grant of UA 43.61 million (80%), and the Government of Ethiopia (GoE) and communities contributed UA 8.12 million (15%) and UA 2.510 million (5%) respectively. In 2014, when the program was completed however, the actual disbursement was UA 60.203 million, an 11% increase over commitment costs. The additional implementation costs were borne by the GoE and the communities.

The program allocated most of its investment to water supply schemes and sanitation facilities. Its delivery of completed water schemes started in 2008 and ended in 2014.

The main objective of this evaluation study is to provide credible estimates of the impacts of the RWSSP on participating communities and households, especially in terms of (i) access to and use of safe water, (ii) the incidence of diarrhea in children under five years of age, (iii) children’s school attendance, and (iv) women’s participation in self-employment, and on the sustainability of the results. This is done primarily to (i) account for the RWSSP development outcomes to the AfDB Board and to the GoE, and (ii) provide AfDB’s Water and Sanitation Department (OWAS) with relevant recommendations for sustaining the benefits of the RWSSP and for informing the design and implementation of similar programs in the future. The evaluation study also helps IDEV in building an evidence base for the 2015 Ethiopia CSPE and for learning from impact evaluation.

The evaluation questions focused on the RWSSP impact areas as described above. Given that it was designed and implemented with no rigorous impact evaluation in mind, the study assessed impact by comparing relevant RWSSP community outcomes with those of an appropriately and carefully matched non-RWSSP community group (“counterfactual” group). Data on both groups were collected from random samples of 228 communities, 2736 households, 114 water points, 74 primary schools and 73 health centers in 38 woredas/districts from three regions – Oromia, Amhara and SNNPR – the regions accounting for 85% of the total RWSSP direct participants. The propensity score matching (PSM) and difference-in-difference (DID) techniques provided the basis for the data analysis.
Key findings

The RWSSP was effective in delivering improved water and sanitation facilities but less effective in building community institutional capacity. The program delivered close to 6810 water supply and sanitation facilities, or approximately 80%) of the target. Most of these facilities were functional and were in use. However, facility breakdowns reduced the functionality of the RWSSP facilities. Although the RWSSP delivered all planned training for the WASH team and WaSHCOM members, its activities in community awareness raising and sensitization about improved sanitation and hygiene practices were limited. The WaSHCOM membership also lacked gender-balance.

The RWSSP had significant impact on access to and the use of an improved water source in selected communities, but was not effective in ensuring the water was completely safe for drinking at the source and point of use. The RWSSP improved household access and use of quality water: approximately 91% of households in RWSSP communities had access to and use of an improved water source. This was approximately 69% higher than the non-RWSSP group outcome (22%). In RWSSP communities, households mainly used water from improved water sources whilst only 22% of the households in non-RWSSP communities obtained their water from improved sources. At 59%, the percentage of the sample of RWSSP water sources that were free of E. coli was 34% higher than that of the non-RWSSP water points, at 25%. At the point of use, 33% of the households in the RWSSP communities had drinking water that tested free of E. coli compared to 14% in the non-RWSSP communities. In 27%–30% of these sampled water sources, the contamination was as low as 1–10 total E. coli count per 100 ml of sample water. This level of contamination at the point of water use was indicative of contamination during water transport and storage. The prevalence of the E-coli in the improved sources was due primarily to infrequent quality testing and treatment of the water sources. Water quality tests were not regularly conducted in most communities. Only about 7% of the sample households reported that they applied water treatment technologies. Notwithstanding the E. coli contamination, about 92% of the sample households in the RSWWP communities perceive the quality of the water from their primary sources as either good or very good.

The RWSSP had no impact on the daily per capita water consumption. The self-reported daily per capita water consumption for domestic purposes in both RWSSP communities (34.12 liters) and non-RWSSP communities (31.11 liters) already far exceeded the national standard consumption target of 15 liters/day per capita.

The RWSSP contributed significantly to the surge in household ownership and use of private latrines and to the decrease in open-defecation, but not on hand washing. The RWSSP increased household sanitation coverage from 73% to 81%. Almost all the latrines in both program and non-program communities were pit latrines with a mud/wooden cover: in other words, they were almost all unimproved pit latrines. There was a marginal increase in the hand washing facilities. Only about a quarter of the household latrines in RWSSP communities had hand washing facilities, compared to 18% in non-RWSSP communities. Hand washing without soap at critical times (before eating or preparing food and after using the toilet) was widespread in both RWSSP and non-RWSSP communities. Although households perceived that open-defecation had declined, households without private latrines resorted more to open-defecation and less to the use of public toilets.

The RWSSP had significant impact on reducing the incidence of diarrhea among persons of all ages but not among children under five. The self-reported incidence of diarrhea of around 5% among children under five in both RWSSP and non-RWSSP communities was low and similar. The lack of any detectable impact on the diarrhea incidence of children under five was due in part to the similarity of sanitation and hygiene practices of children in both RWSSP and non-RWSSP communities.
That said, compared to the non-RWSSP communities, the RWSSP reduced the incidence of diarrhea among persons of all ages by 7 percentage points or 45%, which is close to the target of a 50% reduction in the incidence of water borne diseases.

The RWSSP reduced the time for fetching water and generated time savings although less than what was planned for at appraisal. The travel time spent by households (in RWSSP communities) on fetching water dropped by about 10 minutes per round trip, and by 4 minutes to reach the primary water source. With an average of 2.28 water fetching trips per day to fetch water, the RWSSP saved 23 minutes per day per household, which was substantially less than the appraisal target of 2 hours per day. All the same, the RWSSP improved daily time to fetch water significantly in the RWSSP communities compared to the non-RWSSP communities.

The RWSSP had no discernable impact on school enrolment rates, which were already very high (in excess of 95%) in both RWSSP and non-RWSSP communities.

The RWSSP had no significant impact on women’s participation in (self) employment activities, which was low in both RWSSP and non-RWSSP communities. While the time saved fetching water was limited, it was positively associated with women’s participation in employment activities, and was used mainly for domestic activities, including cooking, fetching firewood and other unpaid work. Employment of women as workers in water supply schemes was also very limited. The lack of significant impact on self-employment might be explained by the high competition for the limited time saved, coupled with the lack of well-developed (local) markets for self-employment activities and also the local culture with respect to the role of women.

Sustainability of the RWSSP facilities and services: The institutional, technical, financial, and monitoring and evaluation capacity constraints of the community limit the sustainability of the RWSSP facilities and services. By enhancing community capacity, especially in creating and ensuring the functionality of the WaSHCOMs, the RWSSP provided a basis for sustaining its results. The communities effectively participated in the delivery of the RWSSP, but their institutional, technical, financial, and monitoring and evaluation capacity remained insufficient for operating and maintaining the RWSSP outputs. Although the WaSHCOMs responsible for operating and managing the RWSSP facilities were functional, they were too organizationally, technically and financially weak to carry out this function. The challenges of operating and maintaining the RWSSP facilities were not only technical and financial capacity constraints, but also the shortage of essential spare parts and the limited participation of the private sector. The majority of the RWSSP water points failed to generate sufficient revenue for their operating and maintenance costs. As a result, GoE support was necessary for maintaining the RWSSP facilities. Furthermore, there was no monitoring and evaluation system in support of the RWSSP nor was one planned to contribute to the sustainability of the RWSSP results.

Conclusions

The RWSSP was effective in delivering the water and sanitation infrastructure capacity but less so in building community institutional capacity. The functionality of the water and sanitation infrastructure capacity was reduced largely as a result of the breakdowns and idle capacity of some facilities. The program enhanced community institutional and management capacity, particularly that of the WaSH committee (WaSHCOM), whose performance was modest in terms of managing and sustaining the WaSH facilities and services.

The RWSSP was successful in producing desirable impacts in its key targeted domain of improving access to and the use of improved water sources in the target communities, but not in other areas. The program significantly improved households’ access to and use of improved water sources although E. coli contamination remained an issue at water sources and points of use. However, it had no detectable
impact on daily water consumption, as the self-reported daily per capita water consumption was already far in excess of the national standard.

The RWSSP was effective in promoting private latrine ownership and use, thus contributing to less open-defecation, but not in enhancing hand washing at critical times and in reducing the incidence of diarrhea among children younger than five. However, the quality of the latrines and hand washing was far below the expected standards. The RWSSP also succeeded in reducing the incidence of diarrhea in persons of all ages.

The program was also effective in reducing the time spent fetching water; the time saved was mostly used to undertake domestic activities but did not increase children’s school enrolment or women’s participation in self-employment.

The sustainability of RWSSP benefits is unlikely because of institutional, technical, financial and development information inadequacies and also because the availability of public funds was critical for operations and maintenance of RWSSP facilities.

**Recommendations**

The key emerging recommendations are for the Bank to do the following:

1. **In collaboration with key stakeholders (including the Federal, Regional and Woreda administrations, and WaSHCOMs), develop a clear strategy for sustaining the benefits of the RWSSP.** While reflecting the strengths and weaknesses of the woreda and community institutional arrangements for designing, implementing, and managing WaSH facilities and services, such a strategy should address the following issues:

   a. Poor quality water and sanitation facilities and services, and irregular water quality testing and treatment. The main issues are the poor quality of the facilities, the presence of E. coli in water at the source and point of use, the predominance of unimproved latrine types, the widespread practice of washing hands without soap, and other hygiene practices undermine positive health outcomes.

   b. Lack of adequate financial resources for operating and maintenance of the RWSSP water facilities. Current water facility user charges are insufficient for meeting the cost of operation, maintenance and replacement, which contributes to delays in or lack of repairs. Moreover, there is currently no clear strategy for ensuring the financial viability of the management of the water points.

   c. WaSHCOMs’ weak organizational and management capacity. Whereas WaSHCOMs are important for sustaining the RWSSP results, they are organizationally and technically weak. In addition, 89% of the WaSHCOM members reported needing (refresher) training. The gender imbalance issue in WaSHCOMs should be addressed.

   d. Weak capacity of WSST to better support WaSHCOMs and to effectively participate in monitoring the sustainability of the RWSSP benefits.

2. **Support the development and implementation of an effective monitoring, evaluation and learning system to ensure regular, pertinent data collection, analysis, reporting and feedback, especially on RWSSP community WASH results.** With no baseline data or effective M&E, the RWSSP missed an opportunity to learn and support the program completion reporting and the impact evaluation study. The Bank could build a sound MEL system for the post-RWSSP through its support for strengthening country systems to support the sustainability of the RWSSP results. The use of smart technologies (GPS-enabled devices, geo-referenced management tools and smart phones) for MEL should also be explored.
About this Evaluation

The Ten-Year Strategy of African Development Bank (AfDB) includes a commitment to undertaking more impact evaluations so as to obtain credible evidence on the development effects of its supported programs and projects.

This evaluation examines the impact of the Rural Water Supply and Sanitation Program (RWSSP) of the African Development Bank Group (AFDB) on key aspects of the livelihoods of people in rural Ethiopia. The program was implemented from 2006 to 2014 at a cost of UA 60.2 million (USD 82.5M). It was financed by the AfDB ADF grant (72%) and the Government and communities in Ethiopia (28%).

The evaluation compiles credible evidence about the impacts of the program on (i) access to and use of safe water, (ii) diarrhea incidence among under-fives, (iii) children’s school attendance, and (v) women’s participation in self-employment; and draws lessons and makes recommendations to the AfDB for sustaining the benefits of the program; and implementing similar programs in the future.

The evaluation finds that the program had significant impact on increasing the rural population’s access to less contaminated water; Reducing diarrhea incidence, but negligibly for children under five; Saving the time spent by rural households on fetching water. The program didn’t have visible impact on school enrolment by children or on women’s participation in income generating activities. The evaluation recommends that the Bank develops clear strategies for sustaining the benefits of the program, and implement effective monitoring, evaluation and learning systems for similar future programs.