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Rural WASH programming: experiences from Rwanda

M. Malik, L. Karangwa, A. Muzola, J. Sano, E. Hategekimana, F. Nteziyaremye, G. Musabyimana & J. M. V. Rutaganda (Rwanda)

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Rwanda WASH Project was implemented in rural areas of four low-WASH access districts during 2009 - 2015 by the Government of Rwanda with support from UNICEF and the Government of the Netherlands. This project had four key components i.e. community water supply, sanitation and hygiene promotion, institutional WASH and capacity building. The project, which benefitted over 500,000 people, resulted in increase in average access to improved water supply and sanitation in the target districts from 47 per cent to 85 per cent and from 34 per cent to 70 per cent, respectively. A project sustainability assessment carried out in 2016 showed that the infrastructure built under the project was fully functional. The experiences of the project underline the importance of establishment of effective project coordination mechanism, use of existing government structures, capacity building, strong monitoring and evaluation framework and public-private partnership for management of water supply systems.

Introduction

Rwanda has an estimated population of 11.4 million (GoR, 2015) of which 52 per cent are women and 48 per cent are men. Of the total population, 83 per cent is living in rural areas while 17% is living in urban areas. It is the most densely populated country in the region with a population density of 415 inhabitants per square kilometre in 2012.

Rwanda has made remarkable progress since the 1994 genocide, particularly in promoting good governance and delivering essential services to the poor such as health, education and water and sanitation. The country has met MDGs targets for water and sanitation with coverage of improved water supply and sanitation estimated at 85 per cent and 83 per cent, respectively, in 2014 (GoR, 2015). Recognizing the key role of water and sanitation in protection of public health, socio-economic development and gender empowerment, the Government of Rwanda (GoR) has committed itself to reaching very ambitious targets for water supply, sanitation and hygiene, with the vision to attain 100% service coverage by 2020 (GoR, 2012).

In 2008, Burera, Musanze, Nyabihu and Rubavu districts, located in the volcanic region in the North-Western part of Rwanda and having a total population of approximately 1.2 million, were among the least served districts in the country in terms of water, sanitation and hygiene (WASH) services. In order to improve access to WASH services in rural areas of these districts, the GoR, with support from UNICEF and the Government of the Netherlands (GoN), implemented the Rwanda WASH Project during 2009-2015. This paper presents an overview of the project and summarises the experiences and lessons learned during its implementation.

Project description

The project was implemented with the objective of improving child health, survival rates and wellbeing by contributing to Rwanda's national efforts to achieve MDG targets for water and environmental sanitation. The stipulated outcome of the project was "equitable access to safe water and improved adequate sanitation and hygiene facilities increased in four districts" (GoR and UNICEF, 2008).

The project targeted rural areas of four districts in the North-Western part of Rwanda i.e. Burera, Musanze, Nyabihu and Rubavu, which were selected in consultation with the line ministries, districts and partners based on prioritisation criteria including access to WASH services, child mortality, poverty and interventions being supported/planned the Government/other partners so as to avoid duplication and ensure complementarity.

The main components of the project included (i) community water supply, (ii) sanitation and hygiene promotion, (iii) institutional WASH and (iv) capacity development. The key project targets included the following:

1. Provision of access to improved water supply to 500,000 new beneficiaries living in rural communities.
2. Promotion of safe hygiene practices and household sanitation benefitting 500,000 people.
3. Provision of piped water supply to 200 schools and 50 health centres; rain water harvesting facilities to 200 schools and 50 health centres; and sanitation facilities to 200 schools and 50 health centres. In 2012, however, the targets for piped water supply to schools and health centres were revised downward to 108 schools and 23 health centres as providing piped water to remotely located institutions in hilly terrain proved to be very expensive.
4. Capacity building for sustainable operation and maintenance of the supported WASH infrastructure.

The Ministry of Infrastructure (MININFRA), the lead ministry for water and sanitation sector, coordinated the implementation of the project through the establishment of a dedicated National Project Management Unit (NPMU) in the water and sanitation division of the Energy, Water and Sanitation Authority (EWSA), the implementing arm of MININFRA, now known as Water and Sanitation Corporation (WASAC). The NPMU, which was staffed by a National Project Coordinator, a Principal Engineer, support staff, and district level project teams (comprising one water and sanitation engineer one social mobiliser in each of the target districts), coordinated the implementation of the project across the districts, in addition to provision of technical and monitoring support. Dedicated WASH teams were set up for management and coordination of the project interventions at the district and community level.

Planning and implementation of the project interventions were led by the districts through district and community WASH teams. For construction of water supply and sanitation infrastructure, engineering consulting firms and private contractors were engaged for design and supervision and construction, respectively, following a competitive bidding process by the districts. Hygiene and sanitation promotion as well as capacity building interventions were, however, implemented in partnership with non-governmental organizations which closely worked with district staff, local leaders, community and faith based organisations, local entrepreneurs and community hygiene club members.

The project was originally planned to be implemented during 2009-2014 but extended till end of 2015 to be able to fully meet the targets. The planned project budget was US$ 20.3 million, including GoN, UNICEF, GoR and beneficiaries' contribution of US$ 16.3 million, US$ 1.2 million, US$ 2.25 million and US$ 0.55 million, respectively. Following additional contribution from GoR and UNICEF to bridge the funding gaps, the total utilised funds under the project amounted to US$ 23.7 million, including GoN, UNICEF, GoR and beneficiaries contribution of approx. US$ 16.3 million, US$ 3.6 million, US$ 2.8 million and US$ 0.96 million, respectively.

The monitoring and evaluation arrangements for the project included quarterly progress review meetings; third-party monitoring by independent consultants; regular field visits by government and UNICEF staff; independent project reviews (conducted in 2010, 2011 and 2013) and independent project sustainability assessments conducted in 2011, 2013, 2014 and 2016.

Project achievements

At the end of 2013, the project had achieved all the stipulated targets except for provision of sanitation facilities in schools and the target on capacity development. In 2014, GoR and UNICEF allocated additional resources to complete the remaining activities, which could not be completed earlier due to budget overruns caused by increased cost of construction and challenging terrain. Following implementation of these activities, all the stipulated project targets have been achieved. A brief description of the key activities implemented under the project are as follows (GoR and UNICEF, 2016):

Community water supply

The water supply related interventions carried out under the project benefitted estimated 515,977 people. This involved construction of 34 piped water supply systems with springs as water source, including 25

newly constructed systems and upgradation and extension of nine existing systems. In addition, 29 boreholes were drilled and equipped with hand pumps while 19 springs were also protected. The construction and upgradation the piped water supply systems entailed laying of over 600 kilometres of pipeline and construction of 260 water storage tanks with capacity ranging from 5 m^3 to 150 m^3 as well as more than 700 water points. The water supply related interventions implemented under the project resulted in increasing the average access to improved water supply (within radius of 500 meters from water points) in the target districts from the baseline value of 47 per cent in 2010 to 85 per cent in 2014.

It may be noted that the project, during the initial phase, supported drilling of boreholes equipped with hand-pumps as a quick fix to improve access to water. While the boreholes delivered a service, they posed challenges with regard to water quality and maintenance in the volcanic region characterised by soils having high infiltration rates and low pH, and hence were discontinued.

Sanitation and hygiene promotion

Over 500,000 people were reached through sanitation and hygiene promotion related activities carried out under the project using Community Based Environmental Health Promotion Programme (CBEHPP) approach which involved establishment and training of community hygiene clubs (CHC) members at village level (Ministry of Health, 2010). Moreover, district WASH team (DWTs) members, community WASH team (CWTs) members, local leaders at the village level and school health club members were trained to enhance their skills and knowledge in hygiene and sanitation promotion. The CHC members, who were also provided hygiene promotion materials, subsequently mobilised the community, with support from DWTs and CWTs and spearheaded hygiene and sanitation promotion, thus cascading critical information in their respective villages.

In addition, mass community gatherings were organised in the target districts where a variety of mediums including dramas, songs, folklores, speech competitions, talk shows on community radios and sport events (e.g. football matches) were used to spread messages on safe hygiene practices. Messages on hygiene and sanitation were also disseminated among the target communities through launch of hygiene and sanitation weeks; through Umuganda (Rwandan term meaning coming together for community work), which is held on the last Saturday of every month, religious gatherings and community meetings; and mass media campaigns. Special household latrine construction campaigns were also organised, led by district authorities and local leaders. As part of these campaigns, people constructed/upgraded household latrines and handwashing facilities for themselves as well as for the vulnerable people.

The hygiene and sanitation promotion related interventions implemented under the project resulted in increasing the average access to improved sanitation facilities in the target districts from the baseline value of 34 per cent in 2010 to 70 per cent in 2014, with 99% of people found using some sort of latrine for defecation. As regards handwashing, in 2010, only 19 per cent of households (average for four districts) were found to have "some form of hand washing facility". Compared to this, 37 per cent of the households were observed to have a hand washing facilities in the vicinity of latrine in 2014 while 55% of households were found to have soap for handwashing.

Institutional WASH

A total of 121 schools having estimated enrolment of 151,000 and 25 health centres (having a catchment population of 25,000) were connected to piped water supply while 258 schools and 50 health centres were provided rain water harvesting facilities. In addition, 203 schools and 29 health centres were provided with gender- and disability-friendly sanitation as well as handwashing facilities.

Capacity building

In order to ensure effective implementation of the project interventions and to contribute to enhanced sustainability, the project invested in strengthening the capacity of key stakeholders including government agencies at the national and sub-national level, non-governmental organisations (NGOs), community-based organizations (CBOs), private water operators, community and school hygiene clubs and members of water user committees. This involved on-the-job training, accompaniment and coaching, formal trainings, study tours, participation in regional conferences and workshops and provision of equipment, based on capacity need assessments. In total, 30,389 people were trained thus exceeding the corresponding project target of 30,000. The training areas included need assessment, priority setting, human-rights based approach to programming, project management, procurement and contract management, GIS and mapping, hygiene and sanitation promotion, operation and maintenance of water supply systems, construction of improved latrines

and manufacturing of tippy taps. It may be noted that given the duration of the project (i.e. over 5 years), administrative changes and staff turnover at the district and sub-district level, refresher trainings were also organised to better achieve and sustain the project results.

The above mentioned capacity building interventions tremendously contributed to improved knowledge and skills of the staff of WASAC, districts, private sector, NGOs and CBOs as well as local technicians and communities. The project supported capacity building interventions also contributed to strengthening the national capacity in the WASH sector as several of the trained staff are now effectively managing ongoing WASH projects supported by the government or other development partners across Rwanda.

Unit costs

Considering the beneficiary population of 500,000, the overall project costs averaged US$ 47.4/capita served. The unit costs for individual components, using average exchange rate during 2009 to 2013, is as follows:

- New pumped water supply systems including source (spring) development, network, reservoirs and water points) = US$ 35 per capita / US$ 25,000 per kilometre (Km)
- New gravity water supply systems = US$ 25 per capita / US$ 21,000 per Km
- Upgradation and extension of existing systems= US$ 17 per capita / US$ 12,000 per Km
- Boreholes fitted with hand pumps: US$ 30 per capita / US$ 12,000 per borehole
- Hygiene and sanitation promotion: US$ 3 per capita
- Provision of sanitation facilities in schools (based on construction at least one block having 12 latrines/doors) = US$ 600

The above unit rates, especially those for water supply, are significantly lower than the corresponding costs for similar projects implemented in the country as well as the regional average of US$ 50 to 80 per capita for piped water supply systems (World Bank, 2008).

Project sustainability

A key component of the project design was to ensure sustainability of the supported interventions after the external support had stopped. Consequently, an annual independent sustainability assessment was built into the project at the design stage. A total of four sustainability assessments were conducted (i.e. during 2011, 2013, 2014 and 2016) to assess the sustainability of the completed interventions. The sustainability of the project was assessed against 22 indicators grouped under five categories i.e. institutional, social, financial, technical and sanitation and hygiene. The overall sustainability score for the project (four districts) averaged 70 per cent in 2011, 75 per cent in 2013, 86 per cent in 2014 and 90 per cent in 2016, showing a significant increase over time (Malik et al., 2016). The final project sustainability assessment conducted in December 2016 showed that all the infrastructure built under the project was being well maintained and fully functional.

It may be noted that following completion of the works, the water supply systems constructed or upgraded under the project were handed over to private water operators (PWOs) for operation and maintenance under public-private-partnership arrangements (Malik, Mukanyamwasa and Karangwa, 2016). The private water operators were trained and provided operation and maintenance tool kits (Verweij, 2013). This resulted in enhanced capacity of the PWOs to manage the systems, collect revenue and undertake timely repairs, and greatly contributed to high functionality and hence increased sustainability scores.

Following the completion of each sustainability assessment, the key findings were shared with the concerned districts and the assessment report was finalized in light of their comments and feedback, where relevant and agreed and accepted by the independent audit firm. Subsequently, MININFRA, WASAC and UNICEF worked with the districts to prepare a management response which listed the key actions to be implemented in order to address the issues affecting sustainability as identified during the assessment. The agreed actions as per the management response were followed through regular meetings with the district teams as well as field visits.

Challenges and lessons learned

The major challenges faced and key lessons learned in the course of implementing the project are as follows:

1. For large scale projects, a dedicated and adequately staff and equipped project management unit within the lead government institution is essential for effective project coordination and implementation. For this project, an existing staff member of MININFRA was initially assigned the additional responsibility

of the national project coordinator. This staff member was unable to devote adequate time to the project, resulting in delays in project implementation. This challenge was addressed by establishment of a NPMU and appointing an experienced full-time National Coordinator who was provided with adequate national-level technical and administrative support staff. Moreover, all communications between UNICEF and the target districts were routed through the NPMU to ensure better coordination and harmonisation. These measures facilitated communication, expedited decision-making, and resulted in accelerated project progress.

2. Due to Rwanda's hilly terrain and geographical position as a landlocked country, the cost of infrastructure is generally high. Moreover, the target districts have extremely challenging geographical conditions, including steep slopes, volcanic rock, which made digging very difficult, and unfavourable ground water conditions. These geographical features made the implementation of certain project activities very difficult, particularly the construction of school sanitation facilities. In several schools, the planned location of latrines had to be changed, while additional works had to be done to elevate foundations and build access ramps with manageable slopes for children with disabilities. These factors, combined with poor accessibility, price escalation (which was not considered in the initial budgeting) and lack of contingency sums in the project budget, contributed to delays and cost overruns that necessitated revisions to some of the project targets. These factors should be given due consideration at the design stage for similar projects.
3. Capacity building interventions, especially training of district staff on planning, procurement and financial management, played a major role in ensuring effective project implementation. Similarly, training of private water operators and water user committees contributed to effective management of water supply systems and hence to increased functionality.
4. The fact that the project was co-financed by the GoR and implemented through existing government structures at the decentralised level resulted in increased ownership, cost effectiveness and enhanced sustainability, as evidenced by low unit costs per capita served and high functionality of the supported systems.
5. The project had a strong monitoring and evaluation framework, which included high-level review meetings, external reviews, and independent sustainability checks, among other measures. This played a key role in ensuring effective project implementation by identifying bottlenecks in a timely manner and defining adequate measures to address challenges that would have otherwise impacted the progress and sustainability of the project.
6. Management of community water supply systems through private water operators has proven to be effective in improving functionality of water supply systems. Such a model, however, requires significant investment in capacity building of the private water operators and establishment of adequate mechanism for monitoring the performance of the private operators.

Conclusions

Despite several challenges, Rwanda WASH project was successfully implemented and achieved the stipulated targets resulting in provision of improved WASH services to over 500,000 people. The experiences of and lessons learned from the project have been incorporated by the Government, UNICEF and partners into under-implementation and planned WASH projects in Rwanda. The experiences of the project have also informed the development of the new water and sanitation policies and strategies, which were approved by the Cabinet in December 2016. The findings of the sustainability assessments carried out under the project, for instance, were used for evidence based advocacy which resulted in bringing the sustainability high on the sector agenda. As a result, the new policies and strategies include strong provisions with regard to sustainability as well as for addressing the issues identified during the sustainability assessment of WASH project.

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Note

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Contact details

Dr Murtaza Malik is a Water, Sanitation, and Hygiene Manager with UNICEF Rwanda while Lambert Karangwa is WASH & 70% Water Projects Coordinator with Rwanda Water and Sanitation Corporation (WASAC) Ltd.

Murtaza Malik
Ebenezer House, 1370 Umuganda Boulevard, Kigali, Rwanda
Tel: +250 788 305 394
Email: mumalik@unicef.org
www: www.unicef.org

Lambert Karangwa
WASAC Ltd, KN 5RD, WASAC Ltd. HQ, Rukiri I, Gasabo District, Kigali, Rwanda
Tel: + 250 788 622 647
Email: lambertkarangwa@yahoo.fr
www: www.wasac.rw