

# **Multiple Use of water Services (MUS) – water for the home and for farming**

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## **Abstract/Summary**

Access to water remains a big challenge for rural populations in Burkina Faso and to address this challenge, the USAID WA-WASH Program focused its efforts on low cost water technologies in 21 villages. These water technologies including, rope and bicycle pumps are human operated. They are simple, reliable, and manufactured locally. They can be used for both domestic water consumption and productive activities including gardening, agricultural production, and livestock. Most importantly, they are made locally, use local materials, provide clean and safe water, and are affordable to rural households. A low cost water technology system consists of a pump and a well. The depth of the well can reach up to 40 meter and the pump is equipped with a rope, a pulley wheel, and a piston. This paper provides insights and solutions for water technologies which aim to be dependable, easy to operate, cost effective, and with a high probability of ensuring a sustainable access to water in rural areas.

**Keywords:** Low cost water technologies; Baseline survey; Rope pump; Bicycle pump; Beneficiaries; Sustainability; Clean and safe water

## **Introduction**

Access to water remains a big challenge for rural populations in Burkina Faso. Despite efforts from the government and non-government organizations (NGOs), the rate of access to water in urban and rural areas remains low. As of December 2011, 26% of the urban population had taps on their premises, 70% were relying on other improved facilities, and 4% on unimproved facilities. In rural areas, 74% of the population were relying on improved facilities, 21% on unimproved facilities, and 5% on surface water (JMP report, 2013). Low access rates to drinking water are the result of inadequate investments, lack of human capacity, increases in large scale and irrigated agriculture, and limited water resources. These major challenges are exacerbated by climate change effects and an increased deterioration of watersheds.

In most West African countries including Burkina Faso, the MDG goals for water and sanitation have not been reached. Thus, it became necessary to include water and sanitation in the SGDs. Most importantly, it is crucial to think about a different approach which could bring clean water to the rural populations at a low cost and within a short period of time. Some of these populations have been waiting for years to have access to water and despite the planning for the next 15 years, it might take a long period of time before they have access to clean water.

To address this issue, the USAID West Africa Water Supply, Sanitation, and Hygiene Program (USAID WA-WASH) introduced in 2011 the low cost water technologies whilst taking into account the aspect of multiple use of water services in rural areas. The cost per unit of wells with rope pumps and bicycle pumps is between 600 000 and 700 000 CFA Franc and they were subsidized by the Program to the tune of 80%. The main features of these technologies is that the pumps equipped with a rope is placed over the well. In some instances, the wells have been deepened and an apron was installed before the installation of the pump. These low cost technologies were introduced in a total of 28 villages spread across three regions in Burkina Faso (Centre, Centre-Ouest, and Boucle du Mouhoun).

Through this low cost water technologies initiative, the main objective of the USAID WA-WASH Program was to increase sustainable access to clean and safe water in the rural areas of Burkina Faso.

### **Description of the Case Study – Approach or technology**

On September, 2015, the member States of the United Nations has committed to achieve universal and equitable access to safe and affordable drinking water for all by 2030 (United Nations General Assembly, 2015) through the newly adopted Sustainable Development Goals (SDGs). For the USAID WA-WASH Program, low cost water technologies are a great opportunity to help achieve this goal and will provide clean and safe water right away until rural population have access to more permanent infrastructure. With an average depth of 20 meters, an upgraded traditional well with a rope pump can serve up to 75 people. The depth of the well can reach up to 40 meter. Rope and bicycle pumps are human operated. These pumps are simple, reliable, and manufactured locally. They can be used for both domestic water consumption and productive activities – such activities include gardening, agricultural production, and livestock - (USAID WA-WASH, 2013). Most importantly, the pumps are made of local materials, they are close and affordable to rural households, and provide clean and safe water; thus, eliminating not only the need to transport and store water but also drinking water contamination risks.

Prior to introducing the low cost water technologies in the selected communities, a baseline survey was conducted in nine villages in September 2012 and a second baseline survey was conducted in 12 additional villages in November 2014. Both baseline surveys showed that households rely on different water sources for their domestic needs depending on the seasons (dry versus rainy season). Despite the existence of some improved water points, most households prefer to use the hand-dug wells within their compounds. Consequently, the main water sources used during the rainy season are unprotected traditional wells (54.5% of the surveyed households), boreholes with hand pumps (37.1%) and unprotected large-diameter wells (11.6%). When most of the unimproved water points dry up during the dry season, the main water sources used are boreholes with hand-pumps (57.4%), followed by unprotected traditional wells (39.2%), and unprotected large-diameter wells (11.6%). Within the nine villages, the community water points include 63 traditional wells (51 functional and 12 non-functional), two protected large-diameter wells, and 42 unprotected large-diameter wells.

Based on the baseline survey findings detailing how people were actually using water, USAID WA-WASH decided to focus on a household/self-supply approach rather than a community approach to provide water. The solution adopted includes the upgrading of existing private hand-dug wells by equipping them with rope pumps and the construction of brand new wells with rope and bicycle pumps.

In installing water facilities in rural areas, proper siting matters. Thus, to pinpoint the right place to dig a well equipped with a rope or bicycle pump, the Program conducted an assessment of potential pollution sources in the surrounding areas and ensured that all water facilities were installed away from polluted areas. During the assessments, the community members were invited to help delineate sacred areas, open defecation zones, and existing water point locations. This information was used to site rope and bicycle pumps in the most appropriate locations. The water facilities were sited at least 15 meters from potential pollutant sources including landfill areas, latrines, and animal pens. In the siting process, the Program also opted not to locate the water facilities within wetlands or protected areas.

To manufacture, maintain, and repair the low cost water facilities, the Program trained local drillers, pumps manufacturers and repairers on how to properly construct low cost water pumps and integrate quality standards and safety measures. To ensure that the pumps manufacturing activities meet program standards, the Program trained the selected craftsmen on business development services and equipped them with pump manufacturing tools. The Program also conducted trainings for community members on water facilities maintenance and formal agreements were made with landlords and traditional authorities in Burkina Faso to prevent dispute over the lands and the water facilities installed by the Program. To maintain proper hygiene around water points, USAID WA-WASH constructed platforms to drain excess water into cesspools. Per the sustainability check recommendations and water quality assurance plan, the water facilities were protected by installing a fence or constructing a small wall around

the facilities. Public outreach on drinking water handling at the household level was also provided to prevent pollution around the water facility which could lead to contamination of the water point.

### **Main results and lessons learned**

Since its inception, USAID WA-WASH and its partners including the municipalities of the target districts have worked hard to promote low cost water technologies across Burkina Faso during the Phase I of the Program which ran from 2012 to 2015. This joined effort has permitted the construction of 197 brand new low-cost water facilities and the upgrading of 12 conventional boreholes within the multiple use of water services communities in Burkina Faso. As a result, 16,589 people gained access to an improved drinking water source. Per USAID WA-WASH sustainability strategy, 134 water points were fenced and water point management committees consisted of hygienists, treasurers, and repairers were established for all water points constructed in order to ensure proper operation and maintenance of the facilities. Since then, the hygienists have been raising awareness on good sanitation practices around the water points and the treasurers have been collecting water user’s monthly financial contributions. In the event of a breakdown the money collected by the treasurers is used to repair the pumps. Through this activity, the Program increased the percentage of households using an improved drinking water source in the target areas by 26 percent as compared to the baseline survey. As part of the promotion of the multiple use of water services activities, USAID WA-WASH strengthened the capacity of three local non-governmental organizations (NGOs). The Program worked with Organisation Catholique pour le Development et la Solidarité (OCADES) and Action Micro Barrage (AMB) to install low-cost boreholes in their intervention areas and a technical assistance was provided to BARKA Foundation to install four conventional boreholes in the Eastern region of Burkina Faso. As a result of the support provided to the three local partner NGOs, 21 additional low-cost water facilities were installed across six communities. This increased to 197 the total number of low cost drinking water facilities installed under the multiple use of water services activities in Burkina Faso.

Lessons learned from the implementation of the low cost water technologies approach during the Program Phase I activities include good timing in the improvements of traditional wells. The construction of brand new wells equipped with rope or bicycle pumps during the rainy season is likely to lead to a wrong depth because of the high water table. Therefore to have long lasting water points and ensure water availability, the dry season is the appropriate period to improve traditional wells. For the beneficiaries to take ownership of new technologies, it is also essential to use the ones which parts are cheap and easy to find. Most importantly, the cultural and socio-economic context of the target country must be considered in order to ensure a wide buy-in of the selected technologies.

As part of its Phase II (2016 – 2017) activities, USAID WA-WASH is monitoring its past activities in 32 villages of Burkina Faso in order to ensure sustainability. This monitoring activities include the performance of the rope and bicycle pumps installed as well as the quality of the water they provide. From March 10 – 19, 2016 and April 20 – 29, 2016 the monitoring and evaluation (M&E) team went to 18 villages in three regions (Boucle du Mouhoun, Centre, and Centre-Ouest) of Burkina Faso. During these field visits, the M&E team checked 63 water points of which 54 were functional (functionality rate of 86%) after more than one year of operation. Water samples have been also taken and they are being analyzed by a laboratory in Ouagadougou.

The monitoring field visits also revealed that the demand for rope and bicycle pumps continued since the end of Phase I. Between 2012 and 2015, the USAID WA-WASH Program encouraged water point improvements in various communities by subsidizing boreholes (digging, aprons, etc.); and urged the beneficiaries to purchase the rope pump (approximate cost of 75,000 F CFA) fabricated by manufacturers in four cities of Burkina Faso – the manufacturer in Ouagadougou sold 117 pumps (46 sold directly by the manufacturer), the one in Boromo sold 55 pumps (3 sold directly by the manufacturer), and the manufacturer from Koudougou sold 76 pumps (2 sold directly by the manufacturer). Since July 30, 2015, the end of the Program’s subsidies, the pump manufacturers sold 51 pumps (Ouagadougou = 24; Boromo = 1; Koudougou = 7). A new pump manufacturer located in Dedougou started operations in

December 2014 and since then, he sold 19 pumps without the Program support, another example of the sustainability of the USAID WA-WASH approach.

One of the problems observed during the monitoring field visits concerns the break of the rope itself. It appears that the rubbing of the rope against the metal is damaging the rope. As a result of this problem, out of 63 water points visited, the rope of 52 pumps have been already replaced. From May 4 – 5, 2016, USAID WA-WASH organized a brainstorming session between the pumps manufacturers, repairers, and the beneficiaries to find a solution to this problem.

### **Conclusions and Recommendations**

Since its inception in 2011, USAID WA-WASH has designed and implemented its activities with sustainability in mind. On the basis of the two baseline studies conducted in Burkina Faso, the USAID WA-WASH Program and its partners have opted to rely on low cost water technologies to ensure sustainable access to water in 28 villages located in the Centre, Centre-Ouest, and Boucle du Mouhoun regions. This option paid off despite the numerous challenges faced by the Program during the implementation of the low cost water technologies strategy. The Program met or exceeded most of its life-of-project targets in water supply, as evidenced by the installation of 197 low cost water facilities and the upgrading of 12 conventional boreholes across Burkina Faso. On top of that, the low cost water technologies initiative allowed 16,589 people living in the Program intervention regions to have access to clean and safe water. However, to ensure the sustainability of these water facilities, it is necessary to continue to monitor them, record lessons learned and share them with relevant public and private WASH stakeholders. Most importantly, to ensure that the WASH sector as a whole addresses the need of the rural and urban populations it is critical that the capacity of the major WASH regional institutions be strengthened.

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