



JUNE, 2014

Rain Water Harvesting: A Possible Solution to Water Shortage

Overview

In Uganda, 34% of people in rural areas do not have access to safe water. Majority of these are in the districts within the dry belt commonly referred to as the cattle corridor (Ministry of Water and Environment (MWE), 2012). The Government of Uganda (GoU), Donors and numerous Non-Government Organizations (NGOs) have supported the construction of improved water supply facilities. However, water supply is still a challenge.

Water shortage in rural areas is mainly attributed to non functionality of water sources. Statistical analysis from the MWE database (2013) indicates that sources often break down due to pipes wearing out and other pump parts which communities' cannot replace. It is noted that 17% of the sources are low yielding or dry due to decreasing water level and quantity.

This has created a need for promotion of appropriate technologies and initiatives, such as Rain Water Harvesting (RWH), as an alternative water shortage solution.

This policy brief highlights; the benefits of rainwater harvesting, interventions undertaken to promote rainwater harvesting, successes recorded and challenges affecting its implementation. It also provides policy recommendations.

Key Issues

1. RWH is a solution to water shortages in areas having inadequate water supply and low groundwater potential.
2. The cost of maintenance of rainwater technologies is affordable compared to other conventional technologies.
3. RWH enables storage and collection of water at accessible points.
4. Construction of rain water harvesting systems is simple and easy to learn
5. RWH system development encourages individual participation, thus creating a sense of ownership which results into sustainable sources.

Introduction

Rainwater Harvesting (RWH) is a simple low-cost technique of collecting and storing rainwater for use. In comparison with conventional water supply technologies, RWH requires minimum specific expertise or knowledge¹.

Uganda has an average rainfall of 1200mm per year with a minimum of 500mm in the semi-arid north-eastern region and a maximum of over 2300mm in Lake Victoria. Given the high levels of rainfall in most parts of Uganda and the dispersed nature of rural settlements, rain water harvesting is an ideal way of providing access to safe water. (NETWAS Report 2012).

There are different methods used to collect rainwater and these include rainwater jars,

¹ Blanchard, Jonathan Peter (2012), "Rainwater Harvesting Storage Methods and Self Supply in Uganda

ferro-cement tanks, plastic rainwater tanks, galvanized iron tanks, brick tanks and rain bags among others.

The average cost for a ferro-cement RWH tank of 10M² is Ug shs 2,500,000 and rain bags of capacities between 1,000-1500 litres have a price range of Ug shs 400,000-700,000 serving six people per household. On the other hand conventional water supply technologies such as boreholes cost Ug shs 18,000,000; spring wells cost Ug shs 2,500,000 and shallow wells Ug shs 6,000,000 on average² and serve 300 people in a village.

The conventional water supply technologies have lower per capita costs, however in water stressed areas there is limited potential for implementation of such technologies. Examples of such areas include; the hilltops of Kabale, and some districts within the cattle corridor of; Sembabule, Rakai, Luwero, Nakaseke and Nakasongola. These are mostly characterized by very low groundwater potential and/or unacceptable ground water quality. In such areas the feasible option is rain water harvesting.

MWE statistics (2013) indicate that using rainwater harvesting technology; about 11 million Ugandans could be covered with clean and safe water currently not served by the piped water, boreholes, shallow wells and gravity water schemes.

Why Focus on Rain Water Harvesting

Increasing water needs/demands

The increased demand of water sources results in lower ground water tables and depleted reservoirs. Rainwater harvesting supplements inadequate water supplies during droughts.

Collection and storage near the place of use

Collecting and storage of water at households improves accessibility and convenience of water supplies.

Simple to construct

Construction of RWH systems is simple and easy for beneficiaries to learn and duplicate.

Good Maintenance

Operation and maintenance of a household catchment system is easy since the owners are involved in the construction process. This participatory approach creates a sense of ownership and sustainable facilities.

Interventions undertaken to promote rainwater harvesting so far

(i) Awareness creation

The MWE and various NGOs for instance, Water AID, NETWAS-Uganda have sensitised communities at national, district and village levels on the importance and potential of rainwater harvesting technology.

During 2013, the Uganda Rain Water Harvesting Association, made follow up visits to Kitgum and Pader districts to advocate for inclusion of rainwater harvesting in the district budgets.

(ii) Capacity Building

District Local Governments (DLGs) and NGOs train beneficiary communities to construct rainwater catchments. For example Water AID trained about 3,000 local masons in construction of rain water harvesting jars. These enabled communities construct onsite water supplies close to homes.

District Local Governments (DLGs) and NGOs train beneficiary communities to construct rainwater catchments. For example Water AID trained about 3,000 local masons in construction of rain water harvesting jars.

² WASH Cost Project 2011

These enabled communities construct onsite water supplies close to homes.



Anna-maria Nanvubya and Zevilio Nakuzabasajja Kwafu constructing a rainwater harvesting jar at their home in Kitayita village, Wakiso District

(iii) Pilot Rainwater Harvesting Projects

In a bid to alleviate water shortage in the water stressed areas, the DLGs constructed a total 1,196 rain water harvesting tanks (10m³) in financial year (FY) 2012/13 (MWE, 2013). By the end of the second quarter of FY 2013/14, a total of 112 rain water harvesting tanks using the District Water and Sanitation Conditional Grant (DWSCG) had been constructed in Rakai and Sembabule³.

Experience of Rain Water Harvesting

Rain Water Harvesting can be used as one of the potential sources to help alleviate water supply shortages. Box 1.0 presents a case where rainwater has worked in a situation of water shortage.



A rain water harvesting tank at Maria's House in Rakai District (one of the beneficiaries)

Success of Rainwater Harvesting

Box 1.0: Rainwater Harvesting by Katosi Women Development Trust Group (KWDT)

Due to water shortages in the sub-counties of Nakisunga, Ntenjeru, Mpata and Mpuge in Mukono district, the women's group opted for construction of rainwater harvesting tanks. A total 181 domestic rainwater harvesting tanks were constructed in homesteads and 17 in schools. The female masons trained were able to earn income through construction of the tanks. Constructing one tank would fetch Ug shs 170,000 for the group.

The tanks availed enough water for domestic and livestock activities for a longer period of time depending on the tank capacities.

Source: KWDT Evaluation Report of the Danida Project (2012)

Implementation Challenges

- (i) **Limited public funding to trigger up-scaling;** the DLGs promote rainwater harvesting using the DWSCG. The existing mechanism allows DLGs to subsidize rainwater harvesting facilities' construction by 60% for individual households. A large percentage of the population, especially in rural areas, cannot afford the cost 40% remaining co-share value of RWH systems.
- (ii) **Limited marketing and sensitization;** the MWE RWH pilot programme evaluation 2013, indicated that there is limited knowledge about rainwater harvesting (especially on technology types, costs and impact of RWH) at community and household levels.

³ Budget Monitoring Report, Q2FY 2013/ 2014.

(iii) **Bottlenecks in the implementation modalities;** the MWE RWH pilot programme evaluation 2013, revealed that in some cases, the selection of beneficiaries was problematic as some undeserving households benefited.

CONCLUSION

The Government and various NGOs have recognised the need for RWH to fill the gap in water supply stressed areas. Various approaches such as training of communities in construction of RWH technologies have been used to promote RWH and it has been noted that rainwater harvesting can work. However, there have been challenges of limited public funding, marketing, sensitization; and implementation modalities.

References:

- Action Against Hunger (2006), *“Rainwater Harvesting System Review. Unpublished Report*
- Blanchard, Jonathan Peter (2012), *“Rainwater Harvesting Storage Methods and Self Supply in Uganda.*
- Ministry of Finance, Planning and Economic Development (2014), *“Budget Monitoring Report Q2 FY 2013/14*
- Ministry of Water and Environment (2013), *Water and Environment Sector Performance Report, Kampala*
- Ministry of Water and Environment (2011), *“Self Supply Experiences in Uganda”*
- UWASNET *Performance Report FY 2012/13*
- Water AID (2013), *Rain water Harvesting Technical Brief*

Policy Recommendations

- (i) **Promotion of self-supply through a credit facility;** so that households, communities and institutions can borrow funds for RWH and pay back at affordable terms. The MWE should negotiate with NGOs and Financial Service Organisations on revolving loan fund management.
- (ii) **Scaling up of the Rainwater strategy** to ensure that RWH is scaled up. The MWE (Appropriate Technology Center) should work in collaboration with, districts/sub-counties, NGO/CBOs to scale up RWH beyond the pilot phase.
- (iii) **Sensitisation of Communities;** the MWE and NGOS should continuously sensitise local governments and communities to embrace rainwater harvesting technology.

**Budget Monitoring and
Accountability Unit (BMAU)**
Ministry of Finance, Planning
and Economic Development,
Plot 2-12 Apollo Kaggwa
Road, P.O.Box 8147 Kampala,
www.finance.go.ug