



# afrifalliance socialinnovation

*Title: Promotion of Rain Water Harvesting in Zambia*

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## Abstract

The Rainwater Harvesting programme will run under the theme “promotion of rainwater harvesting in Zambia”. This plan shall become an integral strategic element in the country’s adaptive programme to climate change and climate variability. To realise the benefits of this programme, pilot areas should be identified where trial schemes will be undertaken and once proven fruitful the programme will be rolled out to other parts of the country. The Executing Agency of the programme shall be the Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP). The Department of Water Resources Development (DWRD) will be responsible for the implementation of the programme through its existing structures and supported by the line ministries that are strategically located in all the provinces and districts.

The rainfall distribution of Zambia varies from high rainfall in the north and lower in the southern parts. The country experiences an average mean annual rainfall of 1,020 mm. This ranges from about 700 mm in the southern parts and whilst the central receives between 910 – 1,300 mm. The high rainfall northern parts receive more than 1,300 mm (Nkhuwa, 2013). Rainfall distribution in the country coincides roughly with the agro-ecological regions.

Region I is arid to semi-arid with annual rainfall < 800mm. Luangwa and Zambezi Rift Valley areas, comprising 14% of the land area. Mainly difficult solonchic soils and unpredictable rainfall. Region III is one of the highest rainfall areas with an average annual rainfall of 1 000-1 500 mm with summer temperatures ranging from 18 - 30°C and extended cloudy periods. Region III covers the northern parts of Zambia, comprising 46% of the land area. Acid leached soils of relatively low fertility predominate. The provinces of Northwestern, Copper Belt and Northern fall into region III, which have the highest rainfall (Petrik, 2014).

Rain water harvesting is one of the most effective methods of water conservation and management. It is the term used to indicate the collection and storage of rain water used for human, animals and plant needs. It involves collection and storage of rainwater at surface or in sub-surface aquifer, before it is lost as surface runoff. The augmented resource can be harvested in the time of need.

An assessment of rainwater harvesting practices in Zambia has revealed that less than five percent of the communities in the Southern, Eastern, Central and Lusaka provinces, practice modern/introduced rainwater harvesting technologies at household level.

A successful integrated water resource management should call for a cross sectional approach to the planning, development, use and protection of water resources. Training in rainwater management should take into consideration the gender differences and inequalities, if development interventions are to be effective.

Unlike in the past when only male oriented projects on rainwater were organised, the need to include women who are indeed the main users of domestic water has been identified. The needs of women and men regarding water differ vastly in a developing country where traditions and culture does not recognise the voice and problems of women. Women like men are fighting to have access to and control of resources such as water, and to be able to make decisions, both at community and household levels.

The National Rainwater Harvesting (NRWH) programme attempts to contribute to the conservation of the national water resources through adoption of sustainable water conservation and management technologies.

To achieve this programme, the sector requires capacity to facilitate the implementation of rainwater harvesting for household, commercial and environmental purposes. In addition support policies and incentives should be developed and mainstreamed into national development strategies and policies.

The main objective is to promote adoption of RWH practices and mainstreaming strategies that facilitate its adoption within wider water sector policies and to strengthen the institutional and human resources capacities of Zambians to use RWH facilities.

To realise the strategic objectives, the programme of RWH will be based on the strategic interventions of both technical and non-technical dimensions of social innovation forming the basis of the plan and these are; (1) Technical Solutions, (2) Capacity development, (3) Governance Structures (4) Business Roadmap.

## TECHNOLOGICAL SOLUTIONS

The National Rain Water Harvesting programme will foster development of infrastructure in the following three (3) areas of intervention

- 1. Groundwater Recharge** - Artificial recharge to ground water (see figure) is a process by which the ground water reservoir is augmented at a rate exceeding that under natural conditions of replenishment. Rainwater is harvested using the roof of buildings and channeled to the ground through boreholes, wells or infiltration trenches. In urban areas roof top rainwater or storm runoff harvesting through recharge pit and recharge borehole and tubewell. In rural areas, rain water harvesting is taken up considering watershed as a unit the following to be applied. Gully plugs and contour buds are to be constructed.
- 2. Agriculture Use** - Agriculture in Zambia is one of the major consumers of water. However, some parts of the country such as the Southern, Lusaka, Central among others would benefit from rainwater harvesting to improve their agricultural production. The methods which shall be employed to increase the water for irrigation are as follows: Construction of storage dams; Construction of ground water recharge facilities to improve the ground water level that can be used for irrigation through the construction of boreholes; and Zai pits Rainwater harvesting.
- 3. Environmental Improvement** - Rainwater is an important resource in the improvement of the environment given the effect of climate change but this can only be effective if rain water is harvested in such a way that it contributes to environmental improvement so that there is water for the sustenance of the environment. Methods to be employed are contour buds, infiltration Gallery, and rainwater soak pit.

## CAPACITY DEVELOPMENT

A training programme will be developed to build the local capacity in RWH infrastructure design and construction from which skills will be tapped.

- Both gender will be trained in community mobilisation, masonry, planning for the RWH scheme and many other skills that are relevant to the programme.
- District and Provincial staff will be trained as trainers in the various RWH techniques

The programme will enhance positive public awareness on the practice of RWH. The promotion of the RWH programme using women group approach is imperative. The promotion of this programme will be centred on the premise of 3Rs and MUS (Recharge, Retention and Restore) and (Multiple Use Services) approaches respectively.

## SOCIAL INNOVATION

## GOVERNANCE STRUCTURES

- The Department of Water Resources is mandated in the development of water resources infrastructure and has adequate and qualified staff in the provinces and districts to implement the rainwater harvesting programme.
- The RWH programme should have a legal backing if it is to succeed. The legislation will among other aspects guide and enforce the certain practice of RWH and the way other infrastructure are related to RWH infrastructure. Legislation and policy will create an enabling environment to implement the RWH programme.

## BUSINESS ROAD MAP

A group business rotation plan will have to be developed. Such that after harvest, the monies gained will have to be used to maintain the irrigation system and also support other groups.

The monies should be able to provide for their crops and other essentials as well as provide for their families.

Each of these farmer groups will have to contribute towards initial investments, the 10% from all the groups will then help in the expansion of the project to other area.

*AfriAlliance Policy Brief 1* - Strengthening the capacity of African stakeholders to achieve Sustainable Development Goal 6 amidst Climate Change

*AfriAlliance Social Innovation Fact Sheet 1* - Monitoring « drinking water » quality for improved health in Africa

*Dr. Uta Wehn* – Module 2 – Social Innovation, the AfriAlliance Approach

*Global Water Partnership Technical Advisory Committee (TAC)* – TAC Background Paper No.4. Integrated Water Resources Management

*Nkhuwa (2013)* -

*Petrik (2014)* - An assessment of the impact of land acquisitions for biofuels on local livelihoods in Zambia. Masters Thesis. Energy Research Centre (ERC), University of Cape Town (UCT). Cape Town. Online. Available: <https://open.uct.ac.za/handle/11427/9142>



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