Technology Fact Sheet for Adaptation

C. Rain Water Collection From Ground Water Surfaces – Small Reservoirs and Micro-Catchments [i]

C.1 Introduction

Rainwater harvesting is defined as a method for inducing, collecting, storing and conserving local surface runoff for agriculture in arid and semi-arid regions. Both small and large scale structures are used for rainwater harvesting collection and storage including water pans, tanks, reservoirs and dams. There are various methods of rainwater harvesting available which include: rock surface, ground surface and roof top. Of these, rock and ground surface are suitable for rural communities whereas the rooftop method is ideal for urban communities with houses made of steel roof tops.

C.2 Technology characteristics

This type of technology involves two broad categories: (i) Collecting rainfall from ground surfaces utilizing "micro-catchments" to divert or slow runoff so that it can be stored before it evaporates or enter watercourses; (ii) Collecting water from a river, stream or other natural watercourse (sometimes called floodwater harvesting). This technique often includes an earthen or other structure to dam the watercourse and form "small reservoirs."

C.3 Country specific applicability and potential

In Zambia, rural water supply comprises mostly of dams, small weirs, boreholes and shallow wells. Rainwater harvesting activities are primarily for agricultural production and are therefore coordinated by the Ministry of Agriculture & Livestock. NGOs are also involved in dam and weir rehabilitation and wells dug adjacent to dams for domestic water use.

C.4 Status of technology in country

Rainwater harvesting has been practiced in Zambia traditionally such as through dug out wells along river banks to harvest runoffs. However, it is only recently that there has been awareness of the huge potential that exists for rainwater harvesting in all the regions of Zambia. Specific for micro catchments (small dams and weirs), the Ministry of Agriculture and Livestock Development has been the main promoter among small and medium farming communities.

C.5 Benefits to economic / social and environmental development

The economic benefits of the technology arise from the opportunities that stored water presents for various uses including for irrigation, watering of livestock, fish farming, etc. Besides this is the potential for accessing safe water for domestic use. Environmental benefits include how widespread rainwater storage capacity can greatly reduce land erosion.

C.6 Climate change adaptation benefits

Collection and storage of rainwater can provide a convenient and reliable water supply during seasonal dry periods and droughts. Small reservoirs are typically used in areas with seasonal rainfall to ensure that adequate water is available during the dry season

C.7 Financial Requirements and Costs

The cost of a typical project for a small dam, i.e. below the depth of 10m, is estimated at US$284,000, for a medium dam (between 10 to 15m depth) US$378,000.00 and US$1,133,000.00 for a large dam.[1] Annual maintenance cost was assumed at 10% of the total investment cost. Again, the cost depends on geographical location, soil type-sandy or rocky and distance to site.

[i] **This fact sheet has been extracted from TNA Report – Technology Needs Assessment for Climate Change Adaptation – Zambia. You can access the complete report from the TNA project website http://tech-action.org/**

[1].Interview with Mr. Albert Chongo, Water Engineer, Water Board, March 2012