



REGIONAL ASSESSMENT OF WATER HARVESTING POTENTIAL FOR DROUGHT MITIGATION AND ADAPTATION; A case in the Central Rift Valley, Ethiopia

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Drought and water scarcity are a major hazard for harvest and food security in Africa. The African agricultural sector predominantly consists of rain-fed farming systems, which are very vulnerable to the natural hydro-meteorological variability and climate change. Adaptation strategies to increase the resilience and productivity of rain-fed farming systems should principally target measures that are aimed at managing the rainfall variability. Managed use of rainwater can be achieved through seasonal water harvesting and storage, and the use of this water as supplementary irrigation in periods of water shortage.

A GIS based methodology is presented to assess the potential of various water harvesting systems at regional scale. A water harvesting assessment model, incorporating a multi-objective multi-criteria evaluation of the biophysical conditions, is used for rapid assessments for large spatial units, which should precede detailed location-specific assessments.

The methodology has been applied to assess the potential of macro- (ex-situ) and micro- (in-situ) catchment water harvesting systems in the Central Rift Valley (CRV) of Ethiopia, which is a typical showcase of a rural area that is very vulnerable to hydro-meteorological variability, climate change and other pressures.

The suitability model showed that from a biophysical perspective more than half of the CRV is suitable for micro-catchment water harvesting, while about half of the area is suitable for macro-catchment water harvesting. These results indicate that the potential for water harvesting in the CRV is still largely unexploited. The quick-scan methodology presented aims at rapid assessments of relatively large areas, which still have to be succeeded by detailed local investigations before water harvesting systems can be designed and constructed.

It is expected that the application of the water harvesting assessment model in other regions in Africa will also reveal that there is still a large potential for water harvesting in agriculture. The exploration of this potential can contribute to increased harvest and food security.