Technology Fact Sheet for Adaptation

C Rain water harvesting [i]

Technology: Rain water harvesting	
Technology characteristics	
Introduction	Rain water harvesting is a technology used for collecting and storing rainwater from rooftops, the land surface or rock catchments using simple techniques such as jars and pots as well as more complex techniques such as underground check dams. Commonly used systems are constructed of three principal components; namely, the catchment area, the collection device, and the conveyance system.
Institutional and organizational requirements	To implement this technology, the government of Rwanda through the Ministry of Local Government-local governance entities, the Ministry of Agriculture and Animal Resources, Rwanda Agriculture Board would play a key role in providing subsidies for equipment purchases by making the technology accessible to a larger number of farmers, particularly small-scale farmers, who have problems raising capital investment funds. The technology is simple to install and operate and does not imply any specific organizational requirements.
Size of beneficiaries	1 400 000 households
Operation and maintenance	Rain water harvesting systems are easy to operate. However maintenance is required for the cleaning of the tank and inspection of the gutters, pipes, taps and other conveyance systems which typically consist of the removal of dirt, leaves and other accumulated materials. In the Rwandan context, such cleaning should take place twice

	annually before the start of the major rainfall season with regular inspections.
Advantages	Rainwater harvesting technologies are simple to install and operate. Local people can be easily trained to implement such technologies, and construction materials are also readily available. Rainwater harvesting is convenient in the sense that it provides water at the point of consumption, and family members have full control of their own systems, which greatly reduces operation and maintenance problems. Running costs, also, are almost negligible. Water collected from roof
Disadvantages	Disadvantages of rainwater harvesting technologies are mainly due to the limited supply and uncertainty of rainfall. Rainwater is not a reliable water source in dry periods or in time of prolonged drought. Low storage capacity will limit rainwater harvesting potential, whereas increasing storage capacity will add to construction and operating costs making the technology less economically viable. The effectiveness of storage can be limited by the evaporation that occurs between
Capital costs	
Cost to implement adaptation options	Currently, to install one cubic meter in a rooftop rainwater harvesting system costs: 3. With plastic tank: $ 230 4. Stone and concrete tank: $ 220 The installation of one cubic meter in a small sized (240 m3)

Additional cost to implement extra unit	To install additional one cubic meter in a rooftop rainwater harvesting system costs: 1. With plastic tank: $ 200 2. Stone and concrete tank: $ 220 The installation of one cubic meter in a small sized (240 m3)
Development impacts, indirect benefits	
Economic benefits	
Employment	The implementation of the technology itself does create employment through the installation of the systems' components for both rooftop and runoff pond systems. These opportunities can be more observed in the case of runoff pond system which is labor intensive.
Investment	There are investments opportunities in the manufacturing of commodities needed to put all the component of any rain water harvesting. They include gutters, pipes, pumps, taps, dam sheets etc.
Public and private expenditures	Savings can be made on money spent by the government in supplying food during prolonged draughts and in alternative water infrastructures installation for remote areas.
Social benefits	
Income	With improved water supply through rooftop rain water harvesting and runoff pond systems, households and small-scale farmers are able to not only feed their families better, but also earn extra income from selling their produce at local markets.
Learning	With this income farmers can send their children to school
Health	On the health side, the technology improves water supply
Environmental benefits	

-Rainwater harvesting removes the need for the energy and chemicals used to produce pure drinking water - unnecessary if all we're going to do is watering the garden, clean the car or flush it down the toilet -It also reduces the need for the pumping of mains water, and the energy use, pollution and CO_2 emissions that go with it -It reduces demand on rivers and groundwater -Using water to wash cloths reduces the amount of detergent used and reduces water pollution from these compounds -Large-scale collection of rainwater can reduce run-off and therefore the risk of flooding	
Local context	
Opportunities	-There exist two separate intensive rainfall seasons/year countrywide which make rain water harvesting optimum. - Increasing the size of irrigated space is one of the country's priorities in the agriculture sector.
Barriers	-The cost of rainwater harvesting systems is relatively high -Lack of national policy on rainwater harvesting -Lack of technical assistance in maintaining communally-owned systems
Market potential	Rain water harvesting systems can be applied from small to large scales. In Rwanda, the technology has potential nationwide.
National status of the technology	Only around 1% of the total number of beneficiaries has rooftop rain water harvesting systems.
Timeframe	Pilots installations have already took place in the eastern province where water is a big issue. This gives the technology the possibility of being implemented immediately.
Acceptability to local stakeholders	The technology is well known by the population and can be easily accepted.

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