

# Rain Water Harvesting System

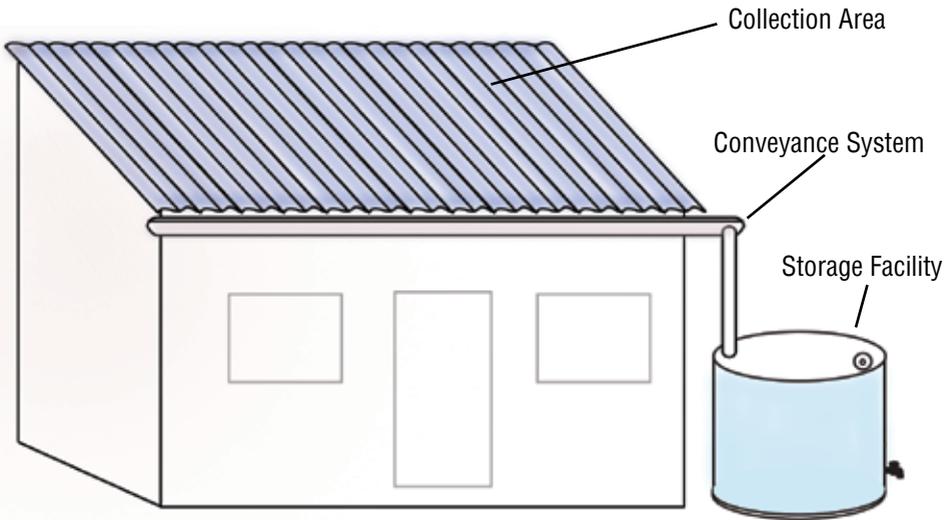


## Introduction

Climate change manifested as rising temperature, erratic rainfall, and frequent and prolonged drought has been felt and observed across the country. One of the major consequences has been the problem of water scarcity for irrigation and basic household water use. Water scarcity is one of the major problems affecting agriculture and food security in Nepal. Rainfed agricultural land accounts for 65 percent of the total cultivable land area in Nepal. Thus the sector is highly dependent on the favourable weather for optimal production. According to the Department of Hydrology and Meteorology in Nepal, Nepal receives 150 to 5000 mm rainfall per annum depending upon the topography with an average of about 1,600 mm. Out of this, 80 percent of the rainfall is received during the monsoon season (June to September). Thus, monsoon plays an important role as a source of water for the country. Realizing the context, rain water harvesting and collecting could be

utilized during the monsoon season so as to meet the demand of scarcity of water during the dry seasons when households face water shortages affecting their daily livelihood and resulting in increased drudgery especially among women. Women have to go far places to fetch water for the household needs. This problem is especially acute for many households in the mid hill settlements of Nepal.

Utilizing the collection and storage of rain water, this technology is very useful for the household with limited or no access to other water sources. In this system, rainwater is collected and stored in a tank/jar of different capacities ranges from few hundreds to thousands liter. The rain falling on a roof used as a catchment for collecting water into jar or tank through pipes, and also this tank can use as water collection tank from tap water or one can store the water when they are free from other business. That provided opportunity to use water when needed and also helped in managing time for the family members. Use water pumps may save time to water in such cases.



## Construction of the system

This technology is simple and easy to adopt. Rainwater harvesting technology includes a catchment roof, a storage jar/tank and pipes leading from roof to the jar. With longitudinally placed pipe from a roof to tank, the rain water is harvested in tank. The water can also collect in ponds. The size of the tank varies with the need of household. It is advisable that the capacity of the collection tank need to be as large as possible so that more water could be stored and utilized.

## Cost of Installation

To install the technology of 1,000 litre of tank, the following is the cost of installation for the rain water harvesting system:

The cost of plastic tank/cement tank	NPR 11,000/NPR 35,000
Zinc Sheets (half bundle)	NPR 4,490
High density polyethylene pipes (2.5 metres)	NPR 800
Nails, clamps, pipe elbow, tee connector, end cap, nipples, brass tap, galvanized iron socket, thread seal tap	NPR 1,500
Labour (skilled)	Rs. 1,000
Labour	Rs. 500
Transportation	(based on the distance)
<b>Total Cost of installation of plastic tank:</b>	<b>NPR 19,290 *(not including the transportation cost)</b>
<b>Total Cost of installation of cement tank</b>	<b>NPR 43,490 *(not including the transportation cost)</b>



## Target Households

This system is especially useful and advisable to use for the following households

- » Households suffering from scarcity of water and has to go to distance for fetching water
- » Households having suitable roof or place to install zinc sheets
- » The area receives about 500 mm of rainfall per year

## Rtf Project Results

The Care Nepal supported Right to Food Project implemented by LI-BIRD supported rain water harvesting system to 46 households in Katari Municipality of Udaypur district. The capacity of tanks varied from 1,000 to 5,000 litres depending upon the needs of the households.

The following is the status of the households before and after the intervention of the technology:

Before the installation	After the installation
<ul style="list-style-type: none"><li>• People had to walk one hours distance and had to wait in queue for long hours to fetch a bucket of water.</li><li>• Due to water unavailability, seasonal vegetables and fruit nursery dried up earlier, and there was no possibility of planting off-seasonal vegetables.</li><li>• Though Lekhani (in Katari Municipality) was declared as Open Defecation Free (ODF) VDC (former), people faced difficulty in using toilets due to scarcity of water.</li></ul>	<ul style="list-style-type: none"><li>• In the monsoon/rainy season tank was full with rain water thus, farmers have easy access to water for irrigation as well feeding livestock during these months so they have saved their time spent in carrying water (three hours per day in an average) and used it in other purposes such as attending community group meetings.</li><li>• Started to grow seasonal vegetables in their kitchen/home garden and consume fresh nutritious vegetables</li><li>• Households have been able to spend more time in maintaining cleanliness and hygiene around the house</li></ul>

## Limitation

- The catchment roof should be have cemented/zinc sheets, other materials constructed of hay and khar doesn't work.
- Initial installment cost is quite high.
- The technology is solely dependent upon rainfall however it can use to store the other sources of water.
- Chances of water being contaminated; use of filter and regular cleaning of roof and jar is necessary, and water can only be drunk by boiling or chlorinating.

**Prepared by:** Raju Jati, Bibudh Dhewaju, Bharat Bhandari and Ram B. Rana, LI-BIRD  
**Design and Layout:** Hem GC, LI-BIRD



**Local Initiatives for Biodiversity, Research and Development (LI-BIRD)**

P.O.Box 324, Pokhara, Kaski, Nepal | Tel (977-61) 535357 / 526834 | Fax (977-61) 539956  
Email [info@libird.org](mailto:info@libird.org) | Website [www.libird.org](http://www.libird.org)

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