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A reliable roof water harvesting system: Kalamino-cistern, Tigray Region (2014)

ROOF WATER HARVESTING SYSTEM: THE KALAMINO CISTERN AS AN EFFECTIVE MEASURE FOR OVERCOMING WATER SHORTAGES

This roof water harvesting system, locally known as the **Kalamino Cistern**, has been developed and promoted in the Tigray Region by HELVETAS Swiss Intercooperation. This water harvesting technology is an efficient way to deal with water scarcity due to reduced and irregular rainfall. It provides access to drinking water at the household level and it enables households to overcome moments of water stress, especially during the driest months of the year (April, May, and June) when water at waterholes and springs is scarce or even unavailable.

The Kalamino cisterns are a steady, relatively low-cost and reliable technology which can bridge the driest months of the year with safe drinking water supplies.

HELVETAS applies the following approach for the effective implementation of rainwater harvesting systems:

- Careful site selection
- Pro-poor focus, with priority given to female-headed households
- Involvement trained community technicians as service providers
- Ensure high engagement of the local authority
- Careful monitoring of the construction quality of the cistern
- Apply water treatment and sanitation measures

In 2013, HELVETAS also started to promote the Kalamino Cistern in the Wag-Himera Zone, where access to drinking

Some facts about the Kalamino Cistern:

Water holding capacity: 7.2 m³ and 7,200 liters, which can be filled by an average annual rainfall of 600mm.

Construction: Slim reinforced cement wall 8 cm thick.

Low cost: Made with locally available materials, approx. 375 USD; affordable compared to imported plastic tanks with the same holding size (550 USD).

Sustainability: It is estimated that the cistern will last for more than 10 years with minor maintenance.

Roof catchment size: Minimum 20 m² of corrugated iron roof catchment in order to fill it based on an annual rainfall of 600 mm.

Labour input: Construction of one cistern takes 7 days.

For further information on Kalamino Cistern:

<https://www.helvetas.org/en/ethiopia/who-we-are/publications>

water during the driest months is a major challenge and a top priority for the communities. In some villages (e.g. Kedamite Kebele), households get their turn to fetch water only every 3rd or 4th day at a nearby waterhole during the dry months (April-May). During the severe drought in 2015-16, it was only every 7th to 10th day. So the establishment of a cistern at the household level makes a major difference for a family. In some villages, it was observed that households refill their cistern when water is still 'easily' available at the waterholes and close it before the driest months to ensure drinking water is available during the driest period of the year.



Take'en Weldegebriel is getting water from the rainwater harvesting cistern at her families farmhouse

Main achievements

- Safe drinking water four households during dry months of the year.
- Social empowerment: Reducing the workload and burden on women and girls at the household level.
- Economic empowerment: Women use the additional time saved from fetching water for income-generating activities.
- Girls' benefits: Improved school attendance and reduced tardiness.
- Income generation: For unemployed local youth supporting the construction and maintenance of cisterns (1,500 ETB (54 USD) per cistern).

« Since we got a cistern at home, my daughter is performing better at school.

Thanks to the cistern, I can now participate regularly at the programme for community-based participatory watershed development. I could not do this before, as it took me a lot of time to fetch water.

Having access to drinking water has improved our family's health. The cistern has also helped increase income for the female 'bread winners,' as we are now able to spend more time selling coffee, tea and the local beer, called 'tella'. »

Ms. Yerbalem, Qedamit village, Wag-Himera

In sum, the roof water-harvesting cistern increases and strengthens adaptive capacities at the household level. It has a transformative character, as girls can go to school and perform better due to reduced absenteeism and tardiness. Moreover, women use their additional time for income-generating activities (e.g. weaving). However, the management of water in the cistern is key. Water consumption needs to be carefully monitored to avoid that a household is left with an empty cistern during the driest period of the year. Last but not least, over the last months, HELVETAS has worked on skills development and technology transfer to local and international partners (e.g. Relief Society of Tigray (REST); Chain of Love, St. Mary Technical Vocational Education and Training, GIZ). This is an important step as knowledge becomes institutionalized from the kebele up to the woreda level.

CONTRIBUTION OF ROOF WATER HARVESTING CISTERN TO CLIMATE RESILIENCE

Sustainable Land Management	Access to Water	Benefit at Household Level	Climate Resilience	Disaster Risk Management
<input type="checkbox"/> Recharge of ground water <input type="checkbox"/> Retention of water <input type="checkbox"/> Soil fertility <input type="checkbox"/> Increase in biodiversity	<input checked="" type="checkbox"/> Drinking <input type="checkbox"/> Irrigation	<input checked="" type="checkbox"/> Increase in income <input type="checkbox"/> Diversification in production	<input checked="" type="checkbox"/> Absorptive <input checked="" type="checkbox"/> Adaptive <input checked="" type="checkbox"/> Transformative	<input type="checkbox"/> Prevent <input checked="" type="checkbox"/> Reduce <input checked="" type="checkbox"/> Prepare / Respond