



Innovative Soil and Water Conservation in Karamoja, Uganda

The DRESS-EA project in Karamoja, Uganda introduced innovative soil and water conservation measures to address climate-driven water scarcity, land degradation, and low agricultural productivity. Through water harvesting structures, protected boreholes, and improved soil practices, communities enhanced water availability, reduced erosion, and increased food production while building capacity for sustainable resilience.

Context

The Karamoja region of Uganda is at the front line of climate change impacts that have resulted in higher temperatures leading to excessive evaporation. Agriculture and water sectors are the most affected by these impacts which has reduced soil moisture for crop production leading to agricultural losses and food insecurity.

Pastoralism is widely practiced in the region which has resulted in overgrazing and exacerbating the climate impacts. Overgrazing has caused loss of soil cover and resulted in soil erosion. The soil erosion over time has caused loss of soil fertility, reduction in crop productivity, and water quality degradation (siltation of water dams and valley tanks).

Additionally, poor land practices like monoculture in the region further increases the impacts on soil health. Practices such as bush burning is also widely practiced as a pest control mechanism has contributed to loss of soil fertility and soil moisture.

About DRESS-EA

Funded by the Adaptation Fund and implemented by the Sahara and Sahel Observatory (OSS) and the Global Water Partnership (GWP), the DRESS-EA (Drought Resilience in East Africa) project supports countries in developing proactive drought management plans through capacity building, stakeholder engagement, and applied research. It promotes integrated, community-centered approaches to enhance resilience, reduce vulnerability, and strengthen early warning systems across drought-prone regions in East Africa.

Lack of surface water storages has led to loss of water via run-off during the rainy season which would otherwise support crop production and a source of water for animals during the dry seasons. Poor groundwater availability in selected areas that also do not have surface water storages compounds the problem of water scarcity – calling for innovation in water harvesting structures.

Activities

Prior to implementing soil and water conservation measures, surface water and groundwater assessments were conducted. Results of the assessment showed that there was an excess of water availability during the wet season. However, there was limited water availability during the dry season due to poor water retention capacity of the soils. The assessment included a water quality assessment from the rivers and boreholes in the project area. The water quality assessment showed large variations in water quality but it highlighted that some project locations have salty water, some have hard water while others have a combination of hard and salty water. It also pointed that the water sources are widely exposed to anthropogenic pollution.

The DRESSEA Project supported farmers in water scarce areas with targeted innovations in water harvesting structures, such as rock water harvesting and compound water harvesting. Two compound water structures have been constructed in Moroto, specifically in Lotisan and Nakonyen. Furthermore, another compound water harvesting was established in Napak and one rainwater harvesting structure was constructed in Lopeei and Lokopo each.

In addition to these innovative water harvesting structures, the anthropogenic pollution highlighted in the assessments required protection of water sources. Three boreholes were protected to ensure water quality in Moroto (Lotisan), and Napak (Ngoleriet, and Lokopo).

The interventions with innovative water conservation measures were combined with innovative soil conservation measures such as infiltration pits, half moon basins, fertility basins, zai pits, minimum tillage and contour ditches in agricultural fields of Moroto, Napak, and Nabilatuk



Results and Impact

The surface water and ground water assessments were valuable to inform site selections for boreholes, valley tanks, and other restoration activities. The interventions have improved the availability of water, both in quality and quantity, during the wet and dry seasons of the country.

The implementation of these interventions involved paid labor from the communities which enhanced livelihoods and ownership from the community. The combined interventions on water and soil conservation also supported the increase in food production and income from sales from the products. Given that the community has gone through hands-on training, it has allowed in the ability to upscale the initiatives.

Overall the measures reduced topsoil erosion from the agricultural fields and increased the window of water availability over seasonal fluctuations. The interventions also allowed in regeneration of some ecosystems such as vegetation cover which had largely disappeared in the areas.

Gaps and Recommendations

There are cultural norms and practices that usually interfere with the work plan and budget during implementation of water and soil conservation measures such as performing of rituals to appease local deities, and excessive consumption of alcohol by community workers.

To further enhance these measures, soil and water conservation need to target settled farmers with secure land tenure. Furthermore, budgets and workplans must be flexible to allow for contingent expenditures. There is still a need to support the upscaling of measures in the community through refresher trainings and Trainers of Trainees in the communities.

Lessons Learned

- Most communities in Karamoja are just transitioning from nomadism to crop production and there is low motivation to invest in practices that don't bring immediate returns, which leads to poor uptake of the measures.
- The migratory tendencies of some community prohibit the establishment of long-term agricultural measures on their gardens leading to low uptake of the measures.
- Unsecure land tenure in some places leads to poor uptake of the measures after the first season.



Contact

GWP Eastern Africa

P.O. BOX 192 Entebbe, Uganda

Tel: +256(414) 321 424/+256(417) 705000

Email: info@gwpea.org