## PROMISING RESILIENCE PRACTICES





# Water Spreading Dykes for Management of Flood Waters

The water held at the dam has enabled households to cultivate 2,000 acres, with each household getting 2 acres. The management of flood water has helped to increase annual grain harvest per household from 6-8 sacks to 16-24 sacks of 90 kg of grain (mainly sorghum)

### Introduction

Initially, the seasonal stream flowing from the Eritrean Plateau during the rainfall season from June to October used to cause flooding and consequently, damage to rain fed crops and household assets. A particularly good rainy season meant more flooding. Communities would be cut-off and would only be able to travel outside the area upon recession of floods. This contributed to increased vulnerability and weakened their livelihood.

With the loss of livelihood assets and seasonal crops, the men travelled out of the area seeking casual labour in mechanised farming schemes or in the irrigated schemes of Al-Gash and New Halfa. Women were left behind to take care of the rest of the family, particularly the elderly and children.

The objective of the Girgir water spreading dyke is to provide protection from flash floods, control, manage and conserve the flood water to contribute to sustainable crop production, and therefore contribute to food security, rehabilitation of the natural resources and poverty alleviation.



#### Methodological approach

Waves of flood water flow from the Eritrean Plateau into the Girgir stream, depending on the quantities of rainfall in the highlands. When the stream brings huge amounts of water, the excessive water damages the livelihood assets of communities along the banks of the stream. The Land Use, Water and Soil Conservation Department of the State Ministry of Agriculture, Animal Resources and Irrigation identified about 32 seasonal streams that flow from the Eritrean Plateau. Girgir is one of the streams that was identified, due to the repeated damage it caused to the communities settled around it. Practical Action held consultations with the communities to identify solutions to the seasonal damage.

It was agreed that a divergence dam would be established to reduce the damage to livelihood assets by floods, harvest water for cultivation, increase the underground water table and improve the situation of natural resources in their area. The decision was participatory.

Consensus was built within the Girgir community of the importance of constructing the divergence dam. Community representatives participated in the selection of the site of the dam, to be a short distance from the village (1-2 km). Practical Action recruited an expert to design the proposed dam in consultation with elders from the communities.

The consultant conducted land surveys to identify the different altitudes and topographies along the stream and studied the stream flow and soil types to select the appropriate site for the construction of the divergence dam. Using this site selection, the consultant prepared the structural design and bill of quantities for the civil works and materials needed for the construction.

The findings from those technical studies were presented to the Department of Land Use, Water and Soil Conservation of the State Ministry of Agriculture, Animal Resources and Irrigation in Kassala State. The proposed site was endorsed by the technical department and the procurement processes were initiated through tendering for the civil works, under the direct supervision of the national expert.

The Girgir community and the consultant closely followed up the implementation. It took six months to complete construction of the dam, which was followed by civil works on the discharge and spillover gates. The divergence dam was constructed with a suitable design for draining excessive water and storing the quantity of water needed for the annual cropping season.

When the completed dam was ready for collection of the water from the first showers, the consultant started training selected community members on the operation of the gates and the actions they needed to take when the stored water reached different levels.

#### **Results**

• The water held at the dam has enabled households to cultivate 2,000 acres, with each household getting 2 acres. The management of flood water has helped to increase

annual grain harvest per household from 6-8 sacks to 16-24 sacks of 90 kg of grain (mainly sorghum).

- The dam has enabled households to grow more crops on the same land; after the sorghum is harvested, they plant watermelon and cucumbers using the water residue in the soil. The crop residues and weeds are used for livestock feed. This has helped households to diversify income sources.
- The upper stream of the dam enabled recovery of natural tree species on the two sides of the dam.
- Women and children have benefitted from the dam. It has reduced the distance walked to collect water, livestock feed and firewood. They have more time to participate in other activities, and access education opportunities.
- It is a requirement that 25 percent of the dam committee be women, so that they can cultivate vegetable crops in the bed of the lake on recession of water.
- Households have become more resilient to drought, floods and disasters; they store their own grains and earn cash from selling crop residues and livestock products.

#### Constraints

• Challenges were encountered mainly at the initial stage during negotiations with the target community to identify the priority interventions and select appropriate options. To ensure that the community members were well informed, the implementing agency took them to visit a project in another state to see how a similar project was carried out, the different structures used for protection, conservation and development of targeted areas and communities, and the results.

#### Sustainability

• The main elements needed for the practice to be institutionally, socially, economically and environmentally resilient and/or sustainable in the event of disasters is to continue working with the targeted community to increase value addition processes, particularly for vegetables, cash crops, diversified income sources and to improve livestock health.

#### **Replicability and upscaling**

- The State Ministry of Agriculture, Animal Resources and Irrigation in Kassala State has endorsed the design and structure of the dam and requested the organisations working in Kassala State to replicate it.
- The water harvesting structure used in Girgir has been replicated in North Darfur State in Sayah, rural El Fashir and Maleit localities, for areas with similar seasonal stream flows during the wet season of the year.
- To replicate the good practice in another context or geographical area, participation of the targeted communities must be ensured in the entire process.

#### CONTACTS

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