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## **Reversing Natural Degradation into Resilience: The Afar Case**

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### **Introduction**

The impact of climate change together with weak management of natural resources gradually eroded the valuable resources of the pastoralist communities that make them vulnerable to external shock like drought through declining production and productivity of livestock. The number of rain fall season falls from four to two. Seasonal mobility patterns and the constant search for adequate pasture and water make health care, education, water, electricity, and financial assistance difficult to provide. Poverty is also of particular concern in pastoral areas, with income and food security low and vulnerability to loss of assets to sudden shocks high.

Pastoral communities have long been enormously resilient, with highly developed coping mechanisms that have allowed them to survive and thrive in this unforgiving landscape for centuries. Chief among them were communities pulling together and households helping each other out when times were hard. But in recent years, as the population has grown and disasters including floods and drought have become more frequent and intense, resources have become scarce and traditional coping mechanisms have been pushed to the breaking point—occasionally giving rise to conflict.

### **Material and Methods**

Substantial degradation of drainage basin in Sahel due to population growth and intense land-use pressure has been observed since the 1960s. Climate change has further amplified this trend. The expansions of grazing and logging have caused the natural vegetation cover to decline. This process has been accelerated by severe droughts and has led to the degradation of the soil.

Water-spreading weirs are made of natural stones and cement, and consist of a spillway in the actual riverbed and lateral abutments and wings. Floodwaters are spread over the adjacent land area above the structure, where they eventually overflow the lateral wings and then slowly flow back towards the riverbed below the structure.

In dry valleys in which water flows in the rivers for only a few days a year, the weirs serve to distribute the incoming runoff over the valley floor and allow as much water as possible to infiltrate the soil. The aquifer is thus replenished and is then available for agricultural use. In contrast to the various types of dams, the goal of water-spreading weirs is not to create reservoirs for later use. What water-spreading weirs do is cause a temporary flooding of the adjacent land area above and below the weir. Depending on user preferences, the primary goal may be 1) agricultural use, 2) pasture use or 3) the replenishment and rising of the water table. Water-spreading weirs require detailed technical planning and experienced engineering and construction firms.

## **Results and Discussion**

GIZ implements a new approach to Ethiopia, using soil and water harvesting methods successfully tested in the Sahel. In the fertile but degraded valley areas, the effects of strong runoff of rain water and sporadic flash floods are reversed by a holistic approach based on water-spreading weirs. This leads to the rehabilitation of the valleys which can then be used for cultivation of animal feed and food and provide access to water for people and animal. River banks with their trees are protected and the groundwater level rises providing water for shallow wells. This approach combined with intensive training strengthens the resilience of the pastoralists and agro-pastoralists to the impacts of climate change offering economic options and reducing conflicts.

Since, 2013 GIZ-SDR-ASAL program supports the Pastoral and Agro-pastoral communities of Afar region in the objective of strengthening drought resilience of vulnerable and marginalized groups through undertaking different development activities that can access and use the natural resources they have in a sustainable manner to improve their livelihoods.

Identified by the communities as one of their priorities for NRM and as a demo site for copying a successful approach from the Sahel, as first measure five water spreading weir were constructed in Chifra woreda in 2014, through implementing partners and district pastoral and agricultural development office (PADO). The measure is constructed with the objective of spreading of the

water causes the land area above and below the structure to be flooded and supplies it with sediment. Water infiltrates, gullies in the valley are filled and the riverbed is raised. The total estimated number of beneficiaries will be 572 household heads out of this 100 HH are women's.

As a result the land area below the weir is flooded. The lateral spreading of the water causes the land area above and below the structure to be flooded and supplies it with sediment. Water infiltrates, gullies in the valley are filled and the riverbed is raised. A groundwater table also started to rise since

### **Conclusions and Outlook**

Based on the lessons learned in some of pilot areas of GIZ intervention districts, Afar Region and other arid and semi arid lowland areas of the country and development partners may use this approach as an option and integrate with existing government food security measures for areas affected by land degradation due to floods and climate change.

Key words:

Afar Regional State, Pastoralist, Resilience, Food security, Ethiopia,  
Land Degradation, Drought

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