



## Climate change, rangelands and agro-pastoral communities in Tanzania

*Adverse environmental degradation has been witnessed in the western, semi-arid rangeland plains of Ukaguru Mountains in Gairo District in Tanzania. Soil erosion, decreasing vegetative cover and changes in plant species composition are resulting in declining forage yields for the livestock. This is of great concern to the pastoralist communities dependent on the nature.*

### A changing environment

Climate change is a global challenge to both sustainable livelihoods and economic development. Its impacts are already evident in Tanzania. It has caused a more difficult situation to many people, pastoral and agro-pastoral communities in particular. Researchers are at work to find adaptation strategies to reduce the risks associated with prolonged drought periods and unreliable rains in Gairo District.



Animals grazing on hill slopes in Ukaguru Mountains in Rubeho village in Gairo District.

### Rangelands in Tanzania

Rangeland is a collective term for native grasses and shrubs that cover arid and semi-arid land. Much of the rangelands are unsuitable for cultivating agricultural crops due to soil quality and low rainfall levels. Pastoralists traditionally use the rangelands. In Tanzania, rangelands are estimated to be 50 million hectares. 26 million hectares are under grazing. 24 million hectares are tsetse infested (URT, 2002). Morogoro Region alone has 2 million hectares of grasslands and about 0.85 million hectares of forested land.

### Environmental degradation and encroachment

Gairo District is warm and dry, with little rains. Much of the vegetation is under pressure from deforestation, crop cultivation and grazing. This degrades the soil quality. The rangelands should always be covered with grass, but the pastoralists need to use the land to graze their cattle.



A typical rangeland alongside Ukagulu Mountains in Gairo District.

Environmental degradation in the western semi-arid rangeland plains of Ukaguru Mountains of Gairo District is a big challenge for the local communities. It is a bad cycle, where soil erosion, unavailability of water, decreasing vegetative cover, and changes in plant species composition has resulted in declining forage yields and reduced livestock performance, including deaths. The desperate situation again results in excessive grazing, which further degrades the land.

This trend has lowered the lands capacity to provide enough food for both human and livestock. Because of this, there has been increased encroachments to the Ukaguru Mountains, one of the catchments of Wami River. Undoubtedly, forest of Ukaguru Mountains will continue to deteriorate due to increased pressure from agro-pastoral activities, unless remedial measures are taken. This is a threat to the Wami River ecosystem as the mountains are the catchment area for the river.

### **Improved rangeland management, to reduce the communities' vulnerability**

Researchers together with agro-pastoralists are trying to evaluate improved rangeland management strategies to reduce the vulnerability of agro-pastoral communities

to climate change, and reduce the pressure on the forests.

The researchers believe that if they can develop improved strategies for increased rangeland productivity, the agro-pastoralists will not have to encroach on the forests. It will also improve the lives of the pastoral and agro-pastoral communities and make it easier for them to adapt to climate change.

A number of range management practices has been identified to address the problem. They include grazing management plans, forage conservation techniques, rain water harvesting and bush fire control.

Together with agro-pastoralists in the area, researchers are now developing and testing appropriate range management practices for reducing pressure on adjacent forest resources and enhance carbon reserve in future. Two activities are currently being implemented.



The researchers setting up the demo soil and water conservation technique

The first is soil and water conservation demonstration plot. Conservation ditches and contours have been constructed to preserve water loss from runoff. This practice reduces soil erosion as well as it improves water retention by the soil.



Pastoralists in Gairo district constructing the structures to conserve soil and water on their lands.

The other activity is range reseeding. Grasses such as *cenchrus cirialis* are re-seeded in some bare land areas. So far the land is dry, so irrigation is necessary to make the soil wet. It is expected that, after one year, the area will be well grassed and in one or two years, it will become a better place for livestock grazing.



Tillers of *cenchrus cirialis* grass species being planted for preservation. Water is sprinkled over for moisten the soil.

The communities are positive to the innovations. They are interested and actively

participating in the activities together with the researchers. They hope to see the rangeland recovered. This would be of great benefit both to the forests and to nature in the area, and strengthen the farmers' livelihood security.

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For more information go to <http://www.suanet.ac.tz/cciam/>

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