ERITREA

Integrating Climate Change Risks into Community-Based Livestock Management in the Northwestern Lowlands

LEAST DEVELOPED COUNTRIES FUND	
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GEF Agency	United Nations Development Programme (UNDP)
Other executing partner	Government of Eritrea

Eritrea's livestock production system and related livelihood opportunities for pastoralists are highly vulnerable to long-term climate change, including variability. Climate models suggest that Eritrea will likely experience rising temperatures and decreasing rainfall over the coming decades. Resultant impacts will include decreasing and more variable run-off, increased occurrence of dry spells, and multiyear droughts, and will be felt heavily in the pastoral sector through diminishing soil moisture and decreases in rangeland productivity. The productive and reproductive efficiencies of the pastoral system have been declining progressively over the past decades due to a number of baseline issues, but these pressures are now compounded by the impacts of climate change. With crop cultivation and animal husbandry accounting for 60 percent of rural incomes, and incomes from livestock in specific regions such as the lowlands being even more important, anticipated climate change will have serious repercussions on rural poverty and well-being.

Over the years, pastoralists have developed a production system that adapts to the fluctuations in feed and water supply availability. The major river basins and the rangeland areas with relatively higher rainfall and soil fertility serve as the dry season camp, while the open grazing land of the drier areas form the wet season camp. The routes that pastoralists, including their livestock, use to travel between seasons are well defined and based on known water points, feed, and tree shade. The movement involves mainly the larger animal species, but in areas where heat stress is acute, all livestock species are forced to move seasonally.

The Northwestern rangelands, the wet season camp, are especially sensitive to the impacts of drought. Recurrent droughts and high temporal and spatial variability of rainfall produces negative impacts on water resources availability by depleting underground water through evaporation. Inadequate recharge of underground aquifers of rangelands results in lower drinking water availability for livestock and reduces livestock productivity as a result of lower biomass productivity. In effect, the rangelands are already under severe pressure from drought. Recent records show that frequent droughts and interannual precipitation variability

between 1992 and 2004 have contributed toward the annual deaths of thousands of livestock species such as cattle and camels.

Thermal stress is increasingly exceeding thresholds that animals can tolerate, leading to shortening of grazing hours, which occur mostly at night or in the early morning; decreased feed intake; and interference with animal productive and reproductive functions. Without adaptation interventions, the linkage between pastoralists and land will be adversely affected and lead to adverse economic impacts, changes in social structure and cultural identity, and even political instability.

Project Activities and Expected Impacts

Reducing the vulnerability of the livestock sector to climate change, including variability, necessarily involves addressing the linkages between agriculture and water resources, as well as those barriers to livestock management that have little to do with climate change. Traditional coping practices have been affected by land- and ground water-use change, desertification, poverty, and border conflicts. Land- and ground water-use change is occurring in most of the rangelands and in particular, those areas with higher rainfall, such as the southwestern lowland and the riverine areas.

The conversion of some rangelands into rain-fed cropping, even in areas with insufficient rainfall, and the conversion of others for irrigated farming, are placing pressure on livestock as grazing regions are more and more confined to marginal areas. The movement of livestock is increasingly restricted due to land fragmentation. In the more arid rangelands, the process of desertification is also increasing pressure on rangelands. Desertification has caused conversion of perennial grasslands to savanna dominated by annual grasses.

Both government and donor projects and programs are tackling these issues with varying degrees of success. This project is linked directly to these ongoing efforts aiming to address the additional threats posed by climate change. This is done through various pilot activities in three specific communities in the particularly vulnerable arid north-western lowlands, and broader-based technical capacity building for communities and relevant institutions.

In the first part, the project tests options for more climate-resilient water and livestock management systems at the local level, piloting infrastructure for irrigation technologies and management practices that support dry-season crop production. This includes the following activities: (a) development of community-scale irrigation infrastructure systems using rainwater harvesting and spate irrigation; (b) establishment of a community-level information system that integrates regular seasonal, annual, and decadal forecasts of on water resource availability into the operational design and maintenance of the community-scale irrigation system; and (c) and empowering pastoralists and other community stakeholders to pursue alternative climate resilient livelihoods.

The second part focuses project activities on targeted capacity- building initiatives that develop the skills of key stakeholders to systematically integrate climate change risks into pastoral land and water management. These activities occur in the context of agricultural and food security–related strategies, policies, and measures at the national, subnational, and community levels. Specific outputs include personnel trained in forage conservation techniques and in managing and distributing water based on available climate information; improved knowledge on reseeding of the rangeland with climate-resilient varieties; extension support staff and other relevant stakeholders trained in climate change risk management; awareness on the part of policy makers of climate change risks and needs pertaining to livestock and water management in rangelands; and development of a rangeland management plan incorporating climate change risks over the next 30 years. The need to incorporate climate change risks on a policy level to create an enabling policy framework to address climate change in a more holistic and systematic manner is also addressed.

Synergies and Coordination

The project is fully linked to existing baseline projects and programs sponsored by the government and international donors, including the Integrated Rural Development Project (IRDP), the Lutheran World Federation Nutrition Project, and the Gash Barka Livestock and Agriculture Development Project. All are community development initiatives that cover the northwestern lowland, aiming to contribute to the livelihood of the populations engaged in traditional livestock production and increase the contribution of the agricultural sector to the national economy by improving productivity of crops, livestock, and community. Furthermore, the project draws on technical assistance from the Drylands Development Centre, that specializes in assisting countries in development projects in the drier parts of the world, as well as the Water Governance Facility, a joint United Nations Development Programme-Swedish International Development Cooperation Authority initiative that seeks to advance socially equitable, environmentally sustainable, and economically efficient management of water resources.

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