



**Baseline Report on climate related
risks, local vulnerabilities and
perception and coping strategies in
three sub-catchments of Lesotho**

Kingdom of Lesotho

***Strengthening capacity for climate change adaptation in
the agricultural sector***

**For the Food and Agriculture Organization of the United Nations
(FAO) in partnership with the Lesotho Ministry of Forestry and
Land Reclamation**

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Executive Summary

Climate variability and climate risk as experienced by Lesotho's rural agriculture-based communities is increasingly impacting on their ability to live off the land. A very high proportion of the rural population are subsistence or smallholder farmers. In recent years, the impacts of increasing climate variability appear to be progressively worsening, one of the manifestations of global climate change. Unlike larger commercial farmers, subsistence and smallholder farmers do not possess reserves of cash or other assets to tide them over extended periods of stress or to recover from short-term shocks. Even small changes in climate risk have a disproportionate impact on their livelihoods. Adaptation programmes will need to take into account the nature of current climate risk at local level, and current production practices, knowledge and skills. The ability of farming communities to cope better and adapt is also broadly determined by non-agricultural factors such as human and social capital, financial systems and decision-making, transport and telecommunications infrastructure, as well as local institutional capacity and efficacy. Adaptation programmes within the agricultural and forestry sectors will be required to be well integrated with other socio-economic imperatives. They must also be implementable, measurable and verifiable in terms of their proposed benefits to the target communities.

This Baseline Report forms part of a larger Technical Cooperation Programme (TCP) between the FAO and the Government of Lesotho, aimed at addressing climate change risks to vulnerable farming and rural communities through strengthening of technical and institutional capacity, and evaluating and prioritizing best practices. OneWorld Sustainable Investments have been tasked with the first of three outputs, namely the assessment of climate change-related impacts and vulnerabilities on crop, livestock and forest-based livelihood systems in selected watershed/catchments, and a baseline study on climate-related vulnerabilities and adaptation practices. The project was implemented in two southern lowland districts (Mohale's Hoek, Mafeteng) and a mountain district (Thaba Tseka) that were previously identified as being the most vulnerable by Lesotho's National Adaptation Programme of Action (NAPA, 2007). Within the three districts, pilot sub-catchments were identified for the implementation of the baseline study, namely Mabalane (Mohale's Hoek), Thaba Tsoeu (Mafeteng) and Rantsimane (Thaba Tseka).

Specifically, we report here on the results of the baseline study to understand current climate-related risks, local vulnerabilities and perception and coping strategies in the three selected pilot watersheds.

A Livelihoods-based vulnerability assessment approach was adopted, together with core aspects of the Household Economy Analysis (HEA, 2009). The HEA was adapted to incorporate sections on agricultural/forestry production and food security and their dependence on climate and seasonal weather patterns, perceptions of climate risk for households, and local coping strategies. Since adaptations to climate variability and climate change are also highly dependent on well-functioning institutions and services, and food security has strong linkages with other sectors such as health, education and services, these aspects were also incorporated into the analysis. The reference year was selected as August 2008 to July 2009.

Two approaches were used for the collection of local information: household interviews, and community focus group workshops. The household survey was carried out by trained teams over the course of 12 days, from 9-20 November 2009. During early November 2009, one focus group workshop was held in each sub-catchment, attended by a range of community leaders and members.

Wealth groups were determined *post-hoc*, using cultivated crop land area, numbers of livestock owned (excluding poultry), livestock product sales value, access to other cash income, and ownership of productive agricultural assets as indicators. Households were classified as very poor, poor, middle, or better-off.

The results indicate that in all three sub-catchments, a high proportion of the population is poor or very poor, with limited livelihood options (mainly subsistence crop and livestock farming), and little cash income. People in Mabalane appear to be slightly wealthier than in Rantsimane or Thaba Tsoeu. The broader local economy, and farming in particular, are relatively undiversified. Nevertheless, risk reduction is practiced through greater crop diversity per household in the mountains, but greater mixed crop and livestock farming in the lowlands. During the reference year, spring drought was experienced in all three sites, which together with late planting and low planting densities resulted in low yields, particularly in the lowlands. Sorghum and pea crops failed in Mabalane.

A general lack of cash, as well as a lack of modern farming skills, has prevented farmers from adapting to any significant degree to increasing climate risk. Awareness of climatic challenges is high, although the underlying reasons (relating to global climate change) are not known. Nevertheless, a high proportion of households listen to weather forecasts and are satisfied with the service rendered by the Lesotho Meteorological Service. Farmers generally have a vision of which adaptation practices could work for them, but are unable to implement them due to lack of cash, and poor (or unaffordable) access to inputs (improved seed, agro-chemicals) and implements (particularly tractors). Most would like to intensify and modernise their farming activities to achieve higher yields, and to diversify as a risk-reduction practice. The latter is not occurring due to a lack of knowledge of which crops are best suited to their soils and climate. Even where this is known (e.g. sorghum is more drought-resistant) non-climatic challenges, in this case birds, are preventing them from farming this crop effectively.

Back-to-back droughts, storm winds, heavy rainfall and a host of other climatic hazards in the recent past have eroded the resilience of land-based livelihoods to such a degree that many people are looking to non-agricultural sources of jobs and income for the future. However, those who are committed to farming are looking increasingly at diversifying into more climate-resistant and lucrative options, notably poultry and pig production, or growing into more stable income-generating commercial enterprises. The limitations to implementing these aspirations include lack of access to start-up or expansion credit, lack of skills (both farming/technical and business/marketing) and lack of markets. The poor condition of the road network was consistently cited as an impediment to accessing input and output markets.

Access to basic services and resources ranges widely from generally good (drinking water) to poor (firewood). Drinking water has become scarce in some parts of Mabalane, particularly during droughts. In the mountains, schools ran out of water during the drought, and rivers dried up creating challenges for stock farmers. Many crop farmers see the use of irrigation as a desirable adaptation, with frequent

mention of dam construction and the installation of irrigation equipment. Control of soil erosion and soil improvement is partially practiced, but does not appear to be given the same priority by farmers as access to inputs and implements. It is of concern that not more farmers practice erosion control.

An interesting outcome was the better performance and practices of farmers in Thaba Tsoeu compared to Mabalane. They show a higher uptake of improved seed, chemical pest control, livestock drugs, manure/fertilizer, winter ploughing to incorporate crop residues, and less mono-cropping. This could be attributable to a better crop and livestock extension service, or to regular use of radio programmes for farming information. People in Thaba Tsoeu are also more likely to engage in off-farm business, suggesting a healthy entrepreneurial spirit. Alternatively, the impacts of climatic hazards have been worse in Mabalane.

Within each sub-catchment, the most vulnerable households with respect to climate change impacts are likely to be those who are very poor, since they have few assets, quite often do not own land or livestock, and have few sources of cash income. They often rely on family and other community members for food and other necessities. In this respect, Rantsimane is worst off, followed by Thaba Tsoeu, with Mabalane having much fewer "very poor". People in the lowlands are more likely to receive remittances and social grants which gives them a better buffer in times of need. In Mabalane, income from livestock products sales is also higher. Pressure on land resources is much higher in Rantsimane, since available arable land is scarce and poor range management has led to lack of quality grazing.

Households who engage solely in crop farming, for example mono-culture of maize (this is more prevalent in Mabalane), especially on small pieces of land, are also more vulnerable to climate hazards. Those with a greater diversity of crops (and more land), and with livestock added into the farming mix, should be more resilient to these events.

It is not clear from the survey (due to incomplete data) whether the higher proportion of female-headed households in the lowlands are more vulnerable, since these households often receive remittances from men working in the towns or RSA. However, women have a greater role in decision-making in the lowlands, which could enable these households to capitalise on a greater pool of experience and ideas. Women have also generally received a higher level of education. Further analysis will be required to investigate possible gender differentiation.

In all three sub-catchments, more formal social networks relevant to farming, such as farmers' associations, grazing associations or water associations appear to be weak or non-existent. This does not mean that informal community networks are not functional. In fact, most farmers turn to their family, neighbours or other farmers for advice. However, in the face of the training and technology uptake which will be required for adaptation to climate change, this could be an impediment. Extension services should play a central role in disseminating information, and can fulfil this role more effectively to organized groups of beneficiaries who meet regularly at a local venue.

The following recommendations are made:

- A holistic livelihoods-based approach must be taken when planning and implementing climate change adaptation amongst the farming community,

since socio-economic realities influence the potential uptake of new practices.

- Farmers desire more information/training from knowledgeable experts, with respect to modern farming using improved crops and livestock, the correct use of fertilizer, pest and disease control, farming under drought conditions (“what and when”), diversification e.g. poultry/pig farming, improved land preparation, and business/marketing skills.
- Amongst possible adaptation options, many were not directly related to farming, but were generally seen to be critical for the development of livelihoods. These included better infrastructure, access to non-agricultural job opportunities, and improved levels of education.
- Particularly in the lowlands, where storm winds are wreaking havoc, the most important adaptation was seen to be the planting of trees, windbreaks and hedges, to protect both crops and homes.
- In the mountains, shelter for livestock and improved early warning systems were given high priority.
- Diversification of farming and the local economy was regarded as an important adaptation in all three sites.
- Poverty is the single most important reason for the current lack of adaptation, and farmers require some form of assistance to be able to access improved seed suited to the climatic conditions, farming implements and other inputs.
- Water harvesting (a survey outcome) and better rangeland management (a focus group outcome) are required.
- Some services, such as the LMS and veterinary service, are clearly providing reasonably good support, whereas other such as extension are not. The latter is used only by a handful of larger farmers.
- Credit mechanisms and markets are entirely informal. The cycle of poverty will only be broken once people are able to access capital and markets in order to break out of subsistence production, which would render them more resilient to stresses and shocks.
- The potential opportunities created by climate change in Lesotho should be identified and disseminated to the rural communities. The MAFS should investigate the emergence of new suitable crop types and cultivars.
- Many rural people are strongly religious and/or bound to traditional beliefs, and experience climatic stress within this framework. To facilitate the understanding of climate change issues and uptake of adaptation practices, church and traditional leaders (including medicine men) should become partners in any adaptation programme and receive some training in this regard.

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