

LDC Workshop on National Adaptation Programmes of Action

NAPA Case Study 2

Lesotho

Summary of Key Vulnerabilities

Lesotho is particularly prone to the following environmental stresses: drought, soil erosion and land degradation, desertification, deforestation and rangeland degradation, loss of biodiversity, degradation and drying up of the wetlands and mountain sponges. These environmental stresses will be more exacerbated under climate change conditions.

With soaring unemployment rate estimated at over 60% and scarcity in natural resources, the effects of climate change are due to become more unbearable. The livelihood of the population is dramatically curtailed; the key feature is dependency on agriculture and livestock production to support domestic food supplies.

It is predicted that climatic and environmental factors that engender rapid soil erosion, which include: high temperatures, scant vegetation cover, frequent bouts of droughts, rainstorms, strong winds and heavy snowfall and the subsequent melting thereof; will intensify and result in the acceleration of soil erosion and desertification. With an estimated 9% of Lesotho's land suitable for agriculture climate change could result in a shrinkage of arable land to as low as 3%.

Key Vulnerabilities:

Water Sector – diminishing rainfall during shorter rainy seasons leading to shrinkage of surface and ground water resources; waning of catchments yields; recurring droughts; in mountain regions, wetlands drying up affecting reliability of perennial streams.

Agricultural Sector - Crop production adversely affected by reduced rainfall and frequent drought occurrences; drought and high temperatures exacerbate incidences of diseases and pests. Resultant crop failures lead to famine and food shortages; falling agricultural output leading to precarious and deteriorating food security situation and steadily increasing staple food prices.

Forestry Sector - Less than 1% of the country is forest and woodland; danger of further destruction of natural vegetation, trees included. Resilience and regenerative capacity of forest resources are negatively affected by extreme climatic conditions; decrease in forestry resources negatively impacts on the stability of energy supplies needed for rural communities depending on biomass fuels as a major energy source.

Rangelands Sector - Rangelands are suffering major destruction due to climate change: chronic drought has impeded recovery of grasses and vegetation; severe attenuation of the carrying capacity of pastoral lands; increased livestock mortality rate and deteriorating quality of livestock products; extreme weather conditions conducive to disease and pest incidences.

Soils and Desertification - soil cover (range and forest resources) will be negatively affected by desertification and incidences of flooding leading to increased rates of soil loss (soil erosion) and loss of soil fertility, which will in turn diminish the efficacy of the soil as a resource;

Biodiversity - Siltation and drying up rivers and their sources, increased aridity and disappearance of wetlands and marshlands, soil erosion and land degradation and diminished vegetation cover will result in loss of habitat and source of sustenance for many indigenous as well as exotic animal and plant species.

Health Sector – Frequent drought occurrences resulting in limited availability and quality of water leading to disease outbreaks compounded by famine and malnutrition; increased incidence of water-borne infections such as typhoid; future warmer climate could lead to incursion into the country of tropical diseases for which the country is ill prepared.

NAPA Projects

Order of Project Priority	Project Title	Project Sector	Sector Component(s)	Project Cost (USD)
1	Improve resilience of livestock production systems under extreme climatic conditions in various livelihood zones in Lesotho.	Food security	Livestock	2,980,000
2	Promoting sustainable crop based livelihood systems in foothills, lowlands and Senqu River Valley.	Food security	Agriculture	4,235,000
3	Capacity building and policy reform to integrate climate change in sectoral development plans.	Cross sectoral	Mainstreaming and Capacity Building	1,260,000
4	Improvement of an early warning system against climate induced disasters and hazards.	Early warning and disaster management	Early warning system	920,000
5	Securing village water supply for communities in the Southern Lowlands.	Water resources	Water supply	1,170,000
6	Management and reclamation of degraded and eroded land in the flood prone areas (pilot project for Western Lowlands).	Terrestrial ecosystems	Land Rehabilitation and Management	966,000

Order of Project Priority	Project Title	Project Sector	Sector Component(s)	Project Cost (USD)
7	Conservation and rehabilitation of degraded wetlands in the mountain areas of Lesotho.	Terrestrial ecosystems	Wetland rehabilitation	690,000
8	Improvement of community food security through the promotion of food processing and preservation technologies.	Food security	Food processing	620,000
9	Strengthening and stabilizing ecotourism based rural livelihoods.	Tourism	Ecotourism	N/A
10	Promote wind, solar and biogas energy use as a supplement to hydropower energy.	Energy	Renewable energy	N/A
11	Stabilising community livelihoods which are adversely affected by climate change through improvement of small scale industries.	Cross sectoral		N/A

NAPA Priority Project 1

Improve resilience of livestock production systems under extreme climatic conditions in various livelihood zones in Lesotho

Rationale

Livestock production is one of the most important components of the farming systems throughout all livelihood zones of Lesotho. It provides a major source of cash income, food (milk and meat), draught power, and transport. Livestock is also an important reserve of wealth and security.

For all its importance, livestock farming has been in steady decline both in number and quality over the years. This decline can be ascribed to recurring prolonged droughts which have resulted in the deterioration of rangelands and their carrying capacity. This project would be an intervention to revamp livestock farming in Lesotho, and thus provide a viable option for the people to adapt to the changing climate.

Livestock production in Lesotho is divided among four major economic enterprises, including:

Sheep and Goats for wool and mohair production

Wool and mohair production are the mainstay of the production systems and livelihoods in the mountains districts of Lesotho. The mountain livelihood zone form the largest single block of land (1,444,667 ha) upon which livestock with particular emphasis on sheep and goats production are the basis for people's livelihoods. The production of wool and mohair is dependent on resilience and quality of range management systems and veterinary programmes. These parameters are affected directly by climate change particularly of extreme drought and temperature dynamics. Drought affects the quality and resilience of the rangelands while extreme temperatures particularly those leading to drought affect disease incidence and require good veterinary services.

Sheep and goats production currently support other forms of income streams like the sale of skins as by products of meat production. Small scale industries in the lowlands of Lesotho depend on good quality skins for production of various products such as shoes and sandals.

The production of meat and milk in the mountain districts is mainly for home consumption and subsistence purposes. For example statistics show that on average 6000 sheep, 2500 goats and 750 cattle are slaughtered annually at household levels in the mountain districts. Overall the mountains accounts for about 54 and 45 percent respectively of the total sheep and goats slaughtered in Lesotho annually.

Dairy production

A total of 290 farmers in the lowlands and foothills rear improved dairy cows for milk production, using Friesians, Jerseys and Brown Swiss cows. The milk is processed and sold through a series of private and parastatal milk collection centers. While farmers generally rely on communal rangelands for grazing and feeding of dairy cattle, the commercial sector on dairy relies on stall feeding and zero grazing. In general fodder production is a priority issue for all dairy producers especially in the light of deteriorating state of the rangelands.

Description

Objectives

Wool and mohair

To stabilize wool and mohair production systems against climate change in the mountain zone livelihood systems.

Dairy production

To improve the state of dairy enterprises in the lowlands and foothills livelihood communities.

Activities

Wool and mohair

1. Upgrade veterinary services;
2. Build capacity of grazing associations;
3. Implement livestock reduction strategies;
4. Establish fodder production schemes;
5. Establish wool and mohair processing centres.

Dairy production

1. Upgrade veterinary services;
2. Establish fodder production;
3. Establish supplementary feeding industries;
4. Improve milk collection centres;
5. Establish milk processing and cottage industries.

Inputs

- Technical expertise in the various activities;
- Financial resources.

Short-Term Outputs

- Improved sustainable livestock enterprises;
- Improved production of livestock and livestock products;
- A more diversified livestock based income streams.

Potential Long-Term Outcomes

The long-term outcome of the project will be an improved and more diversified livestock rearing in Lesotho.

Implementation

Institutional Arrangement

The project will be implemented by the Department of Livestock Services, working in collaboration with other relevant government departments and community organizations.

Risks and Barriers

Potential risks and barriers to the success of the project are:

- Inadequate support and involvement of relevant stakeholders
- Insufficient financial resources

Evaluation and Monitoring

Monitoring committees will work in close collaboration with the Department of Livestock Services and the Ministry of Local Government. Monitoring and evaluation will be done on regular basis.

Cost

A total budget of USD 3,210,000 is needed.

Breakdown of major project costs

Activity	Cost (USD)
Build capacity of grazing associations	275 000
Implement livestock reduction strategies	115 000
Establish fodder production schemes	150 000
Upgrade wool and mohair processing centres	300 000
Establish supplementary feeding industries	220 000
Promote dairy industry	280 000
Establish milk collection centres, milk processing and cottage industries	300 000
Promoting Improved housing of livestock	250 000
Promoting feed production and supply channels	210 000
Organize community marketing structures	240 000
Upgrade veterinary services	340 000
Build capacity and skills on livestock development	320 000
GRAND TOTAL	2 980 000

NAPA Priority Project 2

Improvement of crop production systems to reduce food insecurity in the lowlands of Lesotho

Rationale

Crop production is one of the most important components of the farming systems throughout all livelihood zones of Lesotho. Approximately 9 to 12 percent of the total land area of Lesotho is used for arable crop production 90 percent of which is dryland farming and approximately 10 percent falling under irrigated conditions. Arable agriculture employs more people than any other sector in Lesotho and provides principal means of livelihoods for about 90 percent of the country's rural population. While 55 percent of the population is landless, arable agriculture contributes about 10 percent to the national GDP (Chakela 1997). The cropping sector is dominated by smallholder farmers struggling to meet their subsistence requirements from year to year.

The main cropping region is the north and south western lowlands and the Senqu River Valley, although significant cropping does occur on the sloping land in the foothills and mountains. The south western lowlands are in particular susceptible to erratic agroclimatic conditions especially annual rainfall patterns. The amount and distribution of precipitation is an important factor in the success or failure of crop production endeavors. However, under the climate change water conservation and water saving irrigation technologies would significantly stabilize and improve current livelihoods based on dryland and irrigated agriculture.

Drought, frost, snow and hail pose significant risks for agricultural production in Lesotho. Rainfall occurs mainly during the summer season but is extremely variable in quantity and timing. The lowlands areas are significantly drier and crop failure from drought is very common. Rainfall is higher in the mountains and foothills but the cropping season is much shorter due to the early onset of frost which will be exacerbated by climate change.

The domestic production of fruits and vegetables is a source of livelihood for at least 10 percent of the population in the foothills, lowlands and Senqu River Valley. Current development initiatives are exploiting the country's potential to increase the yields of fruits trees. However, this potential has been marginalized by skewed climate extremes and hazards such as: hail, frost, and extreme temperatures. These climate hazards are projected to be more severe under climate change conditions.

Crop production in Lesotho is divided among three major economic cropping systems:

1. Cereal Crop Production: Promotion of conservation agriculture technologies and drought resistant crop varieties to support dryland farming in the Lowlands and Senqu River Valley

The principal dryland crops in Lesotho are maize and sorghum which account for about 80 percent of the planted area followed by wheat (12 %) and bean /peas (7 %). Maize and sorghum are primarily cultivated for household subsistence, while wheat, beans, peas are grown mainly for cash crops. Minor dryland crops include sunflower, lentils and fodder crops.

The most significant manifestation of climate change in Lesotho is chronic drought and diminishing rainfall. Surviving periods of drought is now the biggest challenge for farmers. One of the most effective strategies for adapting to the changing climatic conditions is development and promotion of crop strains that can withstand drought. This project aims to support and facilitate the development and widespread use of drought-resistant crops and use of conservation agriculture technologies.

2. Horticulture and Fruit Production: Improve Production of Fruits and Vegetables in the Lowlands and Foothills

The foothills and lowlands of Lesotho are major fruit production areas. There are about 34 seedling nursery facilities installed in the southern districts which supply seedlings to farmers country wide. A total of 74 farmers are involved in seedling production to support horticultural farming. However, these nurseries have of late not been able to meet the country's domestic seedling needs as their production is curtailed by extreme climatic events mainly hail, frost and temperature borne diseases. As a coping strategy farmers have installed plastic insulation sheets nurseries to minimize climatic hazards on their produce. However, occurrences of severe thunderstorms associated with hail often destroy these facilities. Due to poor insulation of these facilities frost kill temperatures associated with cold front surges often destroy the seedlings. It has been projected that cold fronts will be more frequent and more severe under climate change conditions.

3. Irrigation Farming Systems: Promotion of Water Conserving Irrigation Systems in the South-western Lowlands and Senqu River Valley.

The lowest annual precipitation (450 mm) in Lesotho occurs in the Senqu River Valley and peaks at 700 mm in the south and western lowlands compared to highs of 1,000mm in the northern lowlands and eastern highlands. Lesotho's precipitation is characterized by fluctuating trends, with high variability from year to year. The occurrence of summer rainfall is an important factor in rainfed subsistence crop production in Lesotho. Furthermore, the topographical and climatic variations impose severe constraints on crop production.

The largely subsistence farming systems in these areas is heavily reliant upon rainfall. Irrigations systems have also been adopted by an increasing number of farmers who grow vegetables for commercial purposes. Most irrigation systems are supported by water collection dams from which sprinkler irrigation systems powered by small to medium engines are used. In the Senqu Valley and foothills areas of the southern lowlands, irrigation systems are powered by gravity.

The advent of climate change has brought about considerable uncertainty and curtailment of farming due to frequent drought occurrences. This has had a severely negative impact on the livelihoods and food security – especially for rural communities in the southern lowlands and Senqu River Valley. To adapt to the changing climatic conditions, the farming communities in these area have to reduce their reliance on rainfall. This can be achieved by promoting water conservation strategies and water-saving irrigation systems like drip irrigation as well as energy efficient systems like the gravity driven sprinkler systems into the farming operations.

Description

Objectives and Activities

Cropping system	Objectives	Activities
1. Promotion of conservation agriculture technologies and drought resistant crop varieties to support dryland farming in the lowlands and Senqu River Valley	Multiplication of drought-resistant strains of various crops.	Promote local generation of drought-resistant cereal and crop varieties.
	Facilitation of availability and accessibility of drought resistant strains to farmers.	Development of distribution channels for drought resistant and short season seeds throughout the farming community.
	Promotion of moisture-conserving practices among farmers.	Promote water conserving practices among farmers.
2. Improve horticultural production: fruits and vegetables in the lowlands and foothills	To revive and strengthen irrigated commercial and domestic horticulture in the lowlands and foothills	<ul style="list-style-type: none"> a. Development of vegetable and fruit tree gardens; b. Expansion of production of high value cash crops such as asparagus; c. Development of local produce marketing and distribution channels.
	To develop robust horticultural seedling nurseries whose production will be less affected by climate variability and change	<ul style="list-style-type: none"> a. Establishment of nurseries of both indigenous and exotic vegetables and fruit trees; b. Provision of quality seedlings to horticultural farmers; c. Development of local produce marketing and distribution channels; d. Expansion of floricultural sector for domestic and export supplies.

Cropping system	Objectives	Activities
3. Promotion of water conserving irrigation systems in the southwestern lowlands and Senqu River Valley	To build the capacity and skills/ knowledge base of rural farmers in management and operation of irrigation methods/techniques	a. Training communities on irrigation methods and techniques; b. Creating irrigation farming blocks for cost sharing; c. Building small dams and other storage facilities.
	To promote adoption and use of water saving irrigation methods and technologies	a. Acquisition and maintenance of equipment for trip irrigation systems; b. Training farmers in the management of trip irrigation systems; c. Extension services to support irrigation farmers and schemes.
	To promote conservation agriculture: zero and minimum tillage systems for soil water conservation	a. Training farmers in the use of manual conservation agriculture methods; b. Acquisition of conservation agriculture equipment and implements.

Inputs

- Technical expertise in the various activities;
- Financial resources.

Short-Term Outputs

- Enhanced awareness and appreciation of low cost drip irrigation techniques and technologies in rural communities in the lowlands regions;
- Increased accessibility of low cost drip irrigation equipment to farmers;
- Improved and sustainable crop production;
- An expanding domestic production of fruits and vegetables in Lesotho;
- Increased and stable yields of drought resistant crop varieties;
- Conservation agriculture widely adopted.

Potential Long-Term Outputs

Potential long-term outputs of the project are:

- Contribution to national food security and poverty reduction in the target areas;
- Capacity building and skills development for use of irrigation technologies;
- Improved management of village plantations;
- Strong horticultural industry in Lesotho;
- Mainstream use of crop resistant varieties.

Implementation

Institutional Arrangement

The Ministry of Agriculture and Food Security in close collaboration other the Ministry of Local Government, NGOs and local communities will coordinate and implement this project.

Risks and Barriers

- Inadequate support and involvement of communities and farmers; and Insufficient financial resources.

Evaluation and Monitoring

Village monitoring committees will work in close collaboration with Ministry of Agriculture and Food Security with Research Institutions. Monitoring and evaluation will be done on regular basis. The coordinating ministry will prepare quarterly progress and financial reports to the international funding agency during the implementation of the project.

Cost

A total budget of USD 4,235,000 is needed.

Breakdown of major project costs

Activity	Costs (USD)
Training communities on irrigation methods and techniques	150 000
Creating irrigation farming blocks for cost sharing	200 000
Building small dams and other storage facilities	250 000
Acquisition and maintenance of equipment for trip irrigation systems	300 000
Training farmers in the management of trip irrigation systems	180 000
Extension services to support irrigation farmers and schemes	225 000
Training farmers in the use of manual conservation agriculture methods	220 000
Acquisition of conservation agriculture equipment and implements	215 000
Development of vegetable and fruit tree gardens	140 000
Expansion of production of high value cash crops such as asparagus	275 000
Development of local produce marketing and distribution channels	240 000
Establishment of nurseries of both indigenous and exotic vegetables and fruit trees	250 000
Provision of quality seedlings to horticultural farmers	125 000
Development of local produce marketing and distribution channels	150 000
Expansion of floricultural sector for domestic and export supplies	250 000
Promote local generation of drought-resistant cereal and crop varieties	175 000
Development of distribution channels for drought resistant and short season seeds throughout the farming community	150 000
Promote water conserving practices among farmers	120 000
Promote local generation of drought-resistant cereal and crop varieties	175 000
Development of distribution channels for drought resistant and short season seeds throughout the farming community	150 000
Promote water conserving practices among farmers	120 000
Promote local generation of drought-resistant cereal and crop varieties	175 000
GRAND TOTAL	4 235 000

NAPA Priority Project 3

Capacity building and policy reform to integrate climate change in sectoral development plans

Rationale

The awareness campaigns on climate change issues were initiated in 1996 following the country's ratification of the UNFCCC in 1995. While the potential impact is acknowledged and appreciated in Lesotho, the issues around climate change have not been integrated into the national development agenda in any significant way. Climate change affects all aspects of life hence national stakeholders broadly acknowledge that it should be accorded high priority along with other national challenges such as HIV/AIDS and Poverty Reduction.

This project seeks to mainstream climate change issues into the national policy development debates and legislative frameworks by building capacity at both institutional and systemic levels. In Lesotho, climate change affects major economic sectors: water, environment, agriculture, forestry, energy etc. The major limitations in the current policy developments and legislative frameworks are that issues of climate change are not featuring prominently despite the levels at which the aforementioned sectors are prone to instabilities induced by climate change. The national capacity self assessment process has identified the need to address policy and legislative gaps and /or discrepancies. Thus this project will facilitate awareness raising, policy review and developments including research elements in the various stakeholder sectors.

Description

Objective

To mainstream the issues of climate change into the national dialogue, policy development, planning and programme implementation.

Activities

1. Advocating for the inclusion of climate change issues in major national programmes – i.e. Vision 2020, Poverty Reduction Strategy, Three-year Development Plans and Local Government Structures;
2. Instigating for the development of a national policy on climate change;
3. Formulation and implementation of an extensive training programme on climate change;
4. Advocating for the inclusion of climate change in the curriculum at the different levels of education and training;
5. Urging for the development of legislation on climate change that would facilitate and support the NAPA.

Inputs

- Technical expertise;
- Financial resources.

Short-Term Outputs

- Inclusion of climate change in Vision 2020, PRS, and Three-year plans;
- Inclusion of climate change in education and training curricula;
- Introduction of policy and enactment of legislation on climate change.

Potential Long-Term Outcomes

The potential long-term outcome of the project is the increased prominence of climate on the national agenda, and an effective national adaptation programme of action, which will be supported by positive policy and legislative environment.

Implementation

Institutional Arrangement

The Lesotho Meteorological Services will play the project leadership role and will work hand-in-hand with other relevant stakeholders.

Risks and Barriers

Potential risks and barriers to the success of the project are:

- Inadequate support and involvement of critical stakeholders;
- Insufficient financial resources.

Evaluation and Monitoring

Monitoring committees will work in close collaboration with the Ministry of Natural Resources in collaboration with the Ministry of Development Planning. Monitoring and evaluation will be done on regular basis. The coordinating ministry will prepare quarterly progress and financial reports to the international funding agency during the implementation of the project.

Cost

A total budget of USD 1,260,000 is needed.

Breakdown of major project costs

Activity	Cost (USD)
Advocating for the inclusion of climate change in major national programmes – i.e. Vision 2020, Poverty Reduction Strategy, Three-year Development Plans and Local Government Structures	120 000
Formulation and implementation of an extensive training programme on climate change	410 000
Advocating for the inclusion of climate change in the curriculum at the different levels of education and training	520 000
Urging for the development of legislation on climate change that would facilitate and support the <i>National Adaptation Programme of Action</i>	100 000
Instigating for the development of a national policy on climate change	110 000
GRAND TOTAL	1 260 000

NAPA Priority Project 4

Improvement of an early warning system to reduce impacts of climate disasters and hazards

Rationale

The need for an early warning system against potential natural disasters cannot be over-emphasized. In Lesotho, the natural phenomena that have potential for disastrous effect are tornadoes, droughts, strong winds, hail storms and snow. These events leave masses of people perilously vulnerable to life threatening situations and crop /animal damage wreaking havoc with food security.

Of the principal natural disasters, drought is unique in terms of the length of time between the first indications that a drought may be developing and the point at which it begins to have an impact on populations of the affected areas. Although it cannot be prevented, its impact can be lessened through properly designed and implemented preparedness measures. Today, drought conditions are a common phenomenon which has to be taken into account in all national development plans. Major drought emergencies were experienced in 1932-33, 1945, 1965, 1982-84, 1991-93 and 1994-97.

Experiences of the past have highlighted the need to introduce effective and long-term disaster mitigation, preparedness and response measures. An effective early-warning system must be put in place to effectively respond to climate related natural disasters thereby assisting communities to adapt and minimize adverse impacts of climate change.

Description

Objective

Development of an early warning system and technical capabilities to monitor and issue warnings on climate and weather extreme events.

Activities

1. Acquisition of equipment to upgrade and increase climate observation network;
2. Strengthen capacity to monitor weather (drought, floods etc.) and prepare and disseminate long-range forecasts;
3. Upgrading and strengthening observational and data collection capacity (both meteorological and hydrological);
4. Install automatic weather stations at synoptic stations;
5. Build a climate data bank and develop an archiving system;
6. Improve warning communication to rural communities.

Inputs

- Technical expertise;
- Financial resources.

Short-Term Outputs

- An improved weather monitoring and long-range forecasting;
- An increased meteorological and hydrological observational network;
- An improved relay of early warning to rural communities.

Potential Long-Term Outcomes

- An advanced early warning communication system for rural communities;
- A well developed climate data bank;
- Early and timely warnings of climate and weather extreme events.

Implementation

Institutional Arrangement

The project will be implemented by the Lesotho Meteorological Services in collaboration with the Department of Water Affairs and the Disaster Management Authority.

Risks and Barriers

Potential risks and barriers to the success of the project are:

- Vandalism especially in remote areas;
- Insufficient financial resources.

Evaluation and Monitoring

Monitoring committees will work in close collaboration with the Lesotho Meteorological Services and the Department of Water Affairs. Monitoring and evaluation will be done on regular basis. The coordinating Departments will prepare quarterly progress and financial reports to the international funding agency during the implementation of the project.

Cost

A total budget of USD 920,000 is needed.

Breakdown of major project costs

Activity	Cost (USD)
Acquisition of equipment to upgrade and increase climate observation network	230 000
Strengthen capacity to monitor weather (drought, floods etc.) and prepare and disseminate long-range forecasts	120 000
Upgrading and strengthening observational and data collection capacity (both meteorological and hydrological)	200 000
Install automatic weather stations at synoptic stations	150 000
Build a climate data bank and develop an archiving system	75 000
Improve warning communication to rural communities	145 000
GRAND TOTAL	920 000

NAPA Priority Project 5

Securing village water supply for communities in the drought prone southern lowlands

Rationale

The supply of adequate and good quality water is essential for people's livelihoods especially in the rural communities. The southern lowlands livelihood zone supports approximately 279,000 people. Historically communities relied on collection of surface water and use of natural springs. Increasingly these sources are insufficient and many boreholes have been sunk. In the southern lowlands for example, Mafeteng has some 22 percent of the total number of boreholes in Lesotho with an average yield of 41 percent of the national average. On the other hand, in Mohale's Hoek (Taung & Mekaling) communities have particular problems of water shortage despite the fact that about 65 percent of the population in this area had been covered through water projects in the late 1990s.

The foregoing problems will be exacerbated by extreme and frequent drought occurrence. It is the recurring drought and the overall diminishing amount of rainfall that are the source of grave concern for the sustainability of sources of domestic water in the southern lowlands of Lesotho. This has had dire consequences for the livelihood and well-being of the people in the region particularly the vulnerable rural communities.

The burgeoning rural communities are placing mounting pressure on the already precarious water resources. Thus, the need to institute measures for sustainable management of water resources is imperative.

Description

Objectives and Activities

Objectives	Activities
1. To improve community access to clean and optimal water supply.	a. Building tanks for roof water harvesting b. rehabilitation of boreholes and silted collection points c. Install community water purification systems and procure requisite equipment e.g. testing kits d. Introduce well fields artificial recharge concepts
2. To increase a network of water collection systems and points for the affected communities.	a. Identify new well fields and sink boreholes for water supply in the communities. b. Increase collection of spring water by use of pipes and distribution tanks.
3. To improve community capacity to manage the demand and usage of water.	a. Promotion of water recycling b. Implementing integrated catchment management systems c. Develop and promote community policies on sustainable use of water.

Inputs

The inputs in this project will be:

- Technical expertise in the different areas of development of water collection systems and water collection points;
- Financial resources for the acquisition of equipment and materials.

Short-Term Outputs

- More and improved water collection systems and water collection points;
- Clean and adequate water supply for household use particularly for rural communities;
- Improved water supply infrastructure.

Potential Long-Term Outcomes

The major potential outcomes of this project are:

- Adequate supply and environmentally sustainable use of water resources in rural communities;
- Improved quality of water for storage purposes;
- Improved quality of people's livelihoods.

Implementation

Institutional Arrangement

The lead departments in the implementation of this project will be the Department of Rural Water Supply in collaboration with the Department of Water Affairs supported by ministry of Local Government including community based structures and relevant civic organizations.

Risks and Barriers

Potential inhibitors for the implementation and success of the project include:

- Inadequate support and involvement of critical stakeholders
- Insufficient financial resources
- Vandalism of installed water systems

Evaluation and Monitoring

The project will be monitored and evaluated by the Commissioner of Water.

Monitoring will be done on monthly basis by the Department of Rural Water Supply through inspection and community gatherings. Quarterly progress and financial reports will be prepared during the implementation of the project.

Cost

A total budget of USD 1,170,000 is needed.

Breakdown of major project costs

Activities	Cost (USD)
Building tanks for rain water harvesting	100 000
Rehabilitation of bore holes and silted collection points	100 000
Installation of community water purification systems and procurement of requisite equipment	150 000
Introduce well fields artificial recharge	170 000
Increase coverage of well fields and boreholes for water supply	100 000
Increase collection of spring water by use of pipes and distribution tanks	100 000
Promotion of water recycling	50 000
Implementing integrated catchment management systems	250 000
Develop and promote community policies on sustainable use of water	150 000
GRAND TOTAL	1 170 000

NAPA Priority Project 6

Management and reclamation of degraded and eroded land in the flood prone areas (pilot project for western lowlands)

Rationale

Land is a valuable but scarce resource in Lesotho. The problem of soil erosion in Lesotho has been noted since the turn of the century but has become more pronounced since the drought of the 1930s. The western lowlands of Lesotho are characterized by high degrees of soil degradation and loss of soil cover mainly due to compound effect of drought, flood and wind. The most visible consequence of soil erosion in these areas is extensive gully formation and desertification.

The western lowlands are characterized by highly erodible duplex soils, erratic and high intensity rain storms which are very erosive. According to vulnerability assessment studies, Lesotho will experience on the one hand more prolonged and intense droughts and severe floods on the other hand. This implies that the western lowlands are particularly vulnerable to climate change and face the risk of endangered livelihoods.

Description

Objectives and Activities

Objectives	Activities
1. To implement soil erosion combating measures.	a. To conduct GIS mapping of degraded lands; b. Construction of stone lines and diversion furrows; c. Planting trees and grasses in the gullies; d. Reallocation of degraded lands and gullies; e. Reseeding of rangelands.
2. To reclaim the productivity of marginal.	a. Planting fodder crops and grasses on marginal lands; b. Construction of diversion furrows and terraces; c. Introducing grass based crop rotations; d. Planting fruit trees on marginal lands; e. Afforestation of marginal lands.
3. To build capacity in the communities for participatory land use planning.	a. Training community leaders as trainers for conducting participatory land use planning; b. Conducting village land use plans.
4. To implement integrated catchments management systems.	a. Establish and train community structures for integrated catchments management; b. GIS mapping of integrated catchments for each community livelihood zone.

Inputs

- Technical expertise;
- Financial resources;
- Community and stakeholder support.

Short-Term Outputs

- Improved and proper land use management;
- Intensified soil conservation measures;
- Increased productive use of marginal lands;
- A functioning programme of improved catchments management;
- Rehabilitated degraded lands and gullies;
- Improved vegetation cover.

Potential Long-Term Outcomes

The potential long-term outcome of the project is the establishment of a more robust and integrated programme for soil conservation, rehabilitation and recovery of marginal lands and catchments management as well as improved land resource to support livelihoods in the project area.

Implementation

Institutional Arrangement

The project will be implemented by the *Ministry of Forestry and Land Reclamation* working closely with Local Government and community organizations.

Risks and Barriers

Successful implementation of the project could be curtailed by, among others:

- Inadequate support and involvement of communities;
- Insufficient financial resources.

Evaluation and Monitoring

Monitoring committees will work in close collaboration with the Ministries of Forestry and Land Reclamation and Local Government. Monitoring and evaluation will be done to ensure the success of the project. The coordinating ministry will prepare quarterly progress and financial reports to the international funding agency during the implementation of the project.

Cost

A total budget of USD 966,000 is needed.

Breakdown of major project costs

Activity	Cost (USD)
To conduct GIS mapping of degraded lands	120 000
Construction of stone lines and diversion furrows	130 000
Planting trees and grasses in the gullies	50 000
Reallocation of degraded lands and gullies.	50000
Reseeding of rangelands	25 000
Planting fodder crops and grasses on marginal lands	70000
Construction of diversion furrows and terraces	125 000
Introducing grass based crop rotations	120000
Planting fruit trees on marginal lands	50 000
Afforestation of marginal lands	75 000
Training community leaders as trainers for conducting participatory land use planning.	30 000
Conducting village land use plans	81 000
Establish and train community structures for integrated catchments management.	40 000
GRAND TOTAL	966 000

NAPA Priority Project 7

Conservation and rehabilitation of degraded wetlands in the mountain areas of Lesotho

Rationale

Wetlands are extremely important environmental ecosystems. They provide a unique habitat for several plant and animal species; they act as natural sponges, absorbing water so that it moves more slowly through the system, thus preventing flooding. Wetlands are important to the environment in two major ways. They form a good natural habitat due to the diversity of plants and animals found around wetlands; and they are natural reservoirs that maintain perennial stream flows and the quality of water flowing from them.

Climate change exacerbates the deterioration of wetland conditions. Drought negatively affects the hydrological regimes of the mountain wetlands. Thus destruction of wetlands endangers water sources and river flow to the detriment of human, livestock populations as well as the sustainability of hydropower generation.

Description

Objectives and Activities

Objectives	Activities
1. To rehabilitate degraded and eroded wetlands in the mountain areas.	a. Conduct an inventory and GIS mapping of existing wetlands ecosystems; b. Conduct survey of degradation and erosion status of the existing wetland ecosystems; c. Construct gabions where the wetlands are eroding.
2. To protect and conserve wetlands ecosystems.	a. Conduct public awareness campaigns on the sustainable use and conservation of wetlands; b. Setting community monitoring structures.
3. To raise public awareness about the importance of wetlands.	a. Conduct public meetings and campaigns; b. Conduct media publicity on wetlands conservation; c. Produce participatory land use and management strategies with the communities.

Inputs

- Technical expertise;
- Financial resources.

Short-Term Outputs

- An inventory of wetlands, providing information on characteristics, extent and status of wetlands in Lesotho;
- A wetlands rehabilitation and protection programme;
- Awareness programmes.

Potential Long-Term Outcomes

- Potential long-term outcomes of the project are;
- Enhanced public awareness on the importance of wetlands;
- Job opportunities for local communities;
- Improved stream flows and water quality;
- Protected biodiversity around wetlands;
- Increased potential for eco-tourism based livelihoods.

Implementation

Institutional Arrangement

Department of Water Affairs in collaboration with the National Environment Secretariat and local communities will lead in the implementation of this project.

Risks and Barriers

Potential risks and barriers to the success of the project are:

- Inadequate support and involvement of local communities;
- Insufficient financial resources.

Evaluation and Monitoring

Monitoring and evaluation will be done on regular basis by the village monitoring committee and the Department of Water Affairs. The project coordinator will prepare quarterly progress and financial reports during the implementation of the project.

Cost

A total budget of USD 690,000 is needed.

Breakdown of major project costs

Activity	Cost (USD)
Conduct an inventory and GIS mapping of existing wetlands ecosystems	250 000
Construct gabions where the wetlands are eroding	60 000
Conduct public awareness campaigns on the sustainable use and conservation of wetlands	185 000
Setting community monitoring structures	75 000
Conduct media publicity on wetlands conservation	70 000
Produce participatory land use and management strategies with the communities	50 000
GRAND TOTAL	690 000

NAPA Priority Project 8

Improvement of community food security through the promotion of food processing and preservation technologies

Rationale

Recurring drought and irregular rainfall patterns have had the effect of fluctuating levels of agricultural production, with relatively high yield in some years and meagre output in others. These conditions will be more pronounced under climate change. It is for this reason that there is a pressing need to enhance the capacity of farmers to preserve their produce during years of abundance, to be able to save for years of scarcity.

Moreover, the lack of capacity to process and preserve the produce has meant that the rural communities have food security for a limited period following harvest. Food processing and preservation will extend the period of high food security following harvest in the winter including preservation of summer production of vegetables and fruits.

Description

Objective and Activities

Objectives	Activities
1. To enhance availability and accessibility of food processing and preserving technologies.	1. Promote growth of food preservation and processing industry.
2. Reinforcement of commercialisation in agricultural products.	2. Promote development of appropriate technologies for food preservation (e.g. driers, canneries etc)

Inputs

- Technical expertise in the development, production and running of appropriate food processing/preserving technologies;
- Financial resources.

Short-Term Outputs

An expanding food processing industry.

Potential Long-Term Outcomes

The potential long-term outcome of the project:

- Improved food processing and preservation industry;
- Increased awareness on food preservation techniques.

Implementation

Institutional Arrangement

The project will be implemented by the Appropriate Technology Section (ATS) in collaboration with local communities.

Risks and Barriers

Potential risks and barriers to the success of the project are:

- Inadequate support and involvement of critical stakeholders;
- Insufficient financial resources.

Evaluation and Monitoring

Monitoring committees will work in close collaboration with the Appropriate Technology Section. Monitoring and evaluation will be done on regular basis. The coordinating ministry will prepare quarterly progress and financial reports to the international funding agency during the implementation of the project.

Cost

A total budget of USD 620,000 is needed.

Breakdown of major project costs

Activity	Cost (USD)
Improve community food preservation and processing industry	380 000
Strengthening development of appropriate technologies for food preservation (e.g. driers, canneries etc.)	240 000
GRAND TOTAL	620 000