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COUNTRY ENVIRONMENTAL PROFILE OF LESOTHO

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ACRONYMS AND ABBREVIATIONS

µ	Micrometre
µg	Micrograms
AAP	Africa Adaptation Programme for Climate Change
ACP	Africa, Caribbean and Pacific
AF	Action Fiche
AfDB	African Development Bank
AIDS	Acquired Immune Deficiency Syndrome
ASAP	Adaptation of Small-scale Agriculture Production project
AU	Animal Unit
BOD	Biological Oxygen Demand
CBD	United Nations Convention on Biological Diversity
CBEP	Capacity Building in Economic Planning
CBO	Community-Based Organisation
CC	Climate change
CEDAMA	Committee on Environmental Data Management
CEP	Country Environmental Profile
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
cm	Centimetres
CO_2	Carbon dioxide
CO_{2e}	CO_2 equivalent
COD	Chemical Oxygen Demand
CoW	Commissioner of Water
CRS	Catholic Relief Services
CSO	Civil Society Organisation
CSP	Country Strategy Paper
DA	District Administrator
DDCC	District Development Coordination Committee
DDNSP	Deepening Decentralisation and Non-State Actors Support Programme
DDP	Deepening Decentralisation Programme
DoE	Department of Environment
DMA	Disaster Management Authority
DRR	Disaster Risk Reduction
DRWS	Department of Rural Water Supply
DWA	Department of Water Affairs
€	Euros
EC	Electrical conductivity
EC	European Commission
ECC	Environmental Coordinating Committee

EDF	European Development Fund
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EP	Energy Policy
ESMU	Environmental and Social Management Unit
EU	Environmental Unit
EU	European Union
EUD	European Union Delegation
EWS	Early Warning System
FAO	Food and Agriculture Organisation
FULL	Families Unite for Livelihoods in Lesotho project
FY	Fiscal Year
GA	Grazing Association
GBS	General Budget Support
GCCA	Global Climate Change Alliance
GCM	Global Circulation Model
GDP	Gross Domestic Product
GEF	Global Environment Fund
GHG	Greenhouse Gas
GIZ	German International Cooperation
GNI	Gross National Income
GoL	Government of Lesotho
ha	Hectares
HDI	Human Development Index
HIV	Human Immunodeficiency Virus
IAS	Invasive Alien Species
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFR	Instream Flow Requirements
IPCC	Inter-governmental Panel on Climate Change
ISWMS	Integrated Solid Waste Management System
ITP	Integrated Transport Project
IUCN	International Union for the Conservation of Nature
IWRM	Integrated Water Resources Management
JBS	Joint Basin Survey
km	Kilometres
km^2	Squared kilometres
kW	Kilowatts

LAA	Land Administration Authority
LDC	Least Developed Country
LDHS	Lesotho Demographic and Health Survey
LEA	Lesotho Environment Authority
LEC	Lesotho Electricity Company
LHDA	Lesotho Highlands Development Authority
LHWP	Lesotho Highlands Water Project
LIP	Lesotho Irrigation Project
LLWSU	Lesotho Lowlands Water Supply Unit
LMS	Lesotho Meteorological Service
LREBRE	Lesotho Renewable Energy-Based Rural Electrification
LSAP	Lesotho Sustainability Assessment Project
LVAC	Lesotho Vulnerability Assessment Committee
LWP	Lesotho Woodland Project
LWSP	Lesotho Water and Sanitation Policy
LWSU	Lowlands Water Supply Unit
M&E	Monitoring and Evaluation
M€	Million Euros
MAFS	Ministry of Agriculture and Food Security
masl	Meters above sea level
MAR	Mean Annual Runoff
MCC	Millennium Challenge Corporation
MDG	Millennium Development Goals
MDTP	Maloti-Drakensberg Trans-frontier Conservation and Development Project
m^3	Cubic metres
MDWSP	Metolong Dam Water Supply Programme
MEA	Multilateral Environmental Agreements
MFDP	Ministry of Finance and Development Planning
MFLR	Ministry of Forestry and Land Reclamation
MHSW	Ministry of Health and Social Welfare
MICA	Mountain Integrated Conservation Agriculture in Lesotho project
MLGC	Ministry of Local Government and Chieftainship
mm	Millimetres
Mm^3	Million cubic metres
MMR	Maternal Mortality Rate
MNR	Ministry of Natural Resources
MPWT	Ministry of Public Works and Transport
MRC	Managed Resource Committee
MT	Metric Tonnes
MTEC	Ministry of Tourism, Environment and Culture

MTEF	Medium-Term Expenditure Framework
MW	Megawatts
MWWP	Maseru Wastewater Project
NAO	National Authorising Officer
NAP	National Action Plan to Implement Agenda 21
NAPA	National Adaptation Programme of Action
NAPFS	National Action Plan for Food Security
NBSAP	National Biodiversity Strategic Action Plan
NEAP	National Environmental Action Plan
NEC	National Environmental Council
NEP	National Environmental Policy
NES	National Environment Secretariat
NFP	National Forestry Policy
NFSP	National Food Security Policy
NGO	Non-Governmental Organisation
NIP	National Indicative Programme (EU)
NIP	National Implementation Programme
NLUP	National Land Use Policy
NO_2	Nitrogen Dioxide
NO_3	Nitrates
NRM	Natural Resources Management
NRRP	National Range Resources Policy
NSA	Non-State Actors
NSA-SP	Non-State Actors Sector Programme
NSDP	National Strategic Development Plan
NSWCP	National Soil and Water Conservation Policy
ORASECOM	The Orange-Senqu River Commission
OVC	Orphans and Vulnerable Children
pH	Hydrogen potential
PM_{10}	Particulate Matter under 10µ
PO_4	Phosphates
POP	Persistent Organic Pollutant
PPP	Public-Private Partnership
PPP$	Purchasing Power Parity
PPSU	Policy Planning and Strategy Unit
PRS	Poverty Reduction Strategy
PRSB	Poverty Reduction Support Budget
PSIP	Public Sector Investment Programme
RBA	Rapid Biological Assessment
RMA	Resources Management Association

RMD	Range Management Division
RSA	Republic of South Africa
RWSS	Rural Water Supply and Sanitation
SADC	Southern African Development Community
SASS4	South Africa Scoring System 4
SBS	Sector Budget Support
SEA	Strategic Environmental Assessment
s	Second
SFCP	Social Forestry and Conservation Project
SFP	Social Forestry Project
SFR	State Forest Reserve
SLM	Sustainable Land Management
SO_2	Sulphur dioxide
SPSP	Sector Policy Support Programme
TA	Technical Assistance
TAPs	Technical and Administrative Provisions
TCF	Technical Cooperation Facility
TDS	Total dissolved solids
TED	Technology for Economic Development
TSPIRSP	Transport Sector Policy and Institutional Reform Support Programme
UES	Unified Extension Service
UNCCD	United Nations Convention on Combatting Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO MAB	United Nations Educational, Scientific and Cultural Organisation Man and Biodiversity (Programme)
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USD	United States Dollars
VIP	Ventilation Improved Pit Latrines
WASA	Water and Sewerage Authority
WASCO	Water and Wewerage Company
WB	World Bank
WHO	World Health Organisation
WFP	World Food Programme
WWTP	Waste Water Treatment Plant
yr	Year

EXECUTIVE SUMMARY

Introduction

Under European Union (EU) policy, the European Commission (EC) has an obligation to integrate the environment in all phases of its development cooperation. According to the EC *Guidelines for Integration of Environment and Climate Change in Development Cooperation* (2009), the main instrument for environmental integration into the programming phase is the Country Environmental Profile (CEP). The EU delegation (EUD) in Lesotho will shortly start preparing its programming for the 11th European Development Fund (EDF) covering the 2014-2020 period, to which this CEP will contribute.

The CEP provides a general overview of the state of the environment in Lesotho, including a brief description of the pressures and trends; it gives an overview of the policy, institutional and legislative framework for environmental protection; and provides an overview of donor activities in relation to the environment in general, and EC activities in environment and environmental mainstreaming in particular. Finally it identifies the key environmental concerns in the country and makes recommendations as to how the EUD could better integrate the environment in its development cooperation under the 11th EDF, be it addressing key environmental issues directly, and/or through better environmental mainstreaming in other sectors.

This CEP was prepared over the April-July, 2012 period by a team of two consultants[1]. CEP preparation was based on: (i) a comprehensive literature review, including an analysis of policy and legislative documents; (ii) bilateral semi-structured interviews with key stakeholders in Lesotho; (iii) site visits[2]; and (iv) a stakeholders' workshop to provide debriefing of findings and explore opportunities for the EU to address key environmental concerns identified within the 11th EDF.

In preparing recommendations to the EUD various key aspects are taken into consideration, including: alignment with the Government's development policies; adequacy of the national policy, institutional and legislative framework to adequately address key environmental concerns; and coordination with other development partners (donors).

Key environmental aspects

Lesotho is a Least Developed Country that depends heavily on the state of its environment in all major respects. More than 70% of the population engage in subsistence rain-fed agriculture, often complemented by sales of wool and mohair, especially in the mountain areas. The main source of foreign exchange for the country is related to the extraction of its natural resources, primarily water (transferred to RSA through the LHWP) and diamond mining.

The main environmental issues identified for Lesotho - highlighted to EU attention - are land degradation, environmental governance, water management and renewable energy.

Land degradation

The environmental resources that underpin Lesotho's economy are scarce, seriously degraded and/or highly vulnerable to climate change. Food insecurity has not improved in the past couple of decades and remains one of the main challenges, with decreasing agricultural yields to which the changing climate has been contributing. Arable land area is very limited and decreasing, and its **soils** are increasingly being washed away and degraded. **Rangelands** are being over-stocked and over-grazed, which does not allow them to regenerate; these are being colonised by Invasive Alien Species and overstocking is also exacerbating soil erosion. Over-harvesting of fuel wood is adding to land degradation; this in a context where the majority of the rural population depend

[1] The water sector expert was replaced in the middle of the mission due to administrative matters.

[2] A limited number of site visits was organised to see key environmental issues on-site as well as to be able to hold interviews with stakeholders at the local level. Visits included UNDP Sustainable Land Management (SLM) project sites; Leribe (local authorities and projects) and the industrial area around Maseru.

on wood as the main source of energy for cooking and heating, where forest cover is incredibly small, and where there is no tradition of sustainable management of forest resources. Other factors – biophysical, regulatory, institutional – also contribute to land degradation, such as bushfires, erosion of traditional authority *vis-à-vis* recently established and yet ineffective local authorities, an out-dated regulatory system, and fragmented and un-coordinated institutional structures. **Wetlands** are also increasingly under pressure; siltation from land degradation affects their ecological functions, some have been reclaimed for agricultural land, cattle graze on them, and roads often traverse them. Inappropriate range management is also directly affecting wetland functions.

Land degradation has multiple causes. It also has multiple effects that spread over a wide array of sectors and sub-sectors. The most immediate effects are decreasing agricultural yields and diminishing grazing lands, which both impinge directly on food security for the majority of the population. Degraded land has an adverse effect on local biodiversity; traditional medicinal plants become scarcer, impacting health of the local population and also traditional Basotho culture. Eroded soil washes to the rivers, adding to nutrient load and thus diminishing oxygen levels, affecting river ecosystems. But sediments also end up in the dams, decreasing their life-time, and thus potentially affecting the revenues from the transfers of water to RSA and reducing the hydropower generation potential. Sediment load will eventually lead to increasing levels of eutrophication, which will affect the potential for tourism and aquaculture, as well as further reduce hydropower generation potential. Increased sediment loads on dams and eventual eutrophication will also affect the Government's efforts to provide improved water sources to the population, by decreasing the life-span of dams and increasing water treatment costs. Land degradation is thus on its way to interfere with the basis of Lesotho's main source of foreign exchange, as well as with the country's efforts to reduce energy dependency and improve access to water.

Climate change is already contributing to land degradation and increased food insecurity, as experienced by farmers across the country. Climate change is likely to, *inter alia*, reduce the regenerative capacity of vegetation through drier weather (causing further stress on rangelands), more intense precipitation events (increasing run-off and risk of floods), and lead to diminishing water resources.

The GoL has recognised the importance of land degradation: different line ministries and levels of government have responsibilities in relation to land degradation, and various pieces of legislation and policies refer to the problem. However efforts to address land degradation have been shy, insufficient, ineffective and largely uncoordinated. Sound policies and strategies have been or are being prepared, but effective implementation remains a challenge. Lack of comprehensive and effective M&E systems in the key sectors does not contribute to effective planning.

The NSDP again emphasises the problem of land degradation, but the GoL's key focus is on macroeconomic figures, promoting job creation through the further development of the LHWP and expansion of the mining industry. Land degradation, albeit its direct relationship to the situation of poverty in the country, does not figure prominently in the GoL priorities. In the words of the NSDP: *"Employment creation represents the best way of achieving progress towards Vision 2020 goals. Therefore, the Plan's main indicator for success will be the number of jobs added to the economy…"*

With some exceptions, environment is not a key area of attention by the donor community. Most of the environment-related support is directed to water supply and sanitation services. There is however, support from the MCC to wetlands protection and some small donor-funded projects addressing issues such as conservation agriculture and climate change adaptation in the agriculture sector. In relation to land degradation the UNDP Sustainable Land Management (SLM) project is the one that most directly addresses the issue of land degradation; however, the project is coming to an end and funds have not yet been identified for up-scaling.

Water management

Provision of water supply and sanitation services has received wider support from the donor community; however, the wider water sector is fundamental not only with regards to its

relationship to the country's macroeconomic figures (i.e. LHWP) but also due to its direct link to land degradation (wetlands, integrated water catchment management) and to its potential to reduce food insecurity and contribute to adaptation to climate change (e.g. small-scale irrigation, water harvesting).

The broader water sector is fragmented between different ministries, departments and parastatals. The MNR addresses issues of water policy and planning, water quality monitoring, wetlands management and, through the DRWS and WASCO, provision of water supply and sanitation services, where local authorities should play an increasingly important role. The LHDA deals with the LHWP and bulk water transfers to RSA. Water for agriculture (irrigation) is mainly addressed under the MAFS; small water-capture structures by the MFLR, which are also addressing protection of wetlands. Land management aspects fundamental to a healthy water system are under the MFLR and, to a lesser extent, the MAFS.

The integrated planning and management dimension that is fundamental to water management is considered at a policy and strategy level, but is yet to become a reality; insufficient and ineffective inter-institutional coordination mechanisms remain one of the main limiting factors.

The lack of a functional M&E system in the sector has also not helped in achieving good planning; there is no current agreement on baseline data, and basic indicators are proving difficult to measure, as evidenced by the difficulties to apply the performance indicators agreed with the EU for the water SBS. The M&E system requires attention; however, the donor community should consider the water sector in its broader context, especially as it relates to fundamental challenges for poverty eradication, such as is the case with land degradation.

Integrated Water Catchment Management

Issues of land degradation and water management are best addressed through an integrated water catchment management approach, which would normally include aspects such as rangeland management, soil erosion control, forestry, water resources management, water quality control, etc. The integrated water catchment management approach is foreseen under the Water and Sanitation Policy (2007), but is also referred to in the National Environmental Policy (1998) as well as in the draft versions of the National Soil and Water Conservation Policy and the National Land Use Policy. An integrated water catchment management approach has the beauty of capturing – in a coordinated manner – the main challenges identified above under the banners of land degradation and water management. Such a systemic approach comes at a cost of complexity, which is translated into significant challenges.

As any integrated approach, water catchment management necessitates a clear overarching policy and effective inter-institutional coordination mechanisms. This is a challenge under the current Lesotho context, where inter-institutional coordination has been very weak and ineffective, and where the different components that must be covered by a water catchment management approach are fragmented across several government institutions, in some cases overlapping. This complexity is carefully considered in proposing a donor support to water catchment management. For example, at a very basic level clarification must be obtained about whether an integrated *catchment management* approach (foreseen under the Water & Sanitation Policy and promoted by the MNR) is the same as the integrated *land and water conservation* approach (promoted by the MFLR).

Environmental governance

Environmental governance in Lesotho is very weak. Lesotho Vision 2020 does refer to a "well managed environment" as an integral element of the vision statement. *"Lesotho shall be renowned for its environmental management"* (Vision 2020, Section 2.3.6) points the way forward; the NSDP rescues environmental management as one of the strategic areas and recognises that *"sound environmental policies, adaptation to climate change and physical planning are necessary for sustainable long-term economic growth while preserving our country for future generations"*. It further acknowledges that *"there is compelling evidence that the measures that are currently being taken…are not adequate to reverse environmental degradation"*.

The Environment Act 2001 provided for the creation of the semi-independent Lesotho Environment Authority (LEA). Nevertheless it was decided that no funds were available to establish the LEA, and the former National Environment Secretariat (NES) was converted into the Department of Environment (DoE) within the MTEC. Several indicators shed light on the inherent weaknesses of the DoE and thus its constraints to fulfil its mandate of advocate and defender of environmental protection in the country, for example: (i) the Ministry's mission statement is all about tourism development[3] - on a generous interpretation, the mission is about environmental protection so it may facilitate tourism development; (ii) the approximate budget allocated to the MTEC for 2012-2014 represents only 0.16% of the total budget; the draft list of "on-going projects" identified under the draft PSIP for the MTEC does not include a single environmental project; (iii) most of the provisions made in the Environment Act 2008 have not been implemented; (iv) the MTEC's Strategic Plan 2005-2008 prescribed without having implemented most of the actions foreseen for the DoE. Furthermore the DoE is understaffed and does not have resources to carry out some of its basic functions.

In spite Lesotho cannot be considered an industrial country, there is the presence of environmentally sensitive industry, such as the garment and mining industries. Large-scale infrastructure projects are also environmentally sensitive, such as the construction of large dams under the LHWP. We must recall that the NSDP is placing emphasis on the expansion of the mining industry and LHWP as growth accelerators under the low-growth scenario; under the moderate-growth scenario these also include manufacturing, agriculture (commercial) and tourism. The existing gap between the development of environmentally-sensitive activities and the capacities of the environmental governance system to guarantee the implementation of regulations and safeguards and ensure enforcement, is widening. Strengthening of environmental governance is a necessity.

For environmental governance to be effective many fronts need to be tackled, such as: institutional arrangements; inter-institutional coordination mechanisms; resources; technical capacities; enforcement powers; and M&E, including establishment of an environmental baseline.

Recommendations

The analysis of the environmental challenges in Lesotho are translated into practical recommendations as to how the EU can best contribute to address them under the programming for the 11th EDF. Careful consideration is given to the objectives of EU development cooperation, as stated in the European Consensus on Development[4], the principles of the Paris Declaration on Aid Effectiveness, and the draft EC Programming Guidelines.

Sectors and areas of support under 11th EDF

Two narrowly defined sector of cooperation are proposed for the EU to consider supporting: **land degradation** and **environmental governance**. As well recommendations are made for the integration of environmental consideration into a possible support to the **energy sector**. Finally specific recommendations are made for better environmental integration in the support to the water sector, which also captures some elements associated to land degradation.

Land degradation

In terms of **alignment**, a hypothetical support to land degradation would be contributing to a number of GoL policy objectives; land degradation is also subject of attention of a number of sectoral strategies. The draft programming guidelines state that the EU should support those sectors that build the foundations for growth, and in particular those with a strong multiplier effect, "notably agriculture and energy". Addressing land degradation is a *de facto* support to agriculture.

[3] *"The Ministry of Tourism, Environment and Culture is committed to promote environmentally and culturally sustainable development, making Lesotho the number one tourism destination in the region through the provision of high quality service and creation of enabling environment for the private sector driven and community based tourism development".*

[4] The 2005 European Consensus on Development states that: *"the primary and overarching objective of EU development cooperation is the eradication of poverty in the context of sustainable development, including pursuit of the Millennium Development Goals".*

Ownership may prove a challenge in a support to land degradation, as it is an area that necessarily requires inter-institutional coordination and which is currently weak in Lesotho. Support to land degradation would thus require to **first focus on the building of ownership and the creation of effective inter-institutional coordination mechanisms**.

Sector support should be the preferred aid delivery modality. However due to the multi-sectoral nature of land degradation, it is not clear which should be the government strategy to be supported through the SPSP (e.g. the National Range Resources Management Policy, the National Soil and Water Conservation Policy). An **alignment of policies with key focus on land degradation needs to be achieved**, and responsibilities for its implementation clearly defined under the coordination mechanisms. Such an alignment of policies and setting up of a coordination mechanism for the sub-sector may profit from a **long-term Technical Assistance**, complemented with **ownership- and capacity-building activities**, such as on-the-job trainings, post-graduate trainings, study tours and twinning arrangements. Working closely with local authorities and traditional authorities is essential in this sector. **Technical Assistance** could be used to **assess technical capacity of land degradation officers** and develop an associated **training plan** and a **retention plan**. TA could also provide capacity building for extension officers and help create extension posts at a high enough level to attract skilled graduates and ensure candidate skills are aligned to positions.

Lack of a **baseline** on land degradation is a key inhibiting factor for effective land management, and thus the generation of a baseline should be priority for evidence-based planning, an area that UNDP is exploring. Technical Assistance could also be used to generate the baseline and the monitoring system.

It is highly recommended not to focus all resources on Sector Budget Support (SBS), but rather complement them with TA as described above.

Choice of **performance indicators** is key for successful sector support. Under the NSDP proposed M&E system, the only directly relevant indicator is *"rehabilitated areas affected by soil erosion"*; however no methodology has been defined on how this indicator should be measured. A credible and agreed methodology for the measurement of this indicator has to be agreed, probably complemented by indirect measures of soil erosion (e.g. suspended solids and sediment load in strategically located surface water sampling points).

In addition to soil erosion, land degradation must also be measured with regards to rangeland management and soil conservation agricultural practices. Possible aspects that could be reflected in indicators include: (i) stocking rates; (ii) number of farmers under functional Range Management Associations; (iii) area under conservation agriculture; (iv) number of approved land use plans; (v) rate of encroachment on arable land; (vi) expenditure on research on soil erosion; and/or (vii) land degradation monitoring system established. UNDP – under its SLM project - is exploring options to measure rangeland degradation for evidence based planning. Results of this consultancy should be taken into account when considering indicators.

Donor coordination will be essential in order to ensure complementarity and follow-up of other activities, notably the UNDP SLM project, the FAO climate change adaptation in agriculture project, the WB small-scale agriculture project, as well as others (e.g. under USAID) that have had a narrower scope.

Environmental governance

Strong environmental governance is needed in a country whose economy is almost fully dependent on its natural resources (mainly water, rangelands and soils), where these natural resources are under increasing stress, and where the country's growth strategy promotes an increase in industrial activity and large infrastructure works. Environmental governance is also an area that has been largely neglected by the donor community, and where the EU could have a significant impact.

In terms of **alignment**, a hypothetical support to environmental governance would be contributing to a number of GoL policy objectives and strategies. One of the challenges in supporting environmental governance is that the DoE has been kept as a weak institution,

showing a **deficit of environmental awareness at the highest political levels**, where environmental protection is to a certain extent still seen as a potential obstacle for the onset of business. For this reason **Sector Budget Support is not recommended**. Rather, a support to environmental governance could be addressed taking into account the following:

- **Awareness raising** at the political level on the links between environmental degradation, poverty and economic growth. **Technical Assistance** could be used to prepare a detailed **economic valuation of natural resources and environmental degradation** in Lesotho, which would translate environmental degradation into monetary terms. Such a study could form the basis for awareness raising. However, the lack of baseline data may be an important obstacle for the preparation of such an economic valuation; a **scoping study** may thus be required to determine the methodology to be used and the basic baseline data to be generated.
  Strategic Environmental Assessment (SEA) can also be promoted as a tool to better integrate the environment into policy-making and planning processes at the national and sector levels. The donor community has wide experience in the use of SEA. As well, the Environment Act 2008 considers SEA as a tool for environmental integration, although its use has not been regulated nor implemented. A pilot SEA in a key sector planning process (e.g. energy) could be very useful to pilot the tool and also to highlight the environmental issues associated to key sectors.
- **Awareness raising of the general population** on the key environmental issues in the country and options to address them. Support to general awareness raising could include: (i) training and capacity building of NGOs to strengthen their advocacy role; (ii) awareness raising of journalists on the environmental issues in the country, and capacity building for providing media coverage of environmental issues and on using the mass media as a tool for environmental sensitisation; (iii) input into strengthening the environmental component of the national education curricula.
- **Strengthening of environmental integration in key ministries**. Although the DoE trained key persons to build the Environmental Units (EUs) in the line ministries, most of these EUs are not functional or were never formally established. A support to environmental governance should also directly tackle environment as a cross-cutting issue in key sectors; this could include aspects such as: (i) awareness raising and training on the links between the environment and the different sectors (targeted training); (ii) training on use of environmental integration tools, such as EIA and SEA; (iii) assistance and training on measurement of key environmental indicators associated to the sector.
- **Policy dialogue** on the need to enhance environmental governance, and discussing institutional rearrangements (e.g. creation of an environment executive agency).
- **Review of the Environment Act 2008** as foreseen under the NSDP, in order to optimise and enhance its performance. Careful attention should be given to ensure this NSDP-foreseen activity is not focused on further diluting the EIA system to facilitate business development.
- **Support to the effective implementation of the Environment Act**, based on a prioritisation of activities. Such support could include a component of sector budget support, with clearly identified indicators that measure effective implementation of the Act. Such indicators could include, e.g. (i) number of effluent licenses and pollution licenses issued by the DoE; (ii) number of inspections carried out by the DoE; (iii) establishment of the Environmental Tribunal; (iv) number of effluent monitoring reports submitted by industry to the DoE (in case such a provision is established); (v) approval of effluent quality standards; (vi) compliance of industry with approved effluent quality standards.

Environmental integration in the energy sector

Energy is being considered by the EU Delegation as a possible sector of cooperation. Apart from the obvious merits of increasing the level of electrification for the Basotho population, from an environmental point of view there are three main opportunities: (1) enhanced supply of biomass energy resources; (2) reduced dependency on biomass resources; and (3) reduced greenhouse gas emissions through the use of renewable sources of energy. The draft Energy Policy (2003) seeks to expand the role of renewable energies by making them more affordable. At the moment solar energy has been expanded, as well as some mini-hydroelectric schemes and some bio-digesters been constructed. Initiatives are on the way for the development of wind power.

From an environmental point of view it should be recalled that the main source of energy for the Basotho population is biomass, mainly wood. The collection of fuel wood from unsustainable sources is associated to increased deforestation and increased land degradation. Increased electrification is likely to be used primarily for lighting and running of electric appliances, but

may not be a significant energy substitute for heating and cooking. Reductions in biomass consumption can be further obtained by promoting increased **energy efficiency**.

From an environmental point of view, a possible support to the energy sector should ensure that it builds into its objectives the **reduced reliance on wood as a source of household energy** and (especially) the **increase of sustainably managed sources of fuel wood** (with appropriate species that do not contribute to land degradation). It thus implies that the support to the energy sector looks at aspects such as: reforestation; afforestation; and forestry management plans. These should be reflected in appropriate indicators, such as: (i) % of households that use sustainably managed woodlots to secure wood for energy purposes; (ii) % of energy needs (cooking, heating, lighting) satisfied by wood. From a **climate change mitigation** point of view, the support to the energy sector should seek to maximise opportunities for low-carbon sources of energy in line with a "green growth" approach to development, as already promoted by the GoL.

A Renewable Energy Policy needs to be aligned with the National Forestry Policy (2008), which promotes planting of trees and shrubs to curb the energy deficit. The **MFLR (Forestry Department) will have to be engaged** in a support to the energy sector.

One of the major obstacles for the support to the energy sector is that the government does not have an approved Energy Policy (the 2003 policy remains a draft), and the Renewable Energy Policy has not yet been prepared.

Under the EU *Guidelines for Integration of Environment and Climate Change in Development Cooperation*, energy is considered as an environmentally-sensitive sector, and it is thus recommended to prepare a **Strategic Environmental Assessment (SEA)** of the policy/strategy whose implementation will be supported. The EU should carry out an **SEA Screening** as part of the energy sector SPSP identification. In case it is decided that an SEA needs to be carried out, the results of the screening process should be used to help define the scope of the SEA, so it becomes a focused process. In this case: (i) the EU should build ownership of the SEA process; (ii) the SEA would provide recommendations to the GoL on how to better integrate the environment in the energy policy and to the EU on how the environment could be better integrated into the formulation of the energy sector SPSP; (iii) ideally the SEA should be carried out as part of the policy-making process; (iv) the ToR for the SEA must be adapted to ensure that it addresses not only the potential environmental impacts of policy implementation, but also to identify the environmental challenges in the sector in order to seek opportunities for the energy policy to better address them; (iv) the SEA would also need to take into account other policies and strategies relevant to the energy sector, especially the National Forestry Policy and its Action Plan.

Water sector support

The EU is currently supporting the water sector through a Sector Budget Support programme, with a focus on water provision and sanitation. However the monitoring has proved difficult to implement, due to the lack of a credible baseline and to the absence of an effective M&E system in the sector. A study to review the M&E system in the water was recently prepared (Vad and Kiwango, 2011) which provides recommendations for improving the M&E system. The EU should ensure an appropriate M&E system, in line with the recommendations made in that report, is developed and implemented for continuation of the current support.

The EU is also likely to agree a new SPSP for the water sector under the 11th EDF. For this new SPSP it is highly recommended that the water sector is addressed in its broader sense, and not limited to the provision of water supply and sanitation services. The EU support should focus on the implementation of an integrated **water catchment management** approach, as foreseen in the Lesotho Water and Sanitation Policy.

Water management can only be effective if it takes into account the whole catchment. This includes measures to guarantee water quantity and quality, such as protection of sources of water (e.g. wetlands), buffering of run-off (e.g. vegetation cover), and water quality (e.g. effluent control). It also includes measures to satisfy demand, such as water for irrigation, industrial use

and household consumption. Integrated water catchment management is becoming increasingly important in the context of climate change, as water supply is like to decrease; water-dependent productive sectors (e.g. rain-fed subsistence agriculture) are especially vulnerable and are likely to be affected by erratic rainfall patters, putting further stress on food security.

Aspects to address in approaching integrated water catchment management have been identified by (Vad and Kiwango, 2011), and are consistent with the analyses undertaken as part of this CEP. These include focus on local level planning and implementation; and combined planning and budgeting at national level between the involved line ministries of natural resources, forestry and land reclamation, agriculture, environment and local government.

Inter-institutional coordination is fundamental for successful integrated water catchment management; for this to occur it is essential to build ownership of the process as well as the necessary awareness and capacities. A watershed management approach requires the involvement of the DWA, the MAFS (e.g. in terms of irrigation and agricultural practices), the MFLR (e.g. in terms of forest management, soil and water conservation and rangeland management), the DoE (pollution control), Community Councils and traditional authorities. **Alignment of sector policies is also fundamental**, more particularly the Water and Sanitation Policy (and the upcoming Long-term Water and Sanitation Strategy), the up-coming Soil and Water Conservation Policy (being prepared by the MFLR), the Range Resources Management Policy (currently in draft), and the Irrigation Policy (in draft).

The EU could support activities such as:

- **Long-term technical assistance**, helping in setting up an inter-institutional coordination mechanism, implementing it, and developing capacities (training);
- **Study tours** to countries in the region where an integrated watershed management approach has proved successful;
- **Post-graduate and/or on-the-job training** on integrated watershed management;
- **Alignment of relevant sector policies**.

Due to the importance of land degradation as an inhibiting factor for development and its direct link to water catchment management, if the EUD decides not to support land degradation as a sector of cooperation, it is recommended that it integrates key land degradation variables in its support to water catchment management. Such aspects could include, e.g.: (i) up-scaling of range management systems; (ii) establishment of a baseline of land degradation/soil erosion; and (iii) establishment of a land degradation monitoring system.

Performance indicators could reflect in general terms progress in the setting up and implementation of an integrated water catchment management approach, for example: **number of water catchment management plans developed and approved**, or **establishment of a water catchment management coordinating body**. However it is recommended that monitoring also focuses on more concrete priority aspects of water management; in particular we recommend promoting **small-scale irrigation**.

In a country where the majority of the population depends on subsistence rain-fed agriculture and where climate change is expected to especially affect the agriculture sector, irrigation is rightly recognised under the NAPA as one of the key adaptation measures. Moreover, large dams, such as Metolong and those under the LHWP offer a guaranteed and constant water flow throughout the year, which could be used to provide gravity irrigation. However, **a possible support to small-scale irrigation should ensure that feasibility studies are carried out prior to any developments, ensuring that irrigation will not exacerbate soil erosion, which can be particularly problematic in duplex soils**. Indicators such as the following could be used: (i) area (ha) under irrigated agriculture; (ii) % of households practicing irrigation agriculture.

An **SEA Screening** was prepared in accordance with the EC guidelines for environmental integration, concluding that an SEA for the LWSP (context of an SPSP in the water sector) is not necessary, but highlighting areas of attention. A distinction is made between the Lesotho Water and Sanitation Policy (subject of the water sector SPSP) and the wider 'policy' to the water sector, which includes the LHWP. Whilst the former is largely not environmentally sensitive and

has mainly potential positive environmental impacts, the latter is highly sensitive in environmental terms. Thus the EUD is encouraged to advocate, through its policy dialogue, for the completion of a **cumulative impacts assessment** for the whole of the LHWP and other dams, also explicitly taking into account the expected effects of climate change and increased climate variability and the potential socio-economic impacts (e.g. water availability for the Basotho population, including to satisfy requirements for climate change adaptation, such as small-scale irrigation).

Environmental integration in EU Delegation

Although no critical shortcomings were identified, environmental integration in the EUD's own practices could benefit from some improvements that deserve explicit attention:

- Undertake EIA and SEA screenings as part of the identification of all project (EIA screening) and sector (SEA screening) supports in accordance with the Guidelines for environmental integration. Attach the screening results to the respective Identification Fiches.
- Promote and carry out SEAs (were necessary, based on SEA screening), in coordination with the GoL and other donors (e.g. an SEA of the NSDP would have been useful in the context of the GBS).

In analysing the environment as a cross-cutting issue as part of the identification and formulation phases (and as reflected in the corresponding IFs and AFs), do not centre attention only on potential adverse impacts on the environment (which are largely absent for the case on environmentally non-sensitive sectors), but also look for opportunities for the proposed support project/programme to help address environmental concerns and enhance environmental performance (opportunities can be identified in most sectors). The EC Guidelines for environmental integration provide many prompts for the identification of such opportunities.

1. Introduction

Under the European Commission (EC) *Guidelines on the Integration of Environment and Climate Change in Development Cooperation* (European Commission, 2009) the Country Environmental Profile (CEP) is the main tool for the integration of the environment into the programming phase. The CEP provides information that allows the European Union Delegation (EUD) to appraise the environmental dimension and integrate it in its programming. The CEP is a reference document. Such information includes:

- A description of the country's state of the environment, including existing pressures, trends and links to the situation of poverty and the socio-economic context;
- An identification of the key environmental concerns in the country;
- An analysis of actions from the EU and other donors in the environment sector and in environmental mainstreaming;
- A review of the policy, legislative and institutional framework for environmental governance;
- An appraisal of the degree of environmental integration in the main sectors; and
- Conclusions and recommendations to better integrate the environment in the EU programming.

The elaboration of the CEP is based primarily on a comprehensive review of existing literature, bilateral interviews with key stakeholders (see Appendix 5) and site visits. Field trips were taken to UNDP SLM (Sustainable Land Management) Project sites around Semakong in Rapoleboea, Hlabathe, Boreipala, and Tsenakeng; Leribe (visiting GIZ work on decentralisation of forest management and on land use planning); and the Maseru industrial area.

2. State of the Environment

2.1 Geophysical Environment

2.1.1 Location, geography and climate

The Kingdom of Lesotho is a landlocked country that covers a surface area of 30,648 km^2 between latitudes 28°41' and 31°41' south and between longitudes 27°00' and 29°30' east, just to the right of the centre of the Republic of South Africa (RSA). Most of the country is mountainous (59%), characterised by bare rock and deep V-shaped river valleys; the lowlands are located along the western border and cover around 17% of the territory; the foothills, between the lowlands and the mountainous area comprise 15% of the land area; and the remaining 9% corresponds to the Senqu Valley, a narrow strip of land along the Senqu (Orange) River. These correspond to the four agro-ecological zones present in Lesotho (see Figure 4). Altitudes in Lesotho range from around 1,388 masl in the lowlands, at the confluence of Senqu and its tributary Makhaleng, to over 3,000 masl in the highlands with a peak of 3,482 masl, Thabana Ntlenyana (the highest in Southern Africa), with 80% of the territory lying over 1,800 masl. The 200 km Drakensberg-Maloti mountain range separates Lesotho and the provinces of KwaZulu-Natal and Eastern Cape of RSA.

The **climate** in Lesotho is continental and temperate with four distinct seasons; it receives 85% of its annual rainfall in the October-April period, averaging 700 mm/yr (below the world average of 800 mm/yr). The highlands are the wettest part, with an average of 1,200 mm/yr, whereas the Senqu Valley receives the lowest precipitation, with an average of 500 mm/yr (NES, 2002a). Winter snowfall occurs in the mountain areas, and approximately once every three years in the lowlands. The precipitation of Lesotho is highly variable, and this variability has increased in the last 23 years resulting in more dry years than in other similar periods (Sekoli, 2002). In the lowlands winters are mild and summers hot, whereas in the highlands temperatures are colder, reaching minus 19°C in the winter. The extreme recorded temperatures are +39.4°C in Maseru and -20.4°C (June 1967) at Letšeng-La-Terai at an altitude of 3,050 masl (Makhoalibe, 1997). See Figure 5 and Figure 6 for average annual temperatures and precipitation respectively.

2.1.2 Water resources

Hydrographic network

Lesotho's hydrographic network is shared with neighbouring countries, being an upstream riparian State with RSA and Namibia in the Senqu/Orange river basin, which has a drainage area of about 1 million km^2. Although 59% of the Senqu/Orange River Basin lies in RSA and Lesotho has only 3% of the basin land area, 46% of mean annual runoff is generated from Lesotho. There are four major river systems: the largest is the Senqu catchment, with 20,485 km^2 and draining 113 m^3/s; this is followed by the Mohokare catchment (6890 km^2 and 39 m^3/s), the Makhaleng catchment (2,911 km^2 and 18 m^3/s) and the Maphutseng catchment (362 km^2 and 1.9 m^3/s) (Mojakisane *et al*, 2004)[5]. The first two of these river systems originate in the Mount Aux Sources in the northeast along the Drakensberg, whereas the latter two originate in the central Maloti and flow in a south-west direction into RSA. See Figure 7 for Lesotho's river systems.

In terms of groundwater resources, it is estimated that Lesotho has a total of 5,925 Mm^3 of static and 341 Mm^3 of renewable groundwater resources (MNR, nd b), groundwater yields being generally small with exception of a few well fields. Reliance of groundwater sources varies widely, from 5% of the rural population in Thaba-Tseka District to 72% of the rural population in Maseru District (MNR, 2000).

Lesotho Highlands Water Project (LHWP)

Water is one of the most important natural resources in Lesotho, and is the basis for a large part of its economy: mainly water transfers to RSA under the **Lesotho Highlands Water Project (LHWP)** and also the generation of electricity in the highlands. Water is also stored and used through smaller schemes in the various urban and peri-urban areas in the lowlands serving domestic, municipal and industrial needs, as well as the rural water supply systems consisting mainly of abstractions from boreholes, wells and springs (MNR, nd b).

There are three large dams in the highlands: (i) Katse dam with 1,950 Mm^3 capacity; (ii) Mohale dam with 958 Mm^3 capacity; and (iii) Muela dam with 6 Mm^3 capacity and a 72 MW hydropower plant. These are all part of the LHWP to supply water to RSA. In the lowlands there are various water abstraction systems which are not meeting the water demand, the largest of which is the pumping of water from the Caledon River for the supply of water to Maseru at a rate of 24,691 m^3/day (MNR, nd b).

The LHWP foresees the construction of four more dams, the first of which (corresponding to the project's Phase 2) is already agreed: (i) Polihali dam with 2,322 Mm^3 capacity and an 83 MW hydropower plant (LHWP Phase 2); (ii) Tsoelike dam with 2,050 Mm^3 capacity (LHWP Phase 3); (iii) Ntoahae dam with 1,720 Mm^3 capacity (LHWP Phase 4); and Malatsi dam (LHWP Phase 5). These subsequent phases were originally scheduled for completion by 2020.

The LHWP is the cornerstone of the GoL's strategy for the country's development; it represents the main source of foreign exchange earnings and takes approximately 75% of the budget. Nevertheless the potential impacts of the LHWP are large in terms of water security for the country, reduction of scarce arable and grazing lands and environmental impacts.

Wetlands[6]

Out of the five wetland systems found in Southern Africa, three are found in Lesotho: palustrine, lacustrine and riverine (Cowan and Van Riet, 1998). Almost all wetlands are found in high precipitation areas in the highlands (notably in the northeast part of the country), and are found in the headwaters of catchments; these range in size from several square metres to several square kilometres, and cover approximately 1.36% of the total land area (National Environment Secretariat, 2002).

[5] The figures reported by Makhoalibe (1997) are 118, 32 and 20 m^3/s respectively, inclusive of groundwater contribution.

[6] The state of wetlands will be assessed as part of the MCC "Wetlands Restoration and Conservation Project"; this section is largely based on National Environment Secretariat (2002a); Anchor Environmental Consultants (2007); and Hughes *et al* (1992).

Lesotho wetlands are the main source of water for the Orange-Senqu River Basin, and also provide a range of direct services such as livestock pasture, medicinal plants and thatch grass for local communities; other important ecosystemic services include climate regulation through carbon recycling, absorption of toxins, flood control/erosion control, genetic and biological diversity, habitat for numerous species, maintaining groundwater levels and water purification.

Grasses are abundant and make up the largest proportion (65%) of the herbaceous cover. Vegetation in Lesotho's wetlands include many endemic species occurring in the high-lying alpine areas.

Wetlands in Lesotho are distinct both floristically and structurally from those found in other parts of the region (Anchor Environmental Consultants, 2007), and have been defined as rare ecological features in Southern Africa, making them extremely valuable from a social and biodiversity perspective. For example, the dwarf *Erica-Helichrysum* heathland, and the dense, mat-like vegetation of the mountain wetlands occur nowhere else in southern or central Africa.

The following wetland types are found in Lesotho:

- Marshes, typically with reedbeds;
- Tarns, consisting of shallow pools and pans without external drainage on sandstone outcrops; and
- Bods and sponges (also called mires), their character being midslope and valleyhead fens, found at sources of streams and rivers.

Lesotho currently has one declared Ramsar site, the Lets'eng-la – Letsie wetland, situated about 200 km south-east of Maseru, in the Quthing District, and which covers an area of 434 ha. The site is within the Maloti Mountains and is part of the Maloti-Drakensberg system.

However, many of Lesotho's wetlands have been degraded, two main factors being land degradation and climate change. The extent of damage is variable, with some wetlands being trampled by livestock and beginning to lose their functions; others have been destroyed by the formation of gullies. Many wetlands, particularly mires are found within rangelands, and have been damaged by overgrazing and trampling by livestock. Mining activities and road construction have also damaged and destroyed wetlands. Proper management of wetlands implies proper range management, such as effective rotational grazing that allows wetlands to rest; range management is however very deficient at present (ORASECOM, 2008).

The gradual drying of the climate over the past 4,000 years has resulted in the alteration of hydrologic regimes. The blooming of the ice rat population, presumably due to the reduced population of its main predator, has also contributed to degradation of wetland peripheries; ice rats cause considerable soil displacement by burrowing and thus promoting wetland aeration and oxidation. Finally agricultural encroachment into wetlands is also a factor of degradation.

Representative montane wetlands are conserved in the Sehlabathebe National Park, which covers 6,805 ha in the south-east of the country, encompassing the headwaters of the Tsoelike River. The park provides one of the last refuges of a small rare fish, *Oreodaimon quathlanzbae*, as well as a recently described aquatic plant, *Aponogeton ranunculiflorus*.

Pressures on the water regime

The water regime of a freshwater ecosystem is the prevailing pattern of water flow over a given time, and can be determined from measurements on: precipitation including snow-melt, and discharge; dynamics of water movement through the system; water use including water abstraction for domestic use, agriculture including irrigation, industry including cooling water and processing, and other uses; water storage including impoundments / wetlands / marshes and vegetation, water diversion into and out of the catchment; evapotranspiration rates and water depth; and biophysical variables such as temperature, conductivity, dissolved oxygen, turbidity, and pH.

Water regime changes which are occurring in Lesotho are the result of:

- construction of large dams for the LHWP and water transfers to RSA;

- removal of peak flows and variability in river catchments as a result of mean annual runoff (MAR) exported to RSA (removal of 30-40% MAR in the form of large inter-year as well as a significant proportion of small intra-year floods and reduction of dry season base flows);
- ecosystem changes downstream from LHWP dams including in-stream flow requirements, sedimentation as a result of low flows in the Orange-Senqu river and tributaries, opportunist plant colonisation of river banks and in-stream deposition;
- stressed and failing in-stream flow requirements, including elimination of fish species, macro-invertebrate and aquatic plant species extinction;
- invasive species in water habitats, including increased outbreaks of microbial growth; and
- water pollution, including high nutrient loading and eutrophication.

Water regime changes have caused a progressive series of impacts in the Orange-Senqu, Senqu, Malibamatso, Senqunyane and Matsoku rivers in Lesotho:

- Biophysical impacts – a highly specific downstream biophysical response at different sites was reported by Metsi Consultants (2000) to the flow regime imposed by LHWP;
- Social impacts – are correlated with the biophysical impacts of the water regime changes but display a different pattern of distribution, perhaps influenced by the distribution of communities in relation to the various reaches and the local geomorphology, which influences the distribution and abundance of important resources such as trees, fish and herbs, and the extent to which communities gather and utilise these resources;
- Public health impacts – downstream communities are at risk from water-borne and sanitation-related diseases, and these are exacerbated by reductions in river flows and reduced frequency of periodic flushing; and
- Animal health impacts – negative effects on livestock are increased where river regime flows are reduced.

Drought conditions and water availability

The lack of drought definitions and data availability are obstacles to a detailed analysis of drought conditions in Lesotho. The Drought Management Strategy (MNR, nd a) synthesises the drought conditions in Lesotho: *"All drought indicators in Lesotho, including rainfall, Mohokare flows and groundwater levels, indicate that the period 2000-2006 has been on average wetter than earlier decades. 2003 has been a very dry year but not exceptional, with drier years in the 1990s and earlier decades. Food shortages in 2002-2005 have been attributed to drought, and national droughts are declared annually, but there is no evidence of widespread hydrological drought in those years. The apparently increased impact of these dry periods must be attributed largely to increased vulnerability of parts of the Lesotho population to crop failures; this is often explained by HIV/AIDS, environmental degradation and infrastructure malfunctioning. A pronounced 10-year drought cycle is apparent and a severe drought is to be expected within a decade that requires prioritization of drought preparation and adaptation measures. Historical climate variability is considerable and likely to exceed the impacts of climate change at least in the first coming decades".*

According to the 2002 State of the Environment Report (NES, 2002a), total water resources in Lesotho are abundant in relation to demand, with a forecast of 5.18 m^3/s by 2025 in comparison with a supply of 159.53 m^3/sec (surface and groundwater). Nevertheless it has also been observed that Lesotho is vulnerable to water stress and scarcity that could result from climate change, and water stress levels could set in by the year 2016 when less than 1,700 m^3 per capita per year will be experienced, reaching less than 660 m^3 per capita per year by 2050 (NES, 2002a)[7].

Water use

Industrialisation, irrigation, hydropower development and increasing population in gazetted urban and peri-urban centres have forced water resources development from streams, springs, well fields and rivers to cater for escalating demands (NES, 2002a). The main pressures on water

[7] It must be noted that the water stress and water scarcity dates were calculated using 1996 population census projections.

resources include: growing population in urban centres; migration from rural into urban areas and increased climate variability associated to climate change (NES, 2002a).

Domestic water supply

The topography of Lesotho is steep slopes with little vegetative cover, so that runoff tends to be very rapid. Consequently, in these situations, water storage facilities (which significantly alter water chemistry and biology) are nearly always necessary for water supplies dependent on surface sources. The few exceptions to this are WASCO water abstraction from the slow-moving Caledon River for Maseru, with recent extension of piped water to Mazenod, and river abstraction to Teyateyaneg, Leribe and Butha Buthe, conglomerations all sited along the less mountainous, lowland western edge of Lesotho. Small volume, continuous local direct abstraction without impoundment takes place throughout the highlands for single or community dwellings, but there is no metering or indication of volumes for these.

Agricultural water supply

Agricultural abstraction for irrigation tends to be unregulated, although WASCO have non-validated figures for licenced volumes going to this sector while, on estimate, un-licenced abstractions may well account for up to x10 this volume. These, together with the impact on water resources from climate change and the progressive extension of the Lesotho Highlands Water Project (Phases 3 and 4), will undoubtedly, increasingly restrict water availability for human consumption, agricultural and industrial use in Lesotho.

The potential for irrigation from run-off river works is approximately 2,520 ha, but many of the works and schemes have been dormant for years (MNR, nd b). Abstraction of water for irrigation from gravel and sand beds in rivers, using well points or horizontal well screens and for groundwater development has a further 1,000-2,000 ha potential (MNR, nd b). The long-term irrigation potential in Lesotho is estimated between 12,500 ha (Aquastat Survey, 2005 cited in MNR, nd b) and 36,000 ha (MNR, nd b). Irrigation however, could also lead to exacerbated soil erosion in duplex soils (Showers, 2005), and thus feasibility of any such developments should be carefully studied.

Water Quality

Natural water supplies throughout Lesotho are generally of reasonable quality with respect to their chemical characteristics, although turbidity, suspended solids and faecal contamination are nearly always high, requiring that raw water undergoes conventional treatment if it is used in large quantities for urban supply. The incidence of pesticide pollution from run-off and radiological hazard is likely to be small because of their low-to-limited use in Lesotho. However, the incidence of arsenic poisoning and other chemical and biological hazards - including methemoglobinemia (blue baby syndrome from nitrates) and *Chlamydomonas* related disease - is not known because laboratory testing for these in Lesotho is not performed. Short-term studies have been undertaken periodically to determine water quality, public health and environmental health as part of academic research. Public health records, health care monitoring, reporting from doctors and medical units through the Ministry of Health network is done at all, and results from environmental surveillance tend to be kept isolated from each other.

The Department of Water Affairs (DWA) manages a network of water quality sampling points; as well the LHWP has a large number of water quality sampling points, including the Katse and Mohale dams, and also monitors in-stream flow requirements (IFR) for river courses downstream from LHWP dams on the Orange-Senqu River.

According to the DWA[8], water quality is generally very good throughout the country, with the exception of the Caledon River, which is receiving industrial effluents. The State of Water Resources report is due to at the end of June, 2012.

The LHWP uses the Rapid Biological Assessment (RBA) method, based on the South Africa Scoring System 4 (SASS4) to monitor instream flow requirements (IFR) to assess water quality

[8] Interview with the Director of Water Affairs, 09/05/2012.

based on the use of selected fauna species, and assigns scores according to their respective sensitivity to water pollution (NES, 2002a). Overall the SASS4 scores indicated good water quality in the highlands, as opposed to low water quality in lowlands streams (NES, 2002a). ORASECOM's Joint Basin Survey (JBS) (ORASECOM, 2010) found that *"water quality along most of the length of the Orange-Senqu River System does not seem to be significantly degraded through pollution"*, although it did identify localised impacts along the Caledon/Mohakare River due to industrial and urban pollution from Maseru and other towns on both sides of the river. In terms of aquatic ecosystem health the JBS identified on average that aquatic ecosystems were moderately to largely modified due to impacts of the Mohale and Katse dams, although it concludes that *"the results from the LHDA's regular monitoring of macro-invertebrates show that river ecosystems seem to be recovering from the construction of the Lesotho Highlands Dams, although some impacts are still noted from the modification of natural river flows and land degradation"*.

The main possible sources of water pollution are identified to be: (i) the urban storm water drainage system; (ii) overflowing conservancy and septic tanks and broken sewage reticulation systems; (iii) the stone wash denim factory in Maseru; (iv) industries in Maseru and other large towns such as Maputsoe, Mafeteng and Botha-Bothe – canneries, pharmaceutical companies, breweries, ice cream factories, flour mills and clothing manufactures; (v) dipping and spraying free-range livestock against parasites; and (vi) high sediment yield from watersheds (NES, 2002a).

2.1.3 Air quality

Atmospheric air quality

Use of domestic wood heaters during winter causes significant air quality impairment from particulates (PM_{10}), particularly following night-time temperature inversions associated with cold weather. A variety of materials are used including dried cattle dung, residual dried vegetation such as dead maize plants, dry and green wood, dried grass, refuse, commercial wood logs, paper and packaging. Heating is also provided by bottled gas and kerosene heaters, although this is more commonly used for cooking in Lesotho.

The low incidence of industrial premises suggests that air contamination from industrial sources is not a regional problem, but could be a significant public health issue on a local basis near continuous or long-term intermittent industrial emission. The MTEC has the responsibility and remit for controlling industrial discharges and emissions, but this seldom happens.

Traffic pollution in urban environments is not broadly significant because the density of traffic is relatively low. Agricultural burn-off of vegetable stubble is not a significant problem to air quality impairment. Highland communities tend to gather disused plant growth, for example maize plants or corn stubble which have been allowed to dry in situ over the autumn, and then gather and use these for fuel over the winter.

Indoor air quality

Indoor air contaminants in domestic premises in Lesotho can arise from furniture and building materials, household dust, tobacco smoke, smoke and chemical oxides from combustion for heating and cooking, or from outdoor sources.

The Lesotho Sustainability Assessment Project (LSAP) carried out by the Baker Institute for Public Policy of Rice University[9] surveyed three Basotho villages in peri-urban areas during the summer of 2009, showing that *"there is an apparent relationship between household wealth, energy consumption choices and individual health"*. The richest households use electricity or gas for cooking and heating, whereas the poorest households use fuel-wood or paraffin for cooking and firewood for heating. Apart from the effects on health from indoor air pollution, consumption of wood for cooking and heating also contributes to further land degradation.

[9] http://bakerinstitute.org/front-page/programs/energy-forum/research/poverty-and-energy/Lesotho.html

2.2 Biophysical Environment

2.2.1 Biodiversity

Biological diversity in Lesotho is remarkably rich, taking into consideration the country's size, with an important number of endemic species. Unfortunately Lesotho's biodiversity has not been explored in detail due to lack of resources, and thus accurate data on biodiversity status and trends is not available.

There are three major ecological zones in Lesotho: Highland Grassland, Afromontane Grassland and Alpine Grassland, although some authors also refer to a fourth zone, the Senqu Valley Zone (Department of Environment, 2009). These are home to a variety of grasses, trees, shrubs, flowering plans and associated fauna. The grasslands zones distribution map includes twelve vegetation types. Transcending the three grassland zones are wetlands, which attract a large variety of aquatic biota.

Based on a number of surveys undertaken in various locations in Lesotho over the past century (see Department of Environment, 2009 for more details), approximately 3,093 species of plants have been identified in the country, 30% of those found in the Maloti/Drakensberg hot-spot area. An inventory of fauna shows 63 species of mammals, 318 of birds, 40 of reptiles, 19 of amphibians, 14 of freshwater fish, and 1,270 of invertebrates.

A number of invasive alien species (IAS) are present in Lesotho, in some cases out-competing native species[10]. IASs are acknowledged as a chief threat to biodiversity, although in some cases also have beneficial characteristics (e.g. most of the species used in agriculture, forestry and fisheries). The decline in native species has partly resulted from the introduction and propagation of IASs, while a degree of interference with the natural environment has also been observed to result in the invasion of certain species by others (e.g. opportunistic species that set-in in overgrazed rangelands). The status of IAS in Lesotho report refers to 3 aquatic weed species; 3 fish species; 15 trees and shrubs species; 1 grass species; 12 terrestrial weed species; and 6 birds and insect species.

The main threats to biodiversity in Lesotho have been identified by the DoE as being (Department of Environment, 2009): overgrazing; unsustainable harvesting (especially of medicinal plants); uncontrolled fires; urban encroachment; agricultural encroachment; invasive alien species; and pollution. Increased attention from the MTEC to exploit plant, animal and cultural sites in order to attract the tourists is also threatening sensitive sites and endangering already threatened species.

Threatened species

The IUCN Red List identifies 60 mammal species in Lesotho, of which none are critically endangered, one endangered, two vulnerable and one near threatened. Endangered/vulnerable species are due to habitat loss, the result of LHWP capital works and infrastructure clearing and construction, roadways and noise. The World Bank indicators show a similar picture with 2 mammal species under threat (Table 1Table 1), although the biodiversity index credited to Lesotho is astonishingly low.

Table 1 World Bank Indicators – Lesotho – biodiversity and protected areas

Biodiversity and Protected Areas	Number
Terrestrial protected areas (number) in Lesotho	5.0
Terrestrial protected areas (% of total surface area) in Lesotho	0.2
Bird species threatened in Lesotho (bearded vulture)	5.0
Fish species threatened in Lesotho (minnow)	1.0
Mammal species threatened in Lesotho	2.0
Plant species (higher plant species) threatened in Lesotho (spiral aloe)	1.0
GEF benefits index for biodiversity where 0 = no biodiversity	0.3

[10] IAS Status and Distribution reports were prepared in 2005.

The spiral aloe (*Aloe polyphylla*), the national plant of Lesotho, growing only in the wild in the Maloti Mountains, is a threatened higher plant species partly as a result of climate change and loss of habitat, but primarily as a result of human interference, collection and removal, mostly from tourism and commercial interest (spiral aloe are currently sold on E-Bay as 'rare collector's plants' from US$18).

The Maloti Minnow (*Pseudobarbus quathlambe*) is a small fish approximately 5 cm long. It lives in highly oxygenated river shallows in the Lesotho highlands, and is a biological indicator of clean water. The minnow has been classified as critically endangered by IUCN following research studies (JB Smith Institute of Ichthyology RSA) in the vicinity of the Mohale Dam where fish habitats were destroyed by the LHWP, but also exposing the minnow to predation from larger fish as a result of the construction of interconnecting underwater tunnels. Promotion of fishing for tourism is also likely to impact on minnow populations.

After allowing Mohale dam to fill, to achieve a long-term conservation objective medium to long-term conservation has been facilitated through community involvement incorporating transplanting fish populations, management strategies and appropriate policy reform to support the conservation process. Mitigation measures have included monitoring transplanted fish populations to establish success rates, ensuring that rivers selected as recipient systems contain adequate and suitable resources as well as habitat to sustain the introduced Minnow stock, and ensuring that sufficient numbers are introduced to circumvent probable genetic variation loss, founder effects, bottlenecks and inbreeding effects.

The Bearded Vulture is one of the five threatened bird species facing possible extinction as a result of habitat change, intrusion from tourism into nesting and breeding areas, attack from herders protecting livestock, and poisoning from eating carrion poisoned by herders protecting livestock.

Protected areas

Lesotho has the smallest amount of protected land in Africa, with less than 0.4% of total land under protection. There are six conservation categories in Lesotho:

- Maboella - a traditional management tool for livestock grazing control throughout the country;
- Environmental Resources Management Areas (formerly Range Management Areas) – used by organised livestock farmers;
- Botanical Gardens – used to keep and reproduce indigenous species;
- Indigenous forest patches;
- Forest reserves;
- Nature reserves; and
- National Parks.

Nature reserves and national parks

The Maloti-Drakensberg Transfrontier Conservation Area has an area of 8,113 km² (5,170 km² in Lesotho) and links the Sehlabathebe National Park (65 km²), Lesotho with the uKhahlamba Drakensberg Park KwaZulu-Natal, RSA. The park is situated in the Drakensberg Mountains which form the highest areas in the sub-region, and supports unique montane and sub-alpine ecosystems. These ecosystems hold a globally significant plant and animal biodiversity, with unique habitats and high levels of endemism. The park is also home to the greatest gallery of rock art in the world, with hundreds of sites and many thousands of images painted by the Bushmen (San) people. The area is vulnerable to climate change.

The Bokong Nature Reserve (19.7 km²) is an extensive afro-alpine area that lies on the front range of the Maloti Mountains at an altitude of over 3,000 metres. It contains multiple wetlands and typical sub-alpine plant and animal communities found throughout highland Lesotho including reebok, baboon, breeding pairs of endangered bearded vulture (*Seoli*), and African ice-rats (*Otomys sloggetti*). The reserve is vulnerable to climate change, with wetlands in the reserve reported as drying and eroding at an unsustainable rate.

The 5,600 ha Ts'ehlanyane National Park (56 km²), which covers an altitudinal range of 1,800 metres, has a rich diversity of animal and plant species including stands of 'cheche' woodland (*Leucocidia sericea*) which sustains its own unique flora and fauna. The park, particularly the 'cheche' woodlands is vulnerable to climate change, rising temperatures and storm events in alpine areas causing erosion (dongas).

The Liphofung Cave Cultural and Historical Site is located in a rural setting on a tributary of the Hololo River. The site was occupied by King Moshoeshoe I founder of the Basotho nation. The cave forms a natural sandstone shelter (holkrans) in which can be seen rock paintings of the San period, Stone Age artefacts, and archaeological deposits. The stream running through the cave is increasingly threatening the site and cultural relics as a result of pronounced storm events upstream and humidity changes in the cave shearing rock surface. The site has been made into a visitor centre for tourism, which also contributes to its deterioration.

Several proposed areas are under study, the Mount Moorosi Reserve being the closest to completion; this area has already been surveyed and plans are being made to preserve it under the UNESCO MAB (Man and Biosphere) programme.

Table 2 shows Lesotho's protected areas according to IUCN categories[11].

Table 2 Protected areas in Lesotho (adapted from USAID, 2009, original source: www.bangor.ac.uk/rangeland/reports/LE-TASK0.htm)

IUCN Category	Name	Management Objective
Category II	1. Sehlabathebe Wild Life Sanctuary and National Park 2. Masitise Nature Reserve 3. Ts'ehlanyane Nature Reserve 4. Maloti-Drakensberg Transfrontier Conservation and Development Programme	Managed primarily for ecosystem protection and recreation
Category III	1. Thaba-Bosiu Mountain 2. Proposed Liphofung Natural Monument 3. NUL Botanical Garden 4. Proposed Qoaling National Botanical Garden 5. MOA Arboretum	Managed primarily for conservation of specific natural or cultural features
Category IV	Proposed Management Area	Managed mainly for conservation through management intervention
Category V	Proposed Muela Reserve	Managed mainly for land and seascape conservation and recreation
Category VI	1. *Maboella* areas 2. Range Management Areas 3. Proposed Biosphere Reserve	Managed mainly for the sustainable use of natural ecosystems

2.2.2 Forests

Forest area in Lesotho is about 140 km², less than 0.5% of total land area (2000, Earth Trend, cited in USAID, 2009), consisting mainly of eucalyptus and pine. Of that area only 17.5 km² are covered by primary forest (Mongabay), and in these cases these have been preserved largely due to their inaccessibility in ravines and gullies (USAID, 2007).

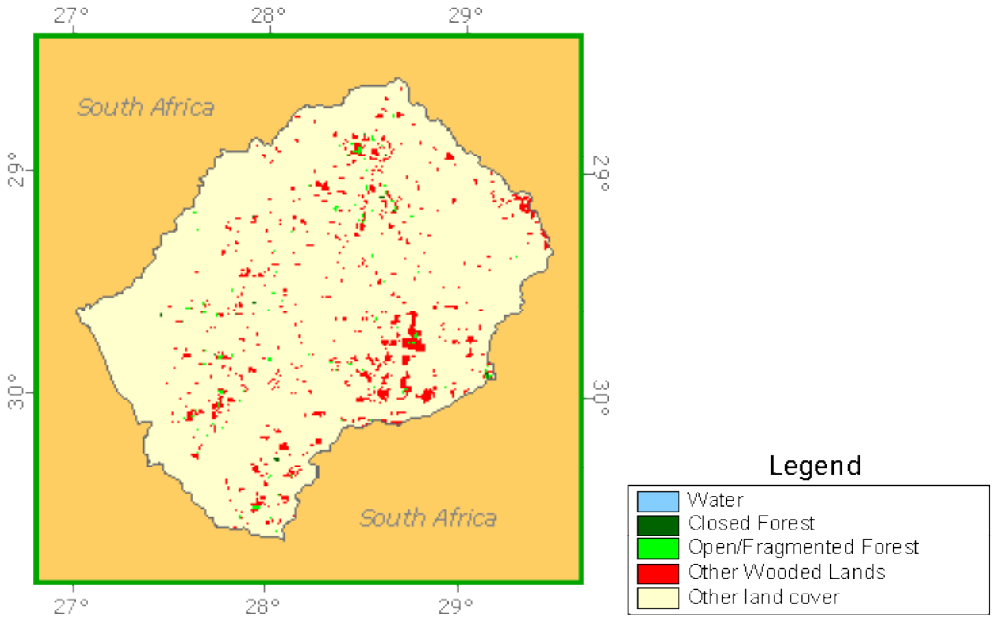
Between 1990 and 2005 the forested area increased by 300 ha (60%); however, during the same period the total rate of habitat conservation (defined as change in forest areas plus change in woodland area minus net plantation expansion) decreased by 69.2% (USAID, 2009). The sparse forest cover can be visualised in Figure 1 below.

Between 1855 and 1993 there have been various efforts to develop forests in Lesotho, the most notable being the Lesotho Woodland Project (1973-1986) (LWP) which established around 485

[11] Further information about IUCN's categories can be found at http://wwe.unep-wcmc.org/protected_areas/categories/index.html

State Forest Reserves (SFR) covering some 11,000 ha, and the Social Forestry Project (SFP) (renamed Social Forestry and Conservation Project – SFCP in 1998) under which some 2,700 ha of forest were planted (with a remaining 1,350 ha considering a 50% tree survival rate) between 1993 and 2002 (MFLR, 2008a).

Figure 1 Distribution of forest cover in Lesotho (source: www.fao.org)



Forest resources fall into five categories, based on ownership (USAID, 2007):

- *Indigenous trees and shrubs* – mixed evergreen and deciduous forest found in lowland gullies and valleys, where they are protected from bush fires. These forests are used for grazing, and have suffered from great loss of vegetation.
- *Government-owned forest plantations* – most of these are remnants from the Lesotho Woodland Project (1973-1987). The majority were planted in the lowlands and foothills and mainly contain pine and eucalyptus. These areas are generally not managed sustainably.
- *Privately owned tree lots* – these have not been formally studied, and include stands of poplar and silver wattle planted under the Tree Planting Scheme (1994-1997).
- *Trees belonging to individual families* – over 80% of households have at least one tree in the yard, usually fruit trees.
- *Trees in the urban environment* – these have not been documented.

Data on wood production and trade in Lesotho is limited and inadequate; although wood felled and sold by the government should be documented, statistics are rarely reported to forestry headquarters and wood harvested and sold by individuals or communities is never documented (USAID, 2009).

The main pressures on forest resources include: (i) land clearance for agriculture; (ii) grazing in protected areas; (iii) bush fires; (iv) drought; and (v) domestic (especially for cooking and heating), commercial and industrial exploitation (USAID, 2009). Of these probably the most critical is browsing of re-growth of harvested plants by animals (MFLR, 2010).

2.2.3 Rangelands

About 60% of Lesotho's total land area is estimated to be rangeland, which have been deteriorating over the years. The last National Rangeland Inventory was carried out from 1983-1986, and estimated that land degradation occurs at a rate of 40 tonnes/ha/yr. Based on a carrying capacity of 8 ha/animal unit (AU), the study concluded that overstocking rates were in the order of 40-80% (MFLR, 2011).

Rangelands are not exclusively used for grazing; there are various other services they provide, including: water supply (filtering and purification of water); biodiversity, including medicinal plants; soil stability functions; reduction of run-off (with effects on reducing soil erosion and flood risks); nutrient recycling; and aesthetic and recreational services (offering opportunities for eco-tourism development).

Healthy rangelands are fundamental for most of Basotho rural livelihoods. For a start ownership of stock is a deeply engrained cultural tradition associated to social status. Most rural communities rely on livestock as a source of protein (meat), milk, draught power, transport and income through the sale of wool. Rangeland degradation fundamentally endangers Basotho rural livelihoods; it has also had an important impact on biodiversity, as the population of wild herbivores has drastically reduced.

There are various drivers of rangeland degradation, including: (i) encroachment for cultivation; (ii) urban encroachment; (iii) partial breakdown of traditional seasonal grazing patters due to increased stock theft; (iv) less mobility of herds due to new settlements; (v) eroded authority of chiefs, including confusion on authority for land use management; (vi) Government policy discouraging transhumance; (vii) decrease of fallow grazing land because of fear of loss of traditional right of use if not cultivated; (viii) uncontrolled burning; (ix) excessive livestock numbers; and (x) inundation of rangeland by LHWP dams. Other factors include climatic changes such as prolonged winters, drought and erratic rainfall patterns, which affect rangeland rehabilitation.[12]

Probably the main driver of degradation can be synthesised as overstocking, but which is in turn driven by a number of the above related factors.

2.2.4 Soils

Approximately only 9% of the total land area in Lesotho is arable. This contrasts with the findings of a 1968 study which estimated that 8.6% of the territory was primarily suitable for semi-intensive cultivation, and 4.2% suitable for extensive cultivation (Bawden and Carroll, 1968 cited in UNDP, nd c). It is estimated that up to 13.2 t/ha of soil and 0.2-1.0% of arable land are lost to soil erosion each year (NES, 1999).

The northern and central lowlands are characterised by large deposits of rich volcanic soils; the southern lowlands are characterised by poor soils and low rainfall; the foothills have very fertile land; and the soils in the Senqu River Valley are generally poor (MAFS, 2006).

The Lesotho lowlands (18% of the national area) offer the best conditions for agriculture. Although some soils in the lowlands are fertile and well-structured, intensive use has lowered their fertility in many areas and a large part of the soils are highly erodible, which has led to widespread erosion in the form of dongas (gullies) (UNDP, nd c). In particular Lesotho has large extensions of duplex soils, which are particularly vulnerable to erosion[13]; in other countries duplex soils are left as pasture but due to scarce arable land these are being cultivated in Lesotho (Showers, 2005). According to the Department of Conservation by 1987 dongas were covering an area of about 60,000 ha, and the current estimate is 100,000 ha (MFLR, 2010).

The foothills (about 12% of the national territory) enjoy a wider distribution of production and rather less erodible soils (UNDP, nd c). The highlands (which occupy 66% of the land area) have a short growing season due to climatic conditions, in spite of having productive soils in some valley bottoms.

Lesotho is losing large quantities of its soils annually, affecting not only agricultural productivity but also developments and structures within and downstream of Lesotho, whereby the Welbedacht dam supplying raw water to the water treatment plant for the city of Bloemfontein

[12] Driving forces synthesised mainly from MFLR (2011), with minor modifications by the authors.

[13] Duplex soils are characterised by having a sharp textural difference between an upper, coarse-textured layer and a lower, fine-textured layer (Rooyani, 1985 cited in Showers, 2005), which causes these soils to have low tolerance and low resistance to erosion, making them particularly vulnerable to gully formation (Cauley, 1986 cited in Showers, 2005).

has silted up with its capacity reduced from 113.8 Mm^3 to 15.1 Mm^3 over a period of 21 years from its infilling in 1972 (TAMS, 1996). The bridge upstream of the Welbedacht dam and across the Mohokare/Caledon river on the R26 road near the town of Wepener has had to be raised by RSA due to the recent annual over-floodings due to sediment build-up from a basin with an annual sediment rate of 878 tonnes/km^2/yr (Makhoalibe, 2005).

There are various anthropogenic drivers of soil erosion; according to Schmitz and Rooyani (1987) (cited in UNDP, nd c), these are: removal of vegetation by cultivating, grazing, burning and settlement; continuous single cropping and related farming practices; overgrazing; failure to maintain conservation structures; and poor drainage from roads. Historical soil erosion control structures implemented during colonial and post-colonial times have also proved to be counter-productive, leading in many cases to exacerbated erosion (Showers, 2005). To these factors we should now add the inundation of fertile soils due to the LHWP; Phase 1A inundated approximately 2,300 ha of arable land (WWF, 2009) and Phase 2 is expected to flood 1,765 ha of arable land (LHDA, 2004).

The Senqu Valley (8% of the national land area) enjoys higher temperatures than the highlands, but has low precipitation and typically poor and erodible soils, limiting its agricultural productivity (UNDP, nd c).

The response to soil erosion has been mainly structural, with emphasis on terracing, construction of contour furrows, diversions, waterways and construction of dams and gully structures (Chakela and Cantor, 1987 cited in Marake, 2010). Recently emphasis has shifted to biological conservation methods and cropping systems (Marake *et al*, 1998), including conservation agriculture and block farming. Only half of households in the mountains are using soil erosion control methods (primarily diversion furrows with some terracing), whilst in the lowlands the figure is higher (with furrows, terracing, contour ploughing and barriers) (FAO, 2011). Under the FAO household survey one-third of farmers indicated that soil erosion control structures are not being maintained.

In the mid-1990s the NES undertook a review of soil erosion data, which identified a large number of data gaps: basic research on geological causes of erosion, biological characteristics of the vegetative cover, the effects of different land management systems on erosion, baseline data, soil loss measurements, and monitoring or evaluation data from existing structures or old projects (Onchere, 1996 cited in Showers, 2005). These gaps remain largely unaddressed, and are fundamental to tackling the soil erosion problem.

2.3 Socio-economic Context

2.3.1 Government and administrative structure

Lesotho is a constitutional monarchy established in 1996, with the King as Head of State and the executive power in the hands of the Government, led by the Prime Minister. There is a dual system consisting of traditional Customary Law and General law based on the Roman-Dutch system and a constitution that establishes a clear separation of the executive, legislative and judiciary powers.

The bicameral Parliament consists of an elected National Assembly and an appointed Senate, in which 22 of 33 seats are held permanently by Principal Chiefs. The National Assembly comprises 120 seats filled on a reformed electoral system (Mixed Member Proportional), with 80 seats contested on a "first past the post" basis and 40 by proportional representation.

Administrative decentralisation is based on the 1996 Local Government Act, which created institutional structures at the District and Community levels. Each of the ten Districts is led by a District Council; there are also 64 Community Councils, 11 Urban Councils and one Municipal Council (Maseru). The number of Community Councils was originally set at 128, but reduced to 64 for budgetary reasons.

Central government is represented at the local level through 'decentralised' ministries and by District Administrators (DAs), who also supervise the work of other public sector agencies and

officials at the local level (Moran *et al*, 2009). The DA is accountable to the Minister for Local Government; technical staff is responsible to the DA administratively and to their line ministries in technical matters. The Local Government Act provided for the establishment of District Development Coordination Committees (DDCCs) at each district, although these remain largely non-functional

The Chieftainship Act 1968 defines the role of traditional chiefs, which historically serve as 'governors' of their communities with authority over all aspects of life; with decentralisation in Lesotho authority of chiefs has been rearranged. Chiefs serve in the Councils (only gazetted Chiefs can be nominated to serve) and retain many of their traditional functions; however one key function which has been taken away from them is the allocation of land.

The Local Government Act 1996 defines the powers of all local authorities, and which include, *inter alia*: control of natural resources and environmental protection; public health (including waste collection and disposal); physical planning; land/site allocation; grazing control; water resources; services for improvement of agriculture; and forestry. However decentralisation remains to be completed, and many of these functions remain de-concentrated (i.e. local representation from the line ministries) and not yet devolved to local authorities; most line ministries are yet to define the functions that will be devolved to the local level. A major remaining challenge is fiscal decentralisation, without which it is not possible to secure effective sectoral decentralisation.

2.3.2 Population and basic development indicators

Lesotho has a population of 1.88 million (2006 Census), 60% of which is concentrated in the four districts that comprise the western corridor where the bulk of arable land is located and which has the best access to physical infrastructure, utilities and services. 56.7% of the population lives in the lowlands, 12.8% in the foothills and 30.5% in the mountains and the Senqu River Valley. The urban/rural split is 25:75. Population density is low at 61 per km^2, ranging from 24 in Mokhotlong to 112 in Berea. However, in terms of arable land, population density rises to 658 people per km^2, ranging from 485 in Thaba-Tseka up to 902 in Maseru.

Lesotho is a Least Developed Country (LDC), and currently fails to meet the criteria for graduation in any of the categories of income, human assets and economic vulnerability. Its Human Development Index (HDI) stands at 0.450 (low human development), ranking 160 out of 187 countries, and showing a gradual increase since 2006.

In terms of gender, Lesotho has a Gender Inequality Index of 0.532, ranking 108 out of 187 countries (2011 data). However, cultural traditions have placed women in a disadvantaged position, in spite of their vital role in the economy (the LDHS 2009 indicated that 35% of households are female-headed). Gender equality is in the Government's agenda, as evidenced by initiatives such as the introduction of quotas in Parliament and Cabinet, as well as in local councils. Gender is addressed as a cross-cutting issue in the NSDP.

Table 3 below provides a synthesis of basic development indicators.

Table 3 Main social indicators for Lesotho

Indicator (year)	Value
Human Development Index (HDI) (2011)	0.450 (ranking 160 out of 187)
Gross National Income (GNI) per capita (constant 2005 PPP$) (2011)	1,664
Gender Inequality Index (2011)	0.532 (ranking 108 out of 187)
Population living below the poverty line (2010)	49.1%
Population in severe poverty (2011)	11.1%
Unemployment rate (2010)	23.4%
Life expectancy at birth (2011)	48.2 years
Maternal Mortality Rate (MMR) (deaths per 100,000 live births) (2010)	1,155
Under 5 Mortality (per 1,000 lives) (2009)	117
Stunted children (short relative to their age) (2009)	39.2%
Severely stunted children (2009)	14.8%
Wasted children (inadequate weight relative to height) (2009)	3.8%
Underweight children (2009)	13.2%
Rate of HIV-positive population (2009)	23.0% (3rd highest prevalence in the world)
Adult literacy rate (2005)	82.0%

2.3.3 Water supply and sanitation

Around 77% of Lesotho households have access to improved water sources, whilst only 25% have access to improved sanitation; however severe water access problems are experienced in the lowlands, where about two thirds of the population live (GoL, 2012a). Access to an improved water source is above the 2010 average of 61% for sub-Saharan Africa, but lower than the 30% regional average in the case of access to improved sanitation (see UN, 2012).

The access to improved water sources and sanitation shows differences between the urban and the rural population as follows (GoL, 2012d):

- Access to improved water sources (2010). Rural: 63.6%; urban: 58.8%
- Access to basic sanitation (2010). Rural: 53.1%; urban: 77.8%

Advances in the coverage of improved sources of water and sanitation is one of the areas under MDG7 where Lesotho is making good progress, albeit these increases are mainly in urban areas and coverage in rural areas remain a challenge (GoL, 2012e).

Water supply for Maseru is especially important due to the rapid urban population growth and rural-urban migration; as well Maseru requires water supply for industrial purposes, as it is here where the garment industry is concentrated. Rural-urban migration is mainly from the mountains into the lowlands, where most economic activity takes place, and which has been attributed to factors such as unemployment and population pressure on agricultural land (Nokana, 2009).

The Government has embarked in the development of the Metolong Dam and Water Supply Programme (MDWSP), which would supply bulk water to Maseru and the surrounding lowlands areas. The MDWSP will provide 75,000 m^3 of treated water per day by 2014, enabling Maseru to meet domestic and industrial requirements for at least the next 40 years (GoL, 2012a).

Adequate urban sanitation in the form of wastewater collection, carried sewerage and treatment, and ventilation improved pit latrines (VIPs) are provided for up to 68% of the population of Maseru, and up to 45% in peri-urban areas. The Towns Sanitation Project improved the situation

for low-income communities by promoting the construction of VIP latrines. Regional centres are less well serviced, with sewerage collection and treatment reaching 38% of the population; in rural areas only 23% of the population are being served by sanitary latrines, incorporating a diversity of systems including VIPs (25% of all sanitary systems), slab or bucket latrines, septic tanks, eco-toilets or unimproved pit latrines.

Sewerage collection and treatment was installed in the last 5 years in Maseru, with the Water and Sewerage Authority (WASA) as the responsible authority (now WASCO). The sewage treatment plant undertakes primary/secondary treatment with the final discharge going to stabilisation ponds before outfall to the Caledon River downstream of the drinking water abstraction intake. The waste water treatment plants, which appears to be over-loaded, accepts industrial wastewater without pre-treatment from the Thetsane industrial park (mainly textiles and electronics components), raw domestic sewage, commercial wastewater (hotels, workshops, schools and institutions), and healthcare wastewater (hospitals, hospital laboratories).

2.3.4 Energy

Lesotho generates 72 MW of electricity from the Muela hydropower station (installed capacity of 78 MW), and imports about 67 MW (40 MW from Mozambique and 27 MW from RSA). In addition to that four mini-hydro power plants have been developed at Mantsonyane (2 MW), Semonkong (180 kW), Tlokoeng (670 kW) and Tsoelike (400 kW), but which have experienced operational problems due to poor maintenance, siltation and flooding. The LHDA also operates a 500 kW mini-hydro plant at Katse Dam to supply local power requirements. (Tsehlo, 2011).

Household access to electricity is estimated at 20%, concentrated in the lowlands and the Senqu River Valley (GoL, 2012a), the immense majority being urban households. There are some rural electrification programmes in the country, such as one between UNDP and DoE to provide rural electrification through solar systems, but which is facing a number of challenges (IFC, 2011).

Biogas digesters were developed since the 1970s, but eventually came into disrepair. Since the establishment of Technology for Economic Development (TED- 2004), over 150 biogas systems were constructed, but there are at least 300 systems from individual owners (Tsehlo, 2011).

The Government is exploring options to increase generation of electricity based on hydropower, wind and solar sources. Key aspects of these are described in Table 4 below. Also, as part of the LHWP Phase 2, the Mashai dam will integrate an 83 MW hydroelectric plant.

Table 4 Key characteristics of power generation options in Lesotho (source: IFC, 2011)

Hydropower	Wind	Solar
• Significant potential, established around 400-450 MW • Capital intensive, probably large scale projects • Sites and characteristics of projects still unclear • International capacity, capability and experience necessary for development, construction and possibly operation • International market for projects, technical and financial • Grid-connection possibilities still unclear	• Significant potential. A study by the Breeze Consortium is said to have identified over 6,000MW[14] potential generating capacity • Capital intensive, probably large-scale projects • Sites and characteristics of projects still unclear • International capacity, capability and experience necessary for development, construction and operation • International market for projects, technical and financial • Grid-connection possibilities still unclear	• Small-scale projects being piloted • Financial feasibility limited, subsidies needed • Solutions prove to be very expensive • International supply of equipment, local installation and maintenance • Scaling-up will be difficult, given potential burden on budget of Government or development partners' • Partially aimed at off-grid power supply (UNDP, DoE), partially aimed at grid-connections (LEC)

[14] Quantity modified from original source based on Matzner (nd), and which includes power supply to RSA.

At the household level, 77% of Basotho rely on biomass (mainly firewood, paraffin and dung) as the main source of fuel for lighting, cooking and heating. Wood is the main source of energy for cooking and heating, whereas paraffin and candles are the main sources of energy for lighting. The approximate distribution of sources of energy is shown in Table 5 below.

Table 5 Percentage distribution of households by main source of energy and application (source: LMS, nd, based on date from the Lesotho Demographic Survey, 2001)

Energy Source	Cooking	Heating	Lighting
Wood	59.0%	57.0%	0.0%
Dung	6.0%	8.9%	0.0%
Coal	0.3%	3.5%	0.0%
Electricity	1.0%	1.2%	3.7%
Natural gas	13.7%	1.5%	0.5%
Paraffin	19.2%	26.7%	55.3%
Candles	0.0%	0.0%	39.2%
Crop/other waste	1.0%	1.2%	1.2%

The burning of biomass is associated to indoor air pollution, and the collection of firewood also contributes to land degradation, as most of it is not sustainably harvested.

2.3.5 Waste production and management

There is little information available of waste production in Lesotho. One of the most complete sources identified was the baseline assessment of waste management within Maseru City, which is confined to solid waste and was carried out as part of the process leading to the development of an Integrated Solid Waste Management System (ISWMS) for the city.

Only a small percentage of solid waste is collected and disposed of at the Tsosane dumpsite, and is not weighed or monitored in any way (Envirotech Services, 2006). Although there is no treatment of municipal waste, there are waste recovery centres, including: Welcome Transport and Waste Sorting (collect everything), Maseru Enviro Recycling (collect scrap metal), Environmental Culture Lesotho (collects cans), and Maseru Waste Collectors (collects plastic, white paper and cardboard) (Envirotech Services, 2006).

A 2002 study found that total waste generated in Masru was 157,552 tonnes per annum, of which 82% was from commercial origin, 15% from households and 3% from industrial sources (Mvuma, 2002 cited in Envirotech Services, 2006). The Envirotech study estimated the following levels of waste production: 0.2 kg/capita/day for low-income residential areas; 0.3 kg/capita/day for middle-income residential areas; and 0.4 kg/capita/day for high-income residential areas. In terms of disposal methods, the findings were: 56% of households burned their waste; 27.7% made compost; 50.5% took it to the city's dumpsite; 40.5% dumped in dongas and open spaces; 12.7% buried the waste; 40.5% reused waste; and 5% sold their waste to recycling agents. Quantities of waste generated by administrative establishments, commercial establishments and educational centres were estimated with varying degrees of certainty.

2.3.6 Agriculture

The LVAC considered that approximately 514,000 people were food insecure by 2011, more than double the number for 2010 (DMA, 2011), which shows a very grim situation and points to areas that require priority attention.

Agriculture represents around 8% of the GDP (GoL, 2012a). The main crops produced in Lesotho are maize (60%), sorghum (20%) and wheat (10%); most of the land is rain-fed (only a small percentage of land is irrigated, in spite some 25,000 ha are irrigable) (GoL, 2012a). Lesotho is currently not self-sufficient in terms of cereals production, and imports more than 70% of its grains (GoL, 2012a). The livestock sub-sector is dominated by sheep and goats, which are kept mainly for wool and mohair – the main agricultural export products. Other livestock includes cattle, horses donkeys, poultry, piggery and rabbitry.

Most of the agricultural activity takes place in the lowlands, although the mountains concentrate the majority of the wool and mohair livestock. Table 6 presents a synthesis of agricultural activities per agro-ecological zone.

Table 6 Agricultural activities and agro-ecological conditions (source: MAFS, 2006)

Description	Lowlands	Foothills	Mountains	Senqu River Valley
Area (km^2)	5,200 (17%)	4,488 (15%)	18,047 (59%)	2,753 (9%)
Altitude range (masl)	< 1800	1800-2000	2000-3250	1000-2000
Main crops	Maize, wheat, beans, vegetables	Maize, wheat, peas, fodder, crops, potatoes	Maize, wheat, peas, potatoes	Maize, beans, sorghum
Vegetation	Crop stubble, reforestation on some hills, fruit trees near homesteads	Poplar and willow trees along streams and gullies, crop stubble, a lot of fruit trees near homesteads	Denuded grassland, indigenous shrubs in some river valleys, stunted peach trees near homesteads	Denuded dry shrubs, brush, fruit trees in valleys.
Summer grazing	Around villages	Around villages	High mountain cattle posts	Unsuitable, too dry
% of livestock				
• Cattle	47%	15%	33%	5%
• Sheep	29%	6%	61%	4%
• Goats	27%	14%	48%	11%
• Pigs	60%	19%	14%	7%
• Horses	27%	14%	55%	4%
• Donkeys	50%	14%	31%	5%

Over 90% of the farmers are subsistence growers, producing little or no surplus for sale in the market; these subsistence farmers produce most of the food grown in the country (MAFS, 2006). Farming is dominated by low-input, low-output traditional rain-fed farming, which gives yields of less than 1 tonne/ha. The high prevalence of HIV/AIDS has also reduced the availability of family labour, resulting in further decreases in agricultural productivity (MAFS, 2006). Farming productivity is also affected by poor and increasingly degraded soils and by climate change (e.g. late onset of rains in the highlands, increased rainfall intensity, drought periods).

The production of the three main crops (maize, sorghum and wheat) has decreased since 2000/01, being now significantly lower; the areas planted increased during 4 or 5 years after 1997/98, and then decreased for 3-4 years, although the increase in planted area from 2005/06 to 2007/08 did not result in higher production (Bureau of Statistics, 2010). The 2007/08 drought resulted in crop failure, and the harvested amounts have hardly recovered since then (Bureau of Statistics, 2010). The Lesotho Food Security and Vulnerability Monitoring Report for 2011 (DMA, 2011) concluded that the total planted area had decrease approximately 1% in comparison with the previous year and that yield per ha decreased by approximately 42% for maize and 81% for sorghum, and had increased by 23% for wheat. This gave as a balance a food shortage of 244,675 MT, a general decrease in cereal production of 60% for maize, 80% for sorghum and 20% for wheat, resulting in shortage of food requirements at the household level.

Livestock productivity is low in terms of off-take and animal fibre, especially due to poor animal health and husbandry, low conception rates, weal lambing/kidding, weaning and retarded growth (MAFS, 2006). Other key factors that affect livestock productivity include widespread stock theft (especially in areas adjacent to RSA) and widespread rangeland degradation (MAFS, 2006). Livestock numbers have remained relatively stable over the past years, with average herd size for 1999-2007 being 675,000 for cattle, 1,000,000 for sheep and 780,000 for goats (Bureau of Statistics, 2010). Important livestock products include meat, milk, wool and mohair.

The wool and mohair sub-sector is fundamental to Lesotho's economy, as 50% of the rural households depend on these products for their livelihoods, and are the only agricultural commodities that are exported to international markets and bring some foreign exchange

earnings that benefit the country's citizens directly (UNIDO, 2010). Production is about 3,000 metric tonnes of Merino wool and about 600 metric tonnes of angora type mohair per year, which are exported in their raw state to RSA (UNIDO, 2010). In terms of fishing, capture fishing and rural aquaculture are of a subsistence type; however cold water aquaculture has been introduced as a result of the LHWP with a potential for becoming a source of foreign exchange through exports of rainbow trout (Bureau of Statistics, 2010).

2.3.7 Industry

The manufacturing sector is dominated by the garment industry, which has expanded rapidly since 1999. By 2009 it was employing 21,349 persons (corresponding to about 78% of employment in the manufacturing sector) and generating around 55 million Maloti (Bureau of Statistics, 2010).

As for mining five licences has been issued. Currently there is one commercial diamond mine at Letseng, which is also the main mining operation with 1,100+ employees; Liqhobong diamond mine is under care maintenance; Mothae and Kao are on trial mining or pre-production stage, and in Lemphane a prospecting licence has been awarded (SARW, 2010). There are also three commercial aggregate quarried at Morija, Peka and Ha Ntsi and some mining of clay deposits. Also, work on geochemical mapping to find potential economic minerals other than diamonds is on-going. (SARW, 2010).

2.4 Vision 2020 and the National Strategic Development Plan

The **Lesotho Vision 2020** provides a long-term orientation for the development of the country, on the basis of which short- to medium-term plans are to be formulated. The vision statement is:

"By the year 2020 Lesotho shall be a stable democracy, a united and prosperous nation at peace with itself and its neighbours. It shall have a healthy and well-developed human resource base. Its economy will be strong, its environment well managed and its technology well established."

It is important to highlight that 'a well managed environment' is a core component of the long-term vision for Lesotho. The Vision 2020 document presents a list of preliminary indicators for the National Development Strategy to implement Vision 2020. The environmental and environment-related indicators that have been used for the 10-year review of Vision 2020 are[15]:

- *Arable land.* It currently stands at 9% showing no changes from the 1998 baseline, and no targets have been set.
- *Land area under forestation.* It currently stands at 12,600 ha in comparison with 10,632 ha for the 2000 baseline and target of 16,380 ha and 21,000 ha for 2016 and 2020 respectively.
- *Waste recovery rates.* It currently stands at 72% in comparison with 67% for the 1997 baseline and targets of 75% and 79% for 2016 and 2020 respectively.

The recently approved **National Strategic Development Plan (NSDP)** covers the period 2012/13 - 2016/17 and serves as an implementation strategy for the Lesotho Vision 2020. The following Strategic Objectives are defined:

1) Pursue high, shared and employment creating economic growth;
2) Develop key infrastructure;
3) Enhance the skills base, technology adoption and foundation for innovation;
4) Improve health, combat HIV and AIDS and reduce vulnerability;
5) Reverse environmental degradation and adapt to climate change; and
6) Promote peace, democratic governance and build effective institutions.

This Plan emphasizes the necessity of achieving sustained and broad based economic growth as the most effective route for poverty reduction. It sets out the intended growth and development strategy and provides strategic direction to all agencies on the resource allocations and budgeting

[15] Other indicators are included under the strategic area "a well managed environment", but which either do not refer to environmental performance, or which are forecasts rather than performance indicators. Such is the case of: 'rangeland (ha)' for which it is not clear how an increase in rangeland area is an indication of environmental performance, where the concern is on the management of rangelands including the reduction of livestock stocking levels to keep within carrying capacity; and 'soil waste (tonnes)', which is more a forecast than a target.

decisions that will be integrated into the Government's annual Medium-Term Expenditure Framework (MTEF) and its Public Sector Investment Programme (PSIP).

The NSDP includes a Strategic Objective (No. 5) to ***reverse environmental degradation and adapt to climate change***. Under this Strategic Objective, the following Strategic Actions are included:

1) Reduce land degradation and protect water sources;
2) Increase biodiversity conservation and promote sustainable use;
3) Strengthen range management institutions and range carrying capacity;
4) Improve national resilience to climate change;
5) Promote and increase the greening of the economy;
6) Improve land use, administration and management; and
7) Improve environment and climate change governance.

More specific activities are identified under each of the above Strategic Actions. Strategic actions identified under other Strategic Objectives are also relevant for environmental management. The following can be highlighted:

- *Strategic Objective: Pursue high, shared and employment creating economic growth*: water harvesting and irrigation (relevant to climate change adaptation); development of a land and water management policy framework; reduction of vulnerability and risk management (including conservation farming and climate proofing of the agriculture sector).
- *Strategic Objective: Develop key infrastructure*: reduction of pollution due to transport; treatment of industrial waste and other effluent; afforestation; renewable energies;
- *Strategic Objective: Improve health, combat HIV and AIDS and reduce vulnerability*: disaster risk management; early warning systems; water and energy security.

However the NSDP also entails risks to environmental governance, which should be carefully considered. More specifically, Strategic Objective 1 on Investment Climate foresees the review of the Environment Act and the EIA system so as not to over-burden businesses.

The NSDP M&E framework is under development; it will consist of two tiers of indicators: 'core indicators' (monitored at national level) and 'sectoral indicators' (monitored at sectoral level).

Table 7 shows draft environment and climate change related indicators.

Table 7 NSDP Strategic Actions and Indicators of environmental relevance

Indicator	Tier	Observations
NSDP Goal: Reverse environmental degradation and adapt to climate change		
Area covered by forest (% of total area)	Core indicator Sectoral indicator	Indirect indication of improvements in land degradation, biodiversity and soil and water conservation.
Rehabilitated areas affected by soil erosion (ha)	Core indicator Sectoral indicator	Will require a carefully designed methodology to measure. The concern should not be only on rehabilitation but also on protection of existing soils.
National financial mechanisms established to facilitate access to climate change finance	Sectoral indicator	Is linked to the development of a national climate change policy.
Number of climate change adaptation and mitigation programmes implemented	Sectoral indicator	Can be a very general indicator, as it does not relate to results nor does it differentiate between adaptation (priority for Lesotho) and mitigation.
Climate change strategy and policy developed and implemented	Sectoral indicator	Should be financed by EU GCCA Facility funds.
Level of pollutants in the air (µg/m^3): PM_{10}, NO_2, and SO_2	Sectoral indicator	Air pollution is not a key concern in Lesotho; these parameters should not be prioritised.
Level of pollutants in the water: TDS, EC, PO_4, NO_3	Sectoral indicator	Can provide an indirect measurement of soil erosion, as well as indication of run-off of agrochemical products. Should be complemented with other key parameters such as BOD, COD, pH, turbidity, oxygen demand, coliforms (total and faecal) in order to provide a better indication of pollution by sewerage, soil erosion and industrial effluents.
Number of people involved in sustainable bio-trade	Sectoral indicator	Measurement may be complicated, as it may require some sort of registration/certification system.
Reduction of GHG emissions (% of tonnes of CO_{2e} reduced)	Sectoral indicator	
Finance mobilised for climate change mitigation and adaptation (% increase)	Sectoral indicator	
Economic loss from natural disasters (% of GDP)	Sectoral indicator	
NSDP Goal: develop key infrastructure		
Population with access to safe and clean water (%): rural population; urban population	Core indicator	Linked also with MDG7 indicators
Population with access to basic sanitation (%): rural population and urban population	Core indicator	Linked also to MDG7 indicators
Population connected to electricity (%)	Core indicator	Improved access to electricity may reduce pressure on biomass resources (land degradation)
Proportion of firms with pre-treatment plants	Sectoral indicator	

2.5 Environmental policies and planning

The mandate on environmental protection in Lesotho derives from Section 36 of the Constitution (1993): *"Lesotho shall adopt policies designed to protect and enhance the natural and cultural environment of Lesotho for the benefit of both present and future generations and shall endeavour to assure to all its citizens a sound and safe environment adequate for their health and well-being".*

The first environmental policy document was developed in 1989: the **National Environmental Action Plan (NEAP)**, followed in 1994 by the **National Action Plan to Implement Agenda 21 (NAP)**, which built on the NEAP and incorporated sectoral priorities and national plans for implementing Multilateral Environmental Agreements (MEA) on biodiversity, climate change and desertification.

These early policy documents gave way to the **National Environmental Policy for Lesotho** (1998), establishing objectives aligned to the national development priorities, focusing on: the social and economic dimensions; the management and conservation of natural resources; protection and improvement of environmental quality; and the promotion of community participation. The Environmental Policy recognises the inter-sectoral linkages and the need for "integrated and systemic views and actions".

In order to understand the context for this succession of environmental policies, it must be noted that the National Environment Secretariat (NES) was created in 1994 as a direct result of a recommendation made in the 1989 NEAP to establish an institutional framework for the management of environmental issues[16]. The Environmental Policy falls under the responsibility of the Ministry of Environment, Tourism and Culture (MTEC).

Under the Environment Act (2008) the Department of Environment is responsible for producing a **National Environmental Action Plan** every five years, to be binding on all stakeholders concerned. At District level the District Development Coordinating Committees are also to prepare, every five years, **District Environmental Action Plans**, as well as District level State of the Environment reports. Finally all line ministries are to prepare **Environmental Management Plans**. These provisions from the Environment Act (2008) are yet to be instrumentalised.

The National Vision for Lesotho (Vision 2020) further confirmed the commitment to environmental protection (see above).

Other policies and planning documents of relevance include:

- Water and Sanitation Policy (2007);
- National Soil and Water Conservation Policy (zero-draft, 2012);
- Interim Strategy for the Water and Sanitation Sector;
- IWRM Strategy;
- Irrigation Policy (draft);
- Industrial Wastewater Management Policy;
- National Wetlands Management Programme (2005);
- National Action Plan for Capacity Development in Disaster Risk Reduction 2007-2015;
- Drought Management Strategy;
- National Drought Contingency Plan;
- National Strategy on Lesotho's Biological Diversity;
- National Biosafety Policy;
- National Implementation Programme (NIP) for the Stockholm Convention on Persistent Organic Pollutants (POPs);
- National Adaptation Programme of Action on Climate Change (NAPA);
- Agricultural Sector Strategy (2003);
- National Food Security Policy and Strategic Guidelines;
- National Action Plan for Food Security (NAPFS) 2007-2017;
- National Range Resources Policy (2011, draft);
- National Forestry Policy (2008);
- Lesotho National Forestry Programme 2008-2018;
- National Disaster Risk Reduction Policy;
- National Land Use Policy (2011, draft);

[16] The NES was originally established under the Prime Minister's Office; subsequently it was moved to the Ministry of Environment, Gender and Youth Affairs and in 2003 to the Ministry of Tourism, Environment and Culture. It is now known as the Department of Environment (DoE).

- Lesotho National Action Programme in Natural Resources Management, Combating Desertification and Mitigating the Effects of Drought (1999);
- Environmental Education Strategy;
- Energy Policy (2003) (draft);
- Transport Sector Policy (2006);
- Transport Sector Environmental Policy and Action Plan.

2.6 Institutional[17] and regulatory framework for environmental management

Responsibilities for environmental protection, management of natural resources and climate change fall under a large number of different ministries, departments and agencies, creating difficulties for ensuring effectiveness due to thin boundaries in the division of areas of responsibility and difficulties for coordination.

There is a large corpus of legislation in Lesotho that deals with the environment, or environmental matters; part of it was developed decades back but has not been officially superseded, with some exceptions. The sections below make reference to the most relevant pieces of legislation; Appendix 3 contains a list of legislation pertaining to the environment.

2.6.1 General environmental management

Framework environmental legislation

The framework environmental legislation is the **Environment Act, 2008**, with a similar scope to the original Environment Act (No 15 of 2001). The Environment Act is very broad in its scope, with wide ranging provisions; nevertheless implementation remains a big challenge, and most of the provisions are yet to be instrumentalised.

Lesotho is also signatory to a number of multi-lateral environmental agreements (MEAs), although implementation to date has been very weak:

- United Nations Convention on Biological Diversity (CBD);
- United Nations Framework Convention on Climate Change (UNFCCC);
- United Nations Convention on Combatting Desertification (UNCCD);
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
- Convention on Wetlands (Ramsar Convention);
- Stockholm Convention on Persistent Organic Pollutants (POPs);
- Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) Region (1995);
- Revised Protocol on Shared Watercourses in the Southern African Development Community (SADC) Region (2000).

Decentralisation

The GoL is engaging in an ambitious decentralisation process, led by the MLGC together with the Ministry of Finance and Development Planning (MFDP). To date some of the functions of the Line Ministries at the local level have been deconcentrated at the District level. Under the Local Government Act (2006), some functions will be devolved to the local level. However this process is slow and the functions have not yet been identified; the most advanced in this respect are the functions on roads from the Ministry of Public Works and Transport (MPWT) as well as some functions from the Ministry of Health and Social Welfare (MHSW).

Line Ministry for environmental protection

Environmental protection is responsibility of the **Ministry of Tourism, Environment and Culture (MTEC)**. It is interesting to notice that environmental protection is primarily seen in

[17] At the end of this CEP assignment the Government of Lesotho changed and three new ministries were created, which are not reflected in this section: development planning (formerly together with finance), mining (formerly within the MNR) and social welfare (formerly together with health). The former Ministry of Natural Resources (MNR) is now the Ministry of Energy, Meteorology and Water Affairs.

the context of its contribution to the development of the tourism industry, as evidenced by a simple discourse analysis of the Ministry's Mission statement: *"The Ministry of Tourism, Environment and Culture is committed to promote environmentally and culturally sustainable development, making Lesotho the number one tourism destination in the region through the provision of high quality service and creation of enabling environment for the private sector driven and community based tourism development"*.

The above reflection, together with the fact that the NES was removed from the Prime Minister's Office and located as a department within the MTEC, already indicate a weak commitment to environmental protection. In terms of budget allocation the MTEC is also one of the weakest ministries, with approximately only 0,16% of the budget for 2012/13 (PSIP draft document). The DoE is also understaffed, which does not allow it to perform its mandate effectively.

The **Department of Environment (DoE)** (formerly the NES) was established in 1994, and is the main institution aimed at environmental protection. It plays an advisory and regulatory role in environmental protection, including the setting of standards and guidelines, monitoring compliance, dissemination of environmental information and awareness creation. The DoE has responsibility for producing the State of Environment report every five years, although the lack of baseline data remains a large impediment for effective monitoring.

One of the main functions of the DoE is the management of the **Environmental Impact Assessment (EIA) system**, which is the main tool available for the control of environmental impact and pollution from industrial activities (in the case of Lesotho, mainly mining, the garment industry and the LHWP). This is managed under the **Environmental Impact Assessment and Pollution Control Division**, which is currently staffed by three persons.

The **Data Division** is meant to be a clearing-house for all environmental information in Lesotho and is responsible of producing the State of the Environment report. Within the Division there is a **Committee on Environmental Data Management (CEDAMA)**, with the aim of advising Government on the management of environmental data.

The **Education and Outreach Division** takes charge of communication matters. The **Biodiversity and Conservation Division** promotes the conservation of indigenous flora and fauna, and engages in activities such as identification of areas of biodiversity significance, establishment and co-management of Protected Areas. Finally, the **Environmental Planning Division** provides guidance in the development of national and district environmental action plans and supports the development and implementation of land use plans.

Environmental Units and Line Ministries

One of the key goals of the National Environmental Policy is the mainstreaming of environmental considerations at all levels of decision-making. One of the strategies - and now a requirement under the Environment Act (2008) - to achieve environmental integration across sectors is through the establishment of **Environmental Units** (EUs) within the Planning Division of each Ministry. These EUs should assume responsibility for ensuring compliance with the Environment Act and liaise and coordinate with the DoE on all environmental matters. Any line Ministry charged with the management of any segment of the environment should submit an annual report to the DoE and report any environmental contraventions relating to its sphere of influence.

With regards to EIA, EUs have the following roles and responsibilities:

- identify environmental problems posed by Ministry sponsored projects;
- ensure that remedial actions are taken;
- prepare plans and supervise EIAs for Ministry projects;
- assist with project review when necessary;
- liaise with DoE for the approval of Environmental Impact Statements (EIS);
- advise communities on particular aspects of environmental concerns within their particular sector;
- monitor and conduct post-EIA audits of projects;
- participate in resource accounting and the preparation of the annual state of environment reports.

The creation of Environmental Units within the line ministries is yet to materialise; resource persons were trained by DoE to act as environmental officers, but most have left their jobs since then. Two exceptions to the above are the creation of the Environmental & Social Management Unit (ESMU) in the MPWT, under the Roads Department, which was a condition under the World Bank supported ITP programme; the second one is the environmental officer in the Mines Division (MNR).

Environmental institutions foreseen under the Environment Act, 2008

A number of environmental institutions are foreseen under the Environment Act (2008), yet to be created. Most importantly is the establishment of a **National Environmental Council (NEC)**, comprising several ministers, a wide cross-section of stakeholder representation and chaired by the Minister responsible for the environment[18]. The NEC would take responsibility for the drafting of environmental policy, harmonising policies, plans and activities of government departments and ensuring coordination amongst stakeholders engaged in environmental protection.

An **Environmental Co-ordinating Committee (ECC)** is also to be established, which will ensure maximum cooperation and coordination amongst line Ministries and other organisations dealing with environmental protection and management. At the local level it is envisaged to have a **District Environmental Officer** in each District, who will be responsible for promoting environmental awareness in the district and reporting on matters relating to the sustainable use of natural resources. Finally the Environment Act (2008) foresees the creation of an **Environmental Tribunal** that will hear appeals against decisions of the competent authority.

2.6.2 Environmental Impact Assessment (EIA) system

EIA is one the main instruments that the Government has to ensure that projects or activities will not derive in significant environmental impacts. On the basis of the EIA process, the DoE may reject project proposals on environmental grounds, or establish environmental conditions to their approval.

The EIA system is covered under Part V of the Environment Act (2008). The EIA Regulations are still in draft. The MTEC has also issued **EIA Guidelines** (2009). Sectoral guidelines have been compiled to support the DoE in the reviews and decision-making.

All projects and activities specified in Part A of the Environment Act's First Schedule require an **Environmental Impact Assessment Licence** issued by the DoE, although not all such projects will necessarily require a full Environmental Impact Statement (EIS). A new EIS may be requested by the DoE to an operation that is in possession of an EIA Licence, but which was suffered a substantial change or where a significant environmental threat materialises that was not envisaged at the time of the EIA.

As a first step in the process the developer has to submit a **Project Brief**[19], on the basis of which the DoE will determine if a full EIA is required. Based on the Project Brief the DoE may: (1) in case the project is unlikely to have significant environmental impacts, approve the project with any conditions that may be stated; (2) in case the project is likely to have significant environmental impacts, invite written or oral comments from the public and may consult the affected community; (3) decide, in consultation with the Line Ministry that an EIA is required due to its potential significant impacts on the environment.

[18] Other members are the Ministers of: Tourism, Environment and Culture (Chair); Trade, Industry and Marketing; Agriculture; Public Works and Transport; Local Government and Chieftainship; Finance and Development Planning; Health; Natural Resources; Forestry and Land Reclamation; Science and Technology; the Principal Secretary; Lesotho Council of Non-governmental Organisations (1); the business community (1); Lesotho National Council of Women (1); a registered youth association (1); and an environmental expert (1).

[19] The Project Brief must indicate at least the following: (i) the nature of the project; (ii) the activities proposed to be undertaken; (iii) the areas(s) of air, land or water that may be affected by the activity; (iv) the possible products or by-products anticipated and their environmental consequences; (v) the number of people the project is likely to employ, in both the construction and operations phases; (vi) any other matters that may be prescribed; (vii) any other matters as the Director may require from the Developer, before or after he has submitted the Project Brief.

The EIS is to be undertaken by experts approved by the DoE after consultation with the Line Ministry, and the cost borne by the developer. On the basis of the EIA the DoE will invite public comments on the EIS in general, or specifically invite those persons who will most likely be affected by the project to make comments. The DoE may also decide to hold a public hearing for the affected parties.

It must be noted that the opportunities offered for public participation take place after submission of the EIS, whereas international good practice establishes that public participation should start as early as possible in the process, ideally from the screening phase.

The EIA Licence may contain terms and conditions necessary to mitigate negative impacts and promote sustainable development and sound environmental management practices.

2.6.3 Strategic Environmental Assessment (SEA)

Strategic Environmental Assessment (SEA) is required for any Bill, regulation, policy, programme or plan that could have a significant impact on the environment, according to Part B of the Environment Act's First Schedule. However, the procedures and regulations have not yet been developed and no SEA has been carried out in Lesotho to date.

2.6.4 Water management (water use and water quality)

The basic legislation for water management is the **Water Act (No 15 of 2008)**. Also of relevance to water management is the Environment Act (2008) as well as the **SADC Protocol on Shared Watercourse Systems in the SADC Region** and the **Revised Protocol on Shared Watercourses in the SADC** (not yet in force). The following principles govern the Water Act: (i) sustainable utilisation of water resources; (ii) intergenerational equity; (iii) integrated water resources management; (iv) equitable distribution of water and sanitation services; (v) public participatory approach; (vi) precautionary principle; (vii) polluter pays principle; (viii) integration of environmental and social issues into water resource management; and (ix) sector wide approach to water resources management.

Under the Water Act (2008) all water resources are owned by the Basotho Nation, held in trust by the King on their behalf.

Water management is primarily the responsibility of the **Ministry of Natural Resources (MNR)**[20]. The MNR is one of the strongest ministries, in terms of budget allocation it is to get about 33% of the budget allocation for 2012/13 (draft PSIP document), mainly due to expenditures in the Metolong Dam and rural electrification. The MNR has responsibility over the development and operations in the energy, water and minerals sub-sectors.

The Minister (MNR) may declare, in consultation with the Minister responsible for land, wetland protected areas and protected natural springs. The use and abstraction of water is subject to a **Water Use Permit** issues by the DWA, which may stipulate the volumes of water that may be used or abstracted.

The different institutions that have a remit on water management include:

Commissioner of Water (CoW): the figure of the CoW was created under the Water Act (2008), and has responsibilities on, *inter alia*, policy advice, implementation of the water and sanitation policy and coordination of water management activities. The classification of water resources, including the stipulation of quantity and quality parameters to be achieved in relation to different classes of water resources is also under responsibility of the CoW (Art. 14). The office of the Commissioner includes four units: Policy Planning and Strategy Unit (PPSU) including the Environmental Unit, the Accountancy Unit, the Monitoring & Evaluation Unit, the Planning Unit and the Water Resources Unit.

Department of Water Affairs (DWA): the DWA is responsible for the management of surface and groundwater resources, collection and processing of water sector information, assessment,

[20] Recently changes in government have taken place, and the water sector is now under the Ministry of Energy, Meteorology and Water Affairs.

planning and development of water resources and for the administration of water sector legislation. The DWA maintains the hydrological and hydro-geological network, and includes the following divisions: Water Resources; Water Pollution Control; Hydrology; Hydrogeology; Wetlands Unit and Administration.

The DWA undertakes assessment and monitoring of water quality and quantity, and is mandated to issue permits for water abstraction and construction of boreholes and water structures.

Lesotho Highlands Development Authority (LHDA): the LHDA is a body corporate responsible for the planning and implementation of the Lesotho Highlands Water Project (LHWP); it is also responsible for the operation and development of bulk water transfer schemes from the highlands to RSA. In terms of water services, it is in charge of implementing rural water and sanitation projects in the catchment areas for the bulk water reservoirs.

Department of Environment (DoE): the DoE has responsibilities relative to water as stipulated under the Environment Act (2008), mainly in relation to the issuing of effluent licences, issuing of water quality standards and regulations, and the overall responsibility for monitoring and enforcement of water quality. DoE functions in related to water are largely underdeveloped.

Water quality standards are to be elaborated by the DoE according to the Environment Act (2008) (Part VI on environmental quality standards), including effluent discharge standards. To date only draft standards for drinking water quality have been produced; in absence of these use is made of international standards, such as those from the World Health Organisation (WHO) or from RSA. The office of the CoW is undertaking a study to develop Water Quality Standards on domestic water, drinking water and effluent.

All effluents from a trade or industrial undertaking must be discharged into the sewerage system only, and be in possession of an **Effluent Discharge Licence**, issued by the DoE. A more ambiguous provision is made for anyone carrying out a project or activity likely to pollute the environment in excess of any standards and guidelines, for which a **Pollution Licence** may be issued by the DoE. No effluent discharge licences or pollution licences have been issued to date.

Ministry of Forestry and Land Reclamation (MFLR): the MFLR plays a role in soil and water conservation due to the importance of forest cover for water retention and for the control of water flow regimes. The Soil and Water Conservation Department engages in the construction of water capture and storage structures used for small-scale agriculture, such as water harvesting. It is the DWA that deals with larger-scale structures. The MFLR coordinates closely with the DWA in the protection of wetlands.

Ministry of Agriculture and Food Security (MAFS): the MAFS plays a role in water management especially with regards to irrigation, which should be guided by the National Irrigation Policy, but which has not been officially approved.

Ministry of Health and Social Welfare (MHSW): the MHSW is responsible for health services and sanitation. It has an Environmental Health Division with staff at district level to carry out environmental health regulatory duties, such as inspecting sanitation facilities for the approval of business permits.

Local authorities: local authorities are responsible for the management of catchment areas in their area of jurisdiction; as well, they are to produce **catchment management plans** and promote community participation. Such plans have not yet being developed, and the functions from the MNR to be devolved to local authorities are yet to be defined.

Other institutions are foreseen under the Lesotho Water and Sanitation Policy (2007), such as the creation of an **Asset Management Agency** that would coordinate large investments for expansion of water distribution networks and other related infrastructure. The Policy also foresees the creation of a **Bulk Water Authority**, which would operate and maintain large dams and reservoirs, whilst WASCO would be responsible for the treatment and distribution of treated water. Finally a **Regulator** is to be created to regulate aspects related to tariffs for treated water and distribution.

At a regional (transboundary) level, the formation of **ORASECOM** demonstrates how the consideration of regional context, power asymmetry, problem structure, and knowledge all help to understand the emergence of the Orange-Senqu water regime. Consideration of the *regional context* in which regime components emerged provides important insights. Components of the Orange-Senqu regime cannot be fully understood without considering the significant transitions from colonialism to independence, and apartheid to democracy. Much of the experience in the basin resonates strongly with the hypothesis that strong political relationships can enable the establishment of agreements while wider tensions can stall the processes of cooperation (EU, 2011). The hydro-political history of the Orange-Senqu river basin also shows the use of water agreements as a tool to influence regional integration; this was true for South Africa during apartheid, but also for the SADC region after RSA transition to democracy where the regional water protocol was seen by many as a powerful tool for converging states. What this suggests is that the dialogue between regional integration and water cooperation may move in both directions with wider political and economic relationships affecting the prospects for water cooperation, and water cooperation affecting the wider prospects for political and economic relationships.

In terms of **Monitoring & Evaluation (M&E)**, the CoW is responsible, under the Water Act 2008 of producing an annual State of Water Resources report. The first report is due by mid-2012. A recent study (Vad and Kiwango, 2011) analysed the water sector M&E system, identifying options to turn it into a functional system that can inform planning processes. The envisaged system consists of the following main components (Vad and Kiwango, 2011):

- Water policy monitoring: overview over implementation of the water and sanitation policy and key sector indicators for monitoring the performance of selected policy strategies.
- Management information of sector institutions data related to the mandate of the particular institution mainly used for institutional management and planning, progress and performance monitoring.
- Water sector studies and documentation: availing the results of special studies on sector issues like technical audits, special in-depth studies on water consumption patterns, water quality, erosion and groundwater, catchment management, etc.

2.6.5 Provision of Water and Sanitation[21]

Provision of water and sanitation is regulated under the Water Act (2008), under which the CoW is responsible for the formulation of the Water and Sanitation Strategy. Service providers are regulated under the Lesotho Electricity and Water Authority Act (2008).

The **Department of Rural Water Supply (DRWS)** is responsible for supporting rural communities (about 82% of the population) with water and sanitation services, whilst local authorities have responsibility in the maintenance of water supply in villages. Under the Water Act 2008 local authorities are responsible for water and sanitation services, but these functions are not yet decentralised. The rural water systems are legally owned by the Community Councils, who manage them through Village Water and Health Committees (Vad and Kiwango, 2011). DRWS is responsible for overseeing water and sanitation services in rural areas that are provided through community managed water schemes and support to on-site sanitation.

The **Water and Sewerage Company (WASCO)**, formerly WASA (Water and Sewerage Authority) is responsible for the provision of water and sanitation in urban areas. The **Lesotho Lowlands Water Supply Unit (LLWSU)** is responsible for bulk supply of water to the densely populated areas in the lowlands of Lesotho, covering Metolong dam, water treatment and transmission to Maseru and nearby centres. The **Metolong Authority** has been established to oversee implementation.

[21] Recent changes in government structures have taken place. The water sector was formerly under the Ministry of Natural Resources, whereas it is now under the new Ministry of Energy, Meteorology and Water.

2.6.6 Biodiversity and protected areas

The protection of biodiversity is under the remit of the **Department of Environment (DoE)** and regulated by the Environment Act (2008), as well as the Convention on Biological Diversity (CBD) to which Lesotho is a party and which is reflected in the National Biodiversity Strategic Action Plan (NBSAP). Implementation of the NSBAP by the DoE (Biodiversity Conservation Unit) has been very limited due to lack of financial and human resources. For example, a target was established under the NSBAP to achieve key in-situ conservation strategies in 10% of the land area by 2010, but only 6.9% has been achieved (DoE, 2009a). The land tenure system, whereas negotiation with the communities must take place to establish such areas has been highlighted by the Government as the main obstacle.

The DoE also has responsibility for the generation of information on biodiversity status and trends; however this information is not regularly monitored and the most complete survey (NES, 2000) dates from 2000. The Biodiversity Conservation Unit has one Assistant Environment Officer in each District, as part of the de-concentrated structure, and the functions to be devolved to the local level are yet to be determined. Three Park Rangers are also at the National Park, but lack equipment (e.g. radio equipment, protective equipment for fire-fighting) and mobility (vehicles).

The DoE works closely with the MNR on wetland protection, as biodiversity is mainly concentrated in the wetlands; however the wetlands protection functions are allegedly in the process of being transferred to the MFLR.

At the local level, local authorities have a role in establishing appropriate structures for the implementation of the NBSAP; empowering local structures to manage their own natural resources; engage in intensive public awareness campaigns on the management of biological resources; and ensuring biodiversity conservation benefits local communities.

The MFLR also plays a role in biodiversity protection. The National Forestry Policy 2008 addresses the conservation and management of indigenous forests as well as the conservation of biological diversity. The National Forestry Programme 2008-2018 recalls that *"internationally, loss of biodiversity from forests and its conservation is top of the agenda"*, and clarifies the value of Lesotho's remaining patches and groves of natural indigenous forests as habitats for biodiversity. It sets an objective related to the conservation of natural forests and defines a strategy for local management of indigenous forest resources. The draft National Range Resources Policy (under the MFLR) also addresses the conservation of biodiversity as an objective.

2.6.7 Forests

Forestry falls under the remit of the **Ministry of Forestry and Land Reclamation (MFLR)** and the main piece of legislation regulating forestry is the **Forestry Act** of 1998. The DoE also plays a role in the development of procedures, guidelines and measures necessary for the sustainable use of areas at risk from environmental degradation. According to the Environment Act (2008) such areas are to be identified by the local authorities, and the criteria to determine if an area is at risk from environmental degradation are: (i) if it is prone to soil erosion; (ii) vegetation cover has been removed or is likely to be removed at a rate faster than it is being replaced; or (iii) any other land use activity in the area is likely to lead to environmental degradation.

Under the Local Government Act 1996, local authorities have responsibilities in forestry, particularly with regards to preservation, improvement and control of designated forests in their areas. The District Development Coordinating Committees, as part of their District Environment Action Plans, should specify the areas at risk that should be targeted for afforestation or reforestation. The implementation of these provisions is incipient at the moment.

The Forestry Act (1998) establishes the figure of the **Chief Forestry Officer**, in charge of, *inter alia*, the conservation, management and establishment of forests, including protection and preservation of water resources in forest reserves (in coordination with the DWA) and the

promotion of forestry and agroforestry in agricultural, pastoral and other areas (in coordination with the MAFS).

The Forestry Act foresees the preparation of a **Forestry Sector Plan**, which is still pending. All **Forest Reserves** must have a corresponding **Forest Management Plan**. Other forest categories are: private forests, community forests and co-operative forests.

The utilisation of forests (e.g. tree feeling, harvesting of forest products, removal of fuel wood, grazing, planting of crops) is subject to the possession of a licence, issued by the Chief Forestry Officer. However these provisions have not been implemented.

The MFLR prepared the Lesotho National Forestry Programme 2008-2018 to implement the Forestry Policy. This programme includes 13 objectives under the following four categories: sustainable forest management; social and economic dimension; public participation; and conservation. It identifies 14 strategies designed to achieve the objectives.

2.6.8 Wetlands

The Lesotho Water and Sanitation Policy 2007, whose implementation is responsibility of the CoW, addresses the adoption and implementation of internationally recognised principles on wetlands management, and calls for the implementation of mechanisms for the conservation of wetlands. The protection and management of wetlands initially falls under the responsibility of the Wetlands Unit within the DWA, and under the guidance of the Wetlands Management Programme.

However the MFLR also engages in wetlands management, and is making a case for the transfer of responsibilities for the management of wetlands from the MNR to the MFLR on the grounds of possessing better expertise. Wetlands management initiatives by the MNR and the MFLR are carried out independently and with little or no coordination. As an example, the MNR-produced Wetlands Management Programme (2005) is not being used by the MFLR; also, projects on wetlands conservation are being initiated under the auspices of SADC/ORASECOM by MNR, in which MFLR is not involved.

Lesotho is party to the Ramsar Convention and has so far declared one Ramsar site, the Lets'eng-la – Letsie wetland, situated about 200 km south-east of Maseru, in the Quthing District, and which covers an area of 434 ha. The site is within the Maloti Mountains and is part of the Maloti-Drakensberg system.

2.6.9 Air quality and noise

Air quality and noise is regulated under the Environment Act (2008). A **Pollution Licence** is required to emit pollutants in excess of those established in the standards and guidelines, to be issued by the DoE. To date no guidelines have been established for air quality or noise in Lesotho, nor pollution licences issued.

2.6.10 Solid and hazardous waste management

Under the Environment Act (2008) a **Waste Licence** (issued by the DoE) is required to own or operate a disposal site, generate, store, transport or dispose of hazardous waste. Importation or exportation of hazardous waste is prohibited. Standards for the classification of hazardous waste, or for its management have not yet been developed. Schedule Two of the Environment Act (2008) defines a list of hazardous chemicals and substances that are banned in Lesotho.

A draft **Hazardous and Non-Hazardous Waste Management Bill** was prepared in 2005, but has not yet been approved. It establishes provisions for the elaboration of a National Waste Management Policy and Local Waste Management Plans; defines provisions for the registration of waste operators and the issuing of waste licences; and defines the responsibilities of local authorities in relation to collection and disposal of solid waste.

Management of hazardous health waste is recently regulated by the **Hazardous (Health Care) Waste Management Regulations 2011**. These regulations focus on waste segregation and disposal, and their implementation is responsibility of the MHWS.

2.6.11 Climate change

The NSDP recognises climate change as being of national importance; climate change is inscribed in one of the NSDP's strategic goals (Strategic Goal 5: reverse environmental degradation and adapt to climate change). Under this goal focus is on improving the country's resilience to climate change, for which climate change must be mainstreamed across all sectors and a national climate change strategy and agenda consolidated.

The NSDP also recognises climate change as one of the main risks that can affect NSDP implementation. References to climate change are found particularly with regards to the agriculture sector (need to climate proofing the sector and reduce vulnerabilities); in the infrastructure sector (need to climate proof infrastructure); in the technology and innovation sector (improve scientific capacity to assess climate change vulnerabilities and adaptation) and in social protection (in relation to disaster risk management). Climate change could likewise have been referred to in relation to other sectors, especially health, water and education.

The key institution dealing with climate change in Lesotho is the **Lesotho Meteorological Service (LMS)**, as focal point to the UNFCCC. The **Disaster Management Authority (DMA)** is also playing an important role in the context on the expansion and enhancement of early warning systems.

The LMS is responsible for the capturing and processing of weather and climatic data, which is then used by the DMA to feed into the Early Warning System. The DMA produces a monthly *Early Warning Bulletin*. At the moment one of the major thrusts of the DMA is the *Community-owned Vulnerability Assessments and Capacity Analysis*, which would allow communities to have community-centred early warning systems. At local level District Disaster Management Teams and Village Disaster Management Teams have been set up.

The cross-cutting nature of climate change is increasingly being recognised. Agriculture is one of the sectors most vulnerable to climate change in Lesotho; the MAFS has recognised this and has already engaged in piloting adaptation mechanisms[22].

A **National Climate Change Coordinating Committee** was created but remains largely non-functional, meeting only sporadically; it also lacks resources, capacity and institutional buy-in to establish the necessary framework for harmonising the management of climate change across the Government.

The Government is expected to soon embark in the development of a national climate change policy, which will require the establishment of inter-institutional coordination mechanisms. This policy, and its implementation will be supported by the EU under the Global Climate Change Alliance (GCCA).

2.6.12 Land management and land degradation control

Land management is regulated under the **Land Act 2010** (No. 8 of 2010) and the **Land Regulations 2011** (Legal Notice No. 21 of 2011). The Land Act establishes that a lease or allocation of land shall be subject to certain 'overriding interests', and which include, *inter alia*: (a) water rights; (b) any rights to mines, minerals, coal, mineral oil, or gas; (c) any flora or fauna naturally occurring or present on the land.

Rural lands are allocated by the local authorities, in consultation with the chief having jurisdiction in that area, whereas in the case of urban lands, these are allocated by 'an allocating authority having jurisdiction in an urban area' and in consultation with the chief having jurisdiction in the area. Land may be allocated subject to an approved development plan for different uses, including e.g. industry, agriculture or grazing. The Land Regulations prohibit any "act, matter or thing" done upon the land which may cause or lead to pollution of the environment or result in the creation of any health hazard or become a nuisance or annoyance (Art. 10).

When an application is made for the lease of agricultural land, the **District Agricultural Officer** and the allocating authority have to determine if the land has been abused through overgrazing

[22] FAO Project on *Strengthening Capacity for Climate Change Adaptation in Agriculture.*

or refusal or failure to combat soil erosion. The District Agricultural Officer must also confirm that the land proposed is consistent with existing agricultural land use plans and policy, and ratify that the land and its soil capability are economically favourable for the land use proposed.

This above process already establishes a control to keep land use in conformity with planning processes and avoid land-degrading practices.

In the case of land to be developed for agriculture 'by modern farming techniques'[23], the MAFS must require the preparation of a feasibility study, including a land use plan, to be prepared by the District Agricultural Officer in consultation with the Allocating Authority. Art. 14(2) specifies the contents of such land use plan, and which include: determination of animal carrying capacity (if land is used for livestock), and the identification of environmental safeguards required.

Overall land administration is under the responsibility of the **Land Administration Authority** (LAA), as defined in the **Land Administration Authority Act 2010** (No. 9 of 2010). In the case of agricultural lands, the **Range Management and Grazing Control Regulations 1980** (Legal Notice No. 39 of 1980) and the **Land Husbandry Act 1969** (No. 22 of 1969) remain applicable legislation, although the MFLR has recognised the need to update them (MFLR, 2011).

Rangeland management

At national level the main institution dealing with land management is the **Ministry of Forestry and Land Reclamation (MFLR)**, created in 2003 and comprising the following sections: the Range Management Division (RMD), the Department of Forestry, and the Department of Soil and Water Conservation. Other national institutions that deal with range management include the MAFS, the MNR, the MTEC and the MLGC. For example, the MAFS National Action Plan for Food Security (NAPFS) 2007-2017 addresses range land management (Sub-programme 2.3), mainly through the strengthening of institutional capacities and technical assistance.

At the local level the Community Councils have jurisdiction over land management, with the exception of the city of Maseru and certain high altitude cattle post areas, where traditional arrangements for the management of these high mountain pastures by the 22 Principal Chiefs have been retained, as their users often come from more than one Community Council area (UNDP, nd c). Responsibilities of the Community Councils include local development planning, land administration and the allocation of land rights, and natural resources management (NRM); although local chiefs choose two of their number to sit on each Community Council, the Act transfers all the chiefs' NRM powers to the new Councils (UNDP, nd c).

However it has been realised that the Community Councils are not a very local form of government, as many are responsible for areas of several hundred square kilometres comprising several dozen villages each, and thus cannot undertake truly local administration of natural resources in the way chiefs and their subordinate headmen could (UNDP, nd c)

Development planning at the local level is guided by **Community Action Plans** produced by the Community Councils; Community Action Plans at the level of individual villages or groups of villages (i.e. below the Community Council level) is facilitated by the Unified Extension Service (UES) (UNDP, nd c).

Grazing areas are divided into three categories: the 'A' areas are high mountain cattleposts which are used as summer grazing areas; the 'B' areas are lower mountain cattleposts used as winter grazing areas; and the 'C' are mountain village areas, foothills and lowlands village winter grazing areas. Control of movement between areas (in a transhumance pattern) requires application for a grazing permit, where a site is identified before allocation by the Principal Chief; every citizen is entitled to be issued with a summer grazing permit anywhere irrespective of village or residence (UNDP, 2011). Traditional authorities also have the power to declare *leboella* (i.e. setting aside lands during a period of time so they may recover). However these traditional systems have being failing lately due to the decreasing availability of grazing lands (UNDP, 2011). The advent of

[23] 'Modern farming techniques' are not defined, but presumably refer to commercial agriculture, using one or more of the following: mechanised planting and/or cropping, irrigation, use or inorganic fertilisers and other agrochemicals (authors' interpretation).

decentralisation has also contributed to ineffective rangeland management, as the authorities of traditional chiefs have been eroded, whilst at the same time the local authorities are not fully functional, nor the new administrative arrangements fully understood by stakeholders.

The management of grazing lands has proved unable to bring stocking levels within the limits of carrying capacity. In some cases **Range Management Areas (RMA)** are managed by **Grazing Associations (GAs)** or (more recently) **Range Management Associations (RMAs)**. Models of RMAs are being tried under the UNDP-implemented SLM project. Upcoming legislation implementing the (yet to be approved) Range Resources Management Policy should legally empower these user groups.

Under the Maluti-Drakensberg Trans-frontier Project (MDTP) a methodology was developed for the Managed Resource Area (MRA) approach. This approach is used in the ORASECOM 'Sponges Project', as it has given good results.

Soil erosion

The Soil and Water Conservation Department (MFLR) engages in the construction of structures for soil and water conservation, including e.g. terracing. It also has responsibility for the mapping of soils and degraded areas, as well as for the monitoring of soil erosion; however, and with the exception of edaphological maps, these have not been produced. Soil erosion is only being monitored under particular project areas. Another of the current shortcomings is that, although erosion control structures are being constructed, it is not know if these are being effective.

The MAFS is concerned with the on-farm management of soils, primarily from a nutrients perspective, rather than a conservation perspective. Nevertheless MAFS activities are highly important for soil conservation, such as the initiatives to expand Conservation Agriculture practices, e.g. as promoted under the National Action Plan for Food Security (NAPFS).

The Forestry Department (MFLR) also deals with soil erosion control. One of the objectives under the National Forestry Policy 2008 is to "increase tree cover to ensure soil conservation and improvement of water catchment areas".

Local authorities have responsibilities on agriculture (services for the improvement of agriculture) and forestry (preservation, improvement and control), as well as on the control of grazing, environmental protection and water resources, all contributing to soil erosion control.

3 Implications of climate change

As part of the preparation of the First National Communication to the UNFCCC, climate change scenarios were generated using six Global Circulation Models (GCMs) with simulations for the years 2030, 2050 and 2075. Since then, updated climate change simulations performed by the LMS show temperatures increasing by about 1ºC by 2030, 1.5-2.0ºC by 2050 and 2.5-3.5ºC by the 2080s (FAO, 2011). These projections are consistent with the modelling performed as part of the IPCC Fourth Assessment Report (FAO, 2011).

Predictions from GCMs suggest that there will be warmer future climatic conditions with lower precipitation in the spring and summer seasons, higher precipitation in winter and gradually increasing precipitation in autumn (UNDP, nd b). This is to result in shifting precipitation patters such that seasonal rains that currently occur in summer could set in later in autumn, with serious effects on agro-ecological conditions as growing seasons will be shortened (UNDP, nd b). The increase in winter precipitation suggests increased frontal systems activity characterised by heavy snowfall events and ravaging winds associated to destruction of property, livestock and loss of human lives (UNDP, nd b). In general terms an increase of extreme events of floods, droughts and snowfall is expected (UNDP, nd b).

Already changes in the onset of rains have been experienced by farmers in the mountains for the past decade. During the 1979-1996 period Lesotho also experienced the highest incidence of droughts over nearly the past 200 years (UNDP, nd b). An FAO household survey identified a

consistent account of changing weather patters in the recent past based on oral accounts (the surveys were carried out in the mountains and southern lowlands) (quoted from FAO, 2011):

- the start of the rainy season is delayed, with rains arriving one or two months later than expected;
- rangeland grass regrowth is delayed;
- the spring drought is followed by heavy rainstorms in early summer which cause flooding;
- strong winds wreak havoc to bare soils devoid of ground cover in the early spring;
- unseasonal cold snaps have occurred in early summer, just after the shearing season, killing small stock;
- dry spells in January/February cause yield reductions, sometimes also linked to pest outbreaks;
- late planting, often due to early season drought and late incidence of rains result in crops not reaching maturity.

Due to is geographical location, as well as to the dominant economic activities (i.e. bulk water transfers, subsistence agriculture, hydropower generation), Lesotho is highly vulnerable to climate change. The 2007 National Adaptation Programme of Action (NAPA) identified the socio-economic sectors that are particularly vulnerable to climate change, and which should receive "immediate and urgent" attention: water; agriculture; forestry; rangelands; soils and desertification; biodiversity; health; and Basotho Culture. In terms of geographical areas, the southern lowlands and mountains are considered under the NAPA to be the most vulnerable.

During 2009/2010 a technical study was conducted to assess climate change impacts, risks and vulnerabilities on food security and livelihoods in the southern lowlands and mountains, followed by a baseline survey of climate related risks, local vulnerabilities and perception and coping strategies in three sub-catchments within vulnerable zones, carried out under the Technical Cooperation Programme between FAO and the GoL. Details on the dimensions of such vulnerabilities are found in FAO (2011).

The **water sector** is particularly vulnerable due to its importance for local livelihoods and that climate change is expected to have a severe impact on water resources, diminishing rainfall leading to the shrinkage of surface and groundwater sources (LMS, 2007; FAO, 2011). The effects are already being felt in catchment yields and water stress levels are expected before 2019 (LMS, 2007).

The **agriculture sector** is particularly vulnerable as over 70% of the communities derive their livelihoods from agricultural activities, there are high levels of food insecurity, and climate change is expected to impact significantly on the sector through decreased yields (LMS, 2007) – also associated to the expected drying climatic conditions. In terms of social groups, smallholders are amongst the most vulnerable, as the slightest change in climate affects them. The southern lowlands and the mountains experience suboptimal spatial and erratic rainfall distribution and recurring droughts, and rising temperatures will further reduce available soil moisture during times of inadequate rainfall (FAO, 2011). As well longer dry spells, punctuated by heavy rainfall events can have disastrous consequences for the escalation of soil erosion (FAO, 2011).

The **forestry sector** plays a critical role in vulnerable zones; in particular for fuel wood supply, erosion control, income generation, tourism attraction, building materials, forage and shelter (LMS, 2007). The forestry sector is already very small in Lesotho, and climate change is expected to exacerbate its deterioration.

The **rangelands sector** is critical for Basotho livelihoods, as they are used for grazing, a key economic activity (e.g. production of wool and mohair). Land degradation has already reached critical levels in Lesotho, and climate change is also contributing to this (e.g. chronic drought has impeded recovery of grasses and vegetation) (LMS, 2007).

Soils and desertification have also been identified as critically vulnerable, due to the existing extent of soil erosion, and which is expected to be exacerbated by the effects of climate change through factors such as: high temperatures, scant vegetation cover, droughts, rainstorms, strong winds and heavy snowfall (and its subsequent melting) (LMS, 2007). The NAPA predicts that "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%".

Biodiversity is likely to be affected by climate change, as species might not be able to adapt in the context of the rapid changes. Biodiversity plays an important role as indigenous plant species are used for medicinal and cultural purposes, as well as being a tourist attraction (LMS, 2007).

The **Health Sector** is expected to be affected especially through the possibility of onset of tropical diseases that currently do not occur in Lesotho (LMS, 2007). Finally the **Basotho Culture** is identified by the NAPA as being under risk, as climate change will impact on livelihoods and new conditions will require people to resort to new ways of living, impinging on Lesotho's cultural heritage (LMS, 2007).

The NAPA identified adaptation options and prioritised them based on their contribution to the following six impact areas: (1) impact on vulnerable groups and resources; (2) impact on the economic growth rate of the vulnerable communities; (3) impact on poverty reduction; (4) MEA synergies; (5) employment creation; and (6) prospects for sustainability. The prioritised adaptation options were further translated into eight adaptation projects, as follows:

1. Improve resilience of livestock production systems under extreme climatic conditions in various livelihood zones in Lesotho;
2. Improvement of crop production systems to reduce food insecurity in the lowlands;
3. Capacity building and policy reform to integrate climate change in sectoral development plans;
4. Improvement of an early warning system to reduce impacts of climate disasters and hazards;
5. Securing village water supply for communities in the drought prone southern lowlands;
6. Management and reclamation of degraded and eroded land in the flood prone areas;
7. Conservation and rehabilitation of degraded wetlands in the mountain areas of Lesotho;
8. Improvement of community food security through the promotion of food processing and preservation technologies.

4 Integration of environment and climate change in key sectors

Under the Environment Act 2008, all line ministries have to mainstream the environment into their planning processes and operations; to this effect the Act provides for the creation of Environmental Units (EU). Key line ministries have been integrating the environment to different extents.

4.1 Water

Environmental management is an integral part of the mandate of the Ministry of Natural Resources, particularly with regards to water quality monitoring, watershed management and wetlands management. However, coordination with other ministries that also have a mandate that affect the water sector (directly or indirectly), particularly the MFLR and the MAFS, remains an important challenge.

Environmental impacts of large scale infrastructure projects such as those under the LHWP, but also dams for the supply of water to urban areas (e.g. Metolong dam) are subject to the EIA process and the implementation of EMPs.

Mainstreaming of climate change has not yet occurred, in spite of the sector being highly vulnerable. This is the case not only on paper (i.e. the policy and strategy documents) but also, and more importantly, on the awareness of key staff who, to a large extent perceive this as a subject matter that falls only under the remit of the LMS. It is expected that the revised Water and Sanitation Policy will integrate the climate change dimension.

4.2 Mining

The Mines and Minerals Act (2005) requires that mining leaseholders shall not engage in any wasteful mining or treatment practices, or conduct their operations otherwise than in accordance with good mining practice. Section 58 of the Act requires that the holder of a mining lease shall, in accordance with good mining practice, international standards and the law, preserve the

environment, minimise and control waste or damage and prevent (and where unavoidable) promptly treat pollution and contamination of the environment (SARW, 2010).

The Mining Division of the MNR has an environmental officer, who advises developers on environmental issues and engages in the review of EISs and environmental briefs from the mining sector.

4.3 Agriculture and forestry

The MAFS has not established an Environmental Unit. When it comes to environmentally sensitive natural resources (especially soils and rangeland) its functions are mostly concerned with the productivity of such resources for agriculture (e.g. soil nutrients, grasslands) rather than on the conservation of the resources, which falls primarily under the MFLR. Nevertheless, the MAFS does engage in conservation activities, such as the promotion of conservation agriculture.

Importantly, the MAFS has also taken an active interest in mainstreaming climate change, and has engaged in piloting climate change adaptation projects in the sector. Such mainstreaming is yet to be reflected in the relevant policy documents.

The mandate of the MFLR is fully oriented to the conservation of key environmental resources, especially soils, forests and rangeland. It is also involved in the management of wetlands, albeit not coordinating with the MNR on these activities.

4.4 Energy

The energy sector has embarked on the promotion of renewable sources of energy, especially mini-hydroelectric, solar and wind power. Although it does not have a policy in place (the Energy Policy dates from 2003 and remains a draft document), it has also taken a concern over the problem of biomass as the main source of energy in the country. However little has been done by the Department of Energy to address this issue.

4.5 Transport

The Transport Sector Policy (2006) was the basis for the Transport Sector Environmental Policy and Action Plan, which includes a statement of intent for, *inter alia*, integration of the environment in decision-making, promotion of ecologically sustainable transport, management of environmental impacts from sector activities, and raising awareness of environmental mainstreaming.

The Roads Directorate created an **Environmental and Social Management Unit** (ESMU) within the Department of Planning, which acts as an Environmental Unit for purposes of compliance with the Environment Act (2008). The ESMU is involved in the preparation of EIAs for roads projects. Other Line Ministries are involved in the review of EIAs to ensure these are not adversely affecting the environment (e.g. the MNR would have a say on effects on wetlands).

For roads works the Roads Directorate requests the contractor/engineering company to appoint an "Environmental Compliance Officer", who must prepare an Environmental Management Action Plan implementing the Environmental Management Plan (EMP) that was submitted as part of the EIS. The ESMU oversees the EIA process as well as the implementation of EMP.

Under the Environment Act the DoE has responsibility for carrying out project audits; however due to lack of resources these are not carried out, and often the Roads Directorate is asked to provide independent audits. Such 'independent audits' are not always carried out. In the case of World Bank projects (under the ITP), the World Bank brings an environmental mission to audit the environmental compliance of projects.

Road design follows environmental guidelines, which are part of the Design Standards for Roads and Bridges[24]. However final designs and construction are not always fully aligned to best practices in terms of implementation of environmental safeguards.

[24] Government of Lesotho (1998) *Design Standards for Roads and Bridges – Guidelines for Environmental Control*, Vol. 9, August 1998.

With regards to climate change, the NSDP makes reference to the need to climate proof roads. Updated data on precipitation and runoff (including flood return periods) are used for road design, and which recently are showing shorter flood return periods, leading to more weather resistant designs. However, designs do not take into account potential future climatic conditions.

4.6 Health

The Ministry of Health and Social Welfare (MHSW) has an Environmental Health Division under the Department of Primary Health Care. This Department currently has seven programmes: (1) water and sanitation; (2) water hygiene safety; (3) occupational health and safety; (4) vector control; (5) pollution control; (6) housing and buildings; and (7) port health.

The Division's activities focus mostly on aspects such as education and awareness raising (e.g. on sanitation and hygiene issues), although they also carry out focused monitoring of some physical and biological environmental variables (e.g. faecal pollution in water sources) in order to track down sources of pollution affecting health, through one person allocated per district.

Waste management is also within the remit of the Division, but focusing mainly on issues such as waste segregation and awareness raising, not on infrastructure (e.g. for disposal and treatment), which is responsibility of the Councils. Hospital waste is currently incinerated in different hospitals, and is recently regulated by the Hazardous (Health Care) Waste Management Regulations 2011.

5 Donor cooperation from an environmental perspective

5.1 European Union

Current EU development cooperation is guided by the Country Strategy Paper (CSP) 2008-2013 and its corresponding National Indicative Programme (NIP) under the 10th European Development Fund (EDF). The following focal sectors are being supported (allocations for 2008-2013 indicated): Human Development (€10 million) and Infrastructure (€38.8 million in the Water & Sanitation sub-sector). In addition to that there is a contribution to General Budget Support (GBS) (€70.9 million), as well as support to non-focal areas (decentralisation; Technical Cooperation Facility – TCF; governance; Non-State Actors – NSA; and trade). As well some 9th EDF projects are still under implementation.

A review is provided below on the degree of environmental integration into the current EU cooperation. The table below provides an overview of the current programmes and projects.

Table 8 Synthesis of current EU development programmes and projects

Title	EDF	Sector	Aid delivery modality	Amount (million €)	Time frame
Maseru Wastewater Project (MWWP) – Medium Term Works	9th	Water	Project Grant under the ACP-EU Water Facility	10	2007-2012
Upgrading and strengthening of 110 km of the paved primary network	9th	Transport	Project	21.5	2011-2013
Capacity Building in Economic Planning (CBEP), Phase II	9th		Project	4.94	2008-2012
Transport Sector Policy and Institutional Reform Support Programme (TSPIRSP)	9th	Transport	Project	7.85	2007-2012
Deepening Decentralisation and Non-State Actors Support Programmes (DDNSP)	10th	NSA	Project	10	2012-2018
Strengthening the Lesotho Justice Sector	10th	Human Development	Project	4	2010-2016
Social Protection for Orphans and Vulnerable Children (OVC) Phase II	10th	Human Development	Project	10	2011-2017
Poverty Reduction Support Budget I (PRSB I)	10th	GBS	GBS	26	2009-2015
Poverty Reduction Support Budget II (PRSB II)	10th	GBS	GBS	42 (+3.646 complementary support)	2011-2016
Water and Sanitation Sector Policy Support Programme	10th	Infrastructure	SPSP	32	2011-2014
Technical Cooperation Facility Phase III (TCF III)	10th	TCF	Project	2	2009-2015
Technical Cooperation Facility Phase IV (TCF IV)	10th	TCF	Project	2	AF stage
Support Climate Change Response Strategy		GCCA Facility	GBS complement	4	AF stage

Maseru Wastewater Project (MWWP). This project is funded under the ACP-EU Water Facility through a grant scheme, and is implemented by the Water and Sanitation Authority (WASA). The project has an overall positive impact on the environment, by increasing coverage of sanitation in Maseru, thus reducing pollution of water sources. Reduced water pollution in the Caledon River will also have positive transboundary effects. An EIA was carried out as part of the project and before construction of the wastewater infrastructure, according to national and EU requirements. Likewise an environmental officer was recruited to ensure compliance with environmental mitigation measures. This project shows an overall good degree of environmental integration.

Upgrading and strengthening of 110 km of the paved primary network. The project purpose is "to provide better access to the Lowland's existing and planned centres of production and to facilitate access of remote communities to basic social services such as schools, clinics, hospitals, commercial markets". An EIA was carried out as part of the project's feasibility study, which identified minor environmental issues that are to be integrated in project implementation.

Environmental integration into this project has been limited to identifying the potential environmental impacts caused by the physical activities to take place. However there are wider environmental issues that could have been addressed but have been neglected, for example: (i) climate proofing of the roads (ensure they are resistant to foreseen climatic conditions, especially in relation to increased rainfall intensity); (ii) development/use of environmental standards for roads. Good road design can help reduce run-off (e.g. design and use of culverts), trap/canalise sediments (e.g. vegetative covers), and thus mitigate effects on soil erosion. It must be pointed out that the NSDP already refers to the need of climate proofing infrastructure, including roads.

In synthesis, although there were efforts to integrate the environment (especially through carrying out an EIA), these could have been enhanced by looking not only at impacts of the construction activities, but also at opportunities to enhance environmental performance and adapt to climate change.

Capacity Building in Economic Planning, Phase II (CBEP II). The project's purpose is "to achieve and sustain a strengthened capacity for macroeconomic and financial management, sectoral planning, and economic and socio-economic development planning in GoL". In spite this is a seemingly environmentally non-sensitive sector, the MFDP plays a central role to ensure environment and climate change considerations are effectively mainstreamed across all sectors, the MFDP being the central planning government institution. This project had opportunities to strengthen awareness of environment and climate change as key cross-cutting aspects.

There is no evidence in the documents review of an environmental screening having being carried out, in accordance with the EU Guidelines for Integration of Environment and Climate Change in Development Cooperation. The use of the environmental screening questionnaire could have identified opportunities to address environmental and climate change awareness as fundamental for national and budget planning.

Deepening Decentralisation and Non-State Actors Support Programmes (DDNSP). The Non-State Actors Sector Programme (NSA-SP) has as stated purpose "to increase the capacity of non state actors to engage constructively in design, implementation and monitoring of gender-sensitive and environmentally sustainable development policies at the local level". The description of the context clearly identifies that CSOs in Lesotho do not address environmental aspects to a sufficient extent. However the stated Results do not emphasise the support to environmental initiatives, although the list of initiatives that could be eligible for support do make reference to environmental projects.

In the case of the Deepening Decentralisation Programme (DDP), it has as stated purpose: "to promote decentralised service delivery for social and economic growth through the development of transparent funding mechanisms and improving the accountability of local authorities". The TAPs for the DDP clarifies that the programme is not expected to have any environmental impacts.

Transport Sector Policy and Institutional Reform Support Programme (TSPIRSP). This is a capacity building programme aiming at supporting the Government's proposed institutional reforms in the transport sector, and is one of the three components of the WB/IDA funded Integrated Transport Project (ITP). The programme's stated purpose is "to provide a sustainable road sector management in place which is efficient in planning, developing, maintaining the Lesotho road network and in coordinating it in the national transport system". It addresses three components: (i) rationalisation of the road sector; (ii) sustainable road financing and improved capacity of road sector management; and (iii) reformulation of transport sub-sector policies.

Environmental management is identified as one of the programme activities, and will include support to establish an Environmental and Social Management Unit within the MPWT to ensure conformity with environmental standards during formulation of transport projects and enforcement of environmental guidelines during their implementation. The programmes logical framework also establishes as a sub-result that all road projects will go through environmental screening and be subject to an EIA, and a corresponding indicator is included.

Strengthening the Lesotho Justice System. This programme "seeks to enhance a professional, accessible and impartial Lesotho Justice Sector, which will ensure fair, timely and efficient delivery of justice and effectively combat corruption". In spite of the links that environmental governance has with the justice sector, there is no reference in the Technical and Administrative Provisions (TAPs) on the environmental dimension of implications of the programme. No environmental screening was carried out, where these links may have been identified; this does not necessarily mean that the programme should have incorporated a component on environmental justice, but would have at least recognised the benefits that an improved justice system and reduced corruption will have to strengthen environmental governance.

Social Protection for Orphans and Vulnerable Children, Phase II (OVC II). The stated project purpose is "to address forms of child vulnerability through adequate provision of quality child and gender sensitive protection measures". The TAPs recognise that there will be no adverse environmental impacts from programme implementation.

Poverty Reduction Support Budget (PRSP) I and II. In spite of the important environmental issues in the country, and which are directly associated to the situation of poverty (e.g. land degradation), the PRSP's indicators and conditions of disbursement do not include any environmental indicator or condition. The selection of GBS performance indicators is a statement of perceived priorities, where the environment does not feature.

Water and Sanitation SPSP. The programme provides support to the implementation of the water and sanitation policy and is implemented through sector budget support (SBS). Performance indicators (triggers for disbursement of variable tranches) are related to rural and urban water supply and rural and urban sanitation. However, the Government has not been able to carry out a proper monitoring of the agreed indicators, and more input/output or proxy indicators are being proposed so as not to stall the disbursement of tranches. No evidence is provided of an environmental screening for SEA in accordance with the EU Guidelines; however, as part of the preparation of this CEP an SEA screening was carried out for a potential second support to the water sector, indicating areas of attention that should be addressed during SPSP identification and formulation.

Technical Cooperation Facility (TCF) Phases III and IV. This project is oriented to enhance the capacities of the GoL to manage the EDF programmes. Although not explicitly mentioned, capacity building in the administration of EDF should include reference to the EU's development cooperation environmental integration policy and guidelines. There is no evidence of environmental screening for the project.

Support to the Climate Change Response Strategy. This GCCA facility project will be integrated into the GBS programme, with the addition of certain climate change specific conditions of disbursement and variable tranche indicators.

In general terms there is a good degree of environmental integration into the formulation of the programmes and projects. However there is little evidence for use of the environmental screening methodology (for EIA and SEA) defined in the EU Guidelines, as no completed environmental screening questionnaires are attached to any of the TAPs. The fact that environmentally sensitive projects have required an EIA shows evidence that an environmental screening has nevertheless being followed in the case of projects, be it the EU's or the Government's own EIA screening process.

The use of the environmental screening questionnaire would have allowed identifying further opportunities to enhance environmental performance, such as the climate change adaptation dimension in roads design; the recognition of benefits of an enhanced justice system for environmental governance and environmental justice; or the need to provide capacity building on the EU's environmental integration tools and methods under the TCF. In the case of some non-environmentally-sensitive programmes reference is sometimes made to the fact that the programme will not have environmental impacts (e.g. OVC II), whereas the analysis should also dwell into opportunities as to how the programme could enhance environmental performance.

In the case of the EIA system, similarly an impact-focus is usually taken, oriented at identifying and mitigating adverse environmental impacts of project designs, rather than also seeking opportunities to enhance environmental performance.

In the case of the GBS, it is unfortunate that no single environmental condition or performance indicator is included, showing that the environmental dimension, in spite of its very close links to the situation of poverty in the country, does not feature in the Government's priorities.

According to the EU Guidelines for environmental integration, SEA screening has to be carried out for sector support, which was not evidenced in the SPSP for water and sanitation (although it has been carried out, as part of this CEP preparation, for a potential follow-up sector support). Likewise an SEA should have been carried out for the national development strategy as a condition for GBS[25].

5.2 Other donors

Only a few donors are active in Lesotho, and not all of them have country offices. The GoL is yet to produce an Aid Policy, and currently there is no formal division of labour amongst donors, leading in some cases to overlaps, but also to the existence of neglected areas. The matrix below shows the sub-sectors where different donors are active in Lesotho; the size of the dot shows the amounts committed, giving an idea of the size of the size of the support [· < €2 million; €2 million < • < 10€ million; ● > €10 million]

[25] According to the EU Guidelines on Integration of Environment and Climate Change in Development Cooperation. The application of SEA for GBS programmes remains one of the weakest areas in terms of environmental integration on EU development cooperation, as evidenced by the reviews of environmental integration in EU funded projects and programmes carried out for the past three years.

Table 9 Synthesis of donor funds in environment and climate change

Donor	Environmental governance	Water & Sanitation	Biodiversity & Protected Areas	Forestry	Land Degradation	Industrial pollution control	Waste & Hazardous Waste Management	Climate Change adaptation	Climate Change mitigation
European Union		●						•	
Irish Aid		●						·	
World Bank		●	•	·	·				
AfDB		·							•
MCC		●							
UNDP				·	•		·	·	
FAO								•	
WFP									
Japan								•	·
GIZ					·				
IFAD								•	
USAID								·	
UNEP								·	

A table providing an overview of the main donor-funded projects in Lesotho dealing with environment and climate change is presented in Appendix 4.

The main donors with presence in Lesotho are: the EU, Irish Aid, World Bank, MCC and UN agencies (in the context of environment and climate change, these are mainly FAO and UNDP). Other donor agencies support some projects on environment and climate change, but have no offices in Lesotho; such is the case of USAID, JICA and AfDB.

Most of the money for environment and climate change is going into the water and sanitation sub-sector. More specifically, the water sector takes up a large percentage of the aid (especially from MCC) for the construction of the Metolong dam. The EU and Irish Aid are the main donors involved in sanitation and rural water supply, especially through sector budget support, although Irish Aid will soon withdraw from the water sector.

Land degradation is targeted directly by the UNDP-implemented (GEF-funded) Sustainable Land Management (SLM) Project. This project involves the development and testing of models and techniques for SLM that overcome current institutional and governance barriers. Other projects, especially on climate change adaptation also address land degradation directly or indirectly, e.g. by promoting conservation agriculture and (to a lesser extent) agroforestry.

The other subsectors that have received wide attention are climate change adaptation and mitigation. In the case of climate change adaptation, much interest has been shown in piloting conservation agriculture and small-scale irrigation (mainly through FAO and USAID) and working through the MAFS; also support is going into disaster management and DRR (mainly UNDP and Japan), working with the DMA and the LMS on early warning systems.

Support to climate change adaptation in the agriculture sector has been given through small pilot projects, with a limited scope. For example, the FAO project on climate change adaptation in the agriculture sector was piloted in three drought-prone localities with very positive results, but the up-scaling of the project in a second phase has not yet attracted interest for funding from donors. Other climate change adaptation projects in the agriculture sector (e.g. the USAID MICA or LIP II projects) also operate in a small-scale pilot basis. Climate change policy-making and mainstreaming has been targeted through the (completed) AAP, and more recently will receive support from the EU through its GCCA Facility.

In the case of climate change mitigation the expansion of renewable energies has received interest, mainly from the AfDB and UNDP. There are some on-going projects, amongst which the most ambitious is the GEF-funded (UNDP-implemented) Lesotho Renewable Energy-Based Rural Electrification project (LREBRE), which is seeking funding for its second phase. The LREBRE project involves mainly the use of solar power in rural communities. Wind power is also to be developed, being pioneered in Lesotho through the Lesotho Highlands Wind Power Project (with private investment).

The other environmental sub-sectors are receiving a much lower degree of attention by the donor community, in some cases in spite of their importance to tackle poverty in Lesotho.

6 Conclusions and recommendations

6.1 Conclusions

Lesotho is a Least Developed Country that depends heavily on the state of its environment in all major respects. More than 70% of the population engage in subsistence rain-fed agriculture, often complemented by sales of wool and mohair, especially in the mountains. The main source of foreign exchange for the country is related to the extraction and sale of its natural resources, primarily water (transferred to RSA through the LHWP) and diamond mining. In the past remittances from Basotho working in the South African mines constituted an important source of income, but these mines have been closing; mineworkers in RSA have dropped from about 120,000 in the 1980s to less than 50,000 today (GoL, 2012a).

Land degradation

In spite of what has been said above, the environmental resources that underpin Lesotho's economy are scarce, seriously degraded and/or highly vulnerable to climate change. Food insecurity has not improved in the past couple of decades and remains one of the main challenges, with decreasing agricultural yields to which the changing climate has been contributing. Arable land is very limited and decreasing (probably less than 9% of total land area at the moment) and its soils are increasingly being washed away and degraded. Some farmers resort to erosion control measures such as terracing and diversion furrows; however these techniques are not widely applied, often not maintained, and in some cases even destroyed to increase arable land.

Rangelands are being over-stocked and over-grazed, not allowing them to regenerate; these are being colonised by Invasive Alien Species, and overstocking is also exacerbating soil erosion. Over-harvesting of fuel wood adds to land degradation, in a context where the majority of the rural population depend on wood as energy sources for cooking and heating, in a country where forest cover is incredibly small, and where there is no tradition of sustainable management of forest resources. Other factors – biophysical, regulatory, institutional – also contribute to land degradation, such as bushfires, erosion of traditional authorities *vis-à-vis* recently established and yet ineffective local authorities, an out-dated regulatory system, and fragmented and un-coordinated institutional structures.

Wetlands are essential for the capture and buffering of water sources in Lesotho. However wetlands are also increasingly under pressure; siltation from land degradation affects their

functions, some have been reclaimed for agricultural land, cattle graze on them, and roads often traverse them. Inappropriate range management is directly affecting wetland functions.

There are little or no updated and trustworthy quantitative data on degradation; however the extent of land degradation is obvious to the eye (e.g. extensive gully and sheet erosion in the form of dongas and bare rock) and is felt by the rural population in the decreasing agricultural yields and scarcity of healthy rangelands.

Land degradation has multiple causes; also multiple effects that spread over a wide array of sectors and sub-sectors. The most immediate effects have been referred to above: decreasing agricultural yields and diminishing grazing lands, which both impinge directly on food security for the majority of the population. Degraded land has an adverse effect on local biodiversity; traditional medicinal plants become scarcer, impacting health of the local population and also traditional Basotho culture; potential for bio-trade is reduced.

Eroded soil washes to the rivers, adding their nutrient load and thus diminishing oxygen levels, affecting river ecosystems. But sediments also end up in the Katse, Mohale and Muela dams, decreasing their life-time, and thus potentially affecting the revenues from the transfers of water to RSA and reducing the hydropower generation potential. Sediment load will eventually lead to increasing levels of eutrophication, which will affect the potential for tourism and aquaculture, as well as further reduce hydropower generation potential. Sediment loads on dams and eventual eutrophication will also affect the Government's efforts to provide improved water sources to the population, by decreasing the life-span of dams and increasing water treatment costs. Land degradation is thus on its way to interfere with the basis of Lesotho's main source of foreign exchange, as well as with the country's efforts to reduce energy dependency and improve access to water.

Climate change is already contributing to land degradation and increased food insecurity, as experienced by farmers across the country. Late onset of rains is shortening the growing season and increased recurrence of drought has already led to crop failures. Three main variables define vulnerability to climate change, and Lesotho scores low in all three of them: exposure, sensitivity and adaptive capacity. Climate change is likely to, *inter alia*, reduce the regenerative capacity of vegetation through drier weather (causing further stress on rangelands), more intense precipitation events (increasing run-off and risk of floods), and lead to diminishing water resources.

Figure 2 below shows the basic interactions around land degradation. The boxes in red show higher level impacts; the boxes in orange highlight the contribution of climate change; the boxes in pink show key medium-level impacts; whilst the boxes in green show areas that will, later in this report, be proposed for focus of EU support.

The GoL has recognised the importance of land degradation; different line ministries and levels of government have responsibilities in relation to land degradation: MNR, MFLR, MAFS, MTEC, MLGC, District Councils, Community Councils, traditional Chiefs. Various pieces of legislation and policies refer to the problem, e.g. the Environment Act 2008, the Water Act 2008, policies for water and sanitation, environment, food security, forestry, agriculture. However efforts to address the problem have been shy, insufficient, ineffective and largely uncoordinated. Sound policies and strategies have been prepared (e.g. Forestry Policy and action plan, IWRM strategy, Food Security Policy and strategy) or are being prepared (e.g. Range Management Policy, Soil and Water Conservation Policy), but effective implementation remains a challenge. Lack of comprehensive and effective M&E systems in the key sectors does not contribute to effective planning, as well as lack of comprehensive research into soil erosion processes and dynamics.

The NSDP again emphasises the problem of land degradation, but the GoL's key focus is on macroeconomic figures, promoting job creation through the further development of the LHWP and expansion of the mining industry. Land degradation, albeit its direct relationship to the situation of poverty in the country, does not figure prominently. In the words of the NSDP: *"Employment creation represents the best way of achieving progress towards Vision 2020 goals. Therefore, the*

Plan's main indicator for success will be the number of jobs added to the economy. The Government has set the objective of adding at least 50,000 sustainable jobs to the economy by the end of the Plan period….This will be an indicator of success in terms of growth, poverty and inequality…"

According to the draft PSIP, for the 2012-2015 period, the MFLR (the main ministry dealing with land degradation) is expected to receive about 2,5% of the budget allocated to ministries; the MAFS about 1.4%, and the MTEC about 0.16% (of which only part of it goes to environment). In contrast MNR is to receive approximately 33% of the budget, mainly for large infrastructure works (i.e. Metolong dam). However, the single largest environmental expenditure is for water catchment, which in principle is to have a budget of 100 million Maloti in FY2012/13. This offers an opportunity to better address land degradation under an integrated water catchment management approach.

With some exceptions, environment is not a key area of attention for the donor community. Most of the environment-related support is to the provision of water supply and sanitation services (e.g. the EU's water SBS, Irish Aid, World Bank support to the construction of the Metolong dam). There is however, support from the MCC to wetlands protection and small donor-funded projects addressing issues such as conservation agriculture and climate change adaptation in the agriculture sector. In relation to land degradation the UNDP (GEF-funded) Sustainable Land Management (SLM) project is the one that most directly addresses land degradation; however, the project is coming to an end and, as has been the case with the FAO-implemented climate change adaptation in the agriculture sector project, funds have not yet been identified for up-scaling.

Water management

The provision of water supply and sanitation services has received wider support from the donor community as explained above. However, the wider water sector is fundamental not only with regards to the country's macroeconomic figures (i.e. LHWP) but also due to its direct link to land degradation (wetlands, integrated water catchment management) and to its potential to reduce food insecurity and contribute to adaptation to climate change (e.g. small-scale irrigation, water harvesting).

The broader water sector is fragmented between different ministries, departments and parastatals. The MNR addresses issues of water policy and planning, water quality monitoring, wetlands management and, through the DRWS and WASCO, provision of water supply and sanitation services, where local authorities should play an increasingly important role. The LHDA deals with the LHWP and bulk water transfers to RSA. Water for agriculture (irrigation) is mainly addressed under the MAFS; small water-capture structures by the MFLR, which are also addressing wetlands protection. Land management aspects fundamental to a healthy water system are under the MFLR and, to a lesser extent, the MAFS.

The integrated planning and management dimension that is fundamental to water management is considered at a policy and strategy level (e.g. the IWRM Strategy, watershed management planning), but is yet to become a reality; insufficient and ineffective inter-institutional coordination mechanisms remain one of the main limiting factors.

The lack of a functional M&E system in the sector has also been an obstacle to good planning; there is no current agreement on baseline data, and basic indicators are proving difficult to measure, as evidenced by the difficulties to apply the performance indicators agreed with the EU for the water SBS.

The M&E system requires attention. However, the donor community should consider the water sector in its broader context, especially as it relates to fundamental challenges for poverty eradication, such as is the case with land degradation.

Integrated Water Catchment Management

Issues of land degradation and water management are best addressed through an integrated water catchment management approach, and which would normally include aspects such as rangeland management, soil erosion control, forestry, water resources management, water quality control,

etc. The integrated water catchment management approach is foreseen under the Water and Sanitation Policy (2007), but is also referred to in the National Environmental Policy (1998) as well as in the draft versions of the National Soil and Water Conservation Policy and the National Land Use Policy.

An integrated water catchment management approach has the beauty of capturing – in a coordinated manner – the main challenges identified above under the banners of land degradation and water management. Such a systemic approach comes at a cost of complexity, which is translated into significant challenges.

As any integrated approach, water catchment management necessitates a clear overarching policy and effective inter-institutional coordination mechanisms. This is a challenge under the current Lesotho context, where inter-institutional coordination has been very weak and ineffective, and where the different components that must be covered by a water catchment management approach are fragmented across several government institutions, in some cases overlapping. Figure 3 below shows the main sub-sectors that pertain to integrated water catchment management, as well as the main institutions with competence in those areas, and the government policies that address them. The diagram presented is but a simplified version that shows the complexity involved, and thus the challenges faced in attempting effective coordination and alignment of policies and strategies. This complexity is carefully considered in proposing a donor support to water catchment management. For example, at a very basic level clarification must be obtained about whether an integrated *catchment management* approach (foreseen under the Water & Sanitation Policy and promoted by the MNR) is the same as the integrated *land and water conservation* approach (promoted by the MFLR).

Environmental governance

Environmental governance in Lesotho is very weak. Lesotho Vision 2020 does refer to a "well managed environment" as an integral element of the vision statement. *"Lesotho shall be renowned for its environmental management"* (Vision 2020, Section 2.3.6) points the way forward; the NSDP rescues environmental management as one of the strategic areas and recognises that *"sound environmental policies, adaptation to climate change and physical planning are necessary for sustainable long-term economic growth while preserving our country for future generations"*. It further acknowledges that *"there is compelling evidence that the measures that are currently being taken…are not adequate to reverse environmental degradation"*.

The Environment Act 2001 provided for the creation of the semi-independent Lesotho Environment Authority (LEA). Nevertheless it was decided that no funds were available to establish the LEA, and the former National Environment Secretariat (NES) was converted into the Department of Environment (DoE) within the MTEC.

Several indicators shed light on the inherent weaknesses of the DoE and thus its constraints to fulfil its mandate of advocate and defender of environmental protection in the country. Some examples should suffice: (i) for a start the Ministry's mission statement is all about tourism development[26] - on a generous interpretation, the mission is about environmental protection so it may facilitate tourism development; (ii) the approximate budget allocated to the whole MTEC for the 2012-2014 period represents only 0.16% of the total budget; the draft list of "on-going projects" identified under the draft PSIP for the MTEC does not include a single environmental project; (iii) most of the provisions made in the Environment Act 2008 have not been implemented; (iv) the MTEC's Strategic Plan 2005-2008 prescribed without having implemented most of the actions foreseen for the Department of Environment.

Furthermore the DoE is understaffed and does not have resources to carry out some of its basic functions; for example, no resources are available for the preparation of the new State of the Environment Report (which is long over-due); there are no resources to implement the NBSAP;

[26] *"The Ministry of Tourism, Environment and Culture is committed to promote environmentally and culturally sustainable development, making Lesotho the number one tourism destination in the region through the provision of high quality service and creation of enabling environment for the private sector driven and community based tourism development".*

and the Department's capacities are insufficient to carry out the necessary inspection missions and environmental audits.

In spite Lesotho cannot be considered an industrial country, there is presence of environmentally sensitive industry, such as the garment and the mining industries. Large-scale infrastructure projects are also environmentally sensitive, such as the construction of large dams under the LHWP. We must recall that the NSDP is placing emphasis on the expansion of the mining industry and LHWP as growth accelerators under the low-growth scenario; under the moderate-growth scenario these also include manufacturing, agriculture (commercial) and tourism.

The existing gap between the development of environmentally-sensitive activities and the capacities of the environmental governance system to guarantee the implementation of regulations and safeguards and ensure enforcement, is widening. Strengthening of environmental governance is a necessity.

For environmental governance to be effective many fronts need to be tackled, such as: institutional arrangements (e.g. DoE *vs* semi-autonomous agency); inter-institutional coordination mechanisms; resources (human, financial, technological); technical capacities; enforcement powers; and M&E, including establishment of an environmental baseline. The DoE has elaborated a project proposal to strengthen the implementation of the Environment Act 2008 (DoE, 2011), and is seeking support from UNDP.

Figure 2 Basic cause-effect land degradation-related interactions

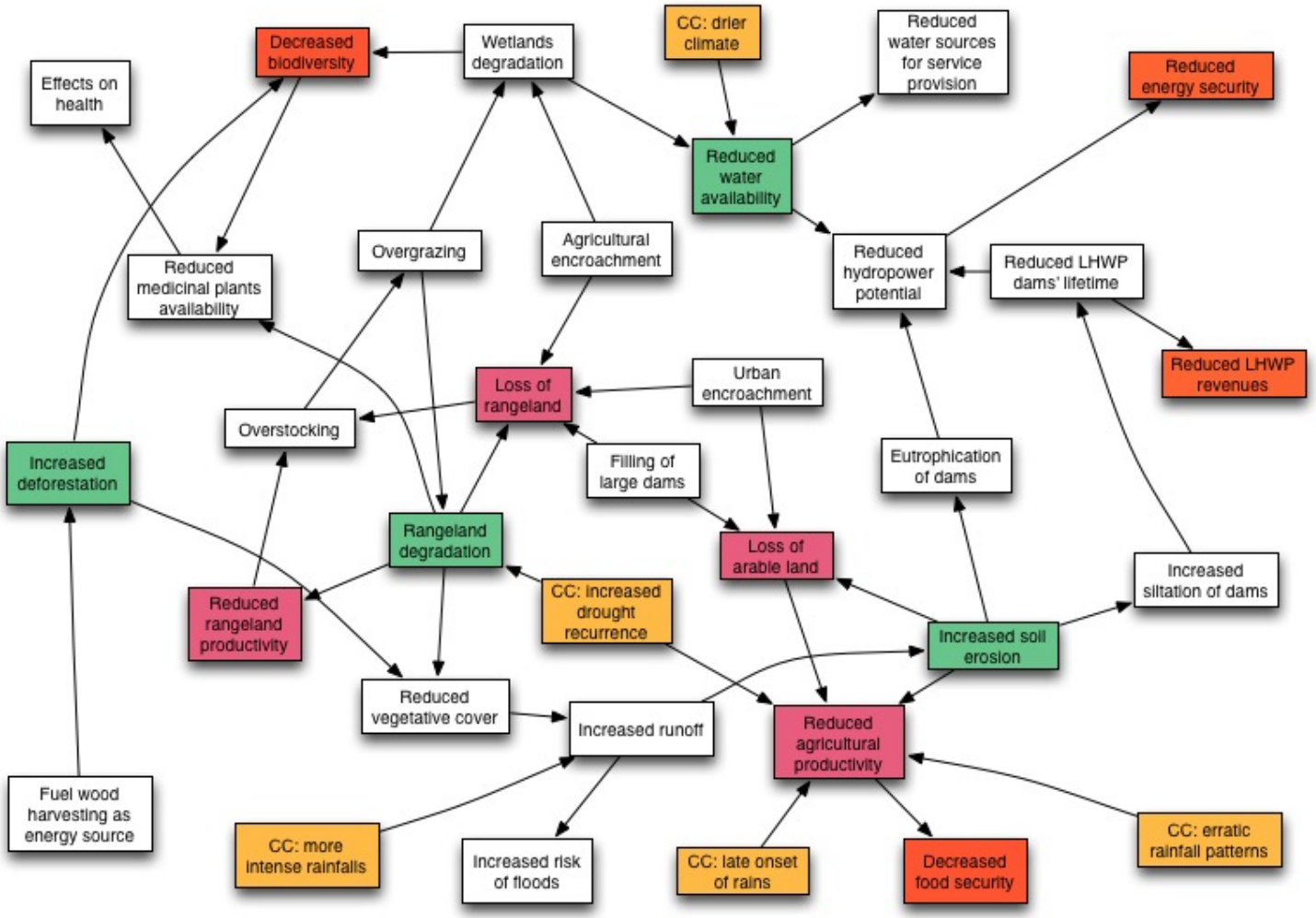
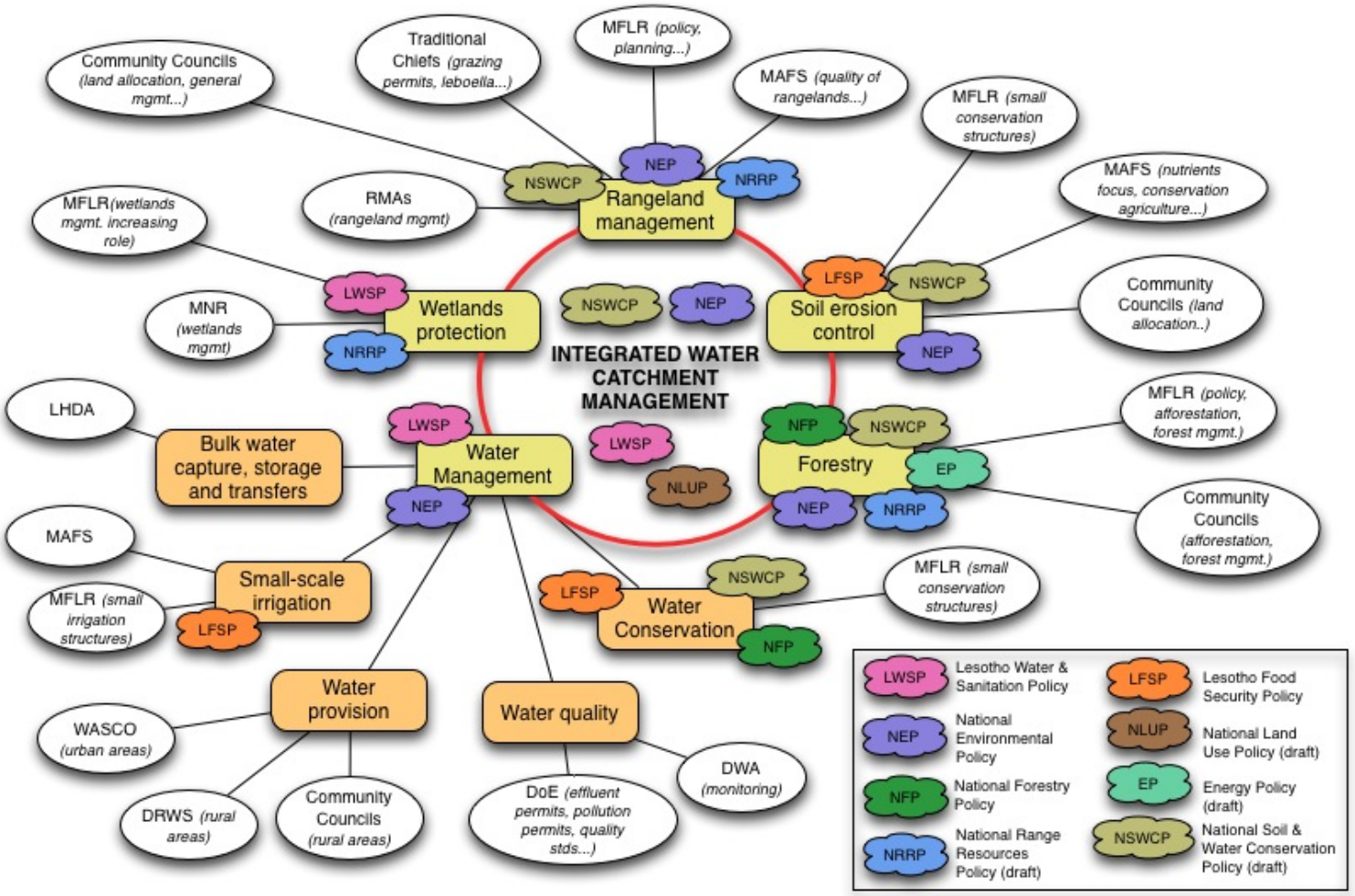


Figure 3 Main components of an integrated water catchment approach, including government institutions and relevant policies



6.2 Recommendations

The analysis of the environmental challenges in Lesotho are translated into practical recommendations as to how the EU can best contribute to address them under the programming for the 11th EDF. Recommendations take into account several factors such as the institutional and regulatory context, the government's priorities as expressed in their policies and strategies, and the current and foreseen donor support.

Especially important, careful consideration is given to the objectives of EU development cooperation, as stated in the European Consensus on Development, the principles of the Paris Declaration on Aid Effectiveness, and the draft EC Programming Guidelines.

The 2005 **European Consensus on Development** states that: *"the primary and overarching objective of EU development cooperation is the eradication of poverty in the context of sustainable development, including pursuit of the Millennium Development Goals"*. Thus the recommendations made below take into account the **poverty focus** of the development cooperation. They also take into account principles of the **Paris Declaration on Aid Effectiveness** (ownership, alignment and harmonisation), which is done mainly by seeking to support the implementation of the government's own policies and strategies, seeking opportunities for coordination with other donors and ensuring that the government remains in the driving seat. In cases where the authors consider the government's policies unsuitable as frameworks to tackle key environmental concerns, **policy dialogue** is proposed as a complementary option for the EU Delegation to take.

Recommendations are made for the selection of sectors of cooperation; environmental integration in non-environment sectors of cooperation; and environmental integration into the Delegation's own procedures.

6.2.1 Sectors and areas of support under 11th EDF

Two narrowly defined sector of cooperation are proposed for consideration for the EU to support: **land degradation** and **environmental governance**. As well recommendations are made for the integration of environmental consideration into a possible support to the **energy sector**. Finally the following section makes specific recommendations for better environmental integration in the water sector support, which also captures some elements associated to land degradation.

Land degradation

Land degradation is probably the main environmental concern in Lesotho, and it is associated to the perpetuation of poverty and to increasing food insecurity. It also has adverse effects on the efficiency of the LHWP, hydropower generation and loss of biodiversity. It receives attention from donors, but not to the extent required; many projects show positive and promising results (e.g. from the SLM project), but these remain localised and funds for up-scaling remain uncertain.

In terms of **alignment**, a hypothetical support to land degradation would be contributing to a number of GoL policy objectives, as shown below.

Table 10 Key national policy objectives associated to land degradation

Policy	Objectives
NSDP	• Reduce vulnerability and manage risk – improve household food security • Climate change proof the agriculture sector • Reduce land degradation and protect water sources • Strengthen range management institutions and range management capacity • Improve land use, administration and management (in relation to reduced encroachment on agricultural land)
National Forestry Policy	• Combating land degradation through increased tree forest cover
National Environmental Policy	• Achieve sustainable development through integrated programmes of employment generation and natural resources rehabilitation and management in rural and urban areas. *Including strategy to: rehabilitate degraded resources to increase their productivity and improve the livelihoods of the poor for basic human needs.* • Promote land conservation, sustainable use and development through tenure reform, planning, legislation and incentives • Improve land use and natural resources management and sustained increased agricultural production and rural economic development and diversification • Promotion of environmentally sound management of the rangeland and mountain ecosystems and resources for sustainable and environmentally friendly development • Identify and address the driving forces behind desertification and mitigate the effects of desertification and drought through sectorally coordinated policies and programmes
Food Security Policy	• Promotion of agriculture to boost food production, income and employment • Sub-objective: prevent soil erosion through appropriate cultivation practices • Sub-objective: maintain the fertility and long-term food production levels by slowing and eventually stopping the process of land degradation. Improve short-term food security by …and rehabilitation of dongas.
National Range Resources Policy (draft)	• Raise public awareness and promote community and wider stakeholders' active participation in rangeland resources management • Develop and implement efficient and effective strategies to avert land and vegetation degradation • Improve and maintain productivity of rangeland resources at optimal level so as to promote ecosystems balance • Rehabilitate and improve the quality of rangeland so as to enhance productivity of livestock and wildlife habitat • Conserve and increase the availability of native plant species for economic, social and cultural utilisation • Protect water resources and improve the water quality and yield • Enhance the aesthetic beauty of the landscape and increase opportunities for sustainable recreation and ecotourism • Improve income opportunities and quality of life of the rural communities • Promote disaster (wild fires, drought, etc.) risk reduction, gender equity, as well as HIV and AIDS mainstreaming in range resources management
National Land Use Policy (draft)	• Ensure that our descendants enjoy land resources and ecosystems that are at least as environmentally and economically productive as they are today
National Soil and Water Conservation Policy (zero-draft)	• Rehabilitation of degraded lands • Develop appropriate conservation techniques • Maintain soil fertility and long-term food production levels by slowing and eventually reducing the process of land degradation

In addition to the above policy objectives, land degradation is also subject of attention of a number of sectoral strategies, including: Agricultural Sector Strategy (2003); the National Action Plan for Food Security (2007-2017); National Forestry Programme (2008-2018); the IWRM Strategy; and the National Action Programme in the context of the UNCCD.

The draft programming guidelines state that the EU should support those sectors that build the foundations for growth, and in particular those with a strong multiplier effect, "notably agriculture and energy". Addressing land degradation is a *de facto* support to agriculture.

Ownership may prove a challenge in a support to land degradation, as it is an area that necessarily requires inter-institutional coordination, which is currently weak in Lesotho. A support to land degradation would thus require to **first focus on the building of ownership and the creation of effective inter-institutional coordination mechanisms**. The Aid Coordination Unit within the Ministry of Development Planning could be the entry point for the coordination of programming related to land degradation; this programme should take as priorities the clarification of institutional mandates and policy frameworks for service delivery and the relevant department would need to be capacitated to carry out this mandate. If the Ministry of Development Planning is given convening power, then its accountability to the rest of the land group needs to be re-emphasised.

Sector support should be the preferred aid delivery modality. However due to the multi-sectoral nature of land degradation, it is not clear which should be the government strategy to be supported through the SPSP (e.g. the National Range Resources Management Policy, the National Soil and Water Conservation Policy). An **alignment of policies with key focus on land degradation needs to be achieved**, and responsibilities for its implementation clearly defined under the coordination mechanisms. Such an alignment of policies and setting up of a coordination mechanism for the sub-sector may profit from a **long-term Technical Assistance**, complemented with **ownership- and capacity-building activities**, such as on-the-job trainings, post-graduate trainings, study tours and twinning arrangements. Working closely with local authorities and traditional authorities is essential in this sector.

Technical Assistance could be used to **assess technical capacity of land degradation officers** and develop an associated **training plan** and a **retention plan**. TA could also provide capacity building for extension officers and help create extension posts at a high enough level to attract skilled graduates and ensure candidate skills are aligned to position.

Lack of a **baseline** on land degradation is a key inhibiting factor for effective land management, and thus the generation of a baseline should be priority for evidence-based planning, an area that UNDP is exploring. Technical Assistance could also be used to generate the baseline and the monitoring system.

It is highly recommended not to focus all resources on Sector Budget Support (SBS), but rather complement with TA as described above.

Choice of **performance indicators** is key for a successful sector support. Under the NSDP proposed M&E system, the only directly relevant indicator is *"rehabilitated areas affected by soil erosion"*; however no methodology has been defined on how this indicator should be measured. The establishment of a baseline and the measuring of the indicator can be very problematic, as experienced in Rwanda, where soil erosion is also a national problem, and where measurement of a similar indicator has proved unsatisfactory and is currently under revision. A credible and agreed methodology for the measurement of this indicator has to be agreed, probably complemented by indirect measures of soil erosion (e.g. suspended solids and sediment load in strategically located surface water sampling points).

In addition to soil erosion, land degradation must also be measured with regards to rangeland management and soil conservation agricultural practices. Possible aspects that could be reflected in indicators include:

- stocking rates;
- number of livestock farmers under functional Range Management Associations;
- ha under conservation agriculture;
- number of approved land use plans;
- rate of encroachment on arable land;
- expenditure on research on soil erosion;
- land degradation monitoring system established.

UNDP – under its SLM project - is exploring options to measure rangeland degradation for evidence based planning. Results of this consultancy should be taken into account when considering indicators.

Donor coordination will be essential in order to ensure complementarity and follow-up of other activities, notably the UNDP SLM project, the FAO climate change adaptation in agriculture project, the WB small-scale agriculture project, as well as others (e.g. under USAID) that have had a narrower scope.

Table 11 below synthesises the rationale of the support, taking the format recommended in the draft programming guidelines.

Table 11 Synthesis of rational for the support to land degradation

Objectives of the National Development Strategy (or equivalent) as identified in the national development plan or equivalent documents	Create high, shared, and employment generating growth Reverse environmental degradation and adapt to climate change
Other donors' coverage in the following sectors	UNDP: sustainable land management FAO: agriculture MCC: wetlands management
EU Agenda for Change relevant priorities	Sustainable agriculture and energy
Expected results of actions foreseen in national development plan and for EU support	Agriculture and rural economy • Reduce vulnerability and manage risk • Improve household food security • Climate change proof the agricultural sector • Reduce land degradation and protect water sources • Strengthen range management institutions and range carrying capacity • Improve land use, administration and management
Could lead to different options for the issues to be addressed within the sector chosen	**Range management governance**. Especially up-scaling of UNDP SLM project experience and institutionalisation of experiences (e.g. including policy framework, establishment of institutional set-up, inter-institutional coordination mechanisms, M&E system for range land management and soil erosion control).

Environmental governance

Strong environmental governance is needed in a country whose economy is almost fully dependent on its natural resources (mainly water, rangelands and soils), where these natural resources are under increasing stress, and where the country's growth strategy promotes an increase in industrial activity and large infrastructure works. Environmental governance is also an area that has been largely neglected by the donor community, and where the EU could have a significant impact.

In terms of **alignment**, a hypothetical support to environmental governance would be contributing to GoL policy objectives and strategies, as shown below.

Table 12 Key national policy objectives associated to environmental governance

Policy	Objectives
NSDP	• Reverse environmental degradation and adapt to climate change (Strategic Goal No. 5) • Improve environment and climate change governance
National Environmental Policy	• Protect and conserve the environment with a view to achieving sustainable development for Lesotho (Policy Goal) (various policy objective under it)

One of the challenges for the support to environmental governance is that the Department of the Environment is kept as a weak institution, showing a **deficit of environmental awareness at the highest political levels**, where environmental protection is to a certain extent still seen as a potential obstacle for the onset of business. For this reason **Sector Budget Support is not recommended**. Low environmental awareness of the wider population is also an inhibiting factor. Rather, a support to environmental governance could be addressed taking into account the following:

- **Awareness raising at the political level** on the links between environmental degradation, poverty and economic growth. **Technical Assistance** could be used to prepare a detailed **economic valuation of natural resources and environmental degradation** in Lesotho, which would translate environmental degradation into monetary terms (e.g. what is the cost, in Maloti, of soil erosion, considering decreased agricultural productivity, decreased life-span of dams for bulk water supply and electricity production, etc.) Such a study could form the basis for awareness raising. However, the lack of baseline data may be an important obstacle for the preparation of such an economic valuation, and a **scoping study** may be required to determine the methodology to be used and basic baseline data to be generated.
  Strategic Environmental Assessment (SEA) can also be promoted as a tool to better integrate the environment into policy-making and planning processes at the national and sector levels. The donor community (especially the EU, World Bank and GIZ out of those present in Lesotho) has wide experience in the use of SEA. As well, the Environment Act 2008 considers SEA as a tool for environmental integration, although its use has not been regulated nor implemented. A pilot SEA in a key sector planning process (e.g. energy) could be very useful to pilot the tool and also to highlight the environmental issues associated to key sectors.
- **Awareness raising of the general population** on the key environmental issues in the country and options to address them. Support to general awareness raising could include:
  - Training and capacity building of NGOs to strengthen their advocacy role;
  - Awareness raising of journalists on the environmental issues in the country, and capacity building for providing media coverage of environmental issues and on using the mass media as a tool for environmental sensitisation;
  - Input into strengthening the environmental component of the national education curricula.
- **Strengthening of environmental integration in key ministries**. Although the DoE had trained key persons to build the Environmental Units (EUs) in the line ministries, most of these EUs are not functional or were never formally established. A support to environmental governance should also directly tackle environment as a cross-cutting issue in key sectors (including energy, water, land use, transport and tourism); this could include aspects such as:
  - Awareness raising and training on the links between the environment and the different sectors (targeted training);
  - Training on use of environmental integration tools, such as EIA and SEA;
  - Assistance and training on measurement of key environmental indicators associated to the sector.
- **Policy dialogue** on the need to enhance environmental governance, and discussing institutional rearrangements (e.g. creation of an environmental semi-autonomous executive agency).
- **Review of the Environment Act 2008**, as foreseen under the NSDP, in order to optimise and enhance its performance. Careful attention should be given to ensure that this NSDP-

foreseen activity is not focused on further diluting the EIA system to facilitate business development. For example, one aspect that could be enhanced in the Act would be defining a provision so developers have an obligation to monitor their polluting emissions on a regular basis, and *report* to the DoE; this would allow the DoE to target the inspections they carry out, place the onus of monitoring on polluters, and provide a legal basis for action in case polluters submit false data.

- **Support to the effective implementation of the Environment Act**, based on a prioritisation of activities. Such support could include a component of sector budget support, with clearly identified indicators that measure effective implementation of the Act. Such indicators could include, e.g.
  - Number of effluent licenses and pollution licenses issued by the DoE;
  - Number of inspections carried out by the DoE;
  - Establishment of the Environmental Tribunal;
  - Number of effluent monitoring reports submitted by industry to the DoE (in case such a provision is established);
  - Approval of effluent quality standards;
  - Compliance of industry with approved effluent quality standards.

Table 13 below synthesises the rationale of the support, taking the format recommended in the draft programming guidelines.

Table 13 Synthesis of rational for the support to environmental governance

Objectives of the National Development Strategy (or equivalent) as identified in the national development plan or equivalent documents	Reverse environmental degradation and adapt to climate change (overall Strategic Goal 5)
Other donors' coverage in the following sectors	None
EU Agenda for Change relevant priorities	Human rights, democracy and other key elements of good governance
Expected results of actions foreseen in national development plan and for EU support	Improve environment and climate change governance
Could lead to different options for the issues to be addressed within the sector chosen	Review and implementation of the Environment Act 2008, including possible revision of legislative framework, institutional restructuring, institutional strengthening, awareness-raising (multiple levels, including key ministries, NGOs, media, judiciary), on-the-job and post-graduate training.

Environmental integration in the energy sector

Energy is being considered by the EU Delegation as a possible sector of cooperation. Apart from the obvious merits of increasing the level of electrification for the Basotho population, from an environmental point of view there are three main opportunities: (1) enhanced supply of biomass energy resources; (2) reduced dependency on biomass resources; and (3) reduced greenhouse gas emissions through the use of renewable sources of energy.

The draft Energy Policy (2003) seeks to expand the role of renewable energies by making them more affordable. At the moment solar energy (mainly photovoltaic and solar-thermal) has been expanded, as well as some mini-hydroelectric schemes and some bio-digesters been constructed. Initiatives are on the way for the development of wind energy.

From an environmental point of view it should be recalled that the main source of energy for the Basotho population is biomass, mainly wood. The collection of fuel wood from unsustainable sources is associated to increased deforestation and increased land degradation. Increased electrification is likely to be used primarily for lighting and running of electric appliances (e.g.

TVs, refrigerators, but also water pumps and medical equipment), but may not be a significant energy substitute for heating and cooking, the main consumers of biomass. Reductions in biomass consumption can be further obtained by promoting increased **energy efficiency** (e.g. in housing insulation, energy-efficient stoves).

From an environmental point of view, a possible support to the energy sector should ensure that it builds into its objectives the **reduced reliance on wood as a source of household energy** and (especially) the **increase of sustainably managed sources of fuel wood** (with appropriate species that do not contribute to land degradation). It thus implies that the support to the energy sector looks at aspects such as: reforestation; afforestation; and forestry management plans. These should be reflected in appropriate indicators, such as:

- % of households that use sustainably managed woodlots to secure wood for energy purposes;
- % of energy needs (cooking, heating, lighting) satisfied by wood.

From a climate change mitigation point of view, the support to the energy sector should seek to maximise opportunities for low-carbon sources of energy in line with a "green growth" approach to development, as already promoted by the GoL.

A Renewable Energy Policy needs to be aligned with the National Forestry Policy (2008), which promotes planting of trees and shrubs to curb the energy deficit. The **MFLR (Forestry Department) will have to be engaged** in a support to the energy sector.

One of the major obstacles for the support to the energy sector is that the government does not have an approved Energy Policy (the 2003 policy remains a draft), and the Renewable Energy Policy has not yet been prepared.

In terms of **alignment**, a hypothetical support to the energy sector would be contributing to a number of GoL policy objectives and strategies, as shown below.

Table 14 Key national policy objectives associated to forestry component of the energy sector

Policy	Objectives
NSDP	• Increase energy conservation, security and distribution efficiency of alternative sources (which includes: promote forest/tree planting and regeneration of other important biofuel species)
National Environmental Policy	• Improve land-use and natural resources management and sustained increased agricultural production and rural economic development and diversification (including a strategy on promoting renewable sources of energy to facilitate regeneration of the resource base and minimisation of loss of vegetation cover)
	• Develop and promote through awareness building, incentives and market efficient, and environmentally friendly energy sources and energy saving technologies (including strategy to accelerate community-based afforestation programmes countrywide for energy sources enhancement and discourage the combustion of crop residues and animal dung)
National Forestry Policy	• Promote the planting of appropriate exotic (indigenous) trees and shrubs in order to curb biomass energy deficit. Encourage and give priority to the establishment of individual and communal woodlots for fuel-wood production.
	• Participate in the promotion of energy efficient technology in rural households, such as the use of energy saving stoves, biogas, and solar energy in order to conserve the few remaining forest resources of the country.
Energy Policy (draft)	• Improve the availability of biomass resources
	• Promote the sustainable use of biomass in the country
	• Make available quantitative data on the consumption patterns and depletion of biomass
	• Encourage the switch to alternative fuels to reduce the pressure on biomass

Under the EU *Guidelines for Integration of Environment and Climate Change in Development Cooperation*, energy is considered as an environmentally-sensitive sector, and it is thus recommended to

prepare a **Strategic Environmental Assessment (SEA)** of the policy/strategy whose implementation should be supported.

The EU should carry out an **SEA Screening** as part of the energy sector SPSP identification. In case it is decided that an SEA needs to be carried out, the results of the screening process should be used to help define the scope of the SEA, so it becomes a focused process. In this case:

- The EU should build ownership of the SEA process by promoting the SEA within the GoL (especially the Department of Energy). To that end, a workshop that includes a short training component on SEA and its use is recommended, leading to the preparation of aspects to be addressed in such an SEA. There must be a *commitment to take into consideration the SEA recommendations* and integrate them in the policy-making and implementation process.
- The SEA should provide recommendations both to the EU and to the GoL. It should provide recommendations to the GoL on how to better integrate the environment in the energy policy; as well it should provide recommendations to the EU on how the environment could be better integrated into the formulation of the energy sector SPSP.
- Ideally the SEA should be carried out as part of the policy-making process, in order for it to more effectively influence the way the policy document takes into account the environment. However there is a possibility that the policy-making process it already advanced by the time an SEA is carried out; in this case the SEA can still influence the policy-implementation process, as long as there is political will to address environmental concerns.
- The ToR for the SEA should be based on the format suggested in the EU guidelines; however it must be adapted to ensure that it addresses not only the potential environmental impacts of policy implementation, but also to identify the environmental challenges in the sector in order to seek opportunities for the energy policy to better address them. As well it should be as focused as possible, addressing the potential areas of concern as identified through the screening process. Possible aspects to focus on may include:
  - Capacities within the Department of Energy to manage EIA processes for energy-sector projects (e.g. evaluation and follow-up of Environmental Management Plans);
  - Adequacy of the environmental regulatory framework to address potential environmental impacts associated to the introduction of new technologies (e.g. wind energy);
  - Degree to which the energy policy promotes opportunities to reduce pressures on the environment associated to the energy sector (e.g. pressure on land due to harvesting of fuel wood);
  - Capacities to implement environmental safeguards and policy provisions that act on reducing pressures on the environment (i.e. is it realistic that such provisions will get implemented, given the existing institutional capacities and resources? Is their implementation conditional to donor support? Is there political will?);
  - Degree to which the energy policy realistically integrates the expected effects of climate change in the sector (e.g. water availability for hydroelectric power, effects on availability of biomass as source of energy);
  - Degree to which the energy policy promotes the use of low-carbon technologies;
- The SEA would also need to take into account other policies and strategies that are relevant to the energy sector, especially the National Forestry Policy and its Action Plan.

6.2.2 Water sector support

The EU is currently supporting the water sector through a Sector Budget Support programme, with a focus on water provision and sanitation. However monitoring has proved difficult to implement, due to the lack of a credible baseline and to the absence of an effective M&E system in the sector. A study to review the M&E system in the water was recently prepared (Vad and Kiwango, 2011) which provides recommendations. The EU should ensure and appropriate M&E system, in line with the recommendations made in that report, is developed and implemented for continuation of the current support.

The EU is also likely to agree a new sector support to the water sector under the 11th EDF. For this new SPSP it is highly recommended that the water sector is addressed in its broader sense, and not limited to the provision of water supply and sanitation services. The EU support should focus on the implementation of an integrated **water catchment management** approach, which is foreseen in the Lesotho Water and Sanitation Policy.

Water management can only be effective if it takes into account the whole catchment. This includes measures to guarantee water quantity and quality, such as protection of sources of water (e.g. wetlands), buffering of run-off (e.g. vegetation cover), and water quality (e.g. effluent control). It also includes measures to satisfy demand, such as water for irrigation, water for industrial use, and water for household consumption. "*The water sector has in the past focused on providing water for domestic purposes only and put little emphasis on the provision of water for productive purposes in rural area"* (Vad and Kiwango, 2011). Integrated water catchment management is becoming increasingly important in the context of climate change, as water supply is like to decrease (e.g. through increased drying of the climate) and because water-dependent productive sectors such as rain-fed subsistence agriculture are especially vulnerable and are going to be affected by erratic rainfall patterns, putting further stress on food security.

Aspects to address in approaching integrated water catchment management identified by Vad and Kiwango (2011) include:

1. *'Focus on local level planning and implementation. The Department of Environment has valuable experience from the support to 'Managed Resource Committees' (MRCs) in selected catchment areas in Mokhotlong as part of the Maluti-Drakensberg Project. The MRCs cover a sub-catchment area and consist of the involved CCs* [Community Councils]*, chiefs, grazing associations and other stakeholders in the catchment and prepare and implement catchment management plans. The MRCs are supported by the district level departments for forestry, soil conservation, range management and agriculture;*
2. *Combined planning and budgeting at national level between the involved line ministries of natural resources, forestry and land reclamation, agriculture, environment and local government. Achieving this would require action and support from the highest level of Government to operationalise coordination mechanisms and e.g. get active participation from these line ministries in the water sector coordination mechanisms."*

Inter-institutional coordination is fundamental for a successful integrated water catchment management approach; for this to occur it is essential to build ownership of the process as well as the necessary awareness and capacities. A watershed management approach requires the involvement of the DWA, the MAFS (e.g. in terms of irrigation and agricultural practices), the MFLR (e.g. in terms of forest management, soil and water conservation and rangeland management), the DoE (pollution control), Community Councils and traditional authorities. **Alignment of sector policies is also fundamental**, more particularly the Water and Sanitation Policy (and the upcoming Long-term Water and Sanitation Strategy), the up-coming Soil and Water Conservation Policy (being prepared by the MFLR), the Range Resources Management Policy (currently in draft), and the Irrigation Policy (draft).

The EU could support activities such as:

- **Long-term technical assistance**, helping in setting up an inter-institutional coordination mechanism, implementing it, and developing capacities (training);
- **Study tours** to countries in the region where an integrated watershed management approach has proved successful;
- **Post-graduate and/or on-the-job training** on integrated watershed management;
- **Alignment of relevant sector policies and/or strategies**.

Due to the importance of land degradation as an inhibiting factor for development and its direct link to water catchment management, if the EUD decides not to support land degradation as a sector of cooperation, it is recommended that it integrates key land degradation variables in its support to water catchment management. Such aspects could include, e.g.:

- up-scaling of range management systems;
- establishment of a baseline of land degradation/soil erosion;
- establishment of a land degradation monitoring system.

Performance indicators could reflect in general terms progress in the setting up and implementation of an integrated watershed management approach, for example: **number of water catchment management plans developed and approved**, or **establishment of a water catchment management coordinating body**. Land-degradation aspects variables could

also be integrated, in the case there is no support to land degradation from the EU or other donors, addressing the aspects mentioned above (range management systems, completion of baseline, monitoring system). However it is also recommended that monitoring focuses on more concrete priority aspects of water management; in particular we recommend promoting **small-scale irrigation**.

In a country where the majority of the population depends on subsistence rain-fed agriculture and where climate change is expected to especially affect the agriculture sector, irrigation is rightly recognised under the NAPA as one of the key adaptation measures. Moreover, large dams, such as Metolong and those under the LHWP offer a guaranteed and constant water flow throughout the year, which could be used to provide gravity irrigation. However, **a possible support to small-scale irrigation should ensure that feasibility studies are carried out prior to any developments, ensuring that irrigation will not exacerbate soil erosion, which can be particularly problematic in duplex soils**. Indicators such as the following could be used:

- Area (ha) under irrigated agriculture;
- % of households practicing irrigation agriculture.

In terms of **alignment**, a support to water catchment management (and small-scale irrigation in particular) would be contributing to a number of GoL policy objectives, as shown below.

Table 15 Key national policy objectives associated to water catchment management and small-scale irrigation

Policy	Objectives
NSDP	• Develop water harvesting infrastructure and increase irrigation capacity
	• Climate change proof the agriculture sector
	• Expand water and sanitation distribution services to industries, commercial centres, households and other institutions
	• Expand water harvesting infrastructure
	• Reduce land degradation and protect water sources
Water and Sanitation Policy	• Enhance the conservation and protection of the country's water resources and promote its sustainable management
	• Promote integrated water resources management with a view to reducing the negative impacts of human activities and natural processes on sensitive ecosystems
	• Encourage the implementation of catchment management principles and practices as the basis for managing the country's water resources
National Environmental Policy	• Promote sustainable development and implementation of measures to help mitigate climate change, control and reduce atmospheric pollution and greenhouse gas emissions
	• Develop integrated and coordinated, effective and efficient approaches to conservation and use of water resources, and promote its conservation and availability in sufficient quantity and quality on sustainable basis
National Forestry Policy	• Increase tree cover to ensure soil conservation and improvement of water catchment management areas
	• Promote sustainable water management and conservation practices
National Irrigation Policy (draft)	• Contribute to poverty alleviation by targeting smallholder farmers for irrigation development to enhance farm income and by supplementing the recommended strategies for rain-fed agriculture
	• Improve agriculture production and a measure of food security through irrigation by supplementing rain-fed agricultural output during the wet season, and ensuring some production during the dry season and droughts
	• Extend cropping opportunities and provide a wider variety of crops in both wet and dry seasons to improve nutritional security
National Soil and Water Conservation Policy (zero-draft)	• Adopt integrated watershed management approach

An **SEA Screening** was prepared in accordance with the EC guidelines for environmental integration (Appendix 6), concluding that an SEA for the LWSP (context of an SPSP in the water sector) is not necessary, but highlighting areas of attention.

A distinction is made between the Lesotho Water and Sanitation Policy (2007) (subject of the water sector SPSP) and the wider 'policy' to the water sector, which includes the LHWP. Whilst the former is largely not environmentally sensitive and has mainly potential positive environmental impacts, the latter is highly sensitive in environmental terms. Thus the EUD is encouraged to advocate, through its policy dialogue, for the completion of a **cumulative impacts assessment** for the whole of the LHWP and other dams (e.g. Metolong, Muela), also explicitly taking into account the expected effects of climate change and increased climate variability and the potential socio-economic impacts (e.g. on water availability for the Basotho population, including to satisfy requirements for climate change adaptation, such as small-scale irrigation).

6.2.3 Environmental integration in the EU Delegation

Although no critical shortcomings were identified, environmental integration in the EUD's own practices could benefit from some improvements that deserve explicit attention:

- Undertake EIA and SEA screenings as part of the identification of all project (EIA screening) and sector (SEA screening) support in accordance with the Guidelines for environmental integration. Attach the screening results to the respective Identification Fiches.
- Promote and prepare SEAs, were necessary (as determined by the SEA screening), in coordination with the GoL and other donors (e.g. an SEA of the NSDP would have been useful in the context of the GBS).
- In analysing the environment as a cross-cutting issue as part of the identification and formulation phases (and as reflected in the corresponding IFs and AFs), do not centre attention only on potential adverse impacts on the environment (which are largely absent for the case on environmentally non-sensitive sectors), but also look for opportunities for the proposed support project/programme to help address environmental concerns and enhance environmental performance (opportunities can be identified in most sectors). The EC Guidelines for environmental integration provide many prompts for the identification of such opportunities.

Appendix 1 Environmental maps

Figure 4 Agro-ecological zones of Lesotho

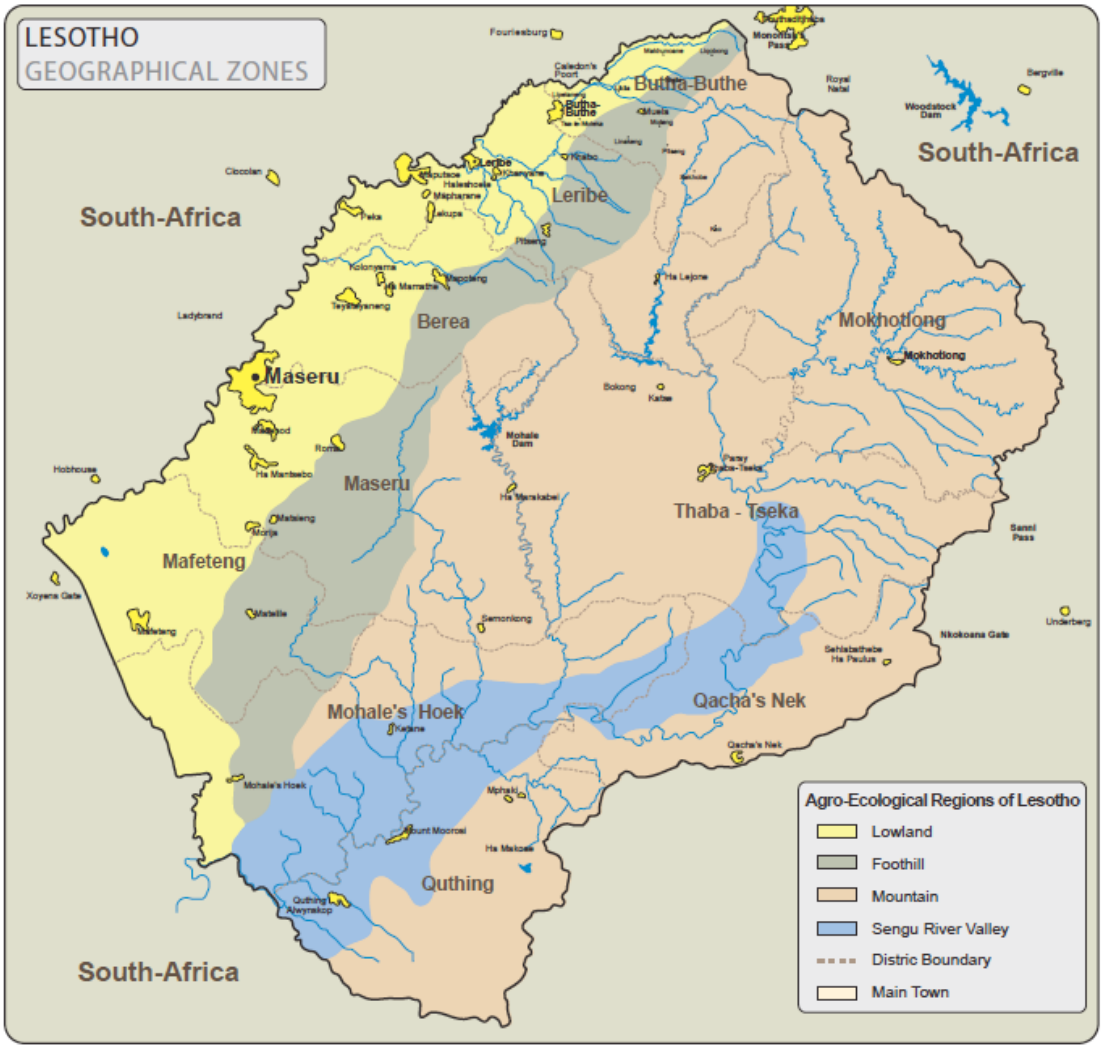


Figure 5 Average annual temperature

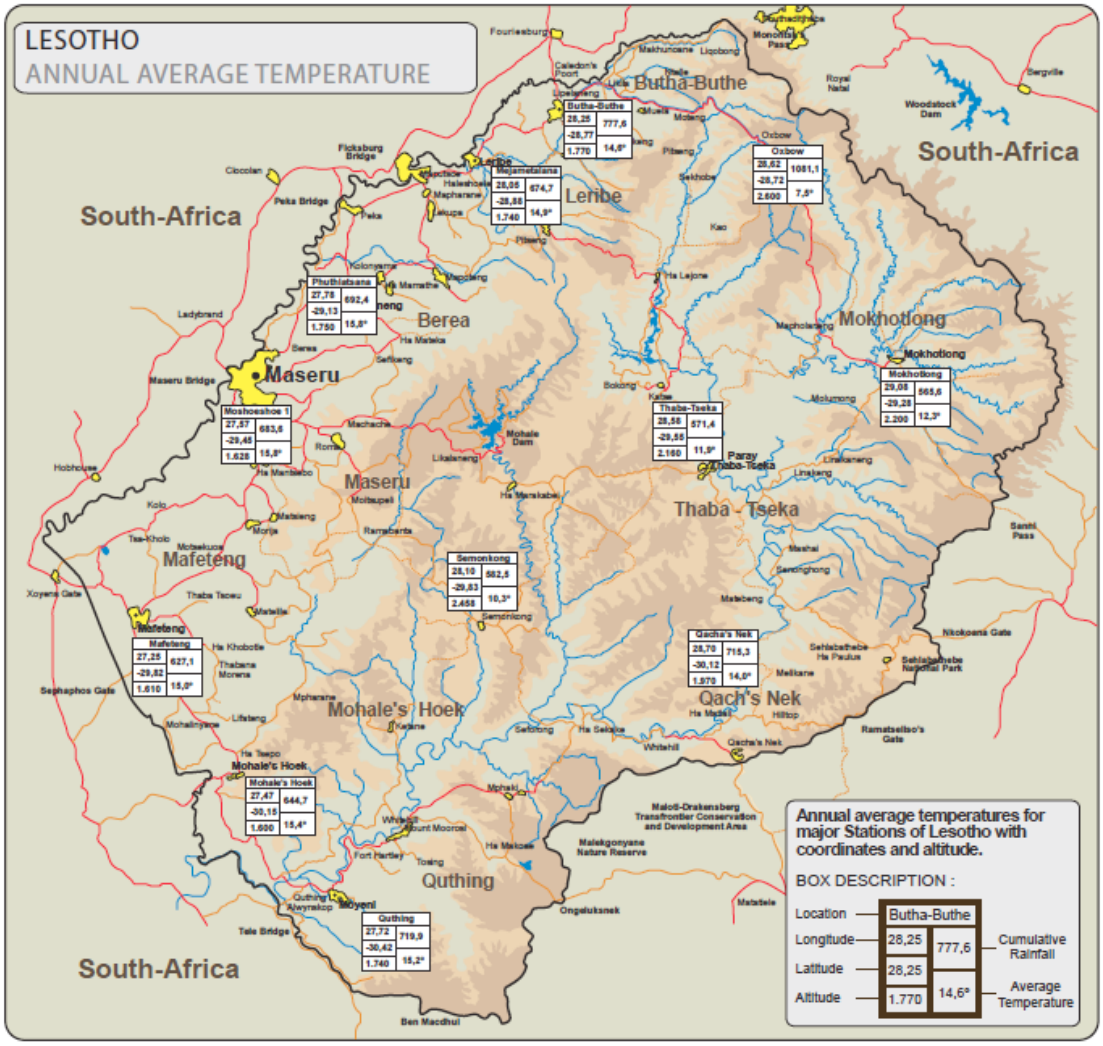


Figure 6 Rainfall distribution

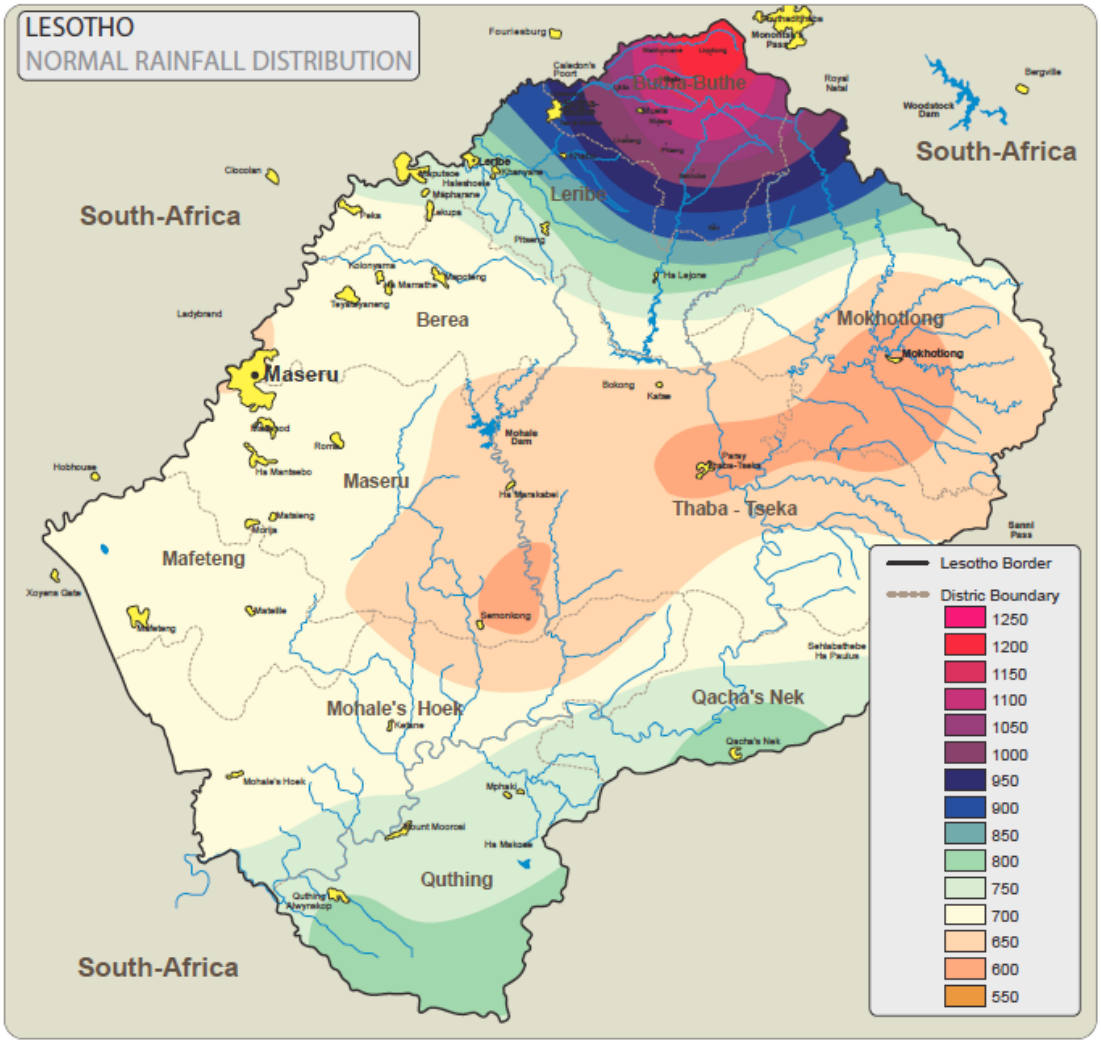


Figure 7 Lesotho's river system

Figure 8 Road infrastructure

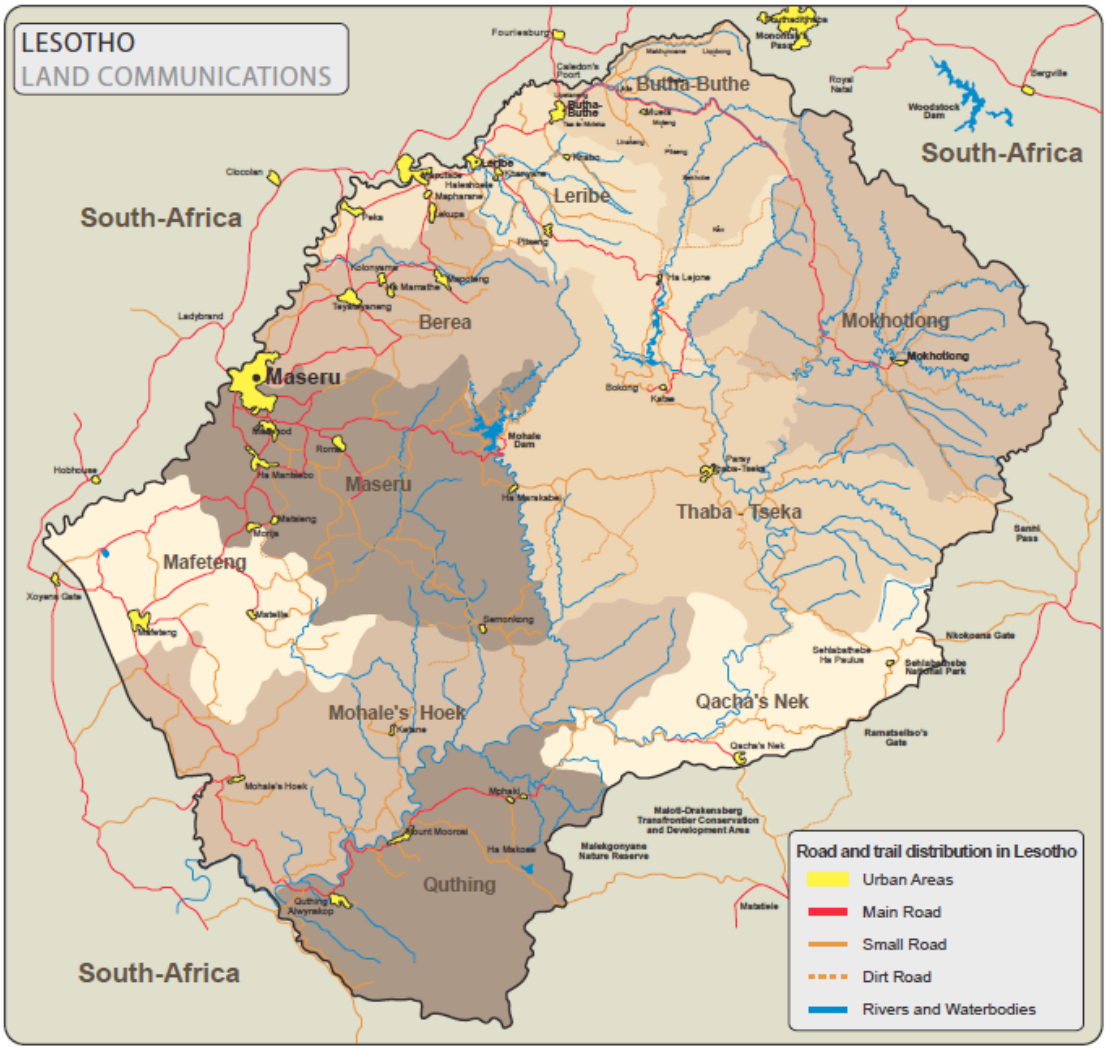
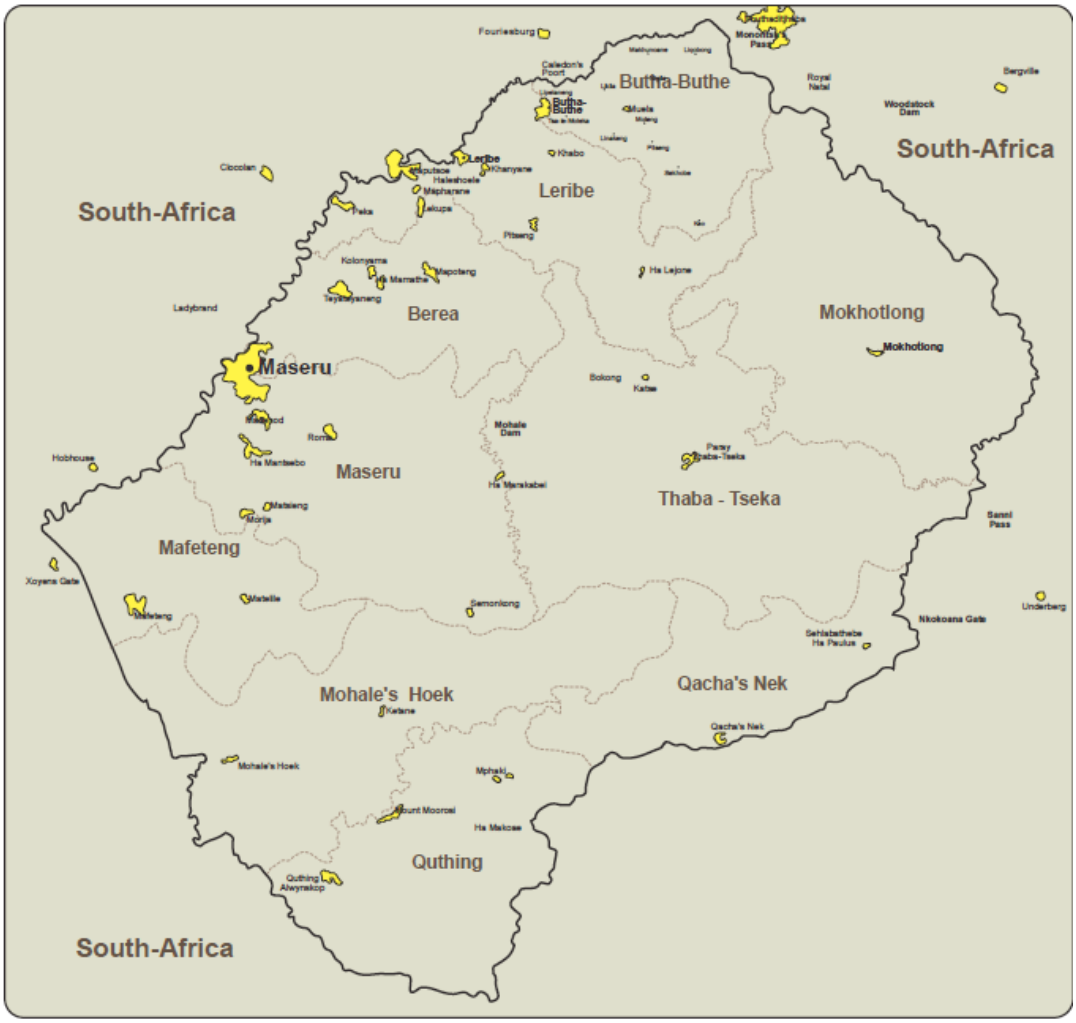


Figure 9 Main cities and urban centres



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Lesotho Highlands Water Project documents

Various documents obtainable from the project's web site (www.lhwp.org.ls), including the annual reports up to 2006.

Appendix 3 Key environment-related legislation

National Legislation

The Constitution of Lesotho (Article 36)

Environment Act 2008 (Act No. 10 of 2008)

Nature Conservation Bill (2011)

Draft Hazardous Waste Management Report and Legislation (Bill and Regulations)

Hazardous (Health Care) Waste Management Regulations 2011 (11 Nov. 2011)

Forestry Act (1998)

National Parks Act 1975 (Act No. 11 of 1975)

Water Act 2008 (No. 15 of 2008)

Lesotho Electricity and Water Authority Act 2008

Lesotho Water and Sewerage Authority Order 1991 (Order No. 29 of 1991)

Lesotho Highlands Development Authority Order, 1986 (Order No 23 of 1986)

Land Act 2010 (Act No. 8 of 2010)

Land Administration Authority Act 2010 (Act No. 9 of 2010)

Land Regulations, 2011 (Legal Notice No. 21 of 2011)

Mines and Minerals Act 2005 (Act No. 4 of 2005) [Part VIII: Environmental Obligations]

Local Government Act (1996)

Local Government Regulations (2005)

Tourism Act 2002 (Act No. 4 of 2002) [Part VI: Tourism and Environment]

The Roads Act, 1969 (Act No. 24 of 1969)

The Land Husbandry Act 1969 (Act No. 22 of 1969)

The Weeds Eradication Act 1969 (Act No 18 of 1969)

Historical Monuments, Relics, Fauna and Flora Act No. 41 (1967)

The Litemo Control Order 1070 (Order No. 23 of 1970)

The Precious Stones Order 1970 (Order No. 24 of 1970)

Proclamation of a Wild Life Sanctuary – Government Notice No. 34 of 1970

Importation and Exportation of Livestock and Livestock Products – Proclamation 57 (1952)

Protection of Fresh Water Fish – Proclamation 45 of 1951

Game Preservation - Proclamation 33 (1951)

Sale of Game – Proclamation 5 of 1939

Locust Destruction – Proclamation 3 of 1925

Wild Birds – Proclamation 43 of 1914

International Treaties and Conventions

Convention on International Trade in Endangered Species of Wild Fauna and Flora

(CITES)

Convention on Wetlands (Ramsar Convention)

Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) Region (1995) (SADC Protocol)

Revised Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) Region (2000) (Revised SADC Protocol)

Stockholm Convention on Persistent Organic Pollutants (POPs)

United Nations Convention on Biological Diversity (CBD)

United Nations Convention on Combating Desertification (UNCCD)

United Nations Framework Convention on Climate Change (UNFCCC)

Appendix 4: Donor projects/programmes on environment and climate change

Title	Description	Main sub-sector	Gov't agency	Donors	Donor funds (approx.)	Time-frame
Up-coming programmes/projects						
Development of Climate Change Policy and Strategy	Respond to possible CC threats and opportunities by building capacity to formulate and implement effective proactive adaptation responses. Build capacity for better technical integration of CC into development planning, promoting tools and methodologies for analysis of vulnerability and development of innovative adaptation solutions.	CC policy	MNR	EU	0.385 M€	2013-2015
Lesotho Renewable Energy-Based Rural Electrification Phase II	LREBRE project builds on an earlier pilot phase in the districts of Mokhotlong, Thaba Tseka and Qacha's Nek. The objective of the project is to reduce energy-related CO_2 emissions by encouraging the use of renewable energy technology as substitute for fossil fuels in the rural areas that are away from the national electricity grid. The project will install solar home systems for rural communities and provide grants for income generating activities.	CC mitigation	MNR, Dep. of Energy			
Current programmes/projects						
Africa Adaptation Programme for Climate Change (AAP)	Key outputs: (1) leadership capacities and institutional frameworks to manage CC risks and opportunities in an integrated manner, including decentralised approach at local and national levels strengthened; (2) climate-resilient policies and measures in energy and health sectors implemented and community-based adaptation action promoted; (3) financing options to meet national adaptation costs, incl. PPP and private participation, expanded at local and national levels; (4) knowledge on adjusting national and sub-national development processes to incorporate CC risks is increased and opportunities generated are shared across all levels.	CC adaptation	LMS	UNDP (funded by Gov't of Japan)	$2,881,000 USD	2010-2011

Title	Description	Main sub-sector	Gov't agency	Donors	Donor funds (approx.)	Time-frame
Sustainable Land Management (SLM)	Main outputs: (1) proven, strengthened, participatory, replicable models and techniques that overcome institutional and governance barriers to SLM, strengthen country partnerships and integrate SLM into country programmes; (2) adequate local and national capacity in place and is adapting and scaling up proven SLM models and techniques; (3) Lesotho adopts programmatic approach to SLM.	Land degradation	MFLR	UNDP (GEF funded)	1,5 M€	2010-2014
Capacity building and knowledge management for SLM in Lesotho	Build a proven, replicable SLM to make a direct contribution to the PRS, to its Food Security Policy and to the fulfilment of its National Action Programme in response to the UNCCD.	Land degradation	MFLR	UNDP CARE (GEF-funded; GTZ co-financed)	$1,724,500 USD (GEF) $4,670,000 USD (GTZ)	2008-2012
Adaptation of small-scale agriculture production (ASAP)	The project objective is to increase the resilience of small-scale agriculture to CC impacts by promoting climate-proofed investments for agriculture-based development, as well as by enhancing the resilience of agricultural productivity under increased climate variability.	Climate Change adaptation	MAFS LMS	IFAD	$4,330,000 USD (GEF) $13,000,000 (co-financement)	2011-
Support to the Implementation of the National Biosafety Framework	The project objective is to develop a workable and transparent National Biosafety Framework in line with its national development priorities and the obligations to the Cartagena Protocol on Biosafety.	Biosafety	MTEC	UNDP (GEF funded)	$884,806 USD (GEF) $166,888 USD (co-financing)	2009-
Water Sector Project	Improving the water supply for industrial and domestic needs. Domestic users in selected urban and rural areas will benefit from water system upgrades and expansion. The project will also enhance rural livelihoods through improved watershed management. Specifically the project will (i) construct a bulk water conveyance system (Metolong Dam and Water Supply Programme); (ii) extend and rehabilitate urban and peri-urban water network; (iii) improve sanitation services for about 25,000 households through construction of VIP and water systems; and (iv) restore degraded wetlands at 3 areas in highland pastures and preparation of an SEA to support development of a national watershed management and wetlands conservation plan.	Water and Sanitation	MNR	MCC	$164,027,999 USD	

Title	Description	Main sub-sector	Gov't agency	Donors	Donor funds (approx.)	Time-frame
Improvement of EWS to reduce impacts of climate change and hazards	NAPA Option III and IV reformulated: Capacity building for monitoring and predicting CC impacts to deliver early warnings and improve local and national planning and adaptation to CC and capacity building to integrate CC into development plans.	CC adaptation	MNR, LMS	UNEP (GEF funded)	$1,595,000 USD (GEF) $1,595,000 USD (co-financing)	2011-2014
Improvement of capabilities to cope with natural disasters caused by climate change	Objective to contribute to disaster management by extending the grant for procurement of equipment and services necessary for preparation against natural disasters: (1) water purification systems; (2) automatic weather station.	CC adaptation	LMS, DRWS	Gov't of Japan	3.85 M€	2011-2014
Enhancing resilience and responsiveness through DRR	Support development of the EWS to ensure that an effective food security information system is in place. Enhancing resilience and responsiveness through DRR / development of the EWS.	CC adaptation	MAFS	WFP, FAO	7,700€	
M&E for the agriculture and food security sector	TA to design the agriculture sector M&E system and capacity building – help establish a functioning M&E system with the MAFS which should be able to assess performance of the various sector programmes and make informed policy recommendations.	Overarching (incl. land degradation, CC adaptation)	MAFS	FAO	210,000€	2012
Framework for strengthening capacity for CC adaptation in agriculture	Assessment of livelihood vulnerability to CC in food security weather and climate services for smallholders.	CC adaptation		FAO		
Small-scale irrigation development project	Including: (1) rainwater and run-off water harvesting; (2) small-scale irrigation; (3) medium- to large-scale commercial irrigation; (4) land improvement; (5) capacity building and support services.	Water	MAFS	FAO		
Smallholder Agriculture Development Project	The project has 3 components: (i) increase agric. market opportunities; (ii) market-oriented smallholder production; and (iii) project management. Focus is not on CC adaptation or NRM, but its 2nd component included helping semi-subsistence producers move towards increased commercialization, while ensuring sustainable natural resource management.	CC adaptation	MAFS	IFAD WB	$34.5 million **NB: only small part targeting NRM**	2011-2018

Title	Description	Main sub-sector	Gov't agency	Donors	Donor funds (approx.)	Time-frame
Conservation agriculture, coordination and advocacy in Southern Africa		CC adaptation	MAFS	FAO		2007-2012
Maseru Wastewater Project (MWWP) – Medium term works	Increasing coverage of sanitation in Maseru, with an impact in reducing pollution of the Caledon River.	Water and Sanitation	WASA	EU (ACP-EU Water Facility)	10 M€	2007-2012
Water and Sanitation SPSP	Sector budget support. The programme will provide support to the implementation of the water and sanitation policy. Performance indicators are related to rural and urban water supply and rural and urban sanitation	Water and Sanitation	MNR	EU	32 M€	2011-2013
Support to the Climate Change Response Strategy		CC adaptation and mitigation	GoL	EU (GCCA facility)	4 M€	2013
GEF Small Grants Programme	Main achievements: (i) Country Programme with portfolio of 16 projects implemented by 16 local NGOs/CBOs; (ii) better appreciation among local NGOs/CBOs of the national environmental problems and the challenges they present to national development; (iii) establishment of community botanical gardens; (iv) increased awareness on environmentally friendly renewable energy technologies; (v) contribution towards enhancement of livelihoods and status of herd boys/herders and harnessing of their indigenous knowledge and experience in sustainable range resources management; (vi) capacity of NGOs/CBOs in project development and management enhanced…	Strengthening of NSA	Local NGOs and CBOs	UNDP (GEF funded)	$1,200,000 USD	2011-2014
Water Sector Improvement APL Phase II: Metolong Dam and Water Supply	(i) developing and sustaining an environmentally sound, socially responsible and financially viable framework for the Metolong Dam Water Supply Programme (MDWSP); (ii) increasing quantity of safe, bulk water supplied to Teyateyaneng; (iii) strengthening institutions and related instruments in the water sector.	Water and Sanitation		World Bank		

Title	Description	Main sub-sector	Gov't agency	Donors	Donor funds (approx.)	Time-frame
Mountain Integrated Conservation Agriculture (MICA) in Lesotho	Strengthen rural mountain livelihoods for 12,000 individuals by combining promotion of conservation agriculture with improved access to markets and improved seed varieties and fertilisers. The project aims to increase agric. production whilst reducing vulnerabilities of livelihoods to drought and soil erosion.	CC adaptation	MAFS	USAID (implemented by CARE and CRS)		
Lesotho Irrigation Project III (LIP III)	The project seeks to reduce vulnerability of rural households to drought and soil erosion, while building household resiliency and strengthening rural livelihoods. It includes elements of low-tech irrigation and conservation agriculture.	CC adaptation	MAFS	USAID (impl. by CRS, World Vision and CARE)		
Home Grown – Keyhole Gardens for DRR learning Initiative	"Home grown" learning initiative to disseminate Keyhole Gardens for DRR.	CC adaptation		USAID (implemented by CRS)		
Families Unite for Livelihoods in Lesotho (FULL) project	Comprehensive approach to improve food security of vulnerable families. Improve sustainable agricultural production at homestead and field levels whilst building the capacity of rural families to better manage local natural resources.	CC adaptation		Irish Aid (implemented by CRS)		
RWSS Strategic Investment Plan	Assist sector agencies to better manage operation and development of sector facilities based on a sound Strategic Investment Plan and its underlying database and planning models.	Water and Sanitation	MNR	AfDB	~250,000 €	
Rural Electrification Project	Renewable energy component: (i) rehabilitation of the 2MW Mant'onyane mini hydropower station and (ii) installation of 350 home solar systems as part of the Mphaki Pilot Projects. Distribution network: construction of substations in Maseru and construction of transmission lines. TA for feasibility study of a transmission line. Main deliverables: provide electricity access to additional 8,000 customers including 5,000 in Maseru, 1,500 in Hlotse and 1,500 in Mphaki.	CC mitigation	MFDP	AfDB	~7.85 M€	
Moshoeshoe I Solar Project	Installation of solar energy at the international airport.	CC mitigation	MPWT MNR	JICA	~ 50,000 €	

Title	Description	Main sub-sector	Gov't agency	Donors	Donor funds (approx.)	Time-frame
Village Water Supply	The Rural Water Supply Programme installs water systems to provide adequate and sustainable potable water supplies to rural communities. Includes: preliminary village survey, water resources assessments, feasibility studies, system design and construction of new water schemes and rehabilitation of existing water systems.	Water and Sanitation	MNR	Irish Aid	17.7 M€	2010-2015
Maseru Waste Water	(i) construction of Lesotho Agriculture College WWTP; (ii) rehabilitation and extension of sewerage system; (iii) construction of new pumping stations and rehabilitation of existing ones; (iv) on-site treatment facilities in unsewered areas; (b) expansion of WASCO coverage customer base by connecting domestic, commercial and industrial sectors.	Water and Sanitation	MNR	EU	11 M€	2010-2014
Six Towns Water Supply and Sanitation	Water supply and sanitation in Maputsoe, Teyateyaneng and Roma.	Water and Sanitation	MNR	EU	21 M€	2010-2013

Recently completed programmes/projects

Title	Description	Main sub-sector	Gov't agency	Donors	Donor funds (approx.)	Time-frame
Lesotho Renewable Energy-based Rural Electrification (LREBRE)	The project aims at reducing Lesotho's energy related CO_2 emissions by promoting renewable and low-GHG technologies.	CC mitigation	MNR Dep. of Energy	UNDP (GEF funded), WB, private sector	$2,500,000 USD	2006-2010
Enhancing National and Local Capacity in DRR in Lesotho	Project strategy focuses on strengthening the disaster management system and effective management of the impact of disaster risks within the context of sustainable development.	CC adaptation	DMA	UNDP	$373,000 USD	2008-2009
Innovative Partnerships for Solid Waste Management in Lesotho	Support to the development of financially sustainable and innovative PPPs for basic service delivery, in particular solid waste management services within urban and peri-urban areas in the city of Maseru.	Waste Management	Maseru City Council	UNDP	$300,000 USD	2009

Maloti-Drakensberg Trans-frontier Conservation and Development Project (MDTP)	Collaboration between Lesotho and RSA to protect the biodiversity of the Drakensberg and Maloti mountains through conservation, sustainable resource use, land use and development planning. The project aimed at conserving the global biodiversity, and contribute to community development through income generation from nature-based tourism.	Biodiversity	RSA	World Bank (GEF)	$7,925,000 USD	2001-2009

Appendix 5: List of stakeholders consulted

Organisation	Name	Position	Tel.	e-mail
European Union Delegation (EUD)	(Ms) Josephine KALINAUCKAS		22272200	Josephine.kalinauckas@ec.europa.eu
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NSDP Secretariat, MFDP	(Ms) Nthoateng LEBONA	Project Coordinator	22314057 63128636	Nthoateng.lebona@gov.ls thoatengl@yahoo.co.uk
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Ministry of Agriculture and Food Security (MAFS)	(Mr) Nchemo MAILE	Principal Secretary	58882840	nchemo@yahoo.co.uk
Office of the Commissioner of Water (CoW) (MNR)	(Mr) Motoho MASEATILE	Acting Commissioner of Water	22320127	maseatilem@yahoo.co.uk
	(Mr) Felix MALACHAMELA	Monitoring & Evaluation		
	(Ms) Mosa MOLAHLEHI	Information Technology		
	(Ms) Maliketso MALEPHANE	Chief Economic Planner		
Ministry of Natural Resources (MNR)	(Ms) Palesa MOLAPO	Lowlands Water Supply Unit (LWSU)		
Department of Water Affairs (DWA) (MNR)	(Mr) Mokake MOJAKISANE	Director	5883948 22317516	director@dwa.gov.ls
Department of Rural Water Supply (DRWS) (MNR)	(Mr) K CHELI			
Lesotho Highlands Development Authority (LHDA)	(Mr) Peter MAKUTA	Manager, Development and Operations Division (DOD)		

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Ministry of Forestry and Land Reclamation (MFLR)	(Mr) Lechesa NTHULANYANE	Project Officer		
	(Dr) Refuoe BOOSE	Chief Conservation Officer		
	(Mrs) Palesa MOLAPO	Principal Conservation Officer		
	(Mr) Thabo MOTSOANE	GIS Manager (Conservation Department)		
	(Mrs) Mamokoli SEKANTSI	Principal Soil Scientist (Conservation Department)		
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	(Mr) Peter Halefele MATSIPA	Chief Forestry Officer (Forestry Department)		
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	(Ms) BULANE	Acting Director, Range Management Chief Range Officer		
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	(Mr) Jens VAD	Consultant to the EU on water sector M&E	62004100	jens@r2.co.ls
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Community Councils	(Ms) Lineo KIKINE	Community Council Secretary (Sephokong Council)		
	(Ms) Lemohag MAHAO	Community Council Secretary (Sephoking Council)		
Representatives of MAFS and MFLR at local level; Community Councils; Area Chiefs; members of Range Management Associations; and farmers were consulted as part of the visit to the UNDP SLM project areas.				

Appendix 6: Strategic Environmental Assessment (SEA) Screening for a sector support to the water sector

Part 1: Screening list and questionnaire

SEA screening list for focal areas

An SEA of sector policies and programmes is particularly appropriate in connection with sector support in environmentally sensitive focal areas. The following areas of cooperation are considered as "environmentally sensitive":

- Infrastructure, communications and transport
- Water and energy
- Natural resources management (including forestry, fisheries and waste management)
- Rural development, territorial planning, agriculture and food security (including forestry and fisheries)

Other cooperation areas might have significant environmental impacts or be significantly dependent on environmental constraints (including those that result from increasing climate variability and climate change), in which case the need for an SEA should be considered.

Based on the first part of the SEA screening process an SEA is recommended, as water is an environmentally sensitive sector. However, the preparation of the Country Environmental Profile (CEP) gave special attention to the water sector policy, and thus the screening questionnaire (Part 2 of the SEA screening process) is used to decide if an SEA would still be required to ensure that the SPSP to the water sector adequately integrates the environment.

SEA screening questionnaire

The SEA questionnaire is composed of two parts: the first looks at possible environmental constraints, impacts and opportunities related to the sector policy and strategy including climate change risks; the second looks at context and process-related aspects that need to be taken into account when considering the need for an SEA.

SEA Screening Questionnaire	YES	?	NO
Part I – Possible impacts, constraints and opportunities			
1. Are there any indications at this stage of negative environmental impacts that might be significant and require further study?	✓		✓
2. Is the sector policy/programme likely to include a large number of Category A or B projects that could interact to produce significant cumulative environmental impacts?	✓		✓
3. Is the sector policy/programme likely to significantly affect valued areas or landscapes with national or international protection status?		✓	✓
4. Is the sector policy/programme likely to significantly affect known vulnerable areas?		✓	✓
5. Does the sector policy/programme significantly increase the risk of a negative impact on human health or safety?			✓
6. Are there indications at this stage that the sector policy/programme will have a direct and significant influence on other environmentally sensitive sectors?	✓		✓
7. Is the achievement of the sector policy/programme's objectives directly and significantly dependent on the availability of scarce natural resources?	✓		
8. Are there indications at this stage that the sector policy/programme may contribute to a significant increase in greenhouse gas emissions (relative to the current level of national emissions) or, on the contrary, has the potential to reduce such emissions or fix significant amounts of carbon?			✓

9.	Are there indications at this stage that the sector policy/programme may substantially increase the vulnerability of the population to increasing climate variability and/or the expected effects of climate change?		✓
Part II – Context and process			
10.	Does analytical work exist that could inform the environmental screening of the sector policy/programme?	✓	
11.	Do the policy, programme, legal and regulatory framework promotes sound environmental management at sector level?		✓
12.	Are partner institutions considering measures to address sector-related environmental concerns and exploit opportunities to contribute to the achievement of environmental and development goals?	✓	
13.	Do institutional capacities exist to implement those measures?	✓	
14.	Are there any local processes to promote harmonisation and alignment (involving multiple stakeholders; partner institutions, donors, development partners, non governmental organisations and civil society) that may address sector-related environmental concerns?		✓

Interpreting the answers

If the answer to one or more of the questions under Part I of the screening questionnaire is **YES**, and SEA is in principle recommended. Local context and processes should be taken into account to identify whether action might already be underway or planned to address environmental sustainability concerns.

Should a decision be made not to carry out an SEA, this should be justified in the *summary of SEA screening outcomes* (see below). In this case, issues identified under Part I and II of the screening questionnaire should be considered in the context of the formulation study. The support of the environmental services (in-house or in the country) may be requested to this effect.

Part 2: Summary of SEA screening outcomes

The following information should be provided as an annex to the SPSP Identification fiche, along with the documentation submitted to the Quality Support Group.

SUMMARY OF SEA SCREENING OUTCOMES

☐ An SEA will be undertaken

☑ Key environmental aspects will be addressed in the formulation study

☐ No SEA required, no further action required

CONCLUSIONS FROM THE SEA SCREENING:

A distinction must be made between the *Lesotho Water and Sanitation Policy* (LWSP), which is the focus of the current water sector support, and the policy for the wider water sector, which is not reflected in a single policy document. The LWSP is centred on the following policy statements:

Policy Statement 1: Manage water resources in an integrated and sustainable manner to ensure availability of this resource in adequate quantities and quality for present and future social, economic and environmental needs.

Policy Statement 2: Ensure access to a sustainable supply of potable water and basic sanitation services for all Basotho.

Policy Statement 3: Protect and conserve water resources and minimise the adverse impacts of socio-economic development activities on water.

Policy Statement 4: Manage trans-boundary water resources on the basis of Lesotho's sovereignty in a away that ensures maximum benefits while taking cognisance of her obligations to downstream users under international law.

Policy Statement 5: Adopt a sector wide approach to water resources management and to water supply and sanitation services development, in order to ensure effective and efficient use of internal and external resources.

Policy Statement 6: Ensure participatory approach with effective involvement of all stakeholders at different levels in water resources management and development in order to ensure sustainability of sector programmes.

Policy Statement 7: Put in place appropriate institutional arrangements and a legislative framework for the sustainable development and management of the nation's water resources and for the supply of water and sanitations services.

As can be seen from the above Policy Statements, the overall focus of the LWSP is positive, with no major environmental impacts expected.

However, the wider (and largely un-written) policy of Lesotho towards the management of water resources is centred on the large-scale capture and storage of water for its transfer to South Africa, under the Lesotho Highlands Water Project (LHWP). The LHWP involves the construction of large dams (two completed at the moment and a third one agreed, but a total of six large dams foreseen); as well, the supply of water to Lesotho's lowlands will be largely satisfied by another dam (Metolong dam).

This policy to the water sector is environmentally sensitive to a large extent. Although all projects for dams are subject to an Environmental Impact Assessment (EIA), there is likely to be a significant cumulative impact of the set of foreseen dams, which is not being analysed. As well a more strategic dimension of the impacts from the dams is not being addressed, such as: the long-term impact on the availability of water to satisfy the national population (for water supply, irrigation, industry) and taking into account the potential effects of climate change (e.g. it will be increasingly important to develop small-scale irrigation as an adaptation measures, groundwater levels are likely to decrease).

The reply to the screening questionnaire above shows in black the responses corresponding to the LWSP, whilst in grey it shows the responses taking also into account the LHWP.

The following conclusions are made on the SEA screening:

1. **The LWSP implementation is not expected to result in significant adverse impacts on the environment. It actually has the potential to contribute significantly to address key environmental concerns through the *watershed management* approach.**

   Thus, the EU water sector support should be used to ensure these opportunities are taken, by actively promoting the implementation of an integrated water catchment management approach, as well as the advance of small-scale irrigation – a key climate change adaptation measure. More details on the form this support can take are included in the section of recommendations in the Country Environmental Profile (CEP).

2. **In spite the implementation of the LWSP is not expected to result in significant adverse impacts on the environment, wider Government policy to water management, especially in the form of the LHWP, is likely to result in significant environmental impacts of a cumulative nature.**

   It is thus recommended that the EU promote (and if possible support financially) – as part of its policy dialogue – the undertaking of a *cumulative impact assessment* for all current and foreseen dams in Lesotho, also taking into account explicitly the expected effects of climate change and increased climate variability and the socio-economic impacts (e.g. on water availability for the Basotho

population, including to satisfy requirements for climate change adaptation, such as small-scale irrigation).

Appendix 7: Synthesis of recommendations and indicators

Area: Land Degradation	
Recommended areas of attention	**Recommended indicators for consideration**
Recommended as a sector of cooperation due to its links to development, poverty and current insufficient attention	• Stocking rates • Number of livestock farmers under functional Range Management Associations • Hectares under conservation agriculture • Number of approved land use plans • Rate of encroachment on arable land • Expenditure on research on soil erosion • Land degradation monitoring system established
Focus on building ownership and creation of effective inter-institutional coordination mechanisms	
Use sector support as the preferred aid delivery modality	
Achieve alignment of policies that have key focus on land degradation, and clearly define responsibilities for implementation	
Use of long-term Technical Assistance, complemented with ownership- and capacity-building activities	
Define a baseline for land degradation, building on UNDP experiences	
Ensure donor coordination to ensure complementarity	
Area: Environmental Governance	
Recommended areas of attention	**Recommended indicators for consideration**
Recommended as a sector of cooperation due to the importance of environment for national development, livelihoods and links to poverty, as well as the promotion of environmentally sensitive industry and current deficit of attention	• Number of effluent licenses and pollution licenses issued by the DoE • Number of inspections carried out by the DoE • Establishment of the Environmental Tribunal • Number of effluent monitoring reports submitted by industry to the DoE (in case such a provision is established) • Approval of effluent quality standards • Compliance of industry with approved effluent quality standards
Focus on awareness raising at the political level on links between environmental degradation, poverty and economic growth	
Use of Technical Assistance to prepare a detailed economic valuation of natural resources and environmental degradation to support awareness raising	
Promotion of Strategic Environmental Assessment as a tool for better environmental mainstreaming	
Promote awareness raising of the general population, including journalists, civil society, and through the education system	
Promote strengthening of environmental integration in key ministries	
Promote policy dialogue on the need to enhance environmental governance	
Review the Environment Act 2008 to optimise and enhance its performance	
Support effective implementation of the Environment Act	
Area: Energy	
Recommended areas of attention	**Recommended indicators for consideration**
Ensure environment and climate change are mainstreamed in a potential support to the energy sector	• % of households that use sustainably managed woodlots to secure wood

Ensure support to energy sector addresses reduced reliance on wood as a source of household energy and (mainly) the increase of sustainably managed sources of fuel wood	for energy purposes • % of energy needs (cooking, heating, lighting) satisfied by wood
Maximise opportunities for low-carbon sources of energy, in line with a "green growth" approach	
Ensure the MFLR is engaged in the sector support, together with the Energy Department	
Seek alignment of the Renewable Energy Policy (upcoming) with the National Forestry Policy	
Prepare a screening for Strategic Environmental Assessment of the energy sector policy whose implementation will be supported, and carry out the SEA if needed	
Area: Water	
Recommended areas of attention	**Recommended indicators for consideration**
Continue support to the water sector	• Number of water catchment management plans developed and approved • Establishment of a water catchment management coordinating body • Area (ha) under irrigated agriculture • % of households practicing irrigation agriculture
Focus support on the implementation of integrated water catchment management, with possible focus on small scale irrigation (adaptation to climate change)	
Support establishment of M&E system (and its baseline) for the water sector in accordance with recommendations by Vad and Kiwango (2011)	
Support inter-institutional coordination for integrated water catchment management	
Support alignment of sector policies, especially between the Water and Sanitation Policy (and upcoming Long-term Water and Sanitation Strategy) and the up-coming Soil and Water Conservation Policy, the Range Resources Management Policy and the Irrigation Policy	
Support activities such as long-term TA for inter-institutional coordination, study tours, trainings, etc.	
If land degradation is not selected as an area for EU support, ensure support to the water sector integrates key land degradation variables	
Integrate areas of attention identified in SEA screening into SPSP identification and formulation, including promotion of a cumulative impacts assessment for the network of (current and future) dams	
Area: EU Delegation procedures	
Recommended areas of attention	**Recommended indicators for consideration**
Undertake EIA and SEA screenings as part of the identification of all projects (EIA screening) and sector (SEA screening) support	
Promote and prepare SEAs where necessary, in coordination with the GoL and other donors	
In analysing environment as a cross-cutting issue as part of identification and formulation, address not only potential impacts but also look for opportunities to address environmental concerns in the sector	

Appendix 8: Study methodology

The methodology employed in the preparation of the Country Environmental Profile (CEP) is based on the EC *Guidelines for Integration of Environment and Climate Change in Development Cooperation* (2009). The CEP was prepared in the April-July, 2012 period by a team of two consultants (the Team Leader with expertise in environmental policy and management and detailed knowledge of environmental integration tools and methods and EC programming; and a water sector expert due to the importance of this sector for Lesotho). Most of the work was carried out in Lesotho, with a smaller provision of home-based days allocated to literature review, preparation of the mission and finalisation of the CEP report.

The preparation of the CEP is based primarily on an exhaustive review of existing data and information on the state of the environment (i.e. no primary data is collected), which is validated and expanded through stakeholder consultations. Bilateral semi-structured interviews were carried out with key stakeholders from government institutions at the national, regional and local level; development partners; and non-state actors.

As well site visits were carried out to see key environmental issues on-site and have an opportunity to meet with stakeholders at the district and local level. A site visit was organised to UNDP Sustainable Land Management (SLM) project areas around Semonkong (accompanying a UNDP monitoring mission), as well as a site visit to Leribe (targeting district and local authorities) and to the industrial area around Maseru,

A stakeholders' workshop was carried out on 19 June at the Maseru Sun hotel, with the objective of presenting the CEP findings to key stakeholders, and discuss the opportunities and options for the EU to better address the key environmental aspects identified in the development cooperation under the 11th EDF.

The draft CEP report was circulated to key stakeholders for comments and to verify the accuracy of its findings.

Appendix 9: Consultants' itinerary

The table below provides an overview of the key stages in the elaboration of the CEP.

Dates	Main Activities
09-20/04	Literature review (policy, legislation, sector reports, academic publications, etc.)
21-22/04	Travel to Lesotho (Team Leader)
23/04	Briefing in the EUD/NAO (TL)
24/04-30/05	Stakeholder consultations (bilateral interviews)
03/05	Travel to Lesotho (water sector expert)
14-16/05	Site visit to Semonkong area
22/05	Site visit to Leribe
28/05	Start of activities of new water sector expert
30/05	Site visit to industrial area around Maseru
31/05	Presentation of preliminary findings at EUD
01-02/06	Travel to Europe (TL)
28/05-13/06	Stakeholder consultations (water sector expert)
04-15/06	Write-up and preparation of workshop
17-18/06	Travel to Lesotho (TL)
19/06	Stakeholders' workshop (Maseru)
20-21/06	Travel to Europe (TL)
26/06	Submission of draft CEP report
27/06-	Review of draft report by stakeholders
	Submission of final CEP report

Appendix 10: CV of the consultants

CURRICULUM VITAE

CONSORTIUM
SAFEGE FWC-Lot 6

Position: Senior Expert I – Environment / Climate issues – Team Leader
Category: Senior
Staff of: Safege

1. Surname: PALERM
2. Name: Juan
3. Date and place of birth: 01 October 1971, Guadalajara, Mexico
4. Nationality: Spanish
5. Residence: Barcelona, Spain
6. Education and training:

Institution [Date from - Date to]	Degree(s) or Diploma(s) obtained
GTZ GmbH – Bonn, Germany - 23-30 June, 2010	Training of Trainers – GTZ/InWEnt **Strategic Environmental Assessment Training**.
Imperial College, University of London - October 1995 - December 1998	**PhD in Environmental Policy and Management**
Imperial College, University of London - October 1994 - September 1995	MSc in Environmental Technology Diploma of Imperial College (DIC)
University of Guadalajara, Mexico – January 1994 - September 1994	Diploma in **Environmental Management**
ITESO University, Mexico - August 1989 - June 1993	Chemical Engineer

7. Language skills (1 – excellent; 5 - basic):

Language	Passive	Spoken	Written
Spanish (Mother Tongue)	1	1	1
English	**1**	**1**	**1**

8. Membership of Professional Bodies:
- Member of the pool of trainers for GTZ/InWEnt training programme on Strategic Environmental Assessment
- International Association for Impact Assessment (IAIA) (member of sections on SEA and public participation)
- Member of the ReCoMaP (Regional Coastal Management Programme, Indian Ocean) Regional Technical Advisory Panel
- Journal of Environmental Assessment Policy and Management – Member of the Editorial Committee

9. Other skills relevant to the position: Full computer literacy; communication skills; analytical skills; experience working in multicultural contexts and with wide range of stakeholders (industry, government, NGOs); knowledge of international environmental policy instruments,

10. Present Position: Environmental Expert

11. Years of professional experience: 18

12. Key qualifications (relevant to the project)**:**
- Environmental expert with almost **20 years** experience in **environmental analysis and management**
- As member of the former Helpdesk for **Environmental Integration in EC Development Cooperation**:
  - Participation in the assessment of **Country Environmental Profile** (CEP) quality, and in the definition of the quality assessment criteria; **Review of around a dozen draft CEP reports** submitted by consultants (e.g. Philippines, Syria, Zambia, Brazil)
  - Delivery of training on environmental integration to staff from the EC and from partner governments, including on **preparation of CEPs** and their use in programming, as well as training to RELEX (Directorate-General for the External Relations) on use of CEPs in programming
- Experience as **Team Leader** on more than EC 10 projects, including Team Leader in the preparation of the **Country Environmental Profile** (CEP) of Bolivia (2011)
- Previous experience in **legislation / policies / strategies analyses in the environment sector** (renewable energy, costal management, climate change, water and waste water management)
- Good knowledge and understanding of **EC development cooperation programming and procedures, logical framework approach** and **Project Cycle Management**
- Experience in **stakeholder consultations** and **participatory planning**, including organisation and facilitation of participatory planning workshops
- Experience in **mainstreaming gender and climate change issues** into environmental studies
- Experience in **southern and eastern Africa**

13. Specific experience in the region (Africa)

Country	Year	Country	Year
Swaziland	2010	Sierra Leone	2011, 2010
Zambia	2009	Kenya	2007
Madagascar	2011, 2007	Tanzania	2007
Rwanda	2011	Zanzibar	2007

14. Specific experience:

Date	Location	Company & reference person	Position	Description
10/2011 – 01/12	Rwanda	**EC** / SAFEGE. Mr David Landais David.landais@safege.be	SEA expert	**Strategic Environmental Assessment (SEA)** of the Agriculture Sector in Rwanda. Prepared for the Ministry of Agriculture and Animal Resources of Rwanda and the EU Del. to Rwanda.
09/2011	EU	**EC** / AGRECO. Mr Frank Feys Frank.feys@agrer.be	SEA expert	Internal analysis of the **effectiveness of EC development cooperation SEAs**, based on the experience of projects implemented by AGRECO.
06/2011	Honduras	AIDCO / MDF Training & Consultancy	**Environment expert**/ trainer	Regional **Training on "Greening Environment in EC Development Cooperation**" for EU delegations and partner institutions in Latin America.
04/2011 to date	Chile	**EU Delegation** to Chile / Particip GmbH. Jörg Böhringer Joerg.boehringer@particip.de	SEA expert	Pilot **Strategic Environmental Assessments** (SEA): SEA for the "Model City Transport Plan of the City of Antofagasta" and "Regional Infrastructure Plan of the Region of Magallanes and the Chilean Antartida" as part of the process of developing and implementing the national SEA system in Chile.
04-07/2011	EU	**AIDCO E6** / MDF Training & Consultancy Ms Melinda Wezenaar (MDF) - mw@mdf.nl	Environmental Expert	Third assessment exercise of the degree of **environment and climate change integration into EU development cooperation projects and programmes**. Assessment of around 100 projects and programmes (including general budget support programmes) and comparison to the exercises carried out in the previous 2 years.
03-04/2011	Sierra Leone	**EC** / Montgomery Watson Belgium - Ms Florine Thiery Florine.thiery@uk.mwhglobal.com	**Team Leader / Climate Change Expert**	Formulation of a project for **support to climate change mitigation and adaptation**, under the **Global Climate Change Alliance** (GCCA).
03/2011	Madagascar (HB work)	**EC** / MDF Training & Consultancy Ms Melinda Wezenaar. mw@mdf.nl	SEA expert	Review of **Strategic Environmental Assessment** for the sugar sector adaptation strategy reports.
01-03/2011	Bolivia	**EU Delegation** to Bolivia AGRECO	**Team Leader / Environmental Policy Expert**	Preparation of Bolivia's **Country Environmental Profile (CEP).** **Environmental Analysis for the EU support to Protected Areas in Bolivia** – analysis of the strategic environmental dimension, providing recommendations for better environmental mainstreaming into the Sector Budget Support to the national system of protected areas.
11-12/2010	Sierra Leone	**EC** / Agrer - Mr Frank Feys Frank.feys@agrer.be	**Team Leader / Environmental Governance**	Formulation of the **Environmental Governance and Mainstreaming project**. Preparation of the corresponding Action Fiche (AF) and Technical and Administrative Provisions (TAP).
10/2010 to date	General	IFC / Scott Wilson (UK) Dr Jeremy Richardson Jeremy.richardson@scottwilson.com	**Environmental Expert**	Expert contributions and advice to the preparation of the **"Corporate Infrastructure Advisory Climate Change Strategy** – Sector Briefing Papers" of the International Finance Corporation (IFC).
09/2010 to date	Zambia	**EC Delegation** Zambia Ms Stephanie Rousseau Stephanie.rousseau@ec.europa.eu	**Environmental Expert**	**Effectiveness assessment of the Strategic Environmental Assessment for the Zambia National Sugar Strategy**. Project elaborated with the objective of presenting the effectiveness of the SEA process at the International Association for Impact Assessment annual meeting in 2011.
05-09/2010	Paraguay	IADB/ IberGeo Ms Judith Muntal jmuntal@iber-geo.com	**SEA Team Leader**	**Strategic Environmental Assessment of tourism development programme**. International advisor to project team and quality support.
06/2010	Peru	**EC** / MDF Training & Consultancy Ms Melinda Wezenaar (MDF) mw@mdf.nl	**Environmental Specialist** / trainer	**Regional Environmental Mainstreaming in EC Development Cooperation Training**. Delivered on behalf of the European Commission (AIDCO E6) to staff from EC Delegations in Latin America and Country Partners (Government, NGOs…) The training addresses **environmental integration throughout the EC's Cycle of Operations for development cooperation** and under the main aid delivery modalities (projects, sector support and

				general budget support).
02-06/2010	**Swaziland**	**EC**/ GFA Christof.batzlen@rdmu.org	**Team Leader / SEA Expert**	**Strategic Environmental Assessment for Swaziland's National Adaptation Strategy** (NAS, sugar sector), including integration of **Climate Change adaptation measures**.
08-12/2009	Zambia	**EC** / AGRECO. Ms Muriel Vives Muriel.vives@agreco.be	Team Leader / SEA Expert	**Strategic Environmental Assessment for Zambia's National Sugar Strategy**, in the context of the EU sugar reform, including integration of **climate change adaptation measures**.
03-06/2009 05/2010	EU	European Environment Agency / Collingwood Environmental Planning (UK)- Mr William Sheate w.sheate@cep.co.uk	**Environmental Specialist**	Participation in the BLOSSOM project of the European Environment Agency, assessing **futures planning in environment in the EU** member states, and their influence in policy-making.
03/2009	Zambia	**EC** - Ms Stephanie Rousseau Stephanie.rousseau@ec.europa.eu	SEA Specialist	Organisation and facilitation of **workshops on Strategic Environmental Assessment in the Sugar and the Roads sectors** for EC staff, Government of Zambia staff and other key stakeholders in the framework of preparation for SEAs in these sectors.
01-03/2009	Jamaica	**EC** / AGRECO. Ms Muriel Vives Muriel.vives@agreco.be	Team Leader	**Strategic Environmental Assessment for the Sugar Reform Multi-annual Adaptation Strategy of the Government of Jamaica**, including integration of climate change adaptation measures.
09/2008	Costa Rica	Netherlands Commission for Environmental Assessment and IUCN. Mr Rob Verheem rverheem@eia.nl	SEA Specialist	**Capacity-building** and technical assistance to IUCN Central America on the **integration of SEA for land use planning** in Central America.
Fulltime: 05-12/2008 05/2005 - 03/2007 Ad hoc support: 05/2007 ; 12/2007 ; 01/2009 - to date	**EU and Worldwide**	**EC** / AGRECO. Ms Muriel Vives (AGRECO) Muriel.vives@agreco.be Tel. +32.2.6263320 Mr Gianluca Azzoni (AIDCO) Gianluca.azzoni@ec.europa.eu Tel. +32.2.2962828	**Environmental Specialist SEA/EIA and trainer**	Full-time member of the **Helpdesk for Environmental Integration into EC Development Cooperation**. The **Mainstreaming the Environment into EC Development Co-operation** project provides assistance to the EC (especially Aidco, DG Relex, DG Development, DG Environment, and EC Delegations) on environmental integration in EC development co-operation. It includes the preparation of a **Handbook on Environmental Integration in EC Development Co-operation**, also **training** in Brussels and EC Delegations and the provision of **HelpDesk services**. Delivered Regional training seminars in: Peru, Chile, Nicaragua (twice), Dominican Republic, Colombia, Ukraine, Bolivia, Venezuela and Syria, apart from Brussels. Specific activities have included, amongst others: - **Design of framework for CEPs (Country Environmental Profiles) and model ToR for the EC** - **Specific training to EC staff and partner Governments on SEA, preparation of CEPs, environmental integration into Country Strategy Papers and the international climate change regime** - **Ad hoc training to DG RELEX on use of CEPs in the programming phase** - **Quality review of various of Country Environmental Profiles and their integration into programming documents (including, e.g. Colombia, India, Vietnam, Yemen, Zambia, Philippines, Asia [regional]).** - Design of **SEA approach** applicable to EC development co-operation, including model ToR and screening procedures - Preparation and application of **indicators for environmental integration** into EC

				development cooperation projects and Sector Policy Support Programmes - Preparation of Sector Guidance Notes for **integration of Climate Change considerations into the EC's Mid-Term Review Process** - **Review of process and follow up of SEA for the sea defences policy**, Guyana - Review of process and follow up of **SEA for the transport Sector Policy Support Programme, Mali** - Development of **SEA effectiveness assessment framework** for SEAs developed in the framework of EC development cooperation - Representation of DG Aidco in OECD DAC **SEA Task Team** - Input into review of OECD DAC **SEA Advisory Notes** on: post-conflict situations; **ecosystem services; and climate change** - Preparation of **EIA Good Practice note** for DG Aidco - Review and of various ToR for **environmental integration projects** - Key author of the Guidelines for **Environmental Integration in EC Development Co-operation** (2007, 2009) - Review of degree of **environmental integration** into Country Strategy Papers and National Indicative Programmes - Design of an analytical framework for the assessment of the degree of environmental integration into EC CSPs and NIPs - Technical Assistance to the EC in the **design and review of the SEA** for the Maldives' Regional Development Plan, and assessment of the pilot experience - **Assessment of the degree of environmental integration** into the "Evaluation of the Multifunctional Role of the Sugarcane Cluster and Validation of the 2006-2015 Action Plan" report in the context of Mauritius' sugar reform adaptation strategy - **Assistance in the preparation of ToR for SEAs and Country Environmental Profiles**
12/2007 - 02/2009	Honduras	GTZ. Mr Axel Olearius Axel.olearius@gtz.de Tel. +49.228.985.3328	SEA Specialist and trainer	**Technical Assistance and Training on Strategic Environmental Assessment** for Municipal planning processes (*Planes de Desarrollo Municipal*) in municipalities of Olancho and Choluteca. Undertaken for GTZ and the Government of Honduras.
08-11/2007	**South West Indian Ocean**	**EC** / Indian Ocean Commission / AGRER. Mr Frank Feys Frank.feys@agrer.be	SEA specialist	**Sustainable development of coastal tourism in the South West Indian Ocean (**Mauritius, Comoros, Seychelles, Madagascar, Kenya, Tanzania, Zanzibar**): Strategic Environmental Assessment at National and Regional Levels project**. Assessment of impacts of tourism on the environment at national and regional level, input into preparation of the "Regional Strategic Action Plan for Coastal Ecotourism Development in the South Western Indian Ocean", and preparation of model terms of reference for national and regional SEAs of ecotourism development projects.
02-05/2005	Venezuela	IFC / ECA S.A. Mr Agustí Seguer international@ecaglobal.com	**Team Leader**	**Review of the Environmental, Health & Safety and Social Management System for Vinccler Oil & Gas.** Undertaken for the IFC (International Finance Corporation).
09/2004 – 12/2005	Mexico	Mexican Federal Electricity Commission / University of Guadalajara (Mexico)	EIA Specialist / consultant	**Environmental Impact Assessment for the "La Yesca" Hydroelectric Dam Project.** Advisor to the project management throughout the EIA process, developed the overall methodology for the EIA and co-ordinated the **impact identification, impact evaluation and mitigation measures** interdisciplinary workshops and processes.
01/2003-08/2004	Mexico	Mexican National Research Council	Environmental Expert/SEA	**Strategic Environmental Assessment and Planning in Mexico.** The project explored the potential to develop an **SEA system in Mexico**. T
12/2003 -	Mexico	Tractebel Mr Alejandro De Gyves	Environmental Expert	**Comparative Environmental Risk and Safety Analysis between Natural Gas and LP Gas** for use in the urban area of Guadalajara, Mexico, 2003-2004**.** Showed the advantages

06/2004		adegyves@tractebeldgj.com.mx		and disadvantages of using each of these sources of **energy** in a large urban area.
04-05/2003	Bolivia, Peru, Ecuador, Colombia, Venezuela	Development Corporation of the Andes (CAF) / ECA, S.A. Mr Agustí Seguer international@ecaglobal.com	Environmental Expert	Project for the Enhancement of the Tourism Sector in the Andes Community (Development Corporation of the Andes). Participated in the **Environmental and Sustainable Development component** of the project, consisting mainly in undertaking **stakeholder consultations and analysis** for the definition of Environmental Indicators for sustainable tourism.
11/2002 – 02/2004	EU	**EC** / ECA, S.A. Mr Agustí Seguer (ECA) international@ecaglobal.com	**Environmental policy specialist**	**Evaluation of Approaches to Integrating Sustainability into Community Policies (EC Secretariat General).** By improving understand of the way in which the three dimensions of sustainability (economic, social and environmental) are incorporated into the formulation, objectives, implementation and monitoring of Community policies, this evaluation identified the problems most frequently encountered with a view to identifying working methods adapted to such strategies in the future.
01/2003 - 10/2003	Mexico	Municipality of Zapopan (Mexico) and University of Guadalajara Dr Juan Villalvazo jvillalv@newton.dip.udg.mx	**Environmental Assessment Specialist**	**Environmental Assessment** of the Rio Blanco Watershed, Zapopan, Mexico**.** Participated in the Environmental Assessment of this important watershed, located in the urban area of the city of Guadalajara. The assessment includes the **Assessment of the Environmental, social, economic and cultural dimension**s.
11/2002 - 01/2005	Mexico	University of Guadalajara (Mexico) Dr Juan Villalvazo jvillalv@newton.dip.udg.mx	Researcher in Environmental Policy	**Coordinating research projects in environmental policy and management**, as well as lecturing in environmental policy planning and management to BSc, MSc and PhD students.
01-12/2002	EU-wide	**EC** / ECA, S.A. Mr Agustí Seguer international@ecaglobal.com	**Team Leader / Land Use Expert**	**Land Use: Exploring the Scope for Action at the EU Level** related to land use in the framework of the **preparation of a Communication on Planning and Environment** to be issued by DG ENV. Performed a c**omprehensive assessment** of current mechanisms for land use planning across the EU in different sectors and at different decision-making levels. **Made recommendations to the EC** on how to promote more sustainable land use planning and management.
08/2001 - 01/2004	Kazakhstan	**EC** / ECA, S.A. and Bureau Veritas Mr David Fardel (BV) David.fardel@ru.bureauveritas.com Tel. +7(095)937.5777	**Team Leader** (environmental and safety policy advice work package)	**Support to the Oil and Gas Production and Transportation Sectors of the Republic of Kazakhstan.** Tacis. Provided (1) technical assistance to the Government of Kazakhstan for the **improvement of national regulations, standards and procedures on safety and environment** for offshore upstream activities and pipeline operations, (2) assistance to the national companies KazTransOil and KazTransGas on pipeline maintenance operations and (3) assistance for the preparation of the legal framework for the establishment of an independent oil and oil products certification system in Kazakhstan.
2000-2001	EU and former accession countries	**EC** / ECA, S.A. and Cassiopee Mr Patrick O'Sullivan (Cassiopee)	EIA and **public participation specialist**	**Study on the Current Regulatory Status in the EU Member States and the Applicant Countries Concerning Environmental Impact Assessment for the Decommissioning of Nuclear Installations**. Reviewed the current legislative status in all Member States and Applicant Countries with regards to the EIA process for the decommissioning of nuclear installations (NPP), and **prepared Guidelines** for NPP decommissioning EIAs.
2000-2001	EU and former accession countries	**EC** / ECA, S.A and ICON (UK) Mr William Sheate (ICON) w.sheate@cep.co.uk	SEA Specialist	**SEA and the Integration of the Environment in Strategic Decision Making**. Reviewed the current integration mechanisms and SEA procedures in all Member States (and some non-EU countries) in order to define a European strategy for the integration of the environment in decision-making on policies, plans and programmes.
2000	Colombia	UNDP / ECA, S.A.	Environmental Specialist	**Culture of No-Rubbish and Solid Waste Management.** Provided TA to Bogota's environmental authority in the definition and implementation of their Urban Waste Management Programme.
01-	EU	**European Commission** (DG	Team Leader	Preparation of **Guidelines for the Evaluation of Environmental Claims** according to

12/2000		SANCO) / ECA, S.A.	Environmental Legislation Expert	International Standard ISO 14021:1999.
04-06/2000	EU-wide	**European Commission** (DG ENV) / ICON (UK)	Consultant	**Pollutants in Urban Wastewater and Sewage Sludge Study.** Undertook a **legislative review and identification** of current- and best-practices with regards to urban wastewater and sewage sludge management in Spain and Portugal.
06/1999 - 11/2002	General	ECA, S.A. (Spain)	Head of International Environmental Consultancy	**Project management and team leader for international environmental consultancy projects**, mainly under contracts for donor agencies and the European Commission. Responsibilities included writing proposals, project management, acting as Team Leader of specific projects, and client liaison.
03-06/1997	Switzerland	United Nations Economic Commission for Europe	Intern	Assistance to the Secretariat during the negotiations for the Aarhus Convention on access to environmental information, public participation in environmental decision making and **access to justice in environmental matters.**
09/1995 - 12/1998	Hungary and Spain	Imperial College (UK) Mr William Sheate w.sheate@cep.co.uk Tel. +44(0)2074078700	EIA Researcher	**A theoretical-empirical analysis framework for public participation in EIA.** Research project developed a theoretical analytical framework for public participation in EIA, focusing on Central and Eastern Europe and the EU and with case studies in Hungary and Spain.
06-08/1995	Czech Republic, Romania		EIA Researcher	**EIA** in Central and Eastern Europe, analysis of the Czech and Romanian cases. This project explored early development of **EIA legislation in the Czech Republic and Romania, compared to the EU (especially in the UK and Spain).**
01-04/1999	Spain	Centre for Entrepreneurial Initiatives	Consultant	Centre for Entrepreneurial Initiatives and Local Government of Santa Margarida i Els Monjos, Spain. Feasibility Study for the establishment of an industrial waste management company.
10/1992 - 06/1994	Mexico (Chapala)	Mexican Institute for Water Technology (IMTA)	Consultant	**Mexican Institute for Water Technology (IMTA). Water Weed Control Programme for Lake Chapala (Mexico).** A programme was developed for the control of water weeds through an analysis of alternatives (physical and chemical methods). Responsible for the modelling of water weed growth under the different control alternatives.
10/1992 - 09/1994	Mexico	Various. Dr Gualberto Limón g.limon@us.mw.com	Consultant	**Review of Wastewater Treatment Plant Designs in Tendering Procedures.** Participated in the review of urban wastewater treatment plant designs for different local authorities, as a technical quality control of technical proposals submitted during tendering procedures.

15. Others: Publications (selected):

- PALERM, J; Ledant, JP and Brinn, P (2007) **Environmental Integration in EC Development Co-operation Multi-Annual Programming**, **experiences in the use of Country Environmental Profiles**, *IAPA*, **25**(3).
- European Commission (2009) ***Guidelines on environmental Integration in EC Development Co-operation***, prepared by the EC Helpdesk Environment. Also available in French and Spanish. (Key author).
- Bond, A.; PALERM, J.; and Haigh, P. (2004) **Public Participation** in EIA of Nuclear Power Plant Decommissioning Projects: a Case Study Analysis. *Environmental Impact Assessment Review*, **24**(6): 617-641.
- Dagg, S.; Achemann, R. and PALERM, J. (2003) Guest Editorial: **The Changing Processes of Public and Stakeholder Participation in Response to Diverse and Dynamic Contexts**, *Journal of Environmental Assessment Policy and Management*, 5(3).
- Sheate, W.; Dagg, S.; Richardson, J.; Aschemann, R.; PALERM, J. and Steen, U. (2003) **Integrating the Environment into Strategic Decision-Making: Conceptualising Policy SEA**. *European Environment*, **13**: 1-18.
- PALERM, J. (2000) An **Empirical-Theoretical Analysis Framework for Public Participation in Environmental Impact Assessment**. *Journal of Environmental Planning and Management,* **43**(5): 581-600.
- PALERM, J. (1999) **Public Participation in Environmental Decision-Making**: examining the Aarhus Convention, *Journal of Environmental Assessment, Policy and Management*, **1**(2): 229-244.

CURRICULUM VITAE

Surname: MAKHOALIBE
First Name: Sechocha

Date of Birth: 4th November, 1942
Nationality: Lesotho
Residence: Lesotho

Areas of Specialisation:

- Hydrology and hydrometeorological assessment, evaluation and analysis;
- Water resources engineering, water resources planning, development and management; and
- Environmental management of natural and water resources.

Education:

- 1966-1970: B.Sc. (Hons) in Earth Sciences (Hydrology, Meteorology, Soil Sciences, Geology, Physical Geography), Uppsala, Sweden.

- 1973-1976: Diploma in Water Sciences and Water Resources Engineering; Kelsey Institute, Saskatoon, Saskatchewan, Canada.

Other Specialist Training:

- January 1978: "Basics in Finance" Institute of Development and Management (IDM), Maseru, Lesotho.
- April-May 1979: "Applications of Remote Sensing Technology to Hydrology and Water Resources Engineering", Remote Sensing Centre, Nairobi, Kenya.
- January-April 1980: "Computer Applications to Water Resources Engineering", Technion-Israel Institute of Technology, Haifa, Israel.
- April-May 1981: "Regionalising and Transferring of Hydrological Variables", Institute of Hydrology, Wallingford, UK.
- June-September, 1982: "Water Resources Engineering", Jaroslav Cerni, Institutefor Development of Water Resources, Belgrade, Yugoslavia.
- May-July, 1983: "Training of Management Educators", Institute of Development Management, Gaborone, Botswana.
- June-September 1988: 'Hydrological Forecasting', University of California, Davis, USA.
- June 1995: "Applications of Economic Principles and Instruments in the Integrated Management of Freshwater Resources" UNEP, Nairobi, Kenya.

- June-October 1995: “Computer Technology Applications” CSN, Maseru, Lesotho.
- December, 1995: “Auto-Cad LT 2D Design”, ACAD Centre Africa, Maseru, Lesotho
- May 2002: “Financial Management and Disbursement in World Bank – Financial Projects” Maseru, Lesotho.
- June 2009: “International Water Law”, Pretoria, South Africa.

Career Development and Experience Record:

- **August 2009 to present: Management Team**

A member and one directors of GWC Consulting Engineers involved in projects supervision and coordination activities with the stakeholders and the clients. Liaising with project affected people. Projects managing.

- **July 2006 to July 2009: Regional Project Manager**

This period covers the assignment on the Orange-Senqu RIVER Basin Commission (ORASECOM) program under the French Global Environment Facility (FGEF) funding. Six Activities were funded and the TORs were prepared, advertisements were issued, interviews were held, contracts were prepared. Consultants were supervised, and progress reports were made for the client and the financier. Work-shopping for stakeholders and the local community authorities in the four riparian states of the Orange-Senqu river. Consistent consultations were held with other cooperating partners programs under the ORASECOM program of action, such as GTZ, UNOPS, EU, DFID.

- **March 2004 to July 2009: Manager GWC Consulting Engineers**

In this assignment, involvement was in supervising construction projects in the water supply infrastructure, preparation of TORs, feasibility studies, and contract negotiations with contractors on behalf of the client.

Reconnaissance project surveys towards pre-feasibility studies.

Preparation of the environmental impact assessment reports including environmental management plan.

- **July 1999 to October, 2003: Head of Lesotho Water and Sewerage Authority (WASA)**

During the period, activities have been those of the Chief Executive Officer (CEO) of the Lesotho Water and Sewerage Authority (WASA). These included day-to-day administration, and management of the Authority’s resources; planning and developing management policies and strategies for all the 17 urban centers in Lesotho; project conceptualization and proposals and their presentations to the Board of Directors of the

Authority, to the Ministry of Development Planning for Government of Lesotho (GOL) back-up, and final presentation to the donors and financiers such as the World Bank, European Union, Arab Bank for Economic Development in Africa (BADEA), OPEC FUND, etc.

The responsibilities entailed water security – in raw water sources; potable water supplies; sanitation and sewerage services for urban population in seven towns. Supervision of engineering, operational, economic/financial, and corporate services senior personnel; coordination of the Authority's regional and international obligations; and developing the mission to improve and elevate the image of the Authority in respect of its customers and the consumers of its products – potable water and safe sanitation for the environment.

Initiatives have been started and prepared for putting in place mechanisms to elevate the Authority to perform as a commercial agency while caring for the social and environmental aspects of water. Public-Private Partnerships and private sector participation strategies have been formulated; including the formulation of Vision 2020 on water supply and sanitation services, and the promulgation of the HIV/AIDS policy for the Authority.

International consultants and contractors have been screened, evaluated and negotiated with on conducting several studies and implementation of projects financed and/or co-financed by the Government, the World Bank, BADEA, EU and OPEC Fund in the potable water supply and sanitation services. Twinning agreements and cooperation were concluded with international agencies (Wessex Water – UK) and regional ones (Umgeni Water and Bloem Water).

Initial negotiations on the Lesotho Lowlands Water Supply Study (LLWSS) between Lesotho and South Africa as joint venture were attended. Metolong Dam feasibility study was agreed upon as a fast-tracked component of LLWSS.

Participated in the review by Lesotho of the World Commission on Dams report and its implications to Lesotho in the development and management of her available water resources. Participated in drawing up terms of reference and preparation of aide memoirs with the World Bank on Lesotho Water Sector Improvement Project component on Maseru Bulk Water Supply Augmentation.

Involved in the review and evaluation of the consultancy services proposal for the formulation and establishment of water sector regulator or a single regulator for both energy and water sectors.

1996-1999: Head of SADC – Water Sector

As the first Chief Engineer/Sector Coordinator of the Southern African Development Community Water Sector (SADC –Water Sector) programs and project proposals were prepared and submitted to Sub-Committees of officials and Ministerial Committee for review and final presentation to the Council of Ministers as SADC-Water Sector policy/activities for approval by Heads of State and Government.

Annual SADC Heads of State, Council of Ministers and Water Sector Ministers meetings and conferences were attended in order to back up presentations on the SADC Water Sector programs and projects.

Programs were formulated and projects dossiers were prepared for presentation to the donors on regional basis and on country specifics. Long term region action plans (Regional Strategic Action Plans) were prepared including the legal aspects on the regional aspirations – The Protocol on Shared Watercourse Systems in the SADC Region.

Several national, regional and international seminars, conferences and workshops were arranged, coordinated, supervised and attended in popularizing the Water Sector (SADC) and for the formulation and conclusion of the SADC – Water Sector Action Plan which contained 31 projects. Round Table Conference was organized and held in Geneva, December, 1998 for international cooperating partners for this Regional Strategic Action Plan (RSAP).

International and regional experts were screened, interviewed and recruited for the implementation of funded projects and studies for the SADC – Water Sector; and regional institutions/agencies were negotiated with to assist/implement projects/activities on behalf of the SADC-Water Sector. Assistance was also given to the SADC Secretariat in the implementation of SADC Programme of Action. Seminars, workshops etc. were held for co-operating partners and stakeholders on SADC-Water Sector program and projects.

Negotiations were undertaken for multi-donor joint funding of several SADC-Water Sector programs and projects. Conflict resolution strategies were put in place for the shared watercourse systems in the SADC region. These included the virtual water principles and water policy, and hydro-politics.

Participated in the review of Water Sector chapter for the production and publication of Lesotho's National Report on Climate Change, First National Communication to the Conference of the Parties to the United Nations Convention on Climate Change.

1983-1996: Head of Department of Water Affairs

The responsibilities during the period were varied and numerous; but over-arching one was the establishment and development of the institutional agency responsibility in the water resources management of Lesotho – Department of Water Affairs.

The detailed activities included:

- Representing Government of Lesotho in international and regional forums on water resources issues, including International Conference on Water and Environment (ICWE) Dublin, Ireland. The recommendations are included in Agenda 21, known as Dublin Principles on Freshwater. A member of Lesotho delegation to the Agenda-21 Conference in Rio de Janeiro, Brazil, 1992
- Development of the department and clarification on its activities in water resources planning, development and management, development of the terms of references for the "Water Resources Management: Policy and Strategies (WRMPS)" study by 32 consultants from TAMS of New York and from Sechaba, and Groundwater Consultants, both of Maseru.
- Programs and projects formulation on water resources; nationally and regionally.
- Prepared for National Environmental Secretariat a critical review on the outline of a chapter on water resources and wetlands for State of Environment (SOE) book and programme of action.
- Supervision and evaluation of international consultants on water projects, including supervision of four mini-hydropower plants.
- Preparation of background paper for workshops held by National Environment Secretariat on natural resources (water) and desertification.
- Participated in several congresses of the World Meteorological Organization (WMO) as Chief Delegate (1987) and as hydrological adviser to Lesotho Permanent Representative with WMO.
- Participation in regional Workshops on Water Resources Challenges in Sub-Saharan Africa organised by the World Bank; and presentation of a country (Lesotho) situation paper.
- A member of SADC Water Resources Technical Committee (WRTC) which is supervising the water programmes and projects for the region (SADC).
- Participated fully in the formulation of draft of the present "Protocol on Shared Watercourse Systems in the SADC Region."
- Guided consultants on the production of the first hydrogeological map of Lesotho under Italian Government technical assistance.
- Organised a workshop for SADC-ELMS on hydrogeological mapping in SADC member States.
- Participation in the drawing up of Lesotho's National Environmental Action Plan (NEAP) including the drafting of NEAP organs and Structures, National Environmental Secretariat and other bodies within NEAP.

- Participated in the workshop preparing Lesotho's contribution paper to the UN Conference on Environment and Development. Drafted water section of this workshop's paper.
- Participated, as a member of Lesotho Delegation to the Preparatory Meeting of UN Conference on Environment and Development, including the preparatory negotiations for the Convention to Combat Drought and Desertification.
- Participated in the Task Force formulating the present Disaster Management Authority.
- Active participation in meetings and workshops shaping the water supply policies in Lesotho.
- Drafting the first version on the term of reference (TOR) for the new Water Sector of SADC.
- Evaluations of the reports and studies concerning water resources of Lesotho in relation to both urban and rural water supplies; and advising concerned agencies and organisations accordingly on hydrology, water and environment aspects.
- Implementing engineering contractual agreements between Government of Lesotho and contractors/consultants.
- Assessing, approving and passing consultants and contractors' certificates for payment on project supervised by the department.
- Assessing the water uses and water availability in Lesotho; including a critique on all reports/studies on water supply to the towns/urban/peri-urban/rural areas on Lesotho.
- Participation in the stakeholders workshops and seminars on the Orange River Replanning Studies (ORRS) organized by DWAF-RSA, as alternatives to Lesotho Highlands Water Project Scheme in the future development of the Orange-Senqu River Basin system, including sub-basin transfers such as Lower Orange to the Vaal as well as from other river basins
- Designing and running three-month courses for hydrological technicians in the Department of Water Affairs (Lesotho) for a period of three years.
- Participated as resource person on training workshop for Mozambicans on environmental monitoring organised by SADC-Environment and Land Management Sector (ELMS), and run by professors from Uppsala University, Sweden.
- Participation in the reconnaissance surveys and dam sites identification for Lesotho Lowlands Water Resources development.
- Participation in the site selection for the construction of three Crump weirs on Malibamat'so, Paray, Senqunyane, and Senqu rivers. These Crump weirs were built by DWA (RSA) for the verification of historical hydrological data as collected by DWA (Lesotho) for Katse, Mohale, and Ntoahae dams respectively. .
- Participation in the panel of experts on the Zambezi River Basin Action Plan (ZACPLAN).

- Participated in data collection for projects implementing ZACPLAN, including the editing of the reports on ZACPLAN project.
- Negotiation with cooperating partners for the funding of SADC projects in the water sector programmes.
- Identification of possible dam sites for bulk water supply for the towns of Lesotho including growth centres and rural villages as multi-purpose dams.
- Supervision of professionals in the Department of Water Affairs (hydrologists, meteorologists, engineers, environmentalists, and hydrogeologists).
- Negotiating donor (JICA) funding for the project on potable water supplies and sanitation facilities to the primary schools in the lowlands of Lesotho.

1978-1983:

PRINCIPAL HYDROLOGIST responsible for the day-to-day administration and activities of the Department of Hydrological & Meteorological Services, as head of the department.

Continued to have a principal active role in the hydrometric network design of Lesotho, river flow measuring stations including the expansion of suspended sediment transport sampling and monitoring network; and the initiation of water quality monitoring of the Caledon river at the Maseru reach of the river. Conducted hydrological studies and ran two successive sets of training courses for hydrological technicians to improve their academic and level of hydrologic understanding, especially in the field of hydrometry, general hydrology and sediment sampling. Data collection, analysis, assessment, evaluation and interpretation including publication (3rd Hydrological Year Book) remained the major routine activities; including on-the-job training and supervision of professional staff.

Representing Lesotho internationally and regionally on water issues, including being a member of Lesotho's 1978 delegation to Cape Town to re-initiate the bilateral consultations and negotiations on the Lesotho Highlands Water Scheme.

Restructuring Department of Hydrological & Meteorological Services to the present Department of Water Affairs with activities decentralised to the regional offices to meet the data users needs as well as improving the quality of data due to high frequency of visits to river stations hence false operations by recorders detected in time.

Designed human resources development of the department's fields of specialization (meteorology, hydrology, hydrogeology, water quality, water resources engineering).

1976-1977:

HYDROLOGIST: As hydrological engineer was responsible for the planning of data collection, computation and the calibration of hydrometric stations and small hydraulic structures (gauging weirs). Initiated the scientific collection of sediment transport data in Lesotho. Involved in the design of small hydraulic structures including the network design. Supplying river flow forecasting to the water users for effective operation of water supplies schemes.

1970-1973:

SENIOR HYDROLOGICAL SURVEYOR involved in the field data collection (stream gauging), maintenance of hydrometric stations, repair of instrumentation and supervision of hydrological data collection and processing and maintenance of meteorological instruments and stations.
Field sampling of suspended sediment using point-sampling, depth-integrating sampling, and bucket (grab) methods including laboratory analysis of the samples, and the laboratory results and data interpretations.

OTHER ACTIVITIES/RESPONSIBILITIES:

- Hydrological Adviser to Permanent Representative of Lesotho with World Meteorological Organization (WMO); since 1979 when Lesotho became a member of WMO; till 1990.
- Secretary, National Committee for international Hydrological Programme of UNESCO, (1984-Now).
- Chairman (1980-1984) of the Standing Committee for Hydrology of Southern African Regional Commission for Conservation and Utilisation of Soil (SARCCUS).
- Vice-chairman (1988-90) of Standing Committee for Hydrology of SARCCUS.
- Chairman of Steering Committee on Water Resources Management: Policy and Strategies (WRMPS) study for Lesotho.
- President, 1996/97, of Lesotho Architects, Engineers and Surveyors Association.
- Treasurer of Africa Division of International Association of Hydraulic Research; 1995.

MEMBERSHIP:

- South African National Committee for the International Association of Hydrological Sciences.
- South African Geographical Society.
- Lesotho Architects, Engineers and Surveyors Association.
- International Association of Hydraulic Engineering and Research.

PROJECTS

The following projects and studies were managed during the career development:

A. WASA

A.1 Design and Construction of Water Supply Pipeline from Lesotho Sun Reservoir to Service Reservoir at Thetsane Industrial Estate – GOL funding.

A.2 Design and Construction Service Reservoir at Thetsane Industrial Estate – GOL funding.

A.3 Construction of 600mm force main from Maseru Water Treatment Plant to Service Reservoir at Lesotho Sun – BADEA funds.

A.4 13 Towns Sanitation Project - KfW (Germany) funding.

A.5 Maseru Peri-Urban Water Supply Project – BADEA funds.

A.6 Thetsane Industrial Estate Sewerline – GOL .

A.7 Terms of Reference for Five Towns Water Supply and Sanitation Feasibility Study – BADEA

A.8 Six Towns Water Supply (Maputsoe, T.Y., Mapoteng, Roma, Morija, Quthing) – EU financing.

A.9 Lesotho Water Sector Reform Project – Maseru Water Supply Augmentation – World Bank financing.

B. SADC WATER SECTOR

B.1 Hydrological Cycle Observing Systems in the SADC Region funded by SIDA (Sweden).

B.2 Zambesi River Basin Action Plan (ZACPLAN) on integrated water resources management.

B.3 Protocol on Shared Watercourse Systems in the SADC Region, SIDA funds.

B.4 Regional Strategic Action Plan for integrated water resources development in the SADC countries – UNDP funding.

C. **DWA (Lesotho)**

C.1 Hydrometric Network Expansion – Government of Lesotho (GOL) funding.
C.2 Meteorological Network Expansion and Assessment – funding WMO/UNDP.
C.3 Hydrogeological Mapping of Lesotho – Italian funds.
C.4 Water Supply to Lowlands Primary Schools – Japanese funds.
C.5 Water Resources Management: Policy and Strategies – GOL.
C.6 Tlokoeng and Tsoelike Mini-Hydropower Plants – French funding.
C.7 Semonkong and Mants'onyane Mini-Hydropower Plants – NORAD funding.
C.8 Oxbow Hydropower Development – Feasibility Study – GOL.

D. ORASECOM Program

D.1 Six Activities were supervised under the French Global Environmental Facility (FGEF).

E. GWC CONSULTING ENGINEERS:

E.1 Feasibility studies were undertaken, contract dossiers were prepared, and contractors were supervised on several projects in the water sector.
E.2 Environmental studies and activities including preparation of EMP were undertaken.

Appendix 11: ToR for the CEP

SPECIFIC TERMS OF REFERENCE

Preparation of the Country Environment Profile of the Kingdom of Lesotho

FWC BENEFICIARIES 2009 – 2011/279247/1
LOT No. 6 : Environment
EuropeAid/127054/C/SER/multi

1. BACKGROUND

Lesotho is a small, mountainous, land-locked country with only limited economic resources. Historically, the Basotho people have provided a substantial element of the labour force in the South African mining industry and migrant miner remittances have become a significant factor in the national economy. However, with the growing uncertainty in the South African mining industry and with relative poverty becoming an increasing problem, the Government of Lesotho has determined that greater emphasis must be given to a strategy that will generate economic growth. Climate change is mainstreamed in Lesotho's National Strategic Development Plan 2012-2016, currently under preparation, and the NSDP puts a clear focus on green growth as a driver for Lesotho's economy.

National environmental outlook

Environmental degradation in Lesotho, if not controlled, will see Lesotho in the next years with declining biological diversity (Lesotho has unique habitats such as mountain wetlands and sandstone cliffs which support high level of plant endemism [more than 500 species]), loss of cultural heritage, declining water and air quality, encroachment of settlements into productive agricultural land and declining ecosystem services. The HIV/AIDS scourge and the increasing levels of poverty as a result of climatic variability will reduce economic growth and leave many people impoverished. The current trends indicate an unstable and unsustainable system characterised by loss of productivity and ongoing environmental degradation. The responses of society to reverse this state of affairs show little success and are marked by very poor performance levels. If the negative trends are not curbed or reversed and the positive ones reinforced, the future of the Lesotho's environment is gloomy.

However, the resilience shown by the country, the level of adaptation of innovative land management methods among the Basotho over the years, and the current realisation of several unsustainable approaches to development provide hope for a better future, if recommended strategies for sustainable development are implemented efficiently. The negative impacts can be mitigated by interventions such as climate change mitigation and adaptation measures, enforcement of environmental standards, sound land use practices, improved food security and self-sufficiency through, for example, the implementation of an irrigation policy, intensive HIV/AIDS awareness campaigns, the infusion of appropriate low-input technologies and alternative community-based natural resource management activities as well as the protection of important cultural and historical sites.

National environmental policies

Lesotho prepared a comprehensive National Environment Action Plan (NEAP) that attempted to incorporate environmental issues into the country's economic development and to co-ordinate the country's environmental challenges. The NEAP did not become effective, however, due to the absence of an appropriate institutional mechanism to co-ordinate environmental programmes and activities. In 1994, Lesotho formulated a National Action

Plan to implement Agenda 21 under the auspices of a National Environment Secretariat (NES). The NES was tasked to co-ordinate the implementation of the National Action Plan (NAP) and it was instrumental in formulating the National Environment Policy (NEP), which harmonised the programmes of both the NEAP and the NEP.

Lesotho has enacted an umbrella environment law (the Environment Act 2001) but some sections have not yet come into operation. Once gazetted, the law will provide for the management of the environmental and natural resources of the country. The law proposes the transformation of the NES into a statutory body with perpetual succession, the Lesotho Environmental Authority.

Trans-boundary environmental policies

There are specific treaties and agreements relevant to water resources:

- The Lesotho Highlands Water Project (LHWP) Treaty between the Governments of Lesotho and South Africa (1987).
- The Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) Region (1995).
- The Revised Protocol on Shared Watercourses in the Southern African Development Community (SADC) Region (2000).

Environmental reports to international agencies

• 1989 – National Environmental Action Plan (Lesotho).
• 1998 – State of the Environment in Lesotho.
• 1998 – Biodiversity Strategy and Desertification (Lesotho).
• 1998 – National Action Plan (Lesotho).
• 1998 – National Environment Policy.
• 1999 – National Report on Desertification (Lesotho).
• 2000 – Lesotho Biodiversity Strategy and Action Plan.
• 2001 – Environment Act (to be enforced).
• 2002 – Second State of the Environment Report (Lesotho).

2. DESCRIPTION OF THE ASSIGNMENT

Objective

The main objective of the Country Environmental Profile (CEP) is to **identify and assess environmental issues to be considered during the preparation of a Country Strategy Paper,** which will directly or indirectly influence EC cooperation with the country for several years to come. The conclusions will also be used by Ireland, the only resident EU member state, to inform their own programming exercise.

The Country Environmental Profile will provide decision makers in the partner country and in the European Commission with clear information on the key environmental challenges, in particular, those resulting from increasing climate variability and climate change. It will also analyse the current policy, legislative and institutional framework and the strategies and programmes (including those of the EC and other donors) designed to address them.

This information will ensure that the EC cooperation strategies systematically integrate environmental and climate change considerations into the selection of focal sectors and

cooperation objectives/strategies, and also establish the necessary environment safeguards for all cooperation activities undertaken in the country. The profile will constitute an important source of baseline information and contribute to focusing political dialogue and cooperation with the country on key areas of concern including sustainable development as well as raising awareness among policy makers. Water and sanitation will continue to be the main focal area of the future CSP and this sector should be given special attention.

Results

The profile will deliver the following results:

- ✓ an assessment of the state of the environment in Lesotho and key environmental factors and trends, including those related to climate, influencing the country's sustainable development and stability;
- ✓ an assessment of national environmental policy and legislation, institutional structures and capacity, and the involvement of civil society in environmental issues;
- ✓ an assessment of available analysis on the impact of increasing climate variability and climate change on different sectors and the strategies and processes in place or under development to respond to them – in particular the water and sanitation sector and disaster risk reduction including food security/production;
- ✓ recommendations and, as far as possible, guidelines or criteria for mainstreaming environmental concerns particularly those concerning adaptation to increasing climate variability and climate change in cooperation areas particularly water and sanitation and disaster risk reduction;
- ✓ recommendations for mainstreaming environmental and climate change issues which could affect governance structures and public financial management in Lesotho.

All recommendations should support the preparation of the Country Strategy Paper/National Indicative Programme and include guidelines or criteria to be used for environmental mainstreaming in subsequent phases of the cycle of operations.

Issues to be addressed

The following issues should be assessed using existing sources of information and key stakeholder perspectives. It is not expected that the preparation of the Profile will involve the collection of original environmental data.

1. *State of the environment, trends and pressures*

a) This chapter should identify the state and trends of key environmental resources or components in the country, including (as relevant to Lesotho), but not necessarily limited to:

Themes	**Aspects**
Land	▪ Soil erosion and degradation ▪ Land use, arable land, losses due to urbanisation or infrastructure building
Water	▪ Water regime ▪ Groundwater ▪ Water quality
Air quality	▪ Urban air quality

	▪ Indoor air quality
Forest, vegetation, ecosystems	▪ Forest cover and volume ▪ Pastureland ▪ State of particular ecosystems (e.g. if none any specific ecosystems could be mentioned here)
Biodiversity, wildlife	▪ Local status of globally threatened species/habitats ▪ Alien invasive species ▪ Fish stocks ▪ Species with special value
Mineral resources and geology	▪ Mineral resources ▪ Geological risks (seismic, volcanic and related risks)
Landscape	▪ Aesthetic and cultural value of landscape
Living conditions in human settlements	▪ Air and water quality ▪ Sanitation ▪ Slums ▪ Health ▪ Vulnerability to disasters
Climate trends	▪ Temperature ▪ Precipitation ▪ Frequency of extreme weather events, natural climate-related disasters

b) Pressures on the environment explaining the main negative trends should be identified, as well as pressures contributing to global environmental problems, including (as relevant to Lesotho), but not necessarily limited to:

Environmental Pressure	**Possible aspects to consider**
Mining, extraction of hydrocarbons	Extraction, processing and transport of minerals and hydrocarbons, and the resulting pollution and waste
Water use and management	▪ Water extraction (surface and groundwater) ▪ Wastewater discharges, water treatment ▪ Water use ▪ Virtual water flows (water footprint of Lesotho's import/exports)* ▪ Water governance matrix, roles of different actors and sharing of water resources, national and supra national issues.
Land use and management	Land use planning including strategic environmental implications Land governance matrix, roles of actors and sharing of land resources, national and supra national issues

Forest exploitation, hunting, fisheries, biodiversity	▪ Forest product extraction ▪ Forest and fisheries management practices ▪ Hunting and fishing activities, poaching ▪ Use of non-timber forest products ▪ Fires ▪ Introduction of alien species
Livestock	▪ Overgrazing ▪ Rangeland management, use of fire, water management ▪ Livestock waste and pollution management
Agriculture	▪ Extension of agricultural land ▪ Shifting cultivation ▪ Intensification ▪ Irrigation and water use ▪ Pest control ▪ Agricultural practices, soil management ▪ Agricultural waste and pollution management
Energy supply and use	▪ Sources of energy ▪ Supply- and generation-related waste and emissions ▪ Energy consumption and associated emissions ▪ Energy efficiency
GHG emissions	Emissions of main GHG and sources
Urbanisation, infrastructure and industry	▪ Urban growth and sprawl, urban planning ▪ Dams, roads, major infrastructure ▪ Polluting industries, tourism
Transport	▪ Transport of goods ▪ Transport of people
Waste disposal and management	▪ Waste production ▪ Waste management ▪ Public behaviour and practices, existing systems ▪ Hazardous waste management

* Virtual water content: the virtual water content of a product is the volume of freshwater used to produce the product. Data on this exists for Lesotho.
http://www.fao.org/nr/water/docs/VirtualWater_article_DZDR.pdf,
http://www.waterfootprint.org

As far as possible the driving forces influencing these pressures should be identified, such as economic incentives, demographic pressure, access rights to natural resources and land tenure systems.

Environmental trends should be assessed with regard to their social and economic impact, including:

- ✓ any decline in economic production or productivity (e.g. agriculture, forestry, fisheries);
- ✓ threats to human health;

- ✓ human exposure to environmental disasters (e.g. floods, drought);
- ✓ conflicts and security issues;
- ✓ impact on poverty, differentiated impact on women and men, impact on vulnerable groups (including children and indigenous peoples);
- ✓ sustainability of resource use;

The concluding paragraphs of this section should summarise the main problems identified, described in terms of situations or trends that are undesirable due to their current socio-economic consequences (e.g. falling productivity, health problems, natural risks, social crises, conflicts), their future consequences (e.g. decline in natural resources, cumulative pollution) or their contribution to global environmental problems. The main links between the environment and human development (in its multiple dimensions: income, consumption, health, security, vulnerability …) should be highlighted, possibly in the form of a matrix or 'problem tree'.

As appropriate, the consultant should refer to environmental indicators that could be used for monitoring changes in the studied country. To the extent that data are available, trends in MDG 7 indicators should be provided; trends in additional indicators related to country-specific environmental issues can also be provided, as available, to highlight those that are significant.

If appropriate, the information could be organised according to eco-geographical subdivisions with the scale (regional, national, local) of the issues indicated.

2. *Environmental Policy. Legislation and Institutions*

A brief description and review should be provided of the main government responses to deal with environmental problems. This section should address the strengths and weaknesses of the following aspects as relevant to Lesotho, but not necessarily limited to:

Aspects	**Examples of Issues to consider**
Policies	▪ Existence of national policies, strategies and action plans for the environment, including possible National Strategy for Sustainable Development (NSSD) and/or National Environmental Action Plan (NEAP). ▪ Policy response to global issues, sustainability issues (depletion of natural resources), and specific environmental issues identified above. ▪ Consistency between policies. ▪ Policies on gender and environment. ▪ Important measures taken by the government to solve environmental concerns and types of policy instruments used for implementation ▪ Effectiveness in achieving targets
Regulatory framework, including Environmental Impact assessment (EIA) and Strategic Environmental Assessment (SEA) legislation	▪ Ratification status and implementation of Multilateral Environmental Agreements such as those concerning climate change, biodiversity and desertification (with reference to any official plans, programmes, communications or reports issued in the context of these conventions). ▪ Adequacy of (current and in preparation) environmental legislation, including land tenure and land reform, access rights to natural resources, management of natural resources, requirements for environmental assessment such as for EIA and SEA, pollution control, development control. ▪ Provision and procedures for public participation in environmental issues. ▪ Effectiveness of legislation enforcement. ▪ Use of other (non-legislative) instruments, e.g. 'green budgeting', environmental

	fiscal reform and market-based mechanisms, voluntary schemes (e.g. environmental management systems, environmental labelling, industry-government agreements). ▪ Potential impact of non-environmental legislation
Institutions with environmental responsibilities	▪ Identity, number and quality of institutions involved in policy making, legislation, planning, environmental protection, monitoring and enforcement. ▪ Level of coordination and decentralisation. ▪ Strength and capacity of individual institutions. ▪ Influence on other institutions. ▪ Good governance practices. ▪ Capabilities, means, functioning of environmental services. ▪ Major NGOs, institutes or other organisations involved in environmental management or policy.
Financial Arrangements	▪ Financial resource envelope of institutions mentioned above ▪ Funding modalities available/in use ▪ Potential sources of funding ▪ Existing financing gaps
Public participation	▪ Transparency and access to environmental information. ▪ Role of NGOs and civil society in environmental decision making. ▪ Effective participation. ▪ Participation by women and traditionally less represented groups. ▪ Access to justice in environmental matters
Environmental services and infrastructure	▪ Protected areas: number, areas, relevance, effectiveness of protection. ▪ Sanitation and waste treatment infrastructure. ▪ Disaster risk reduction systems. ▪ Emergency response mechanisms
Environmental monitoring system	▪ Relevance of selected indicators (with reference to MDG7). ▪ Measurement of the indicators: periodicity, reliability. ▪ Integration in the general development indicators

3. *Implications of climate change*

The CEP report should include an overall estimation of both vulnerability (identification of vulnerability factors) and capacity to respond to the consequences of climate variability and change.

Policies should be reviewed (e.g. climate-resilient development strategies, national adaptation programmes, low carbon development strategies, agricultural and food production policies and trade related policies), together with their institutional components. Sources of information may include National Communications under the United Nations Framework Convention on Climate Change (UNFCCC), and for the least developed countries National Adaptation Programmes of Action (NAPAs). Existing national or sub-regional studies on the expected effects of climate change should be considered including proposed responses, which may include technical, policy and institutional components.

This section of the report will highlight the effects of climate change in exacerbating existing pressures or impacts and the linkages between environmental degradation (ecosystem services) and vulnerability, with a focus on the poorest and most exposed social groups. The overall implications of climate change for focal areas of cooperation should be assessed, in particular the water supply and sanitation sector, disaster risk reduction and governance

sector, including any safeguards or need for additional analyses to ensure that investments are adapted to increasing climate variability and predicted climate change effects.

4. *Integration of environmental and climate change concerns into the main policies and sectors*

The assessment should examine the integration of environment and climate change in the overall development policy and in sector policies, particularly those that might be identified for EC support, taking into account the proposed focal area of water supply and sanitation of the future EDF 11 Country Strategy Paper as well as other options for future co-operation i.e. disaster risk reduction, governance, renewable energy and food security issues.

This section should examine whether Strategic Environmental Assessments (or similar assessments) are available for the national development strategy or poverty reduction strategy and for the sectors of interest. If such SEAs exist, they should be briefly described including the main recommendations. The main legislation and institutional arrangements and measures of the sector which address environmental issues, especially those identified in section (a) above, should be examined.

5. *Conclusions and recommendations*

The key aspects of the state and trends of the environment in the country, including policy, regulatory and institutional constraints and challenges, should be identified as clearly as possible. The implications of climate variability and climate change on vulnerability and adaptation strategies should also be included. These key aspects may be presented in a matrix, comparing environmental concerns and the main sectors or policies.

Based on a comprehensive assessment of available information and on consultations with stakeholders, conclusions and recommendations should be formulated on how the Commission and the partner government can best address identified environmental challenges (including climate-related ones) in the Country Strategy Paper, taking into account current cooperation and any pre-identified options for future cooperation (water supply and sanitation, disaster risk reduction, governance). Conclusions and recommendations should feed into the country analysis, response strategy and possibly the identification of focal cooperation sectors. They should address (but not necessarily be limited to) the following aspects:

- ✓ The need to mainstream climate change and environmental concerns by safeguards and complementary actions in other areas of cooperation, in order to address environmental constraints and opportunities as appropriate. Measures may include, for example, proposals for institutional strengthening and capacity building (including the enhancement of the regulatory framework and enforcement capacities) particularly in relation to environmentally sensitive sector programmes and budget support programmes. Opportunities may include supporting low-carbon development plans and programmes.
- ✓ Recommendations to ensure that environmentally sensitive projects and programmes are adapted to increasing climate variability and the anticipated effects of climate change, and can thus deliver sustained developmental benefits. Information gaps preventing this work from being accomplished should be identified.
- ✓ Opportunities for coordination on environmental issues with other donors, seeking to achieve complementarities and synergies in order to more effectively deliver

development objectives. A checklist for all donor projects in Lesotho should also be developed.

- ✓ Proposals for environmentally-relevant indicators to be used in the National Indicative Programme or to be considered during the formulation of cooperation actions. The proposed indicators should be chosen taking account of the availability of data and actual capacity to monitor their evolution. The report should mention whether the proposed indicators are included in the performance assessment framework of national (e.g. poverty reduction strategy) or sectoral strategies/programmes.

Individual recommendations should be clearly articulated and linked to the problems to be solved and grouped according to the sector or institutional stakeholder concerned. The relative priority of the recommendations and an indication of the challenges to their implementation should be given.

Any constraints to preparing the profile resulting from limited information should be described.

Work Plan

The work plan should include but not necessarily be limited to the following activities:

- ✓ Consultations with EC country desk officers and other relevant officials, EU Delegation, the national environmental authority and a selection of national and local authorities, officials in the water sector, key international donors, plus key national and international civil society actors operating in the environmental field.
- ✓ Review of key documents and reports, including (a list of key documents will be identified by the EU Delegation) relevant national documents (e.g. state of the environment reports); previous Country Environmental Profiles and/or Country Environmental Analysis; the current EC Country Strategy Paper(s); evaluation reports; existing environmental assessments of EC-funded projects and/or sector programmes (particularly those related to potential future focal sectors); environmental literature; environmental policies, legislation and regulations; environmental monitoring data; and environmental performance indicators.
- ✓ Field visits to sites of key environmental concern and (if possible) the organisation of a national workshop attended by national authorities, development partners, experts and representatives of civil society with the aim of clarifying and validating key environmental concerns.
- ✓ A workshop for up to 20 people towards the end of the contract to present the findings to key government and non-government stakeholders and the EU delegation.
- ✓ On the basis of the outlined work plan and time schedule given in these Terms of Reference, a detailed work plan should be proposed.

3. EXPERTISE REQUIRED

The proposed mission shall be conducted by a team of (two) senior experts who should have the following profile:

- ✓ Senior Expert I with at least 10 years wide experience in environment/climate issues including institutional/governance aspects; international environmental policies and management; renewable energies; mainstreaming climate change and environmental

concerns into policy; environmental assessment techniques (e.g. multi-criteria techniques, scenario analysis, surveying etc.) and experience in rapidly assessing information and developing recommendations. S/he would be the team leader.

- ✓ Senior Expert II with at least 10 years experience in the water and sanitation sector including experience of mainstreaming climate change/environmental/land protection concerns into the sector.

Previous working experience in the country or the region is requested for at least one team member;

- ✓ Experience in undertaking environmental analyses and preparation of development programmes is required.

- ✓ Familiarity of 1 expert with Commission guidance on programming, country strategies, project cycle management, policy mix and integration of environmental issues into other policy areas is required.

- ✓ Previous experience of the second expert of working in the water sector in Lesotho would be an asset;

- ✓ Experience of participatory planning processes and gender issues would be an advantage.

English will be the working language and (mother-tongue level fluency) in English is a pre-requisite. The final report must be presented in English.

The contract is a global price and therefore the contract amount will cover all fees and reimbursable expenditures related to the services rendered.

The EU team may be joined by additional consultants financed and contracted by Irish Aid who will work under the EU team leader.

4. LOCATION AND DURATION

It is foreseen that the assignment will be carried out during March – July 2012 in Lesotho.

Indicative plan of activities and man-days requirements:

	EXPERT 1 (TL)	EXPERT 2
Desk analysis, including briefing to the team leader in Lesotho	10	10
Field phase including travel and workshop	33	33
Report finalisation (draft)	3	3
Debriefing in Lesotho	1	1
Final report	3	3
Total days	50	50

The Commission may request further assistance from the consultants as a follow up this mission and as part of further preparations for the CSP 2014-2017. This is not covered by these ToR and if this is required with the agreement of NAO of the Government of Lesotho, the Commission will issue an addendum to the contract.

5. REPORTING

Many of the issues to be addressed in section 2 should be assessed using existing sources of information and key stakeholder perspectives. The report should make clear where existing material has been used and acknowledge sources. Every effort should be made to avoid copy/pasting large amounts of text. Information should be presented succinctly. A list of source materials should be compiled. Wherever possible the source materials should be handed over to the Delegation for future reference purposes.

The focus of the consultants' work should be on the conclusions and recommendations section with targeted and detailed advice for the EU delegation on how to tackle the environment and climate change in its next country strategy paper.

The results of the study should be presented in the Country Environmental Profile in the format given below.

The draft profile, in six hard copies (double-sided printing) and electronic version (Microsoft Word), should be presented to the National Authorising Officer (3 copies) and the EU Delegation (3 copies) by *31 May 2012* at the latest. Within four weeks, comments on the draft report will be received from the relevant authorities and the EUD. The consultants will take account of these comments in preparing the final report (maximum 45 pages excluding appendices).

The final report in English and six copies (double-sided printing) is to be submitted by *15 July 2012.*

Report format for a Country Environmental Profile (Maximum length (excluding appendices): 45 pages.)

The following text appears on the inside front cover of the report:
This report is financed by the European Union and is presented by (*name of consultant*) for the National Authorising Officer, Lesotho, and the European Union Delegation. It does not necessarily reflect the opinion of NAO or the European Union.

Structure of the report:

1. Summary
   The summary should succinctly and clearly present the key issues described in the profile following the order of headings 2 to 6 given below. The summary should not exceed 6 pages.

2. State of the environment, trends and pressures

3. Environmental policy, legislative and institutional framework
   3.1 Environmental policy
   3.2 Environmental legislation and institutional framework

4. Climate change implications

5. Integration of environmental concerns into the main policies and sectors

6. EU and other donor cooperation with the country from an environmental perspective

7. Conclusions and recommendations

8. Country Strategy Paper environmental annex summary

Comprising the main issues presented in sections 2 to 6 above (excluding section 7) in no more than 4 pages.

9. Technical Appendices
   I. Environmental maps of the country
   II. Reference list of environmental policy documents, statements and action plans, and other relevant technical information.

10. Other Appendices
    I. Study methodology/work plan (1–2 pages)
    II. Consultants' itinerary (1–2 pages)
    III. List of persons/organisations consulted with their affiliation and contact details (1–2 pages)
    IV. List of participants in workshop (if organised)
    V. List of documentation consulted (1–2 pages)
    VI. Curriculum vitae of the consultants (1 page per person)
    VII. Terms of Reference for the Country Environmental Profile

6. ADMINISTRATIVE INFORMATION

- No subcontracting
- Other authorized items to foresee under 'Reimbursable':
  - Provision for a 2 one-day workshops
  - Provision for in-country travel