Ministry of
Environment
& Forestry

KINGDOM OF LESOTHO

MINISTRY OF ENVIRONMENT AND FORESTRY

NATIONAL ADAPTATION PLAN (NAP)

Building Climate Resilience for Sustainable Development

2025

Table Contents

List of Figures

List of Tables

Acronyms and Abbreviations

AF	Adaptation Fund	LMS	Lesotho Meteorological Services
BSAP	Biodiversity Strategy and Action Plan	LoCAL	Local Climate Adaptive Living
BUR	Biennial Update Report	M&R	Monitoring and Reporting
CC	Climate Change	MEA	Multilateral Environmental Agreements
CCC	Climate Change Coordinator	MECC	Migration, Environment and Climate Change Strategy
CCTC	Climate Change Technical Committee	MEF	Ministry of Environment and Forestry
CCU	Climate Change Unit	NAP	National Adaptation Plan
CRM	Climate Risk Management	NAPA	National Adaptation Programme of Action
CSO	Civil Society Organisations	NAP-SDG iFrame	National Adaptation Plan - Sustainable Development Goals Integration Framework
DAE	Direct Access Entity	NC	National Communications
DRWS	Department of Rural Water Supply	NCCC	National Climate Change Committee
DWA	Department of Water Affairs	NCCP	National Climate Change Policy
EST	Environmentally Sound Technology	NDC	Nationally Determined Contribution
EWS	Early Warning System	NGO	Non-Governmental Organisation
GCF	Green Climate Fund	NUL	National University of Lesotho
GDP	Gross Domestic Product	ORASECOM	Orange-Senqu River Commission
GEF	Global Environment Facility	PA	Paris Agreement
GGA	Global Goal on Adaptation	SADC	Southern African Development Community
GHG	Greenhouse Gas	SDG	Sustainable Development Goal
GoL	Government of Lesotho	SF	Sendai Framework
INC	Initial National Communication	SNC	Second National Communication
IPCC	Intergovernmental Panel on Climate Change	TNC	Third National Communication
LCCC	Local Climate Change Coordinating Committee	UNCDF	United Nations Capital Development Fund
LDCF	Least Developed Countries Fund	UNFCCC	United Nations Framework Convention on Climate Change
LEG	Least Developed Countries Expert Group	WASCO	Water and Sewage Company
LHWP	Lesotho Highlands Water Project	WFP	World Food Programme
LLWSS	Lesotho Lowlands Water Supply Scheme		

FOREWORD

Lesotho is highly vulnerable to the impacts of climate change; its people, economy, and ecosystems are facing growing risks from recurrent droughts, floods, frost, storms, heavy snowfall, and other extreme weather events. These challenges threaten Lesotho's national development gains and compromise the well-being of current and future generations.

The National Adaptation Plan (NAP) provides a strategic framework towards addressing these risks and strengthen resilience across all sectors of society. It outlines medium- and long-term adaptation priorities that are firmly aligned with Lesotho's National Climate Change Policy (2017–2027), the National Strategic Development Plan, and international commitments under the Paris Agreement and United Nations Framework Convention on Climate Change (UNFCCC).

The NAP builds upon earlier efforts, including the National Adaptation Programme of Action (2007), while advancing a systems-based approach that integrates science, traditional knowledge, governance, and inclusive development centred on circular economic efforts. Central to this plan is the recognition that adaptation must benefit all Basotho—particularly women, youth, and vulnerable communities—who are most affected by climate change.

This plan is the result of broad consultation and collaboration with government institutions, civil society, academia, the private sector, and development partners. I, therefore, extend my sincere appreciation to all who contributed to this important process.

The NAP is a living document that will evolve as new information, resources, and innovations become available. Its successful implementation requires strong partnerships, sustained investment, and active participation by all stakeholders. Together, we can transform climate risks into opportunities for sustainable, resilient, and inclusive development.

With this plan, Lesotho reaffirms its commitment to protecting its people, safeguarding its natural heritage, and securing a climate-resilient future for generations to come.

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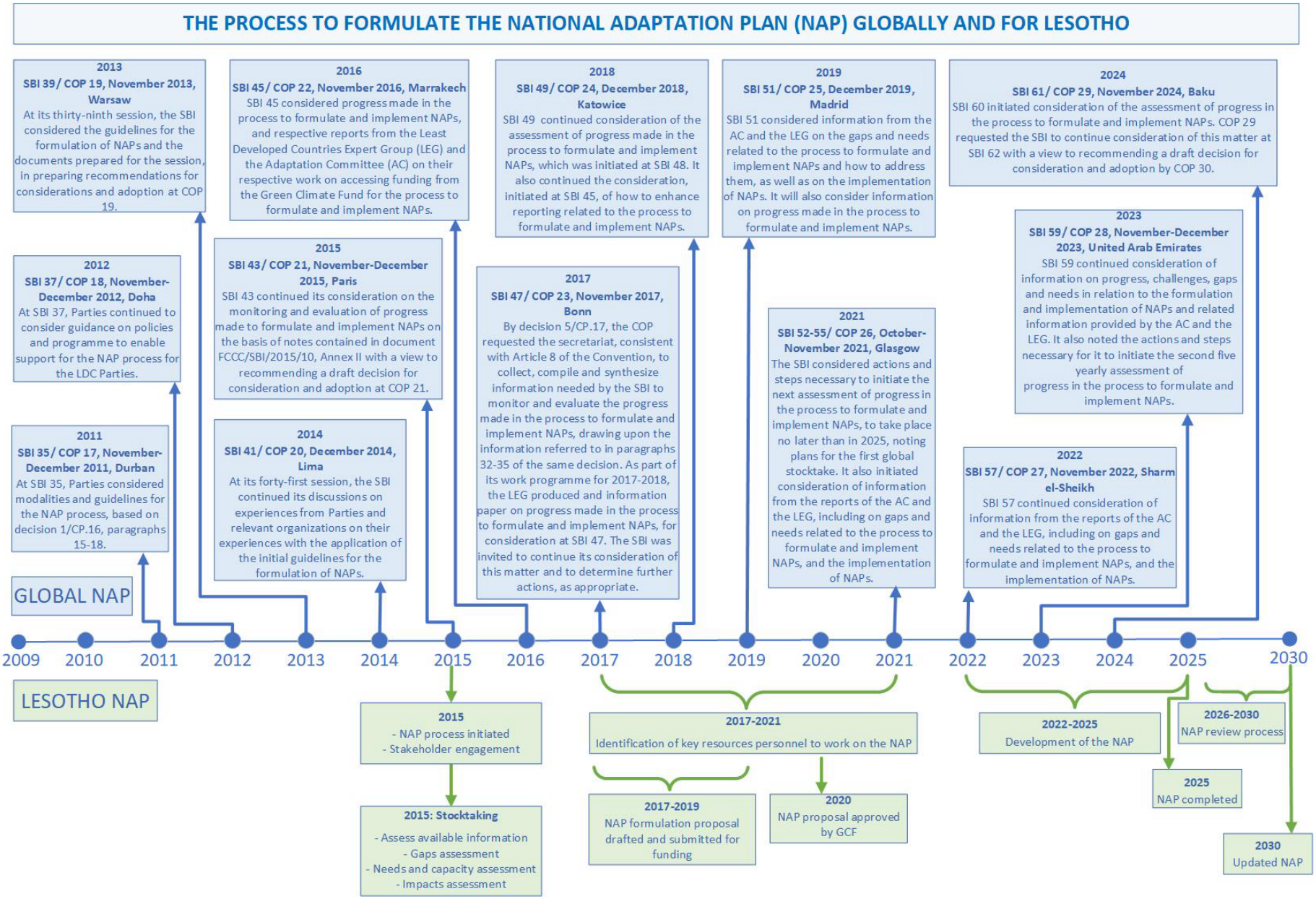
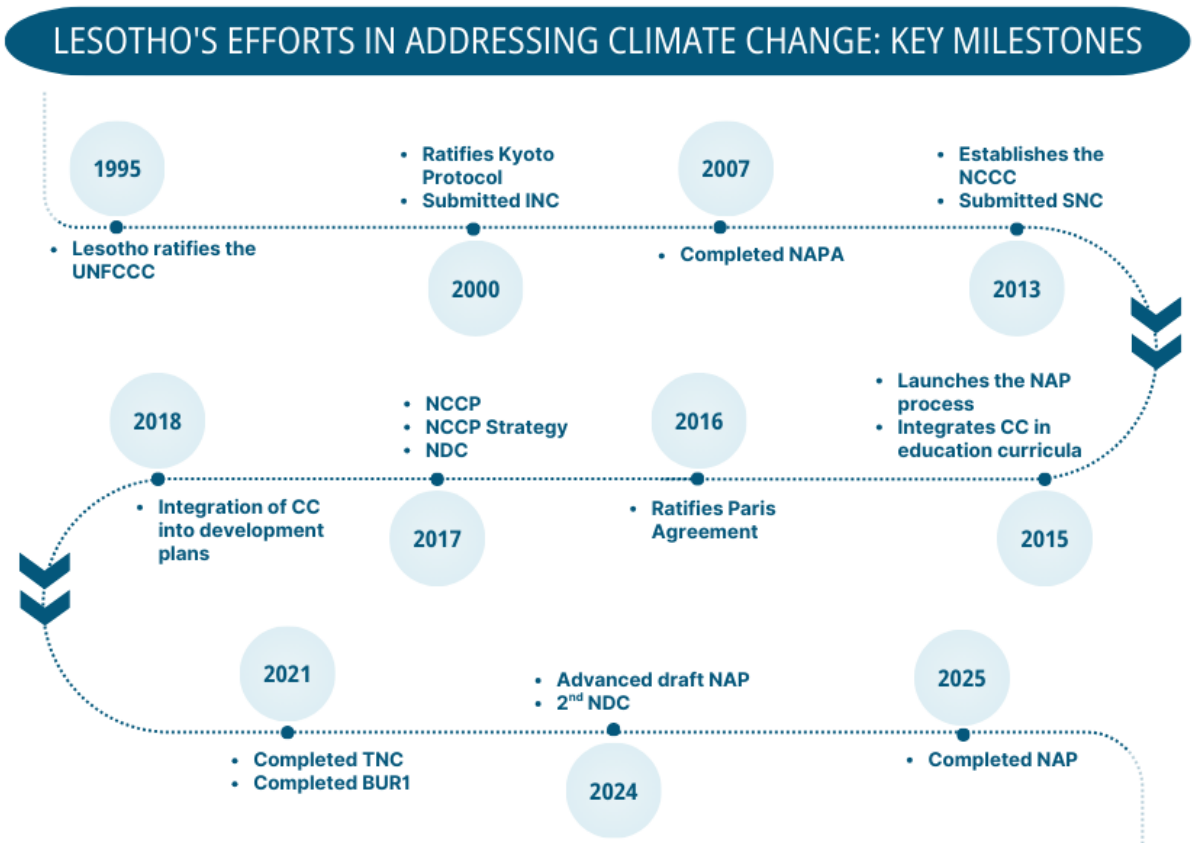
Hon. Letsema Adontsi
Minister of Environment and Forestry
Government of Lesotho


THE PROCESS TO FORMULATE THE NATIONAL ADAPTATION PLAN (NAP) GLOBALLY AND FOR LESOTHO
2013
SBI 39/ COP 19, November 2013, Warsaw
At its thirty-ninth session, the SBI considered the guidelines for the formulation of NAPs and the documents prepared for the session, in preparing recommendations for considerations and adoption at COP 19.
2016
SBI 45/ COP 22, November 2016, Marrakech
SBI 45 considered progress made in the process to formulate and implement NAPs, and respective reports from the Least Developed Countries Expert Group (LEG) and the Adaptation Committee (AC) on their respective work on accessing funding from the Green Climate Fund for the process to formulate and implement NAPs.
2018
SBI 49/ COP 24, December 2018, Katowice
SBI 49 continued consideration of the assessment of progress made in the process to formulate and implement NAPs, which was initiated at SBI 48. It also continued the consideration, initiated at SBI 45, of how to enhance reporting related to the process to formulate and implement NAPs.
2019
SBI 51/ COP 25, December 2019, Madrid
SBI 51 considered information from the AC and the LEG on the gaps and needs related to the process to formulate and implement NAPs and how to address them, as well as on the implementation of NAPs. It will also consider information on progress made in the process to formulate and implement NAPs.
2024
SBI 61/ COP 29, November 2024, Baku
SBI 60 initiated consideration of the assessment of progress in the process to formulate and implement NAPs. COP 29 requested the SBI to continue consideration of this matter at SBI 62 with a view to recommending a draft decision for consideration and adoption by COP 30.
2012
SBI 37/ COP 18, November-December 2012, Doha
At SBI 37, Parties continued to consider guidance on policies and programme to enable support for the NAP process for the LDC Parties.
2015
SBI 43/ COP 21, November-December 2015, Paris
SBI 43 continued its consideration on the monitoring and evaluation of progress made to formulate and implement NAPs on the basis of notes contained in document FCCC/SBI/2015/10, Annex II with a view to recommending a draft decision for consideration and adoption at COP 21.
2017
SBI 47/ COP 23, November 2017, Bonn
By decision 5/CP.17, the COP requested the secretariat, consistent with Article 8 of the Convention, to collect, compile and synthesize information needed by the SBI to monitor and evaluate the progress made in the process to formulate and implement NAPs, drawing upon the information referred to in paragraphs 32-35 of the same decision. As part of its work programme for 2017-2018, the LEG produced and information paper on progress made in the process to formulate and implement NAPs, for consideration at SBI 47. The SBI was invited to continue its consideration of this matter and to determine further actions, as appropriate.
2021
SBI 52-55/ COP 26, October-November 2021, Glasgow
The SBI considered actions and steps necessary to initiate the next assessment of progress in the process to formulate and implement NAPs, to take place no later than in 2025, noting plans for the first global stocktake. It also initiated consideration of information from the reports of the AC and the LEG, including on gaps and needs related to the process to formulate and implement NAPs, and the implementation of NAPs.
2023
SBI 59/ COP 28, November-December 2023, United Arab Emirates
SBI 59 continued consideration of information on progress, challenges, gaps and needs in relation to the formulation and implementation of NAPs and related information provided by the AC and the LEG. It also noted the actions and steps necessary for it to initiate the second five yearly assessment of progress in the process to formulate and implement NAPs.
2011
SBI 35/ COP 17, November-December 2011, Durban
At SBI 35, Parties considered modalities and guidelines for the NAP process, based on decision 1/CP.16, paragraphs 15-18.
2014
SBI 41/ COP 20, December 2014, Lima
At its forty-first session, the SBI continued its discussions on experiences from Parties and relevant organizations on their experiences with the application of the initial guidelines for the formulation of NAPs.
2022
SBI 57/ COP 27, November 2022, Sharm el-Sheikh
SBI 57 continued consideration of information from the reports of the AC and the LEG, including on gaps and needs related to the process to formulate and implement NAPs, and the implementation of NAPs.
GLOBAL NAP
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2030
LESOTHO NAP
2015
- NAP process initiated
- Stakeholder engagement
2015: Stocktaking
- Assess available information
- Gaps assessment
- Needs and capacity assessment
- Impacts assessment
2017-2021
Identification of key resources personnel to work on the NAP
2017-2019
NAP formulation proposal drafted and submitted for funding
2020
NAP proposal approved by GCF
2022-2025
Development of the NAP
2025
NAP completed
2026-2030
NAP review process
2030
Updated NAP

Executive Summary

Lesotho, a lower-middle-income country with a population of about 2.3 million, is one of the most unequal countries in the world. Poverty is widespread, persistent, and particularly severe in rural areas, with nearly half of the population living in poverty and almost a quarter below the food poverty line. The country is highly vulnerable to natural hazards such as floods, droughts, food insecurity, and disease outbreaks. Climate change is worsening these risks, impacting major economic sectors and human well-being. The National Adaptation Plan outlines strategies for building resilience against these increasing threats, drawing from past experiences with natural hazards. Climate variability affects multiple interconnected systems and sectors, necessitating comprehensive adaptation measures for a more secure future. Climate change is exacerbating the risk of existing natural hazards – including flooding and droughts – affecting major economic sectors and human well-being. Building from past experience with natural hazards to prepare for increased risk in the future. The National Adaptation Plan sets out how Lesotho will build resilience for an uncertain future.

Lesotho has established a strong foundation for climate change adaptation through its initial efforts and key milestones. Now, it is essential to build on this foundation by enhancing coordination, securing funding and investments, and strengthening capacity across all stakeholders, including researchers, policymakers, implementers, and the public. To ensure inclusive and effective adaptation actions, gender mainstreaming is of priority and special considerations afforded to youth and other vulnerable groups.



Lesotho's first NAP aims to:

- Synthesize assessments of climate impacts, vulnerability and risk building upon relevant past work under specific programmes in important sectors such as water;
- Identify and communicate priority adaptation needs for the country to contribute towards medium to long-term goals and objectives for adaptation for the country;
- Define a strategy for financing to implement the priority adaptation needs through projects and policies while ensuring synergy and complementarity with ongoing activities;
- Capture main capacity gaps and needs for advancing adaptation planning and implementing at all levels, with proposals for addressing them;
- Summarize ongoing efforts in support of the NAP process including a work plan for subsequent steps to be undertaking with the newly acquired funding from the GCF Readiness Support window;
- Introduce elements of a monitoring and evaluation system to be used to assess progress in adaptation and the NAP process over time;
- Assemble details about adaptation to inform the update to the NDC/Adaptation Communication in future.

This NAP incorporates the best available climate change science regionally and nationally, along with the latest methodologies and support mechanisms within the broader climate finance landscape. It aligns with the Global Goal on Adaptation (GGA) under Article 7 of the Paris Agreement by identifying key systems for adaptation, applying advanced risk assessment approaches, and ensuring synergy with NDCs and adaptation communications. This approach aims to enhance adaptive capacity, strengthen resilience, and reduce vulnerability to climate change, contributing to the collective adaptation efforts under the Paris Agreement.

The following sectors and systems have been identified as key priorities for adaptation actions in Lesotho:

i. Food and agriculture (including crop production and livestock production),
ii. Economic activities (including manufacturing and trade, tourism, poverty reduction and livelihoods),
iii. Water resources (including catchments and wetlands, water supply),
iv. Critical infrastructure (Transport system; Energy system (hydro-power generation, grid distribution system, access); Human settlements and living spaces)
v. Ecosystems and biodiversity (mainly rangelands, forests, alpine/mountain system),
vi. Socio-cultural system (a strong "Indigenous Peoples" customary system also a focus on special vulnerable groups of youth, gender),
vii. Health services,
viii. Knowledge and information systems,
ix. Governance system.

The main **adaptation goals** of the Lesotho NAP, **in line with the National Climate Change Policy of 2017** are:

The Lesotho National Adaptation Plan (NAP) has 12 objectives designed to enhance the country's resilience to climate change across various sectors. These objectives aim to substantially **reduce the adverse effects of climate change on economic activities** in manufacturing, trade, and tourism, thereby promoting poverty eradication and sustainable livelihoods through adaptive social protection measures. The NAP also focuses on **achieving climate-resilient food and agricultural production**, ensuring equitable access to adequate food and nutrition for all. It seeks to secure a **reliable water supply** for industry, agriculture, and households, and improve climate-resilient sanitation systems. **Critical infrastructure, especially in transportation, will be designed to withstand climate impacts**, ensuring continuous essential services. The plan aims to **increase the resilience of human settlements and housing** and **energy systems** and **reduce climate impacts on ecosystems** through ecosystem-based adaptation, nature-based solutions, and conservation efforts. Furthermore, it focuses on **protecting biodiversity** by conserving genetic diversity of important species and **preserving cultural heritage** through adaptive strategies informed by traditional knowledge. The NAP also **prioritizes protecting human well-being by promoting climate-resilient health services** to reduce climate-related morbidity and mortality, particularly among vulnerable groups. To support these goals, the NAP emphasizes **strengthening research, policy development, skills training, and ICT application** for sustainable growth, while **improving governance systems to facilitate effective adaptation**, manage migration, and protect the rights of vulnerable groups.

The NAP process was initiated in 2015 with a stakeholder engagement workshop where stocktaking was undertaken to assess the available information on climate change, its impacts, vulnerability of people and ecosystems, and adaptation to climate change impacts. Key resource stakeholders and persons were identified to work on the NAP from 2017 through to 2021, the target year for having the draft NAP in place. However, several barriers have impeded progress towards producing a NAP timeously, these include limited: i) institutional capacity at national and district levels to implement and monitor the NAP process; ii) coordination and knowledge-sharing between relevant institutions and stakeholders; iii) information available to inform adaptation planning and decision-making; iv) integration of climate change issues into policies and development plans; and v) adaptation funding. This NAP has been developed through the Open NAP initiative of the LEG, in anticipation of GCF Readiness and Preparatory Support funding to advance the NAP process, which was subsequently approved in 2022. The GCF funding will be used to continue the process and will support assessments as well as development of project proposals to implement the NAP.

The climate risks and vulnerabilities are presented for the key sectors and systems identified:

Food and agriculture: Various climate hazards, including drought, frost, hail, heavy rains, delayed rainy seasons, and extreme temperatures, negatively impact agricultural output, devastating livelihoods and leaving half of the population regularly facing food insecurity. Livestock production and health are highly vulnerable to both current and future climate changes due to their dependence on ecological resources. Currently, poor rangeland and limited water availability for livestock are leading to deteriorated livestock conditions and drought-related deaths. Climate impacts such as heat stress, cold stress, drought, and feed shortages further reduce the quality and quantity of livestock products.

Economic activities: Winter tourism is facing challenges due to rising temperatures and changing precipitation patterns. Droughts in rural areas lead to loss of livelihoods and increased poverty, as most rural inhabitants depend on agriculture, which is highly vulnerable to climate variability. Additionally, heavy rainfalls that damage access roads hinder trade, further impacting the economy.

Water resources: High temperatures, droughts, and heavy rains pose significant threats to water availability and quality in Lesotho. The urban water supply heavily relies on the Senqu/Orange River basin, with projections showing increased water stress by 2019 and potential shortages by 2062. These changes could result in ecological damage, decreased agricultural productivity, and adverse effects on rural communities that depend on groundwater. High-altitude wetlands, which help stabilize stream flow, mitigate flooding, reduce sediment loads, and absorb nutrients, are currently drying up, impacting the consistency of perennial streams. The anticipated rise in temperatures and decrease in precipitation are expected to substantially affect wetland biodiversity, diminishing their capacity to provide vital ecosystem services.

Critical infrastructure – transport systems: The Lesotho highlands suffer from inadequate road infrastructure compared to the lowlands and foothills, resulting in 75 percent of the country being isolated from critical facilities and public services. Many residents depend on river crossings, which have become increasingly dangerous due to frequent flash floods. Heavy snowfall and torrential rains often damage roads and bridges, further isolating rural highland communities. The absence of proper road and rail networks also impacts key economic sectors such as mining and tourism, ultimately affecting the country's GDP.

Critical infrastructure – energy: Rising temperatures and frequent droughts threaten hydropower generation by impacting power transmission and fuel transfers. Long-distance transmission lines are particularly vulnerable to variable weather conditions, land movements, and erosion. However, Lesotho benefits from an average of 300 cloud-free days per year and a favourable wind regime, presenting significant potential for wind and solar energy development. Efforts are underway to implement energy policies that shift the balance toward environmentally friendly practices and ensure energy security for all. Expanding beyond hydropower to explore wind and solar energy will reduce dependency on fossil- and bio-fuels.

Critical infrastructure – human settlements and living spaces: Urban areas including Maseru City are highly affected by flooding. With the rural-urban migration resulting in urban sprawls into flood prone areas, more people are exposed to flash flooding. This will likely increase fatalities and displacement due to climate hazards. In rural areas, housing infrastructures are prone to destruction during extreme

weather events such as hailstorms and strong winds as they are poorly constructed. These conditions make it crucial to invest in climate resilient housing infrastructures for the safety of Basotho.

Ecosystems and biodiversity: Higher temperatures, poor grass cover, frequent droughts, rainstorms, and strong winds in rangelands and forests are likely to lead to veld and forest fires. This will exacerbate soil loss, surpassing levels recorded in the late 1990s, altering biodiversity, and putting the country's ecosystem and economy under increased stress. Climate warming has caused a biome shift in the alpine regions, allowing low-elevation vegetation to move up the slopes as conditions become more favourable for their growth. Consequently, species endemic to the alpine regions are now endangered.

Socio-cultural: The natural heritage and culture of the Basotho are intricately linked to their environment, affecting their housing, clothing, medicine, and other traditions. However, the relationship between these cultural aspects and climate change impacts on ecosystem goods and services remains nuanced and not clearly defined.

Health: Warming climate often results in several health consequences, including the spread of tropical diseases, increased incidence of respiratory infections like tuberculosis, and a rise in waterborne diseases such as typhoid. On the other hand, severe winter conditions could exacerbate acute respiratory infections, especially in rural areas where poverty and energy scarcity are prevalent. Drought conditions may reduce dietary diversity and overall food consumption, leading to micronutrient deficiencies. The relationship between climate and human health is yet to be in Lesotho, this will require a rational approach to assessing climate change impacts on health which will prioritize ongoing research and monitoring of disease patterns in relation to climate and environmental factors, acknowledging a range of potential outcomes.

Knowledge and information: Lesotho had made tremendous efforts to improve national literacy, however, only just over half of women and 40 percent of men in Lesotho have attended at least some secondary school, and only 9 percent of women and 8 percent of men have more than a secondary education. Poor public awareness and education services undermine adaptation efforts, making it crucial to mainstream climate change education into curricula at all levels and target the private sector. Integrating ICT will aid in monitoring, information exchange, and raising public awareness.

Governance: Local authorities are vital in promoting climate change adaptation and building resilience, as they can best identify and implement responses that meet local needs. However, for many districts in Lesotho, these authorities lack the technical capacity and resources for effective adaptation planning and implementation, limiting the country's ability to address climate change. Therefore, enhancing institutional arrangements for climate change risk management is of utmost importance to ensure proper linkages and collaboration in action design and implementation.

The NAP is being framed as a national programme for adaptation taking a systems approach to identify priorities spanning all levels of government, spatial scales and temporal scales from the short-term to the long-term. The priorities will cover capacity-building, maintaining the NAP process and concrete adaptation actions, by all stakeholders and actors. As such, the NAP will be implemented as a programme, with projects contributing to components of the programme.

An initial set of projects has been compiled based on the sectors and systems above and considering existing strategies and plans related to climate change adaptation from efforts in different sectors. These projects have been selected for implementation based on national stakeholder consultations and government priorities.

The NAP complements the NCCP in driving towards the establishment of a coherent and effective adaptation programme for Lesotho. For updating Lesotho's NAP the following steps will be undertaken:

- Through the GCF Readiness and Preparatory Support Project, institutional arrangements will be formalized by establishing a formal legal mandate. Ownership at local levels will also be ensured.
- Sectoral impact chain analysis and vulnerability/risk assessments will be carried out. Improved risk and vulnerability assessments will provide evidence-based linkages between the physical processes of climate change to the direct and indirect impacts on different people and places.
- A stocktaking exercise will be carried out to measure progress on the priorities and programmes that have been identified. Based on the impact chain analysis and stakeholder consultations, the NAP process will generate adaptation options for the identified vulnerabilities to supplement the existing priorities that have been identified. This will include projects and actions to integrate climate change adaptation considerations.
- Progress reports on the implementation of the above activities will be produced annually and reported to the NCCC and through national adaptation communication instruments.

1. National context

1.1. Background

Lesotho's Constitution — adopted in 1993 — explicitly states that "*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 all citizens a sound and safe environment for health and well-being*". In line with the Constitution, the Government of Lesotho (GoL) has enacted several policies, strategies and plans to safeguard its environment and aid social development. In 1992, the GoL became party to the United Nations Framework Convention on Climate Change (UNFCCC) and subsequently submitted its Initial and Second National Communications in 2000 and 2013, respectively. Lesotho also ratified the Kyoto Protocol in 2000 and signed the Paris Agreement in 2016.

Lesotho developed its Biodiversity Strategy and Action Plan (BSAP) in 2000, aimed at protecting the country's biodiversity, while supporting the sustainable use of natural resources. However, the environment continues to be increasingly threatened by climate change as well as overexploitation as Lesotho is yet to fully integrate climate change into development planning. To identify and prioritize urgent national adaptation needs and implement effective measures to manage the adverse effects of climate change, Lesotho prepared its National Adaptation Programme of Action (NAPA) in 2007.

Other, more recent, policies, plans and strategies — for example, the Strategic Development Plan 2012/13- 2016/17 — do refer to climate change, suggesting that the GoL recognises the need for climate change integration, but has not yet updated all relevant sectoral policies, plans and strategies. This is primarily because climate change is an emerging challenge, so there is limited knowledge within Lesotho on how climate change can be integrated into sectoral policies, plans and strategies. Although climate change knowledge exists in some ministries, there is currently limited cross-sectoral collaboration, which is hindering the country's progress towards effective adaptation planning. To enhance cross-sectoral collaboration for climate change matters, the GoL established the National Climate Change Committee (NCCC) in 2013.

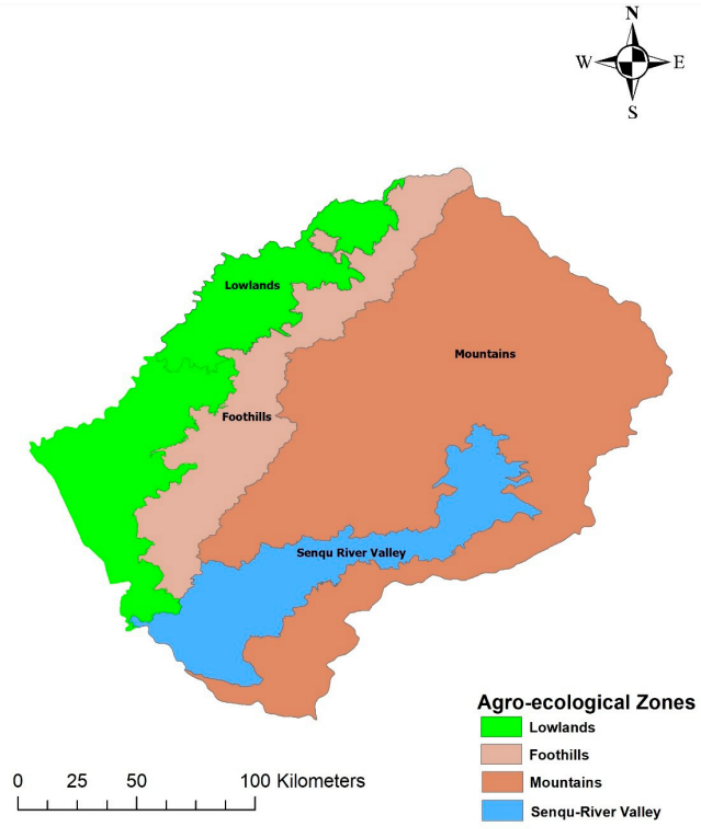
In 2015, the country began formulating and implementing National Adaptation Plans (NAPs) to address its adaptation needs. The NAP seeks to build on the NAPA, the National Climate Change Policy (NCCP), and other related strategies by assessing opportunities for effective climate change adaptation actions.

1.2. Geographical profile

Lesotho is located in the south-eastern part of Southern Africa; at approximately 28°S and 31°S Latitude and 27°E and 30°E Longitude. It occupies a land area of 30,355 km^2, a north-south extent of about 230 km and a maximum width of about 210 km, with elevation ranging from 1,388 m to 3,482 m. Lesotho is a landlocked country surrounded by the Republic of South Africa. Lesotho has a continental temperate climate characterized by four distinct seasons: spring, summer, autumn, and winter; its temperate[1] climate with sub-alpine characteristics distinguishes it from other southern African countries[2]. The average temperature ranges between -10°C in winter and 30°C in summer[3]. The country receives most of

[1] LMS (2017) NDC
[2] Lesotho NAP Stocktaking Report (2015)
[3] LMS (2017) NDC

its highly variable rainfall between the months of October to April, with an average of 786.11mm per annum[4]. The lowest average annual rainfall occurs in the Senqu River Valley (450 mm) and the highest in the north-eastern mountain zone (1,200mm)[5].



The Mountains with 59 percent of the land area, and the elevation beyond 2000 m above mean sea level. Deep valleys and rivers, clean water that supports some indigenous aquatic species run through there.

The Foothills occupy 15 percent of the land area and lie between 1800 and 2000 m above mean sea level. They host some microclimates that favour horticulture.

The Senqu River Valley lies between 1,388 and 2,000 m above mean sea level occupying 9 percent of the land area and is the driest region as it is in the rain-shadow of Maluti and Drakensberg Mountain ranges.

The Lowlands occupy the remaining 17 percent of the land and lies between 1400 and 1,800 m above mean sea level. The Southern region shows high vulnerability to climate change with poorer soils, the rampant damage to the ecosystem and geo-morphological conditions and the diminishing ability to support agriculture in general. The Northern lowlands possess fertile soils and thus are the main food producing region of the country.

Figure 1: *Agro-ecological Zones in Lesotho (Source: Lesotho Third National Communication, 2021).*

1.3. National circumstances

Political: Lesotho is a sovereign democratic kingdom led by the King as the constitutional monarch and Head of State. The government comprises three arms: the Legislature, the Executive, and the Judiciary. The Legislature has two houses: the Senate, with hereditary chiefs and King-nominated members, and the National Assembly with 120 elected members. Lesotho is a member of the United Nations, Commonwealth, African Union, and the Southern African Development Community (SADC).

Legislative: The National Climate Change Policy 2017-2027 sets the climate change agenda, aligned with Vision 2020 and the National Strategic Development Plan. It informs adaptation strategies to mitigate climate change impacts, with the 2017 Implementation Strategy serving as the policy's framework. A broader legal and regulatory framework is detailed in section 3.

[4] World Bank, CCKP, 2021
[5] LMS (2017) NDC

Population: Over a quarter of the population faces high levels of acute food insecurity and requires humanitarian action to reduce food gaps, protect and restore livelihoods, and prevent acute malnutrition[6]. The population of Lesotho was estimated at 2,330,318 in 2023 and estimated to be 2,898,369 by 2050[7]. The rural population's current annual increase is 0.4 percent whereas for urban population it is 2.6 percent and as a result, by 2050, the rural population is expected to be 53.6 percent compared to the 46.4 percent of the urban population[8].

Gender Equality: While the Land Act 2010 grants equal land rights to women and men, customary law still treats women as minors, limiting their land ownership and participation in agriculture. Women, who make up about 30% of the rural extreme poor, are more vulnerable to climate risks. Quotas have increased women's representation in Parliament, Cabinet, and local councils, and women now participate more in education than men. However, cultural barriers still hinder their economic and political empowerment, and maternal health remains a challenge.[9] In rural areas, boys often leave school early to herd livestock, exposing them to climate-related hazards and making them highly vulnerable. Adaptation measures must therefore apply a strong gender lens to leave no one behind.

Economic: Lesotho's economy is closely tied to regional and international partners. While it saw growth in the early 2000s, economic performance has declined since the late 2010s, with GNI per capita contracting by 1.2% annually.[10] The economy has been in recession since 2017, worsened by natural disasters, political instability, and COVID-19. Real GDP contracted by 3.1% in 2017, 1.5% in 2018, 0.8% in 2019, and 5.6% in 2020.[11] The country's economy is primarily based on four sectors, namely: water, manufacturing, mining, and agriculture.[12] The Lesotho Highlands Water Project is a major source of foreign income, and green energy projects are expected to boost the water and electricity sectors.[13] The government also aims to support the tertiary sector through financial inclusion initiatives.

Poverty and livelihoods: Poverty reduction has mainly occurred in urban areas, while rural and mountainous regions, home to 58% of the population, remain the poorest. The unequal distribution of poverty is linked to factors such as human capital, economic opportunities, access to services, and vulnerability to natural disasters. The COVID-19 pandemic, along with price inflation and climate shocks, has halted poverty reduction, with poverty rising to 35.8% in 2021 and slightly decreasing to 35.3% in 2022.[14] The unemployment rate is 22.5%, with youth unemployment at 29.1%, and the expanded unemployment rate, including discouraged job seekers, stands at 38.3%.[15]

Health: Lesotho faces significant malnutrition challenges, particularly among children aged 2-3 years, with a stunting rate of 34.5%.[16] Over half of children under 5 suffer from micronutrient deficiencies, primarily in iron and vitamin A. Nearly half of children aged 6 to 59 months have iron deficiency anaemia, leading

[6] World Food Programme (2023) Lesotho - Country Profile Brief
[7] World Bank (2024) Health Nutrition and Population Statistics
[8] Ibid.
[9] Lesotho NAP Stocktaking Report (2015)
[10] World Bank (2023) Lesotho CPF FY24-28
[11] Ibid.
[12] LMS (2017) NDC
[13] Lesotho NAP Stocktaking Report (2015)
[14] World Bank (2023) Lesotho CPF FY24-28
[15] Bureau of Statistics, Lesotho (2021) Labour Force Survey Report 2019
[16] World Food Programme (2024)

to stunted development without proper supplementation. Gender inequality exacerbates the issue, with 28% of women aged 15 to 49 anaemic, 51% of children anaemic, 15% of infants born with low birth weight, and 34.6% of children under 5 stunted, higher than the Sub-Saharan Africa average of 31%.[17]

Environment: Lesotho's land is dominated by rugged terrain, with 10.1% arable land, 65.9% permanent pasture, 1.63% tree cover, and 22% other areas.[18] Forests, though small and under threat from deforestation, provide essential resources like fuelwood and construction materials. Environmental degradation, including severe soil erosion, hinders crop production and is worsened by droughts, rapid population growth, and unsustainable practices. Overstocking has led to excessive water runoff, flash flooding, and erosion, resulting in a loss of agricultural land and biodiversity. Approximately 4.5 million tons of soil are lost annually, reducing productivity.[19] Economic activities are mainly confined to the lowlands and foothills, while the mountains are suitable for grazing and hydropower development.

Technological: Environmentally sound technologies (ESTs) are crucial for developing countries to mitigate climate change, as emphasized by the UNFCCC. The UNFCCC calls for promoting, facilitating, and financing the transfer of these technologies. While Lesotho has begun identifying and developing ESTs for sustainable development and climate adaptation, barriers to technology transfer persist in some sectors, requiring external support to accelerate climate resilience efforts.[20,21]

2. Vision, goals and objectives

Lesotho's Vision:
To have a well-adapting country that achieves, including through necessary transformations, its medium to long-term sustainable development goals in the context of the changing climate under at least the 1.5° C warming future.

The main **adaptation goals** of the Lesotho NAP, **in line with the National Climate Change Policy of 2017** are:

- Progress towards **reducing vulnerability to climate change by enhancing adaptive capacity** including by reversing environmental/land degradation. promoting sustainable use of resources while utilizing low-carbon development opportunities;
- **Support all stakeholders in managing climate risk comprehensively** from identification, mainstreaming and implementation of appropriate adaptation measures to addressing climate change impacts;
- **Promote climate-resilient, social, economic and environmental development** that is compatible with, and mainstreamed into, national sustainable development planning and national budget-setting processes, while promoting synergy with mitigation measures;
- **Strengthen a framework that promotes efficient, effective and just climate change governance**, strong international cooperation, capacity building, research and systematic observations, clean technology development, transfer and use, education, training and public awareness and

[17] Ibid.
[18] LMS (2000) Lesotho's Initial National Communication
[19] Ibid.
[20] Mhlanga (2004)
[21] LMS (2017) NDC

financing in a way that also benefits the most vulnerable through the implementation arrangements to be defined in the NAP.

The **specific adaptation objectives** of the Lesotho NAP mapped to the key sectors and systems above are:

1. Substantially reducing the adverse effects of climate change on **economic activities** in manufacturing, trade, and tourism to promote poverty eradication and sustainable livelihoods including by promoting the use of adaptive social protection measures for all.
2. Make progress towards **climate-resilient food and agricultural** production and supply and distribution of food (crops, livestock, fisheries), and equitable access to adequate food and nutrition for all.
3. Make progress towards a climate-resilient **water supply** for industry, transboundary trade, agriculture, and climate-resilient **sanitation** and while ensuring access to safe and affordable potable water for all households.
4. Designing **climate-resilient infrastructure**, and increasing the resilience of infrastructure, especially in **transportation**, to climate change impacts to ensure basic and continuous essential services for all and **minimizing climate-related impacts** on infrastructure.
5. Increasing the **resilience of human settlements** including their infrastructure to climate change impacts to ensure basic and safe living spaces and housing for all and **minimizing climate-related impacts** on human settlements.
6. Enhance the climate resilience of **energy systems** to safeguard economic development and human well-being.
7. Reducing climate impacts on **ecosystems** and accelerating the use of ecosystem-based adaptation and nature-based solutions, including through their management, enhancement, restoration and conservation and the protection of forests and rangelands, inland water and alpine/mountain, ecosystems.
8. Reducing climate impacts on **biodiversity** through enhanced nature conservation and use of appropriate technologies in conserving and preserving genetic diversity of unique and important crop, plant, and wildlife species.
9. Protecting **cultural heritage and cultural systems** from the impacts of climate-related risks by developing adaptive strategies for preserving cultural practices and heritage sites guided by traditional knowledge, Indigenous Peoples' knowledge and local knowledge systems.
10. Protecting human-wellbeing and safety and attaining resilience against climate change related health impacts, promoting **climate-resilient health** services, and significantly reducing climate-related morbidity and mortality, particularly in the most vulnerable communities and groups (youth, elderly, women).
11. Strengthen **research and policymaking and product development, skills** development, and effective application of ICT to ensure **sustainable, inclusive and just growth**.
12. Improve **governance systems** to facilitate and enable effective adaptation, including through improved public financial management, well-managed **migration,** and **protection of civil and political rights of vulnerable groups**, in the face of a changing climate.

This NAP incorporates the best available climate change science regionally and nationally, along with the latest methodologies and support mechanisms within the broader climate finance landscape. It aligns with the Global Goal on Adaptation (GGA) under Article 7 of the Paris Agreement by identifying key systems for adaptation, applying advanced risk assessment approaches, and ensuring synergy with NDCs and

adaptation communications. This approach aims to enhance adaptive capacity, strengthen resilience, and reduce vulnerability to climate change, contributing to the collective adaptation efforts under the Paris Agreement.

3. Existing regulatory and policy frameworks supporting climate change adaptation

Climate change continues to pose serious challenges on all aspects of development, and there is a broad need to integrate climate change considerations in development planning and decision-making, to improve adaptative capacity and resilience. Climate change adaptation policies and programmes, including implementing capacity, are needed across all systems.

The following policies and frameworks amongst others represent the nation's comprehensive approach to climate change adaptation:

The Lesotho Vision 2020 which was adopted in 2004, highlights a "**healthy and well-developed human resource base**", a "**strong economy**", a "**well-managed environment**", and "**well-established technology**" which all broadly speak to the goals of the NAP as well.

The **National Adaptation Programme of Action (NAPA)** (2007) identified gaps primarily concentrated in the southern districts of Lesotho, characterized by sectoral and zone-based fragmentation due to disparate implementation strategies among various entities. It also highlighted limitations in trans-regional adaptation capacity and multi-sectoral connectivity over the long term. Consequently, the NAP aims to rectify these deficiencies by adopting a more systematic approach that enhances interconnectedness within both the biophysical and socio-economic development spheres.

Lesotho's **Nationally Determined Contribution (NDC)** (2017) underscores the importance of integrating adaptation into national policies and development plans to build resilience, reduce vulnerability, and achieve sustainable development goals in the face of climate change challenges. The NDC highlights strategies for both climate change mitigation and adaptation across various sectors crucial to its socio-economic stability. It also prioritizes conducting comprehensive vulnerability assessments to identify climate risks and inform adaptation planning. Key sectors like water resource management are targeted to enhance resilience against droughts and irregular rainfall patterns, critical for sustaining agriculture, food security, and economic stability. Disaster risk reduction measures are also pivotal, aiming to bolster preparedness and response capacities against extreme weather events exacerbated by climate change. Additionally, the NDC promotes ecosystem-based adaptation approaches, recognizing the role of natural ecosystems in buffering climate impacts. Capacity building and institutional strengthening are integral components, aimed at improving governance frameworks and ensuring effective implementation of adaptation strategies at all levels.

The **Lesotho National Climate Change Policy** (NCCP) (2017-2027) emphasizes adaptation and climate risk reduction as crucial pillars for socio-economic and environmental resilience, aiming to prevent loss and damage. It highlights sectors such as **water, agriculture, food systems, early warning, energy, land use, health, and biodiversity** as pivotal for achieving climate resilience. The NAP aligns with the goals and objectives of the NCCP which sets the climate change agenda in Lesotho.

To effectively implement the NCCP, a **National Climate Change Implementation Strategy** (NCCPIS) (2017) has also been developed. The strategy establishes action guidelines for mainstreaming climate change

into key socio-economic sectoral plans and programmes while safeguarding environmental integrity and sustainable development in Lesotho. The NCCP also serves as a foundation for other national strategies and plans, including the **National Strategic Development Plan (NSDP II) 2018/19-2022/23**. The NSDP II acknowledges climate change as a strategic challenge affecting land quality and intensifying extreme weather events like droughts, heavy rains, floods, winds, frosts, hail, and snowstorms, necessitating strategic responses to mitigate impacts on agriculture, food security, poverty, and vulnerability. It also takes cognizance of the importance of mainstreaming of climate change adaptation and mitigation in all socio-economic sectors as these are crucial for economic growth. Aligned with the **African Union Agenda 2063**, **Regional Indicative Strategic Development Plan**, and **Sustainable Development Goals (SDGs) 2030 Agenda**, the NSDP II operationalizes **Vision 2020** goals while setting the stage for Lesotho to implement and mainstream a National Adaptation Plan (NAP). This strategic framework, coupled with the **National Resilience Strategic Framework 2017-2030** and **Disaster Risk Management Bill 2020** aligning with the **Sendai Framework**, positions Lesotho to effectively address climate change adaptation and monitor progress towards resilience goals.

These policies and strategies broadly highlight objectives which seamlessly align with the NAP objectives, creating a unified approach to sustainable development and resilience against climate change in Lesotho. Deepening democracy and respect for human rights ensure that all stakeholders, especially vulnerable communities, are included in decision-making processes, mirroring the NAP's emphasis on inclusive governance. Transparency and good governance are pivotal for monitoring NAP initiatives, ensuring resources are used efficiently and goals are met. The emphasis on consultation and citizen participation is reflected in the NAP's stakeholder engagement strategies, ensuring local knowledge and involvement are integral to adaptation efforts. Enhancing equality of opportunity ensures that adaptation benefits are distributed equitably, particularly among marginalized populations. The government's dedication to eliminating corruption supports the integrity of NAP implementation, ensuring that resources allocated for climate adaptation are used appropriately. Deepening national pride among the Basotho fosters public support for NAP initiatives, promotes locally led adaptation and creates a collective commitment to sustainable development. Lastly, strengthening relationships with regional and international partners facilitates knowledge sharing, access to funding, and technical assistance, essential for the effective implementation of NAP strategies. This comprehensive alignment ensures that Lesotho is on a path toward a sustainable and resilient future.

There are several other policies, strategies, and frameworks in place (see Annex 1) to help domesticate the climate change adaptation process. Despite the development of these policies and strategies, there are still institutional gaps such as inadequate coordination among Ministries, Departments, and sectors, lack of integration of NCCP goals into sectoral and regional plans, and insufficient incorporation of climate change concerns into relevant policies and planning processes. To ensure effective implementation of the NAP, these gaps can be addressed by intensifying coordination across Ministries, Departments, and sectors for better data collection and exchange among stakeholders; ensuring that the goals of the NCCP are integrated into sectoral and regional plans in alignment with financial opportunities from donors; and incorporating climate change concerns into relevant policies and planning processes at both state and national levels.

4. Framework of the NAP

4.1. Institutional and legal arrangements

The successful implementation of NAP is much dependent on active support and effective participation of all stakeholders as stipulated in the National Climate Change Policy and its Implementation Strategy. Proper coordination and mainstreaming of climate change activities into different sectors of the economy is key to addressing the issues of working in silos by various departments, institutions and organizations; a state that could lead to disharmony between different actors and undermine its effectiveness and efficiency. It is against this background that the NCCPIS calls for the establishment of an institutional framework and set up that will be effective in implementing the climate adaptation policies (see Figure 2). The NAP will follow the same institutional arrangement.

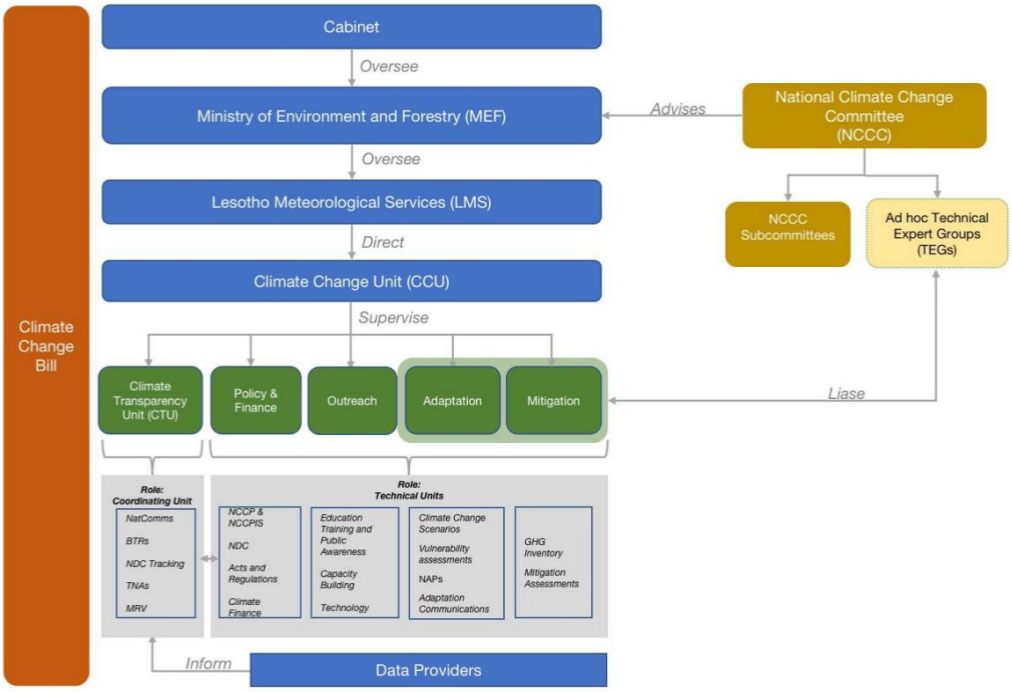


Figure 2: *Proposed institutional arrangement.*

4.1.1 Policy and approval

The **Ministry of Environment and Forestry (MEF)** (*formerly Ministry of Energy and Meteorology (MEM)*) through LMS is charged with the responsibility of monitoring and reporting on weather, climate and climate change issues. In addition, MEF ensures that the country adheres and implements commitments under the UNFCCC and the Paris Agreement. A National Climate Change Committee (NCCC) which serves as an advisory body to the MEF was formally established in 2013 to effectively coordinate climate change issues in the country. Other major responsibilities of the MEF include implementation of the Vienna Convention and Montreal Protocol on Substances that deplete the ozone layer; and provision of support to other Multilateral Environmental Agreements (MEAs).

4.1.2 Formulation and mainstreaming

The **Ministry of Environment and Forestry** through **Lesotho Meteorological Services (LMS)** department is identified as the leading agency in the generation and dissemination of weather and climate information. The LMS is also the country's scientific authority in climate and climate change issues. Furthermore, LMS is the Government's focal point for the planning and execution of activities pertaining to Lesotho's commitments under the UNFCCC and the Paris Agreement making it key to the NAP process as it is leading the development and adoption of the NAP. The Ministry of Environment and Forestry has also been mandated to take charge of forestry development activities across the country through tree-planting activities, gully rehabilitation, rangelands improvement and management, and harnessing of water.

National Climate Change Committee (NCCC) serves as an advisory body to the MEF was formally established in 2013 to effectively coordinate climate change issues in the country. The inter-sectoral coordination mechanism is represented by the NCCC. The NCCC supports the LMS in integrating climate change adaptation into the NSDP and other frameworks. It also facilitates coordination and dialogue among national stakeholders and oversee the assessment and formulation of national mitigation and adaptation measures. Its responsibilities include ensuring these measures are incorporated into policies, plans, and programmes, as well as advising on climate vulnerability and risk assessments. The committee will also address projected climate impacts, develop appropriate responses, and mobilize resources both nationally and internationally. The contribution that this committee will make in taking forward the process of NAP is made clear in the roadmap.

The NCCC consists of 30 members from relevant government ministries, as well as non-state actors — including **Lesotho Council of NGOs**, the **Christian Council of Lesotho**, **Private Sector Foundation**, **Lesotho National Farmers Union** and research institutions. Members include representatives from inter alia:

The **Department of Energy** (DoE) of the **Ministry of Energy** is the national body responsible for the formulation and implementation of the energy policy, legislation and activities in the energy sector at national, regional and local levels, in consultation with relevant stakeholders. Within DoE, the Division of Renewable Energy is the main government body involved in renewables in Lesotho. With renewable energy identified under the NDC as the most strategic entry point for climate changes adaptation and mitigation, the Ministry will provide strategic inputs for attaining adaptation objectives pertaining to renewable energy. The **Appropriate Technology Section** of the **Ministry of Information, Communications, Science and Innovation** is also involved in renewable energy to some extent.

The **Office of the Commissioner of Water**, within the **Ministry of Natural Resources**, is mandated to promote coordination of programs and activities within the water sector. The Commissioner is responsible for the **Department of Water Affairs (DWA) and the Department of Rural Water Supply** (DRWS). Additionally, the Commissioner overseas two parastatals: the Lesotho Highlands Development Authority, and the Water and Sewage Company (WASCO). The organization responsible for implementing the Water Act 1978 is the DWA within the **Ministry of Natural Resources**. The DWA is responsible for general administration of the water sector, as well as for policy formulation and data collection. The DRWS is mandated to supply water to rural communities in Lesotho, while WASCO manages water supply to urban areas.

The **Ministry of Health** plays a crucial role in developing programs and projects aimed at enhancing national resilience to climate change and improving climate change governance within the health sector. By collaborating with the LMS to effectively communicate early warnings relevant to health, the Ministry will strengthen overall resilience. Following the completion of climate change health impact assessments for Lesotho, the Ministry's primary responsibility will be to formulate a comprehensive national plan that addresses the impacts of climate change on human health.

Ministry of Agriculture, Food Security and Nutrition provides leadership in designing programmes/projects that will help the agricultural sector to adapt better to climate change. The Department of Agricultural Research is responsible for the development appropriate agricultural technologies for improved and sustainable agriculture and the transfer relevant scientific knowledge and information to all stakeholders for sustainable development of agriculture.

The **Bureau of Statistics** under the **Ministry of Finance and Development Planning** is responsible for establishing a system for national official statistics on economic, social, demographic, including human resources, and environmental areas in relation to the development needs of Lesotho. These statistics are essential for economic and social planning, research, public information and international cooperation. In the NAP process, this department as a key stakeholder plays a crucial role in advising and engaging in the NAP monitoring and reporting, aiming to integrate NAP indicators into national development plan monitoring systems.

The **Ministry of Gender, Youth and Social Development** plays a crucial role in integrating gender and social considerations into climate change adaptation efforts. It encourages the adoption of climate-relevant technologies that specifically benefit women, youth, and vulnerable groups. The Ministry develops policies and guidelines to promote affirmative action within government projects, ensuring that the needs of women, men, youth, and vulnerable groups are addressed. Additionally, it creates and implements gender and social inclusion programs within climate change initiatives, ensuring equitable participation and benefits. The Ministry also raises awareness among women, men, youth, and other vulnerable groups through targeted and comprehensive communication strategies, enhancing their engagement and resilience in the face of climate change.

The **Energy Research Centre of the National University of Lesotho** together with three technical and vocational schools are the key players in the training-related components of renewable energy projects. The coordination between the technical and vocational schools is facilitated by the Technical Vocational Department of the **Ministry of Education and Training**.

The **Climate Change Technical Committee (CCTC)** serves as the technical advisory body for the LMS, providing expert inputs through the **Climate Change Unit (CCU)**. Its primary functions include working

closely with the LMS to integrate climate change mitigation and adaptation into national, sectoral, and local policies, frameworks, and programmes. The CCTC is responsible for gathering climate data, making projections, and assessing impacts across various sectors. This includes conducting vulnerability and risk assessments for climate-sensitive sectors as directed by the LMS and the NCCC. Additionally, the CCTC reviews existing climate change measures, propose new strategies, and advise on the necessary institutional capacities for effective climate change responses at all levels.

The CCTC will be chaired by the Head of the CCU within the LMS. The committee will be composed of **professional staff** from the CCU, and **technical experts** co-opted from institutions directly engaged in climate science applications and the design and implementation of climate change mitigation and adaptation responses, including *Agriculture, Water, Forestry, Soil Conservation, and Range*. Additionally, the CCTC will include **technical staff from academia and research institutions**, as well as experts from high greenhouse gas (GHG) emission sectors such as *Industry, Mining, Sanitation, and Transport*. This diverse composition will ensure a robust approach to addressing climate change challenges.

4.1.3 Implementation

The **Local Climate Change Coordinating Committees (LCCCs)** are established to foster synergies at the district or community level. Their functions include integrating climate change mitigation and adaptation into local government policies, frameworks, and programmes. LCCCs assist with local vulnerability and risk assessments conducted by the CCTC or consultants. They review and propose new local climate change measures, advise on required institutional capacities, and ensure effective coordination among local actors involved in climate initiatives. Additionally, LCCCs help develop, implement, monitor, and evaluate integrated climate change programmes at the local level, and organize public awareness campaigns to engage the community in climate actions.

The LCCC will include a diverse group of members consisting of **District Heads** from climate-sensitive sectors such as *Agriculture, Water, Forestry, Soil Conservation, and Range*. It will also include **technical staff** from high greenhouse gas (GHG) emission sectors, such as *Sanitation and Transport*. Additionally, the committee will feature representatives from the local municipality, **civil society organizations**, and the **private sector**. **Chiefs, traditional authorities, local community representatives**, and **District Councillors** will also be part of the LCCC, ensuring a comprehensive and inclusive approach to addressing climate change at the local level.

Climate Change Coordinators (CCCs) are appointed in each climate-sensitive line ministry and district, with existing Planning Officers and District Resource Planners filling these roles. These coordinators will undergo retraining by the LMS to fulfil several key duties. They will work with the CCU, NCCC, CCTC, or LCCCs to integrate climate change mitigation and adaptation into sectoral and local policies. They will conduct vulnerability and risk assessments, gather, and analyse climate data, and review or propose new mitigation and adaptation measures. Additionally, they will ensure that proposals undergo environmental and economic impact assessments before submission to the CCU and advise on the necessary institutional capacities for effective climate change responses in their sectors or localities.

Ministry of Local Government, Chieftainship, Home Affairs and Police through Local Climate Adaptive Living (LoCAL) emerge as one of the key players in climate adaptation as the local governments identify, prioritise, implement, manage and monitor locally-led adaptation actions.

The **Ministry Environment and Forestry** through its **Department of Environment** is the GEF operational focal point that can guarantee cooperation with other GEF initiatives.

Numerous other government agencies and bodies outside the formal structures of government are potentially influential in the creation of responses to the challenges of climate change, for examples, the **Ministry of Foreign and International Relations**.

4.2. The NAP as the umbrella programme for adaptation

Lesotho's geographical characteristics and prevailing socioeconomic conditions among the majority of its rural population make it one of the most vulnerable countries to the impacts of climate change[22]. Climate change is affecting Lesotho in many ways. Recurrent and devastating droughts and high temperatures pose great risks to food security, water resources and many other sectors and systems. Therefore, the NAP will be framed using multiple entry points, from **vulnerability, hazards and exposure**, as well as in aggregate in terms of climate **risk**.

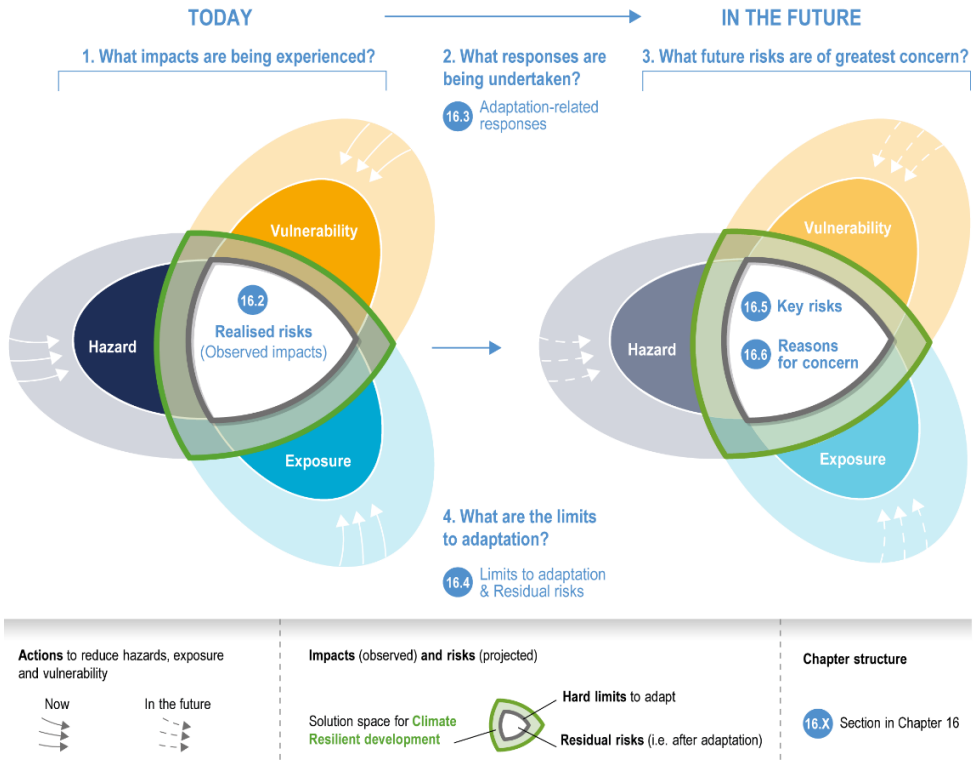


Figure 3: *Intergovernmental Panel on Climate Change (IPCC) Risk Diagram depicting four key questions to assess current and future vulnerabilities, hazards, exposure, and risks concerning adaptation (Source: Chapter 16 of the IPCC 6th Report, 2022).*

[22]World Bank (2024)

Climate variability has multiple effects and cascade across connected systems and sectors. Higher temperatures are increasing human and livestock susceptibility to heat stress, exacerbating the incidences of pests and diseases, and contributing to crop failures through crop wilting. On the other hand, intense rainfall and runoff, floods, hail and heavy snowfalls destroy crops and infrastructure such as roads, bridges and power lines, enhance soil erosion and land degradation which result in turbid rivers and compromised ecosystem services, and increase susceptibility to water-borne diseases. Both droughts and floods directly result in loss of human lives and kill livestock and wildlife. Increasing rainfall variability, shorter rainfall seasons and late onset of rainy seasons contribute to reduced crop and pasture yields, unreliable water supply and hydropower generation, reduced availability of groundwater due to inadequate recharge, and more broadly to degraded ecosystem services. All these changes, among others, are depressing economic activities, with significant impact on national GDP, and diminishing the wellbeing particularly of the large population of rural dwellers whose livelihoods depend on the rangelands, wetlands, indigenous plant and animal species, and ecotourism, as well as the urban poor who contend with unemployment and inequality.

The NAP process for Lesotho adopts the "systems" rather than "sectoral" approach as it provides a more integrative and holistic understanding that better underpins required and effective adaptation strategies. To capture the interlinkages between hazards and the systems they impact, the Lesotho NAP will apply the **systems approach** of the NAP-SDG iFrame framing, as well as nexus approaches in the case of water, energy and food in the main river basins, including within the context of the transboundary issues within the broader Orange-Senqu River Basin.

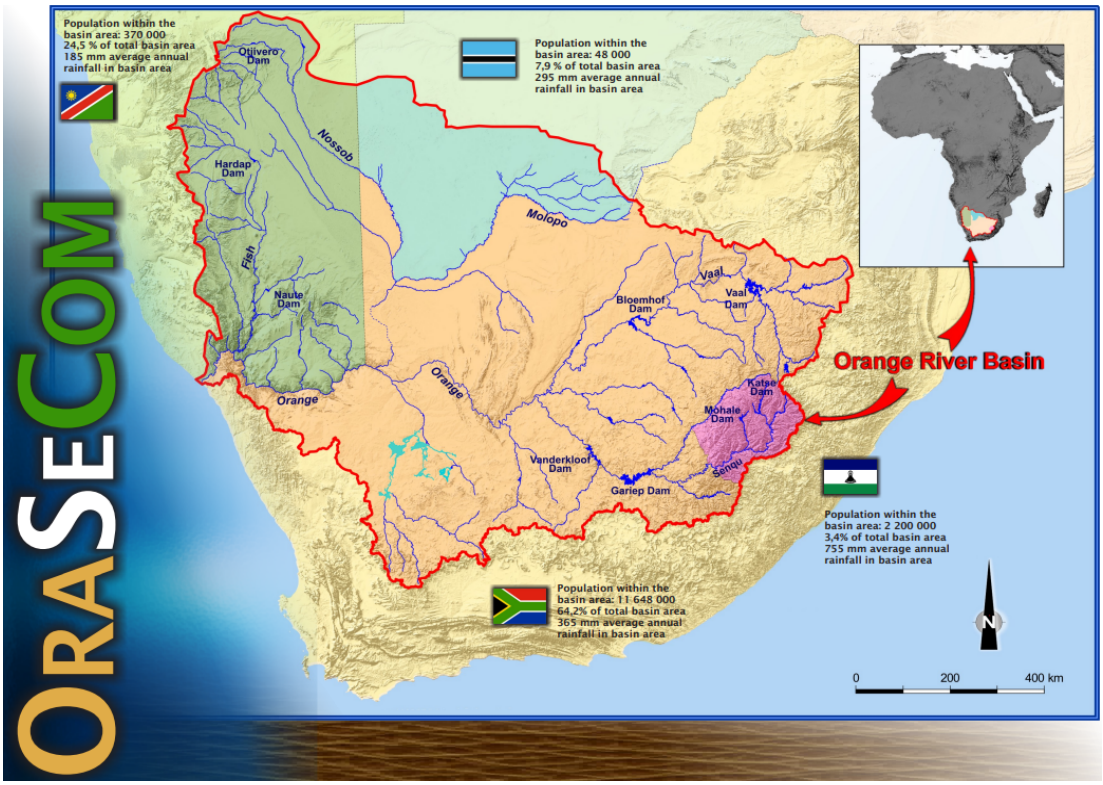


Figure 4: *The Orange-Senqu River Basin, highlighting major dams and the population distribution within the basin across the four nations in 2005. (Source: ORASECOM, 2008)*

While the NAPA[23] identified the country's "urgent and immediate" priority needs for adaptation, the NAP process extends this to cover adaptation measures that the country needs to focus on for its medium- and long-term priorities for adapting to climate change and defines clear actions to develop the necessary capacities and systems and to operationalise necessary actions needed to make adaptation an integral part of a country's development planning, decision making and budgeting. The NAP-SDG iFrame also helps show and achieve **coherence with the national development context, the SDGs, Sendai Framework (SF)** and other relevant frameworks.

The NAP is being framed as a national programme for adaptation, where the priorities identified span all levels of government, spatial scales and temporal scales from the short-term to the long-term. The priorities will cover capacity-building, maintaining the NAP process and concrete adaptation actions, by all stakeholders and actors. As such, the NAP will be implemented as a programme, with projects contributing to components of the programme.

4.3. The national process to formulate the NAP

The process to formulate and implement the NAP (NAP process) is highly essential for Lesotho given the prevailing climate change related challenges that are facing the country, and which are clear and detrimental impacts on its people, ecosystems and economy.

During the Lesotho NAP process launch in 2015, it was strongly emphasised that the NAP process will help to identify a NAP roadmap for Lesotho[24], facilitating the coordination of all the existing adaptation projects and initiatives, and the formulation of new concepts which will be further developed into bankable projects to reduce vulnerability, build capacity and mainstream adaptation into all systems and sectors specific development plans. The NAP will clearly identify and prioritise the key adaptation measures required to address the country's peculiar adaptation needs, and the processes to ensure that these measures are mainstreamed into the national planning and development processes and programmes across systems and sectors.

This process was initiated with a stakeholder engagement workshop (Figure 5). During the same year, stocktaking was undertaken to assess the available information on climate change, its impacts, vulnerability of people and ecosystems, and adaptation to climate change impacts. A gap assessment relating to these aspects was undertaken, along with assessment of the needs and capacity to adapt. Key resource persons were identified to work on the NAP from 2017 through to 2021, the target year for having the draft NAP in place. However, several barriers have impeded progress towards producing a NAP timeously, these include limited: i) institutional capacity at national and district levels to implement and monitor the NAP process; ii) coordination and knowledge-sharing between relevant institutions and stakeholders; iii) information available to inform adaptation planning and decision-making; iv) integration of climate change issues into policies and development plans; and v) adaptation funding. A proposal to access the GCF Readiness Support for the NAP process was initially submitted in 2017 and was approved in June 2020 after revisions and resubmission. Lesotho experienced delays in implementing its NAP due to COVID-19 disruptions and administrative challenges, including prolonged staff recruitment and banking procedures. As a result, the advanced draft NAP was completed by the end of 2024, with the final version expected in 2025.

[23] GoL (2007) Lesotho NAPA
[24] See Annex 2

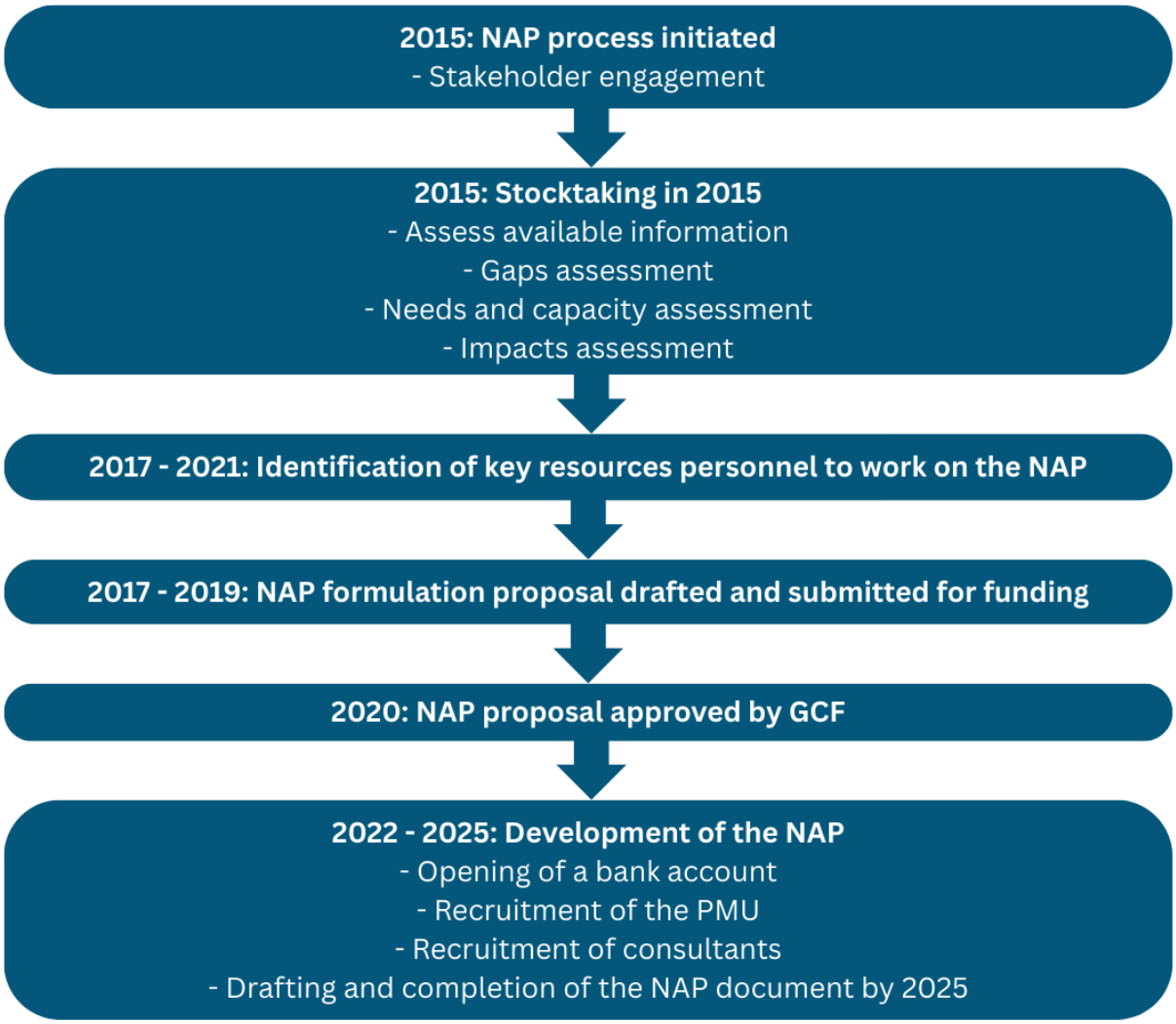


Figure 5: *Roadmap for advancing Lesotho's NAP process.*

The Lesotho NAP also places importance in subnational government levels in addition to **focusing on most vulnerable groups and communities**. The Government has expressed a wish to mainstream adaptation activities in all procedures at the District and Community Council levels, with a strong focus on strengthening their capacities to withstand potential climate change effects, as well as sharpen the attention to the increasing roles of **local governments** in dealing with climate change issues. Accordingly, through the Ministry of Local Government and Chieftainship, Home Affairs and Police and the Ministry of Finance and Development Planning, the government established a "Local Climate Adaptive Living (LoCAL) mechanism" supported by the United Nations Capital Development Fund (UNCDF) to channel climate finance to local authorities across the country, for its effective use.

The approach for Lesotho embraces the **iterative** nature of the process to produce the NAP and continue with more assessments to contribute to a revision and update within 3-5 years as more information becomes available. The iteration involves research and systematic observations, accessing support from various funding mechanisms (notably the Green Climate Fund (GCF) and the Least Developed Countries Fund (LDCF)) in addition to the four main dimensions of assessment, planning, implementation and monitoring and evaluation.

This NAP has been developed through the Open NAP initiative[25] of the LEG, in anticipation of GCF Readiness and Preparatory Support funding to advance the NAP process, which was subsequently approved in 2022. The GCF funding will be used to continue the process and will support assessments as well as development of project proposals to implement the NAP.

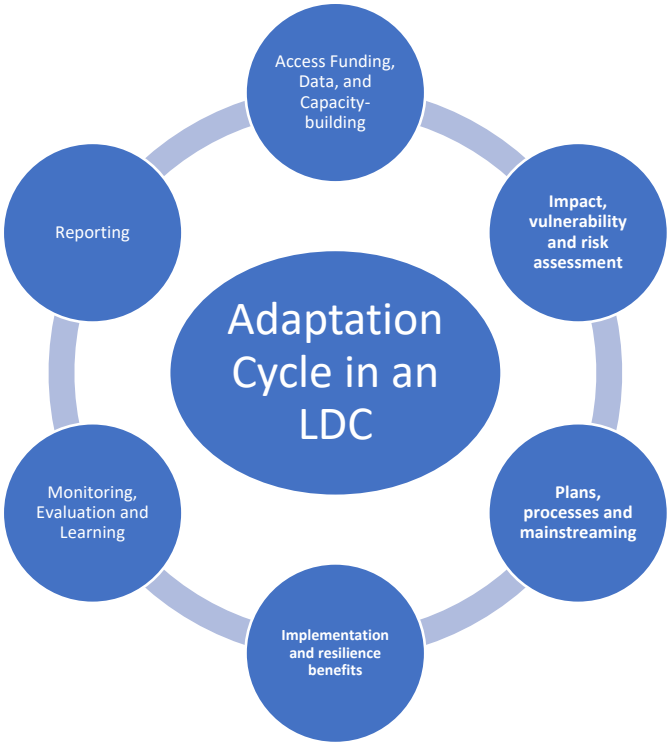


Figure 6: *Adaptation cycle in an LDC, expanded based on the adaptation cycle described in decision 1/CMA.5, paragraph 10. (Source: LEG, Unpublished)*

4.4. Principles guiding the development and delivery of the NAP process and document

The NAP is based on the guiding principles of NCCP which emanate from the UNFCCC, SDGs, African Union Agenda 2063, the Paris Agreement, and the NSDP. The UNFCCC Technical Guidelines for the NAP Process were used as the primary document for framing of the structure and content of this NAP. These guidelines stipulate that the process of formulating and implementing the NAP process: follows a country-driven, is fully transparent; is based on and guided by the best available science and, as appropriate, traditional and indigenous knowledge; and facilitates country-owned, country-driven action and not to be prescriptive, nor result in the duplication of efforts undertaken in-country.

Following the experiences gathered from the implementation of the NAPA, the Technical Guidelines recommend:

- Using locally defined criteria for ranking vulnerabilities and prioritizing project activities, which will build confidence and buy-in across all stakeholders;

[25] Open Nap Initiative

- Using available data and assessments as a basis for more comprehensive assessments;
- Engaging national experts, as this will also enhance the experience and capacity of the country;
- Using data and findings from past and ongoing projects.

National documents[26] used to guide the development of the NAP include:

- National Climate Change Policy 2017-2027
- Lesotho National Communications to the Conference of Parties of the UNFCCC
- Lesotho Vision 2020
- The National Strategic Develop Plan II 2018-2023
- Lesotho's Nationally Determined Contribution 2017
- National Adaptation Programme of Action 2007
- Lesotho NAP Stocktaking Report 2015
- Lesotho Resilience Strategic Framework 2017
- Guidelines for integration of climate change into National, Sectoral and Local Policies, Strategies and Development Plans 2018

Table 1: *Guiding Principles of Lesotho's National Adaptation Plan*

The NAP is guided by the following principles:	
a. A country-driven approach.	Country-driven approaches inspire ownership and ensure that plans, programmes and activities are aligned with national priorities.
b. Equality, justice, and transparency	Lesotho's Constitution states that it shall adopt policies aimed at promoting a society based on equality and justice for all its citizens, and that the State shall take appropriate measures in order to promote equality of opportunity for the disadvantaged groups in the society to enable them to participate fully in all spheres of public life. Transparency is an important principle of good governance and promotes public and private sector participation in development projects.
c. Protection and sound management of the environment	Article 36 of the Constitution of Lesotho states that it "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 citizens a sound and safe environment adequate for their health and well-being".
d. Gender and social inclusion, and particular consideration	Lesotho's NSDP II mainstreams Climate Change, Environment, Gender and Social Inclusion across all sectors, recognising that these are crucial for the realization of inclusive growth.

[26] Annex 1 - National Documents

	of marginalized groups such as women	
e.	Contribution to sustainable development	Sustainable development serves to meet the country's needs today without compromising the ability of future generations to meet their needs. Lesotho, in its Vision 2020, lays a very strong emphasis on sustainable development, and is implementing the UN Sustainable Development Goals which have been domesticated in the National Strategic Development Plan II. Development gains are threatened by high vulnerability to global warming and the impacts of climate change, so adaptation planning and implementation of planned adaptation measures are important the country is to remain on the development pathway.
f.	A participatory NAP process involving stakeholders	Stakeholder participation is necessary for buy-in, ownership, involvement in, and support of planned activities. Lesotho aims to strengthen & promote private sector and civil society participation in managing development, and to ensure the equal participation of men and women and vulnerable groups in economic opportunities, participation in policy making, and other decision-making structures.
g.	A multidisciplinary and complementary NAP approach, building upon relevant existing plans and programmes	Multidisciplinary and complementary approaches are important in the NAP approach because the issue of adaptation is itself multidisciplinary and cross-cutting. The country has mainstreamed climate change issues in its development plans because it has implications for employment creation and economic growth since its impact on various economic sectors such as agriculture, health and nutrition, tourism and natural resources has been well established.
h.	Incorporation of science, technology and indigenous technical knowledge (ITK)	It is important to incorporate and to build capacity, through a gender-sensitive lens, in this area that is cross-cutting in climate change adaptation. New knowledge from assessments and emerging science, as well as the results and lessons learned from implemented adaptation measures, are important, iterated inputs to the NAP process.
i.	Education and training	The priority projects identified in the NAP contain various activities that are related to building capacity to address climate change, such as improving institutional and human resource capacity, strengthening early warning systems including data and modelling capacity, improving climate change education and awareness, and developing and/or strengthening policy frameworks to address climate change – all of which are strongly emphasized in the country's development plans.

j.	Mainstreaming of climate change adaptation across all sectors	Lesotho's NSDP II mainstreams Climate Change, Environment, Gender and Social Inclusion across all sectors, recognising that these are crucial for the realization of inclusive growth.
k.	Cost-effectiveness	This is important as the country can make savings that can go a long way to expand or scale up its programmes and frees finances for other programmes and activities.
l.	Simplicity, and flexibility of procedures based on the country's circumstances	Simplicity is important where actions are planned in multidisciplinary and multi-institutional/multi-agency contexts coupled with strong involvement of the public and private sector, communities and individuals. Flexibility is important, as adjustments can be made to improve different aspects of implemented programmes.
m.	Alignment with the GCF country programme.	This alignment is important in order to improve access to funds such as the Green Climate Fund. Such alignment would include coherency with the national climate change policy and related strategies and plans, coherence with existing policies, capacity of the executing entity to deliver, and stakeholder consultations and engagement.

The guiding principles are drawn from several documents, including: The Constitution of Lesotho, Lesotho Vision 2020, The National Strategic Develop Plan II 2018-2023, the National Communications to UNFCCC, and the principles outlined in the UNFCCC 'Technical guidelines for the national adaptation plan process'.

The LEG's updated technical guidance materials, aligned with the Global Goal on Adaptation (GGA), were also utilized. In line with the GGA's call for enhancing adaptive capacity, strengthening resilience, and reducing vulnerability across systems, this NAP adopts a systems-based approach. Social, physical, and economic systems are recognized as highly interconnected, with many extending beyond national borders, such as water and energy networks. Capturing the interlinkages, scale, and stakeholder diversity of these systems enables the identification and implementation of coherent and synergistic adaptation measures.

This systems approach supports the integration of climate change adaptation into new and existing policies, programmes, and activities, particularly within development planning processes and strategies across sectors and levels. Consistent with the GGA, it emphasizes moving beyond siloed actions by managing adaptation across interacting systems, for instance, considering food alongside water, health, energy, and ecosystems. The approach aims to maximize the impact of adaptation efforts by building synergies, minimizing trade-offs, and advancing resilient development pathways.

5. Climate Trends

Lesotho's climate is generally classified as temperate with alpine characteristics. The country experiences hot summers and relatively very cold winters. Temperatures tend to be lower than in other countries at similar latitudes mainly due to the higher elevations. Four distinct seasons are recognized, with large fluctuations in temperature and very erratic rainfall. Its location exposes the country to the influences of both the Indian and the Atlantic Oceans, with wide differences in temperature. Annual precipitation is

highly variable both temporally and spatially, ranging from 500 mm to 760 mm[27]. Temperatures are highly variable on diurnal, monthly, and annual time scales, generally ranging between 10°C and 30°C[28]. High winds of up to 20 meters per second can sometimes be received during summer thunderstorms[29].

5.1. Observed climate impacts

Temperature

Temperature distribution in Lesotho correlates strongly with altitude with the highlands warming faster than the lowlands. Annual mean temperatures are highly variable from year to year with an increasing trend (Figure 7). Based on the latest climatology, 1991-2022, mean annual temperature for Lesotho is 12.38°C, with average monthly temperatures ranging between 15°C (November to March) and 6°C (June, July)[30]. Temperatures are highly variable on diurnal, monthly, and annual time scales, generally ranging between 10°C and 30°C. The high evaporation rate and the virtual absence of permanent surface water over large parts of the country combine to make water a scarce resource, with some projections indicating that even without climate change impacts, water resources will be reduced significantly.

In line with the warming trend, the number of frost days have also decreased between 1991-2020 (Figure 8).

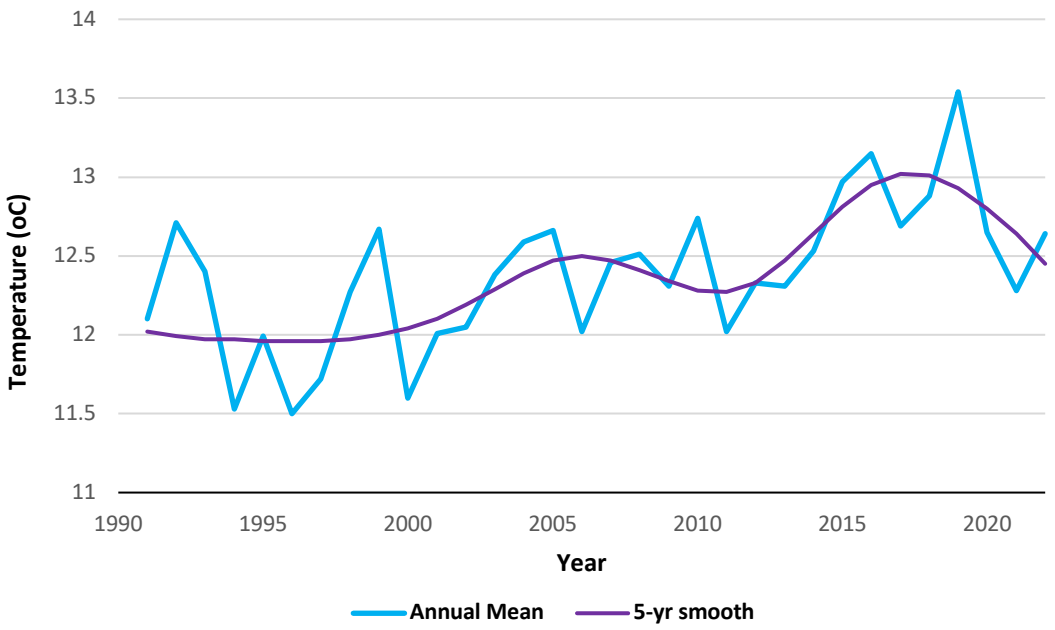


Figure 7: *Observed annual average mean air surface temperature of Lesotho for 1991 -2022. (Source: World Bank, CCKP, 2021)*

[27] World Bank, CCKP, 2021
[28] Ibid.
[29] Ibid.
[30] Ibid.

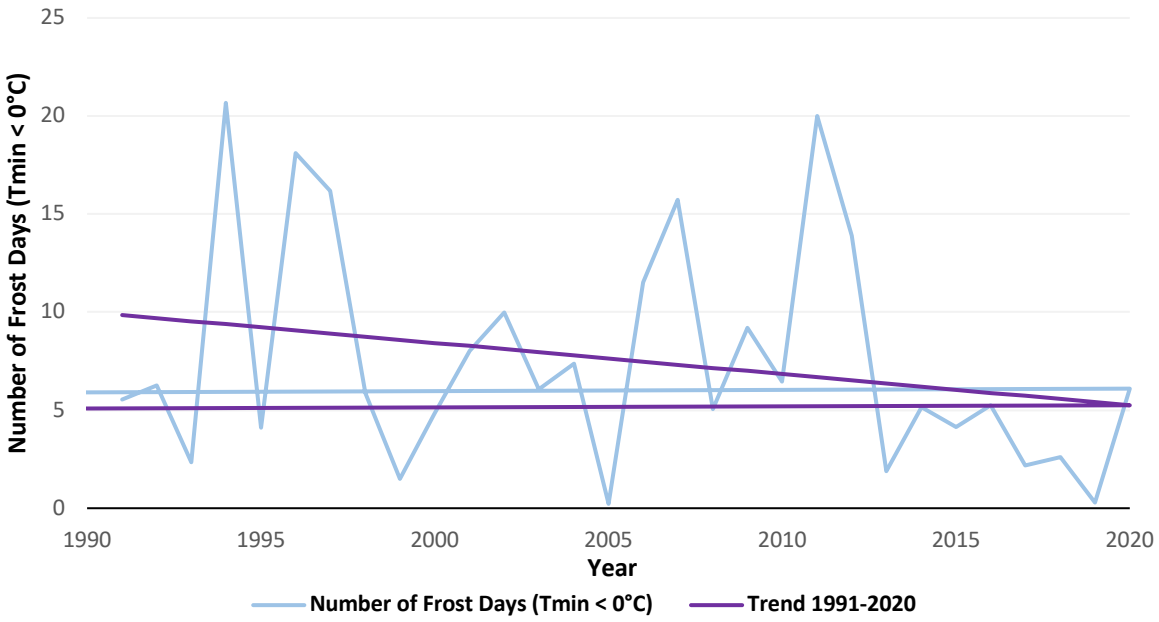


Figure 8: *Observed number of frost days in Lesotho for 1991- 2020. (Source: World Bank, CCKP, 2021)*

Precipitation

Mean annual precipitation is 786.11mm, with highest rainfall occurring October to April, with extremely low levels of precipitation occurring between May to September[31]. In Lesotho, high aridity and periods of intense drought exacerbate the loss of biological diversity, deterioration of rangelands and reduce crop and animal productivity via desertification, make the country increasingly vulnerable. Droughts occur three years out of every ten[32]. The productivity of major crops and animals has declined significantly in recent years due to poor land and rangeland conditions. Primary challenges are centred around water resource availability, changing precipitation patterns and increasing population demands. Climatic and socio-economic environments in semi-arid areas in Lesotho make communities vulnerable to food insecurity and livelihoods and lead to unsustainable agroecological systems, crop failure and unproductive rangelands.

[31] World Bank, CCKP, 2021
[32] Lesotho NAP Stocktaking Report (2015)

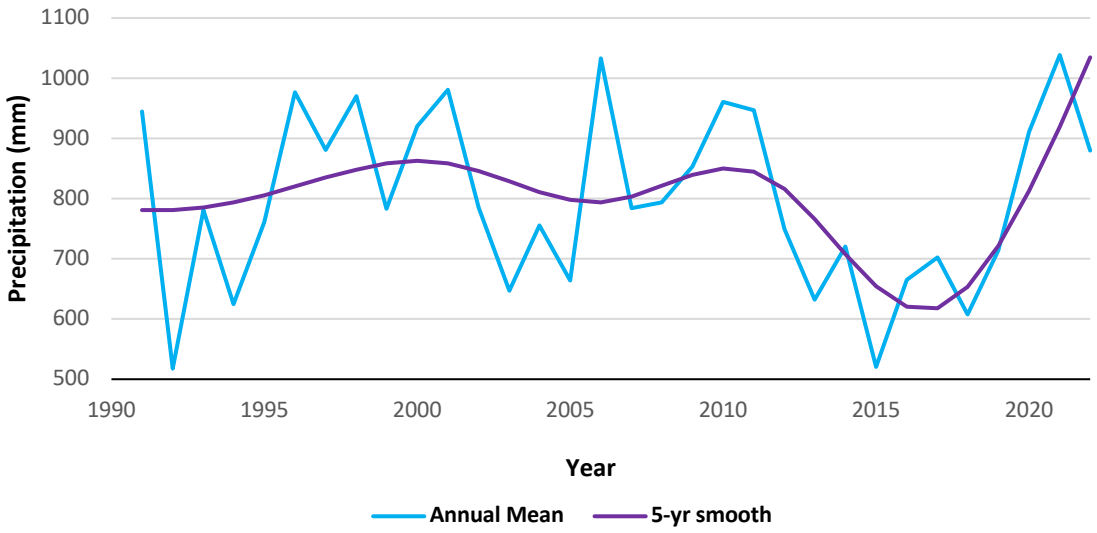


Figure 9: *Observed annual precipitation of Lesotho for 1991 – 2022. (Source: World Bank, CCKP, 2021)*

High intensity rainfall often produces flash floods that accelerate soil erosion leading to high sediment loads in rivers. Winter months feature significant snowfall annually in the highlands and on average once every three years in the lowlands[33] causing serious problems, not only resulting in extremely low temperatures but in restrictions on movement and access to essential services as well as the mountain communities including loss of livestock[34].

According to the Lesotho NDC[35], the high spatial and temporal variability of precipitation and temperature has increased the occurrences of major climatic hazards such as droughts, floods, extreme weather etc. (Table 2). The southern lowland areas are dry and particularly threatened by drought while mountain and foothill areas are vulnerable to frost, snow, and hail.

Table 2: *Observed climate hazards and their impacts on the identified systems or sectors.*

Hazard	Event date	Impacts	Most impacted systems/sectors
Heavy rains	2021	• Public infrastructure damaged • Crop fields washed away	• Water resources and supply • Infrastructure • Crop production • Socio-cultural
Drought	2017 - 2020	• 507,700 people severely food insecure • In 2019, production of major cereals decreased by more than 60 percent compared to 2018	• Socio-cultural • Crop and livestock production • Water resources and supply • Health
Flash floods	2018	• Killed 12 people, 7 children injured • Displaced more than 1,400 people • 315 households damaged • Public infrastructure worth $4 million	• Socio-cultural • Energy • Water resources and supply • Crop production

[33] GoL (2007) Lesotho NAPA
[34] LMS (2017) NDC
[35] LMS (2017) NDC

		• Damaged crops worth $1.5 million	• Cities and human settlements • Health
Drought	2015 - 2016	• Worst experienced in Lesotho in 35 years • Drought response cost was US$82 million (3.6 percent of GDP in 2016) • Affected 979,000 people and left 709,000 people were food insecure • 66 percent reduction in cereal production, and 58 percent increase in food prices • Increase in the need for external food supply	• Crop and livestock production • Health • Water resources and supply • Energy • Manufacture and trade • Socio-cultural
Torrential rains	2010 - 2011	• Heaviest rains since the 1930s • Lost 3.2 percent of 2010 Gross Domestic Product (GDP) • Between 2,000 and 2,500 houses damaged or destroyed • 74,912 hectares worth of summer cereal crops in subsistence agriculture were lost • 806 hectares of privately owned small irrigation systems were partially destroyed • 44,00 domestic animals drowned, >24,000 animals became ill • +50,000 more people food insecure	• Socio-cultural • Energy • Water resources and supply • Crop production • Cities and human settlements • Health
Dry spell	1991 - 1996	• The longest drought recorded in 200 years • Reductions in food production, ranging from 50-75 percent	• Socio-cultural • Energy • Water resources and supply • Crop production • Cities and human settlements • Health
Drought	1979 - 1996	• Period with highest incidences of drought in almost 100 years	• Crop and livestock production • Health • Water resources and supply • Energy • Socio-cultural

* LMS (2000), (2013), (2017); World Bank, CIAT (2018); World Bank (2019a), (2021); GoL (2021a); Gwimbi et al. (2012)

5.2. Projected future climate

The Shared Socioeconomic Pathways (SSPs) reflect the most advanced iteration of socioeconomic narratives offered to date. They consider societal factors such as demographics, human development, economic growth, inequality, governance, technological change, and policy orientations. Three SSPs (i.e., SSP2-4.5, SSP3-7.0, and SSP5-8.5) were selected, and for simplification they are referred to as a low (SSP2-4.5: Middle of the road); a medium to high (SSP3-7.0: Regional rivalry) and a high (SSP5-8.5: Fossil fuel development) scenarios.

Lesotho's climate change projections[36] indicate rising temperatures and increased rainfall variability, including unpredictable and extreme weather events. These climate changes have the potential to impact the dynamics of the nation's key systems directly and indirectly.

Temperature

Increased temperatures are expected for the region, mean monthly temperature changes expected to increase by more than 2.0°C for the 2050s and by 4.4°C by end of the century, under a high-emission scenario. Temperature increases are expected throughout the country, although slightly lower degrees of temperature increases are expected to occur in the mountain zones[37]. Increased incidence of heat waves and higher rates of evapotranspiration are expected, which will affect multiple aspects of local economic development and agricultural productivity[38]. One of the most serious consequences of increased heat for Lesotho is the projected increases in the number of days with temperatures over 25°C. Impacts will be most pronounced from August to May[39]. Across all emission scenarios, temperatures increases are projected for Lesotho throughout the century. As seen in Figure 10, under a high-emission scenario, average temperatures are expected to increase rapidly throughout the century. Across the seasonal cycle, temperature is expected to increase throughout the year. Increased heat and extreme heat conditions will negatively impact human and animal health, agriculture, and ecosystems. Figure 11 shows the change in the number of frost days where minimum temperatures are below 0°C, with the greatest increase projected for May to September.

Precipitation

Water resources are likely to be increasingly strained across Lesotho as well as across southern Africa; warmer temperatures are expected to accelerate the rate of evapotranspiration for the country. With more frequent and severe droughts, the region will likely experience negative impacts on water supply and agriculture. A potentially simultaneous increase in flooding events poses a serious water pollution threat, affecting health of wetland ecosystems and agriculture and livestock communities. Rainfall in Lesotho is highly variable. Northern areas of the country are expected to experience below normal precipitation through mid-century, with slightly above normal rainfall through the end of the century. Southern areas of Lesotho are expected to have below normal rainfall through the end of the century of between 50 and 100 mm per annum in the Lowland, Foothill, and southern Senqu Valley zones[40]. Significant changes in precipitation and temperature could have severe impacts on people's livelihoods, particularly in the Lowlands, the Foothills, and the Senqu Valley, where increasing temperatures and decreasing precipitation might lead to a substantial decrease in crop harvests[41].

[36] See Annex 3 for Lesotho's projected climate changes, associated hazards and impacts
[37] Morris (2017)
[38] LMS (2013) Lesotho's Second National Communication
[39] World Bank, CCKP, 2021
[40] LMS (2013) Lesotho's Second National Communication
[41] IFPRI (2013)

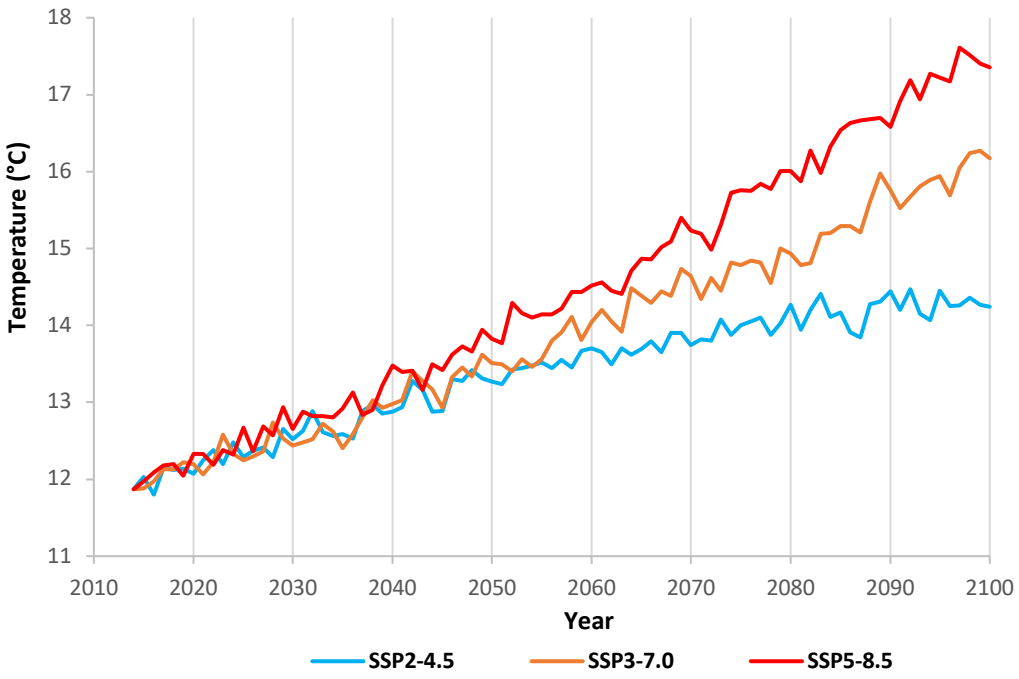


Figure 10: *Projected Mean Surface Air Temperature for Lesotho (Reference Period, 1995–2014), Multi Model Ensemble. (Source: World Bank, CCKP, 2021)*

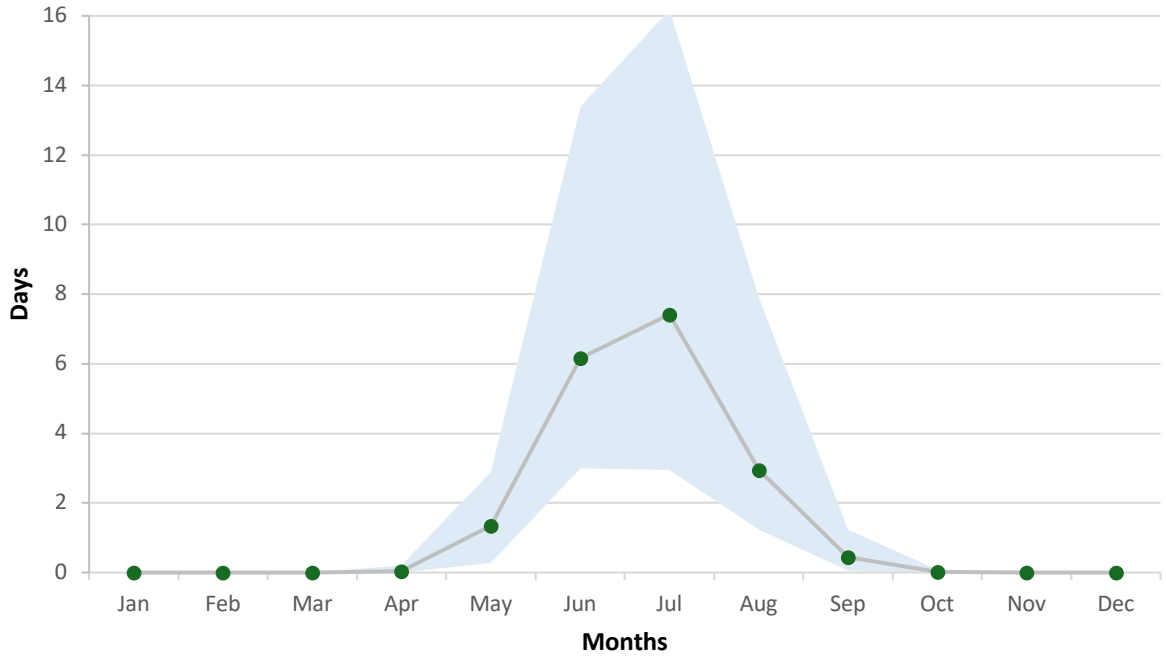


Figure 11: *Projected climatology of number of frost days (Tmin< °C) for 2080-2099 in Lesotho (Reference Period, 1995–2014), SSP5-8.5, Multi Model Ensemble. (Source: World Bank, CCKP, 2021)*

Figure 12 presents the change in projected annual average precipitation for Lesotho. Water routing, storage and other management options, are often very different if the precipitation occurs as multiple, lite rainfall events or a series of heavy rainfall events[42]. Lesotho's projected precipitation regime, aggregated across a national scale, will only slightly reduce against observed historical trends, under the highest emissions scenario, SSP5-8.5. However, changes in precipitation patterns for Lesotho are projected to experience an increase in extreme precipitation events, indicating potential for prolonged dry periods in between events. The country's drought areas may be further exacerbated by these trends[43].

5.2.1 Sub-regional climate change projections for Lesotho, 2020-2040

Sub-regional climate change projections for the near future (2020 to 2040) provide detailed information for the three climate change vulnerability zones in the country: Zone 1 (the Southern Lowlands and Senqu River Valley)[44], Zone 2 (the Mountains)[45], and Zone 3 (the Western Lowlands and Foothills)[46]. These projections offer more granular insights into the anticipated climate changes in each zone (see Annex 4). In terms of mean annual temperatures (maximum and minimum), these will increase more or less uniformly in all the three zones, but the effect will be most pronounced in Zone 2 because of the steep topography and changes to the temperature lapse rate with altitude, which will result in stronger biome shifts in this zone compared to the others. Likewise, the number of hot days >32°C in a year will increase and will particularly affect cropping seasons in the foothills and the relatively lower lands in Zones 1 and 3 and will be accompanied by fewer frost days, but some models show exception in Zone 1. The mean dry spell duration is expected to increase in winter by 6 to 7 days in all zones but is expected to decrease slightly during the summer rainfall months. In terms of total monthly rainfall, amplified variability is expected in all zones with more precipitation (up to 36 percent in zone 3) during the summer months, and significantly reduced precipitation (up to 100 percent for zones 1 and 3) in the drier winter months.

[42] World Bank, CCKP, 2021
[43] LMS (2013) Lesotho's Second National Communication
[44] INR (2015a)
[45] INR (2014)
[46] INR (2015b)

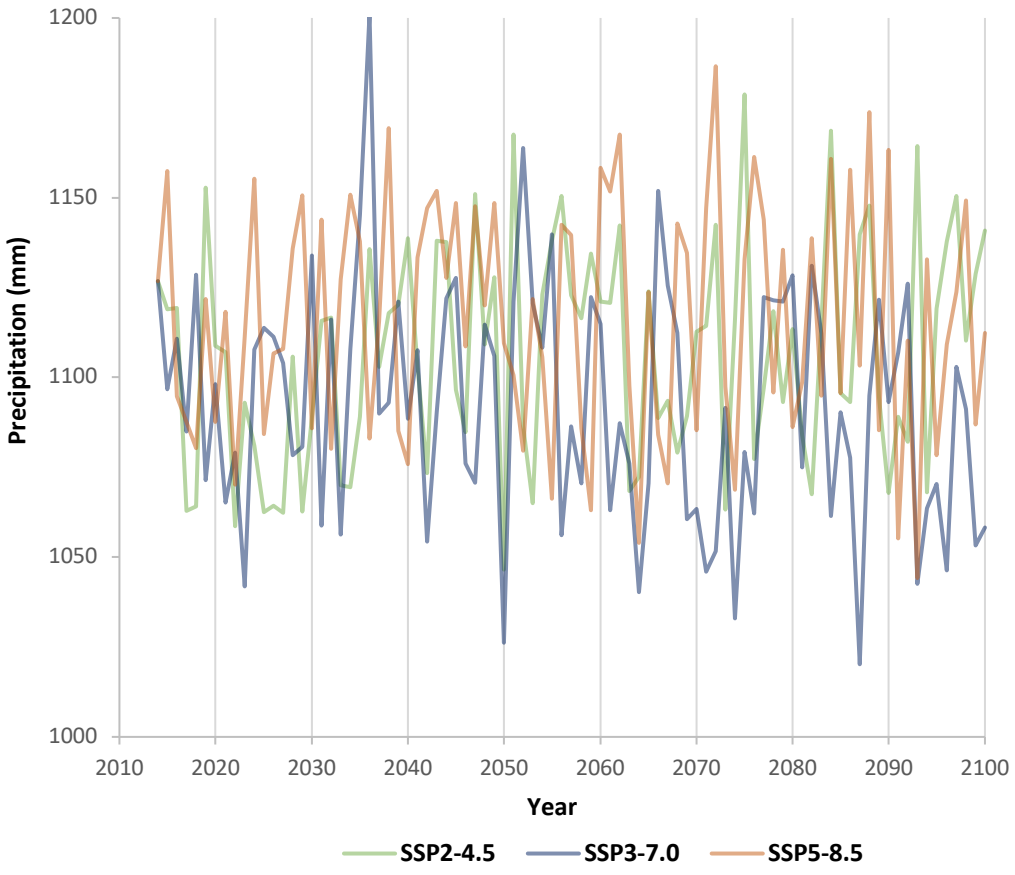


Figure 12: *Projected Precipitation for Lesotho (Reference Period, 1995–2014), Multi Model Ensemble. (Source: World Bank, CCKP, 2021)*

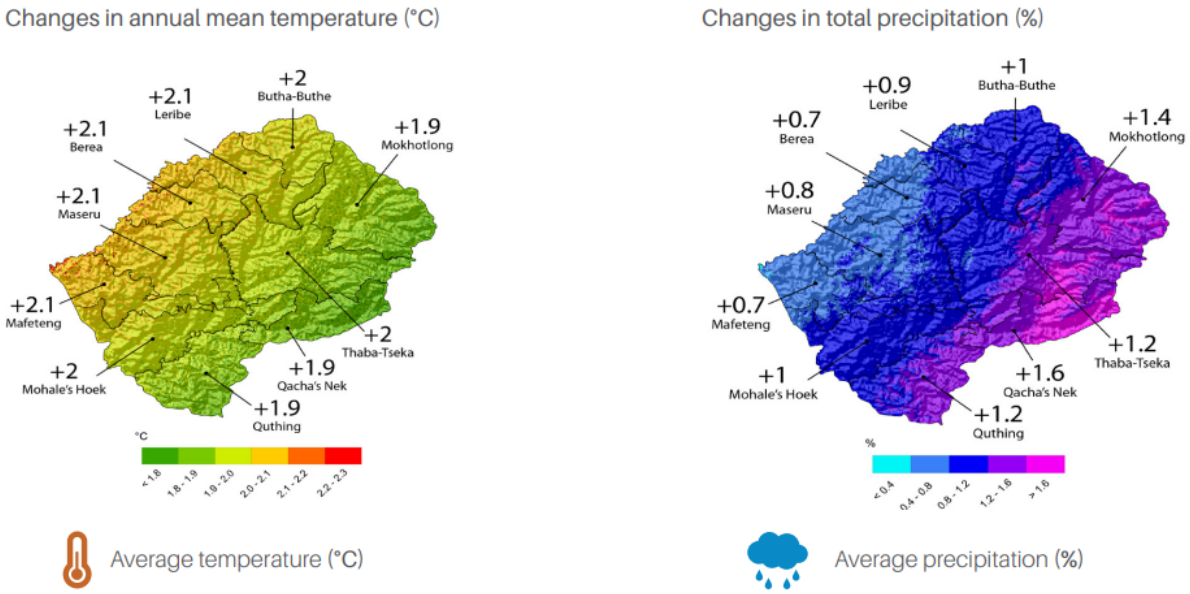


Figure 13: *Projected change in temperature and precipitation in Lesotho by 2050. (Source: World Bank, CIAT, 2018)*

5.3. Climate vulnerability, risks and impacts by key sectors and systems

Climate vulnerability, risks, and impacts on key sectors and systems in Lesotho are detailed, based on various vulnerability assessments conducted across different sectors. These assessments highlight the climate challenges faced by vital areas such as water security, agriculture, health, and infrastructure, providing essential insights for developing adaptation strategies and enhancing resilience.

5.3.1 Food and agriculture

5.3.1.1 Crop Production

Lesotho's agriculture relies heavily on rain-fed cultivation[47]. Various climate hazards, including drought, frost, hail, heavy rains, delayed rainy seasons, and extreme temperatures, negatively impact crop yields and fruit quality. While agriculture productivity has been steadily declining since the 1990s (due to changes in rainfall patterns and frequency), more than 70 percent of the population participate in subsistence agriculture[48]. Maize yield in Lesotho is projected to decrease due to declining rainfall and rising temperatures. In the highland regions, warmer temperatures could make maize cultivation viable[49]. Climate hazards destroy agricultural output, devastating livelihoods and half of the population regularly faces food insecurity. The economic impact depends on the extent of the variability and extreme events, but droughts alone are estimated to reduce total GDP by 1 percent - percent, while soil erosion has been estimated to reduce agricultural GDP by 2 percent-3 percent (around 1 percent of total GDP).

[47] LMS (2000) Lesotho's Initial National Communication
[48] World Bank (2023) Lesotho CPF FY24-28
[49] Gwimbi et al. (2012)

The Regional Vulnerability and Climate Change (RVCC) project, funded by the Global Environment Facility (GEF) and the United Nations Development Programme (UNDP), concluded after more than five years with significant achievements in Lesotho. The Project invested in awareness-raising and strengthening the capacity of relevant community groups and government institutions. The project greatly enhanced community resilience to climate change through the implementation of climate-smart agricultural practices and advanced land management techniques. It built local capacity by training technical staff in AutoCAD for water-harvesting design and equipping communities with skills in permaculture and land rehabilitation. Government officers are better equipped to advise and lead in climate change interventions because of the knowledge and experience they have gained from the Project. Notably, the introduction of the Farmer Field School concept and advanced beekeeping training improved agricultural productivity and food security. Additionally, the development of permaculture homestead gardens promoted sustainable food production and long-term resilience. Overall, the RVCC project successfully reduced climate vulnerability and improved both environmental and economic outcomes for local communities. The lives of the people have changed for the better as they have acquired new and sustainable land management and farming skills which can withstand climate change. (Source: UNDP, 2021)

5.3.1.2 Livestock Production

Livestock farming is a traditional cornerstone of the Basotho economy, leveraging the favorable ecological conditions of the Foothills and Mountains, which are ideally suited for extensive livestock farming. Common livestock includes cattle, goats, and sheep, contributing more than 6 percent to GDP and over 80 percent of the agriculture sector's GDP contribution. However, livestock production and health are highly vulnerable to current and future climate changes due to their reliance on ecological resources. Presently, rangeland and water availability for livestock are poor, leading to deteriorated livestock conditions and drought-related deaths in districts such as Quthing, Mohale's Hoek, and Butha-Buthe. Climate impacts like heat stress, cold stress, drought, and feed shortages reduce the quality and quantity of livestock products. Moreover, livestock numbers can decline due to heavy rains, extreme temperatures, heavy snow, and climate-sensitive diseases.

The **Wool and Mohair Value Chain Competitiveness Project** co-financed by GEF, IFAD and other partners, will run from 2023 to 2030 with a budget of $60.97 million. The project aims to enhance the competitiveness of Lesotho's wool and mohair value chains by training farmers in best practices, improving shearing, sorting, and storage facilities, and strengthening cooperatives and market linkages, the project has increased income for farmers, enhanced their skills, and improved market access. This not only boosted rural incomes but also promoted sustainable agricultural practices that are more resilient to climate change. Through the project, a sustainable system of communal grazing and rangeland management has been established. This initiative will build climate change resilience of those involved in the rangeland sector. It will also improve livestock production and management. (Source: IFAD, 2024)

5.3.2 Economic activities

5.3.2.2 Manufacturing and Trade System

The commodity market in Lesotho is dominated by the clothing market (40 percent of total exports), water, and wool. These products significantly contribute to the GDP. Another crucial commodity is the importation of cereal to supplement domestic crop production. As a net food-importing economy, the cereal market largely depends on neighbouring markets for stocking. Climate change events affect trade and industrial activities in various ways. For instance, during the heavy rainfall of 2010/2011, there was evidence of physical damage to industrial properties, including roofs and ceilings. The floods also impeded access to sources of goods due to breakdowns in road networks. Future increases in temperature and extreme events will negatively impact commerce.

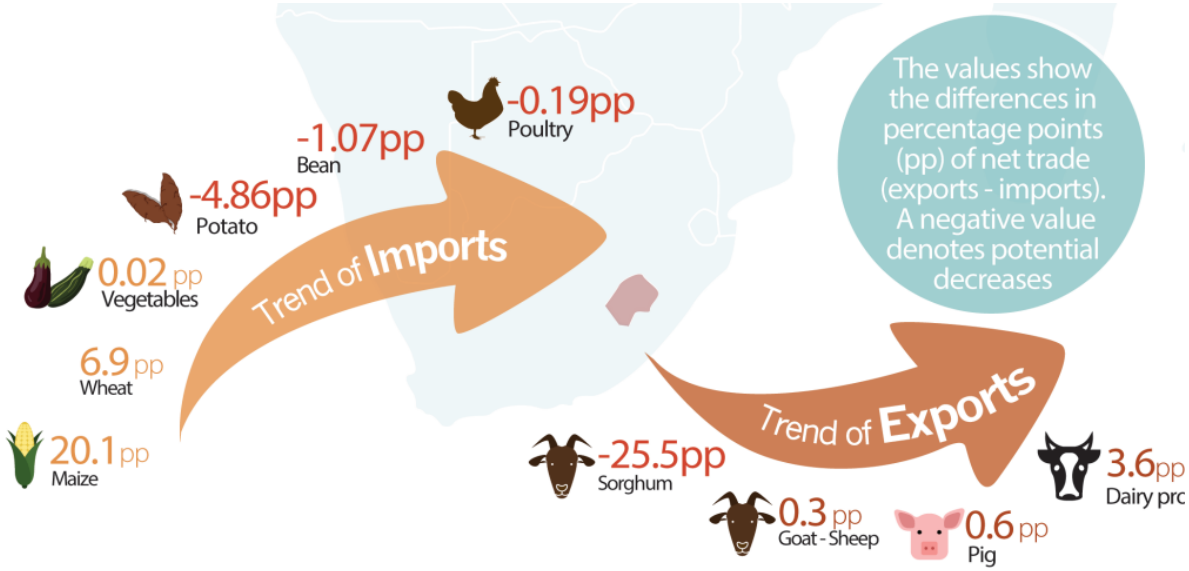


Figure 14: *The impact of climate change on net trade in Lesotho (2020-2050). (Source: World Bank, CIAT, 2018)*

In Lesotho, horticultural farming is getting an increasing focus after the implementation of the World Bank-supported **Private Sector Competitiveness and Economic Diversification Project.** The project has two sub-components: the production of vegetables and the production of fruit trees, specifically apples and cherries. Two South African companies, Alpha Farms and Denmar estates, have partnered with farmers in Lesotho to produce for the Lesotho, South Africa and EU markets. Due to the country's elevation, good soil, and abundance of water, the quality of the produce is good, and the fruits ripen earlier than in other countries in the southern hemisphere, offering an opportunity to supply the regional market early in the season. In addition, Lesotho's climate is good for mushroom farming, and the kind of mushroom produced in Lesotho is in high demand in South Africa, Botswana and other southern African countries. Medicinal cannabis farming has also provided impetus for growth of agricultural sector. (Source: WE4F, 2022)

5.3.2.2 Tourism

The tourism sector in Lesotho currently employs 34,000 Basotho representing 6 percent of the workforce. The country relies on a good climatic condition to attract tourist in the region. Tourism resources such as snow is particularly vulnerable to the consequences of climate change, notably through rising temperatures and alterations in natural precipitation patterns. For example, the Afriski Mountain Ski Resort in the Lesotho Highlands is facing the challenges of a changing climate. Future climate variability is likely to impact significantly on the sector with attendant impact on job creation, infrastructural development and rural development.

5.3.2.1 Poverty reduction and livelihoods

Poverty varies substantially across this small country. The national poverty rate in 2017 of 49.7 percent does not capture this variation[50]. The spatial distribution of poverty reveals two main divides: one between lowlands and highlands and the other between rural and urban areas. The poverty rates are correlated with the topography, with the highlands generally faring worse than the lowlands. Urban areas fare better than rural ones in terms of both poverty rates and access to services. At the same time, the numbers of urban poor are growing, as people from rural areas migrate to cities and towns for better opportunities. In 2015-2016, Lesotho faced one of its greatest rainfall shortages in decades due to an El Niño. Rural areas responded to the shock by reducing consumption by an average of 23 percent. As a result, rural poverty was significantly higher than it would have been in the absence of the weather shock. It is estimated that rural poverty would have fallen to 54.6 percent with normal rainfall[51]. Urban poverty, on the other hand, was less impacted by the rainfall shortage, and the poverty rate would only have declined 3 percentage points faster had no shock occurred. Aside from urban households relying less on agriculture, the Metolong dam, which was finished just before the drought, also helped supply critical water to Maseru and other urban areas. In total, poverty in Lesotho would have decreased twice as fast over the 15 years had the shock not occurred.

[50] World Bank (2023) Lesotho CPF FY24-28
[51] World Bank (2019b) Lesotho Poverty Assessment

5.3.3 Water Resources

5.3.3.1 Wetlands

The eastern alpine areas of Lesotho support a network of unique high-altitude bogs and sponges, a system of wetlands found nowhere else in the world. These high-altitude wetland systems include hydrophilous, aquatic and semi-aquatic communities, with a high proportion of endemic species. The wetland systems also play a crucial role in the hydrological cycle. Particularly, their retention and slow release of water, these high-altitude wetlands help stabilise the stream flow, attenuate flooding, reduce sedimentation loads and absorption of nutrients. Currently, these highland wetlands are drying up, affecting the reliability of perennial streams. The projected increase in temperature and reduction in precipitation are likely to affect the wetland biodiversity significantly. Conservation and rehabilitation of degraded highland wetlands is therefore critical.

5.3.3.1 Water supply

Lesotho's water resources, comprising annual rainfall and winter snowmelt totalling 5.5 billion cubic meters, alongside renewable groundwater sources of approximately 340 million cubic meters per year, are crucial for the nation's sustainability[52]. These resources are closely intertwined with climate dynamics and various systems. Challenges such as high temperatures, droughts, and heavy rains threaten water availability and quality. Urban water supply in Lesotho depends predominantly on the Senqu/Orange River basin, with projections indicating increasing water stress by 2019 and potential scarcity by 2062. These shifts could have profound implications, including ecological damage, reduced agricultural productivity, and impacts on rural communities heavily reliant on groundwater.

The 2016 World Bank assessment on *'Lesotho Water Security and Climate Change*' highlighted vulnerabilities in Lesotho's water management system. Utilizing the WEAP model and climate projections, the study forecasted rising temperatures and decreased winter rainfall, particularly affecting northern regions. These changes could disrupt runoff patterns, diminish soil moisture, and alter reservoir capacities. As Lesotho serves as a critical water tower for the region, these shifts also pose transboundary challenges affecting neighbouring countries like South Africa, Namibia, and Botswana. The **Lesotho Highlands Water Project (LHWP)** plays a pivotal role by generating hydropower and facilitating water transfer to urban centres and South Africa's Gauteng province. Royalties earned from the export of water have become the largest single source of non-tax revenue in the country, contributing 10 percent to the overall Gross Domestic Product (GDP), and the launch of the LHWP Phase II has reinforced the crucial role of this lucrative commodity in Lesotho's economy (LMS 2017). Continued investment in water infrastructure, including LHWP Phase II and other initiatives like the **Metolong Dam** and the **Lesotho Lowlands Water Supply Scheme**, is essential to bolster resilience against climate impacts and sustain water security for Lesotho's economic and social development (LMS (2000) Lesotho's Initial National Communication; LMS 2017).

[52] LMS (2000) Lesotho's Initial National Communication

5.3.4 Critical Infrastructure – transport

5.3.4.1 Transport systems

In Lesotho, critical infrastructure includes transport systems, electric power, water supply, and telecommunication networks. This section focuses on the transport system, primarily dominated by road transport, with limited air and rail services. Private operators mainly provide road freight services, and the only regular rail service is a freight line from Maseru to Bloemfontein, South Africa. The road network is concentrated in the lowlands and foothills, covering 25% of the country, while the highlands, comprising 75%, rely on bridle paths, footbridges, and river crossings for access. Poor road network planning and investment hinder growth, especially in isolated highland areas. Arterial roads connect districts to nine South African border points, but fewer rural roads link villages within mountain districts like Thaba Tseka, Mokhotlong, Qacha's Nek, and Quthing. The Mokhotlong district's mining and tourism sectors are constrained by poor road conditions, despite recent bridge constructions. Many unpaved roads are in poor condition due to inadequate maintenance and limited local contractor capacity. The rugged highlands challenge road expansion and maintenance. Institutional capacity issues persist, leading to high fatality rates and frequent accidents, particularly in mountainous areas. Heavy snowfall and torrential rains often damage roads and bridges, isolating rural highland populations. These challenges and the impact of climate on road infrastructure requires that future investment in the road and transport system should consider climate change in the design of transport infrastructure.

5.3.4.2 Energy

Lesotho's primary energy base consists of hydroelectricity, biomass, and petroleum products. These energy bases comprise about 10% of Lesotho's gross domestic product and employment generation rate of about 0.1% of the population[53]. The government is committed to promoting green energy development pathways and reducing traditional dependence on biomass utilization. However, deforestation hampers the government's efforts to preserve the environment. Efforts are made to implement energy policy to alter the energy balance towards environmentally friendly practices and securing energy for all. There are plans to establish multipurpose dams on Makhaleng, Hlotse and Senqu with a capacity to generate more hydropower. Hydropower is threatened by rising temperatures and frequent droughts, affecting power transmission and fuel transfers. Long-distance transmission lines are particularly vulnerable to widely ranging weather and climate situations, land movements, and erosion. The country enjoys on average 300 cloud free days a year and a favourable wind regime. Thus, the potential for development of wind and solar energies holds much hope for the future.

[53] GoL (2021b) Lesotho's First Biennial Report

The Ha Makebe Solar Mini-Grid project in Lesotho stands as a remarkable success in enhancing energy access for rural communities. Prior to the project, residents of Ha Makebe, a remote village, lacked reliable electricity, severely limiting their opportunities and quality of life. Designed with community participation at its core, the project began with initial consultations through public gatherings announced by the local chief. This grassroots approach ensured the project addressed the community's specific needs and priorities. The introduction of the solar mini-grid system has transformed the village by providing clean, renewable energy, enabling lighting, powering essential appliances, and supporting small businesses. This success has not only improved daily lives but also spurred economic development and social upliftment. Encouraged by the pilot project's achievements, OnePower has expanded its efforts, installing an additional ten solar mini-grids in rural areas across the country. The Ha Makebe Solar Mini-Grid project exemplifies how sustainable energy solutions can profoundly impact rural communities and how Community's influence in decision making minimizes conflicts and enhances project sustainability, thus serving as a model for future energy initiatives. (Source : REPP, 2020)

5.3.4.1 Human settlements and living spaces

Extreme weather events such as torrential rains and strong winds are features of Lesotho's climate that pose a major threat to human settlements. These events damage infrastructure and homes, trigger soil erosion, reduce land productivity and displace people, often forcing them to migrate to cities and straining urban systems. Exposure to flooding is rising in urban areas as they expand. Since 1985, Maseru City has had four major flooding events. Combined, they displaced 11,000 people, of whom 45 percent were displaced in the last major flood in 2011.[54] Two of the floods were extreme flood events, which typically have a recurrence interval of more than 100 years. Urban sprawl of Maseru City into flood-prone areas has been happening at a rate of 3 percent a year, while the area exposed to rainwater flooding doubled from 1985 to 2015[55]. Presently, the total land area exposed to possible flooding is 10 percent and predicted rapid population growth is likely to raise the risk of fatalities and displacement as large-scale floods become more common. The housing structures in the rural areas have proven to not be stable enough to withstand extreme weather such as storms, flooding and strong winds – sometimes leading to loss of life. Unfortunately, these conditions are predicted to persist hence it is crucial to invest in climate resilient housing infrastructures.

5.3.5 Ecosystems and biodiversity

Lesotho features two distinct grassland ecosystems: the highveld and the mountain grassland ecosystem, each characterized by unique montane, afro-montane, and alpine vegetation. Within these major ecosystems, there are unique alpine wetlands, bogs, tarns, and patches of woody vegetation. Droughts, coupled with poor rangeland use and management, are degrading land quality, reducing productivity, and adversely affecting livelihoods through increased food insecurity, poverty, and migration. Aquatic and

[54] World Bank (2023) Lesotho CPF FY24-28
[55] Ibid.

terrestrial biodiversity loss, already linked to the siltation and drying of rivers, increased aridity, and the disappearance of wetlands, is expected to worsen[56]. This leads to accelerated soil erosion, reduced soil fertility, decreased arable land, and diminished vegetation cover. Insect and pest populations are anticipated to rise, but the extent of natural control mechanisms remains uncertain[57].

5.3.5.1 Rangelands

The degradation of Lesotho's rangelands is resulting in habitat changes for both micro- and macro-flora and fauna, and has the net effect of reduced livestock production, quality of livestock products and increased livestock mortality rate. Higher temperatures, poor grass cover, lower rainfall, frequent droughts, rainstorms, strong winds and the melting of heavier snow are all likely to increase soil loss far above the levels that were recorded in the late 1990s, putting the country's ecosystem and economy under heavier stress[58], while extreme weather conditions are conducive for disease and pest incidences. High temperatures and greater dry spell duration have potential to increase vegetation flammability resulting in extensive rangeland fires which would alter biodiversity by its effects on soil organic matter and soil fertility in grasslands and could lead to species changes such as dominance of fire-tolerant species such as *Themida triandra* and resprouting karroo bushes. The temperature increase will more likely impact negatively on grass layer cover on rangeland and crop residues, which are important sources of feed in the country.

The **Regeneration of Landscapes and Livelihoods project,** spanning from 2021 to 2029 with a budget of $50.75 million is co-financed by the OPEC Fund for International Development, the International Fund for Agricultural Development, and the Global Environmental Facility. The project's main objective is to ensure that rural communities adopt transformational practices for regenerated landscapes and sustainable livelihoods, leading to improved nutrition and adaptation to climate change. Through soil and water conservation techniques, reforestation, and the promotion of sustainable agricultural practices, this project has enhanced ecosystem services and biodiversity, increased agricultural productivity, and improved food security. These efforts are crucial in mitigating the impacts of climate change by restoring natural ecosystems and promoting sustainable land management. (Source: IFAD, 2024b)

5.3.5.2 Forests

Forest cover is very low as a percentage of total area of the country and tends to be limited to short patches under escarpments and to some river valleys in the mountains[59]. In the northern region of Lesotho, projected decrease in rainfall during the winter season and concomitant forest fires will present a major risk for forests as most of Lesotho's plantations are concentrated in that region. In Lesotho the peak fire season typically begins in mid-July and lasts around 14 weeks. There were 3,911 VIIRS fire alerts reported between 24th of July 2023 and 22nd of July 2024[60]. This is high compared to previous years going back to 2012. In the south, predicted increases in rainfall during the seasons of spring and autumn may be sufficient to compensate for increased evapotranspiration, and there may be no major threat to the existence of forests. There is a need to scale up agroforestry in meeting the country's goals related to improving forest cover, while at the same time enhancing the food security, nutrition and resilience of

[56] LMS (2000) Lesotho's Initial National Communication
[57] Mhlanga (2004)
[58] LMS (2000) Lesotho's Initial National Communication
[59] Mhlanga (2004)
[60] Global Forest Watch (2024

households. The integration of stone fruits (peaches and nectarines) and other fruit trees into existing cropping systems could be an option.

5.3.5.3 Alpine (Mountain)

The alpine system is critical for water security for two countries, Lesotho and South Africa. The alpine zone is an extremely harsh environment, with winter temperatures dropping to minus 20 degrees Celsius and winds reaching up to 100 km/hour. Only highly specialised species occur as a result. However, with climate warming, it is expected that many lower-elevation plants might begin to "climb" the mountain and invade the upper reaches, which could heavily impact the ecology and livelihoods of endemic alpine species[61].

5.3.6 Socio-cultural

The natural heritage and culture of the Basotho are intricately linked to their environment, affecting their housing, clothing, medicine, and other traditions. However, the relationship between these cultural aspects and climate change impacts on ecosystem goods and services remains nuanced and not clearly defined. Livestock rearing, a source of pride and wealth for the Basotho, relies entirely on the rangelands. Many communities, especially from the mountain regions to the Senqu River valley, face chronic poverty and survivalist livelihoods. Despite this, Lesotho's strong foundation in community-based climate change adaptation, rooted in its enduring social ecology, provides hope. While current climatic trends have adversely affected Basotho culture[62], future conditions might offer potential benefits, such as enhanced biodiversity that could improve traditional medicine and cultural restoration. Additionally, increased biomass from forest expansion could reduce reliance on dung and paraffin for energy, and improved sorghum and bean production could lead to better nutrition if technological advancements in processing occur[63]. Therefore, adaptation efforts must align with community priorities and aspirations, requiring specialists to collaborate effectively and avoid working in isolation.

5.3.7 Health

The dynamics of disease patterns, particularly those influenced by climate, are highly complex due to the interconnected impacts of climate change across various economic sectors, such as agriculture. This complexity makes accurate predictions challenging. However, a warming climate could result in several health consequences, including the spread of tropical diseases, increased incidence of respiratory infections like tuberculosis, and a rise in waterborne diseases such as typhoid. Additionally, severe winter conditions could exacerbate acute respiratory infections, especially in rural areas where poverty and energy scarcity are prevalent. Drought conditions may reduce dietary diversity and overall food consumption, leading to micronutrient deficiencies. Although Lesotho is currently outside the malaria zone, the IPCC's Fourth Assessment Report predicts that this zone may expand into southern Africa. Lesotho faces a growing dual burden of diseases, marked by both an increase in non-communicable diseases and a high incidence of communicable diseases. To build a resilient health system, comprehensive global and national efforts are needed, including mobilizing all health actors, establishing a robust regulatory and policy framework, and maintaining a dedicated health workforce. Given that the

[61] DST (2023)
[62] LMS (2000) Lesotho's Initial National Communication
[63] Ibid.

relationship between climate and human health is underdeveloped in Lesotho, a rational approach to assessing climate change impacts on health should prioritize ongoing research and monitoring of disease patterns in relation to climate and environmental factors, acknowledging a range of potential outcomes[64].

5.3.8 Knowledge and Information

Despite significant progress in overall literacy, only just over half of women and 40 percent of men in Lesotho have attended at least some secondary school, and only 9 percent of women and 8 percent of men have more than a secondary education[65]. Although expenditure on education is among the highest relative to GDP, the country's educational outcomes remain unsatisfactory, particularly in rural areas where access to post-primary education is a challenge for the poor[66]. Poor public awareness and education services undermine adaptation efforts, making it crucial to mainstream climate change education into curricula at all levels and target the private sector. As recognized in the NCCP, capacity building is needed across all sectors at community, district, national, and regional levels to collect and analyze diverse climate data and respond appropriately. Integrating ICT will aid in monitoring, information exchange, and raising public awareness.

5.3.9 Governance

Different institutions have specific roles that contribute to adaptive capacity and resilience, making coordination crucial for effective climate crisis responses across national ministries, including those focused on social development and gender equality. Shared responsibilities, such as disaster risk reduction, require alignment of purpose and action through coherent policies. At the subnational level, local authorities are vital in promoting climate change adaptation and building resilience, as they can best identify and implement responses that meet local needs. These authorities are typically responsible for small- to medium-sized adaptation investments in areas like land use, agriculture, water management, and disaster risk management. However, many districts and councils in Lesotho lack the technical capacity and resources for effective adaptation planning and implementation, limiting the country's ability to address climate change. Enhancing institutional arrangements for climate change risk management is essential to ensure proper linkages and collaboration in action design and implementation. Continued capacity building and staff development are also necessary. Governance and institutional barriers can limit adaptive capacity by exacerbating vulnerability drivers and impeding action, decision-making, and resource allocation.

6. National Adaptation Priorities

Lesotho's climate projections indicate that the identified climate hazards are and will continue to significantly impact key systems, necessitating the immediate prioritization of adaptation actions. Addressing these hazards with urgency through targeted adaptation actions is crucial to safeguarding livelihoods, ensuring sustainable development, and enhancing the resilience of Lesotho's socio-economic and environmental systems against the ongoing and future impacts of climate change. Immediate adaptation actions are essential to protect the most vulnerable populations and mitigate the long-term adverse effects on the nation's development.

[64] LMS (2013) Lesotho's Second National Communication
[65] Ministry of Health and ICF (2016)
[66] World Bank (2015)

6.1. Ranking adaptation actions

The adaptation options listed below have been ranked using multi-criteria analysis partly modified from Sinay and Carter (2020). Diverse stakeholders came to consensus on the priority adaptation actions which will be unpacked in the project development plans. The adaptation options are clustered under over-arching adaptation themes which are the most likely to generate synergistic and wide-reaching co-benefits for the country. The project development plans will further take into consideration other specific criteria that will assess aspects such as alignment with SDGs, Sendai Framework and Country GCF programmes, and inclusion of cross-cutting factors such as gender, vulnerable groups, policy and legislative reforms, and knowledge and capacity building at individual, community, institutional and systemic levels. These aspects align well with the five broad strategy clusters of the NSDP II, namely:

- Accelerated, Shared and Sustainable Economic Growth;
- Human Development and Social protection;
- Good Governance;
- Environment, Natural Resources and Climate Change;
- Cross cutting issues: integration of population, gender, youth and other vulnerable populations.

Table 3: *Criteria to be used in ranking priority adaptation actions.*

Criteria	Indicator	States/Score	Values	Observations
Uncertainty	Scenario	1.5°C	1	The state of this indicator relates to the average temperature increase used for planning. 1 – Near future
		3°C	2	2 – Mid future
		5°C	3	3 – Far future
Costs	Costs	Low	3	Low in comparison to other responses
		Moderate	2	Moderate in comparison to other responses
		High	1	High in comparison to other responses
Decision-Making time horizons	Timing	Urgent	3	If the implementation of the adaptation option can avoid life threatening situations.
		Convenient	2	When the implementation of the adaptation option is not urgent but is in synchrony with ongoing development.
		Inconvenient	1	Implementation of the adaptation option is not urgent and may significantly impact the existing development plans
Co-benefits	Natural Systems	Low	1	No natural system co-benefits
		Moderate	2	Some benefits to natural systems
		High	3	Many benefits to natural systems
	Human Systems	Low	1	Few people benefit (social, economic/livelihoods, inclusivity, gender)
		Moderate	2	Moderate number of people benefit
		High	3	Large number of people benefit
Positive Systems Synergies	Positive impacts	Low	1	Largely confined within a single system
		Moderate	2	Links strongly to 2-3 systems
		High	3	Links strongly to 4 or more systems

Negative Systems Synergies	Negative impacts	Low	3	Low potential of negative impacts on another system (e.g., aquaculture in dams can increase nutrient levels in water supply systems)
		Moderate	2	Medium potential of negative impacts on another system
		High	1	High potential of negative impacts on another system

6.2. Adaptation actions by sector or system

Adaptation actions were identified and ranked and are presented according to the sectoral/system-specific objectives of the Lesotho NAP in alignment with the GGA thematic targets. These actions will then be aggregated into specific projects for further development and presentation for funding.

6.2.1 Climate-resilient water security for all

Managing water resources in a changing climate requires boosting the capacity of communities and institutions to adapt, improving system resilience to droughts and floods, and minimizing exposure to water-related climate risks. These priorities reflect Lesotho's contribution toward the GGA, particularly in strengthening resilience and reducing vulnerabilities in critical water systems.

Objective 1: *Make progress towards a climate-resilient* ***water supply*** *for industry,* ***transboundary*** *trade, agriculture, and climate-resilient* ***sanitation*** *and while ensuring access to safe and affordable potable water for all households.*

Ensure sustainable and equitable water supplies for multiple uses through integrated catchment management and protection of key water towers and associated river basins, restoration and rehabilitation of degraded lands including wetlands in mountain areas and flood prone areas in the lowlands. Establish a national/local gender responsive integrated water resource management framework that incorporates community-based catchment monitoring and management, building appropriate capacity where needed, and revise the water-related and water-reliant policies and strategies to underpin these measures. Promote water recycling activities and to a large extent dredge some existing ponds and dams to collect and conserve water.

Improve access to sufficient and safe water supplies for various purposes by: promoting equitable and sustainable water management, appropriately scaled multi-purpose water reservoirs and expanding rainwater harvesting and water storage facilities and connected infrastructure across the public and private sector domains, down to the household level, and; construct boreholes where plausible with supporting storages and reticulated water supply systems at village level for better access to clean drinking water. Grow awareness of, encourage and build capacity at scale in water conservation, including re-use, recycling and irrigation efficiency; protection of natural and artificial wells; surface runoff control and managed aquifer recharge.

Further implement the Lesotho Lowlands Water Supply Scheme (LLWSS) Continued development of the LLWSS is critical to improving the reliability and resilience of the domestic and industrial sectors. Exploring interconnections between the developed water resources through LHWP and linking these to address

domestic and industrial demands in the lowlands could help improve the resilience of the existing system. Such integrated planning could also help to manage the associated political economy between perceived national benefits and the development of water transfer projects.[67]

Extending Adaptation Analysis. Using the existing data and tools to undertake additional iterations of the vulnerability and adaptation analysis up to the end of the 21st century would increase the scientific rigor. The analysis would enhance the capacity to evaluate climate risks and weigh different trade-offs. Further adaptation of the WEAP model to a shorter time step, such as one day, would enable the evaluation of operational strategies for water allocation among competing uses, such as water deliveries and timing for domestic and agricultural use, as well as hydropower generation. Extending the geographic scope of the model to demand areas in South Africa that rely on water imported from Lesotho would also produce a more complete understanding of vulnerabilities and trade-offs.[68]

Nexuses: The water security nexus is closely tied to agriculture, health, and infrastructure. Water scarcity challenges agricultural productivity and can compromise public health, particularly in vulnerable communities. Efforts to manage water resources sustainably, such as efficient irrigation and improved water storage, enhance both water security and agricultural resilience. Furthermore, resilient infrastructure, including flood defences and water supply systems, plays a critical role in maintaining water availability and protecting public health against climate impacts.

6.2.2 Sustainable food and nutrition security for all

Building climate-resilient agriculture is central to strengthening food security. In line with the GGA, this sector's adaptation focus is on equipping farmers with skills and technologies to better manage climate risks, ensuring food systems can withstand shocks, and safeguarding the most vulnerable groups from climate-induced food insecurity.

> ***Objective 2:*** *Make progress towards* ***climate-resilient food and agricultural*** *production and supply and distribution of food (crops, livestock, fisheries), and equitable access to adequate food and nutrition for all.*

Implement gender-responsive climate-smart agriculture and innovations in post-harvest storage and food processing, including: implementing conservation agriculture, improved land management e.g. erosion control and soil protection and agroforestry practices; expanding irrigation and enhancing water use efficiency; crop and livestock diversification, adjustment of planting dates and crop variety informed by integrated climate forecasts; crop relocation; promotion of drought-tolerant and heat-tolerant crop varieties and hardy livestock, and; build the capacity of smallholder farmers to adopt climate resilient agronomic practices.

Carry out research to support additional agriculture sector assessment. There is a need for a more thorough assessment of the risks and opportunities for Lesotho's agricultural sector of potential changes in climate. An evaluation of the implications of increasing atmospheric carbon dioxide (CO_2) concentrations, together with rising temperatures and water stress on agricultural productivity, should

[67] Ibid.
[68] World Bank (2016). Lesotho Water Security and Climate Change Assessment Report

be further elaborated. A better understanding of these dynamics could help develop agricultural strategies suited for the unique climatic changes under way in Lesotho. This information could help direct a program to incorporate the traits of such plans into desirable crop production cultivars to improve yield.[69]

Nexuses: The food security nexus is intrinsically connected to water management, biodiversity, and health systems. Water scarcity directly affects agricultural yields, while poor nutrition exacerbates health risks in vulnerable populations. Sustainable agriculture practices that promote water efficiency, soil health, and biodiversity protection not only address food security but also contribute to ecosystem stability and public health. The interdependence of these systems requires cross-sectoral collaboration to foster resilience against climate change.

6.2.3 Climate-Resilient Health Systems and Services

Strengthening the health system's ability to cope with climate change is key to protecting communities. Adaptation actions target improving healthcare readiness, reinforcing public health resilience to climate-sensitive diseases, and reducing health disparities exacerbated by climate risks. These efforts contribute to the GGA by enhancing the resilience of health systems and ensuring equitable protection for vulnerable populations.

> ***Objective 3:*** *Protecting human-wellbeing and safety and attaining resilience against climate change related health impacts, promoting* ***climate-resilient health*** *services, and significantly reducing climate-related morbidity and mortality, particularly in the most vulnerable communities and groups (youth, elderly, women).*

Strengthen the capacity of the health system to prepare for and respond to disasters, including: resilient construction and equipping of more health centres in order to improve access to health facilities within a walking distance of 8 km; support programmes for preventing and controlling climate induced diseases; enhance public awareness about water, sanitation and hygiene practices; enhance health surveillance, and; build capacity to diagnose, prevent and control climate-induced diseases such as diarrheal diseases and malnutrition.

Nexuses: Health systems intersects with water, food, and ecosystem resilience. Access to clean water and sanitation is essential in reducing climate-sensitive diseases, while nutritious food supports overall health resilience. Additionally, healthy ecosystems contribute to disease regulation and air quality, enhancing public health. Strengthening health systems requires an integrated approach that addresses these interdependencies, ensuring that climate adaptation efforts safeguard both human health and the environment.

6.2.4 Healthy Ecosystems and Biodiversity

Healthy ecosystems are foundational for climate resilience. In line with the GAA, which aims to protect and restore ecosystems that play a vital role in sustaining livelihoods and strengthening climate resilience; adaptation strategies emphasize strengthening ecosystem integrity, enhancing species' adaptive capacities, and addressing vulnerabilities to biodiversity loss driven by climatic change.

[69] World Bank (2016). Lesotho Water Security and Climate Change Assessment Report

Objective 4: *Reducing climate impacts on* ***ecosystems*** *and accelerating the use of ecosystem-based adaptation and nature-based solutions, including through their management, enhancement, restoration and conservation and the protection of forests and rangelands, inland water and alpine/mountain ecosystems.*

Upscaling interventions that **combat land degradation** and soil erosion by implementing land rehabilitation programmes incorporating integrated approaches to Sustainable Land Use Planning and Management, promotion of nature-positive land use practices and improvement of legislation addressing range management and the conservation of genetic resources.

Preserve natural forest and expand afforestation and forest regeneration programmes to maintain biodiversity and ecosystems and conserve genetic resources, including: protection and conservation of indigenous and endangered species and promotion of drought tolerant and fast growing tree species; development and maintenance of a frequent forest inventory system to facilitate monitoring of forest status and strengthening the implementation of the national Community-Based Forest Resources Management Programme; enhanced regulatory protections for floral and faunal species potentially at risk due to climate changes; and prevention of wildfires.

Protect and conserve grasslands and rangelands.

Objective 5: *Reducing climate impacts on* ***biodiversity*** *through enhanced nature conservation and use of appropriate technologies in conserving and preserving genetic diversity of unique and important crop, plant, and wildlife species.*

Support and implement programmes for alternative livelihoods in order to reduce unsustainable resource use that contributes to loss of biodiversity, including strengthening and stabilizing rural livelihoods through diverse adaptation interventions including ecotourism and aquaculture.

Nexuses: Biodiversity and ecosystem health are crucial for maintaining water, food, and infrastructure resilience. Healthy ecosystems regulate water cycles, protect soil health, and offer vital services such as pest control. Efforts to preserve biodiversity and restore degraded lands support water management and agricultural productivity. The links between ecosystems, water, agriculture, and public health underscore the need for coordinated strategies to protect both natural resources and community well-being.

6.2.5 Climate-Resilient Infrastructure and Human Settlements for all

Adaptation actions strengthen the resilience of infrastructure and human settlements by upgrading transport and energy systems to withstand climate shocks and by supporting livelihoods and social systems that enhance communities' capacity to cope with climate risks. These efforts support the GGA by reinforcing critical infrastructure, reducing climate-induced damages and ensuring continuity of services that are vital to community well-being and resilience.

Objective 6: *Designing* ***climate-resilient infrastructure****, and increasing the resilience of infrastructure, especially in* ***transportation****, to climate change impacts to ensure basic and continuous essential services for all and* ***minimizing climate-related impacts*** *on infrastructure.*

Climate proof supply distribution systems (water/power), waste management systems (sanitation) and transport systems (roads, bridges).

Existing roadways should be upgraded with reinforced materials designed to withstand extreme weather events and erosion, while prioritizing repairs to critical routes essential for connecting rural areas and districts or towns. In flood-prone areas, roads should be elevated using embankments or bridges to minimize flood damage. Incorporating flood-resistant designs, such as flood barriers and raised roadways, is essential for both new and existing infrastructure to mitigate future flood impacts. Additionally, planning and developing alternative routes will ensure continued connectivity if primary roads are damaged, with these alternative routes also built to withstand climate impacts.

Objective 7: *Increasing the* ***resilience of human settlements*** *including their infrastructure to climate change impacts to ensure basic and safe living spaces and housing for all and* ***minimizing climate-related impacts*** *on human settlements.*

Promote energy-efficient and disaster-resistant construction techniques through **updated building codes and standards.** This will ensure safe living spaces for all residents. Revise existing building and construction standards to account for climate change, incorporating gender considerations.

Prevent settlements in high-risk areas, such as floodplains, by **developing and enforcing appropriate land-use regulations**. Engage with local communities, especially in rural areas, to integrate indigenous knowledge about climate-resilient housing designs with modern architectural practices.

Objective 8: *Enhance the climate resilience of* ***energy systems*** *to safeguard economic development and human well-being.*

Diversify the energy mix by implementing renewable energy (solar/wind) projects in addition to multi-purpose dams for hydropower, and promote use of efficient bioenergy technologies, supporting these with appropriate guiding policies, regulatory framework/legislation and capacity building. Empower communities to adopt sustainable energy practices. Incorporate climate adaptation considerations into existing energy policies and regulations. Prioritize renewable energy sources, energy efficiency, and decentralized energy systems. By diversifying the energy supply and reducing reliance on centralized power grids, decentralized systems enhance energy security and resilience against natural disasters, grid failures, and other disruptions.

Nexuses: Infrastructure resilience is linked to water, energy, and transport systems. Climate-proofing essential infrastructure such as roads, water supply systems, and energy networks ensures that communities remain connected and have access to vital services during climate disruptions. Renewable energy sources and disaster-resistant construction techniques further strengthen community resilience. These interconnections highlight the importance of integrating climate adaptation measures across multiple sectors to protect both infrastructure and livelihoods.

6.2.6 Climate-proof Poverty Reduction and Livelihoods for all/Climate-social protection measures for all

To sustain economic growth amid climate challenges, adaptation actions aim to strengthen the resilience of key economic sectors, diversify livelihoods, and promote innovative financing and risk management approaches. These measures support the GGA by addressing vulnerabilities across industries and enhancing the capacity of economies to thrive sustainably in a changing climate.

> ***Objective 9:*** *Substantially reducing the adverse effects of climate change on* ***economic activities*** *in manufacturing, trade and tourism to promote poverty eradication and sustainable livelihoods including by promoting the use of adaptive social protection measures for all.*

Conduct research to support economic evaluations. The climate modelling and RDM framework illustrates important decision pathways for future development in Lesotho. The cost and valuation data required to support a cost-benefit analysis across the wide range of climate conditions would also support an important economic evaluation of different adaptation options. These data could be incorporated into the current RDM analysis to evaluate the economic robustness of the different adaptations.[70]

Nexuses: The poverty reduction is closely tied to access to water, food, and climate-resilient livelihoods. Climate-smart agriculture, renewable energy, and diversified income sources reduce vulnerability to climate risks and promote long-term economic stability. Protecting water resources and ensuring food security are essential for poverty alleviation, particularly in vulnerable communities. A holistic approach to livelihood diversification that integrates these interdependencies can foster resilience and reduce climate-related poverty.

6.2.7 Climate-proof Cultural Heritage

Preserving socio-cultural values, including indigenous knowledge, is critical for maintaining the resilience of communities. Adaptation efforts focus on safeguarding cultural assets from climate risks and promoting traditional adaptive practices. In doing so, they advance the GGA target by integrating local knowledge and traditional practices into effective, long-term resilience strategies.

> ***Objective 10:*** *Protecting* ***cultural heritage and cultural systems*** *from the impacts of climate-related risks by developing adaptive strategies for preserving cultural practices and heritage sites guided by traditional knowledge, Indigenous Peoples' knowledge and local knowledge systems.*

Conduct **climate vulnerability assessments** to evaluate the vulnerability of various cultural heritage types—such as monuments, historic buildings, and archaeological sites—to climate change impacts. Use these assessments to ensure that restoration and construction efforts incorporate climate-resilient materials and designs capable of withstanding extreme weather events and sea-level rise.

[70] World Bank (2016). Lesotho Water Security and Climate Change Assessment Report

Establish climate change adaptation policies specifically tailored for cultural heritage, focusing on preservation, restoration, and risk reduction.

Build the capacity of heritage professionals, local communities, and stakeholders on climate adaptation strategies to enhance their ability to safeguard cultural heritage. **Collaborate with local communities and traditional leaders** to **integrate their knowledge and practices** into these adaptation strategies.

Nexuses: Cultural heritage resilience is connected to ecosystems, water management, and community well-being. Traditional knowledge and practices play a key role in adapting to climate impacts, particularly in managing land and water resources. Healthy ecosystems support the preservation of cultural landscapes and historical sites, while safeguarding cultural heritage strengthens community identity and adaptive capacity. Integrating these elements into climate adaptation strategies ensures the preservation of cultural assets and the resilience of the communities that depend on them.

6.2.8 Cross-cutting enabler (supports all targets)

Expanding access to knowledge, including indigenous and traditional knowledge systems, and strengthening governance are critical for effective adaptation. Efforts aim to close information gaps, support evidence-based decision-making, and enhance institutional capacities and decision-making processes to deliver actions that contribute across all GGA thematic targets.

Objective 11: *Protecting Strengthen* ***research and policy making and product development, skills development,*** *and effective application of ICT to ensure* ***sustainable, inclusive and just growth****.*

Improve Data Monitoring and Management. Data limitations will undermine Lesotho's ability to monitor predictions and respond to changes in climate. Design and implementation of an optimized hydrometeorological network would enhance the capacity of Lesotho to prepare for and respond to potential future changes in climate. Detailed agricultural data and information about the economic uses and value of water were not readily available. These limitations led to a more cursory evaluation of the agricultural sector and the omission of a more formal economic analysis.[71]

Devise and implement a multi-hazard forecasting and early warning system to support systems planning, monitoring and disaster preparedness and facilitate gender responsive inclusive participation, access, sharing and information exchange using well documented and advertised channels of communication.

Continued Capacity Enhancement. The tools and analysis required to support the planning for robust climate adaptation necessitate sustained capacity development. The nature of the analysis here provided support to the first iteration of an interactive participatory process. The time required to develop the tools and capacity needed provides a foundation but should be further developed and integrated into government planning processes.[72]

Objective 12: *Improve* ***governance systems*** *to facilitate and enable effective adaptation, including through improved public financial management, well-managed* ***migration,*** *and* ***protection of civil and political rights of vulnerable groups****, in the face of a changing climate.*

[71] World Bank (2016) Lesotho Water Security and Climate Change Assessment Report
[72] Ibid.

Enhance Governance Systems. Strengthen governance structures to support climate adaptation efforts by improving coordination among relevant government agencies and stakeholders. Enhance transparency, accountability, and participation in decision-making processes.[73]

Effective Public Financial Management. Develop and implement financial mechanisms to fund adaptation projects, allocate resources efficiently to prioritize climate resilience initiatives, and monitor and evaluate financial management practices.[74]

Well-Managed Migration. Address climate-induced migration by developing comprehensive and gender-sensitive strategies focusing on migration, environment, and climate change (MECC) [75] to protect vulnerable populations. These strategies will harmonize efforts to reduce climate-induced human mobility and enhance sustainable livelihoods. Provide support for displaced communities to ensure their smooth integration and promote sustainable livelihoods for migrants.

Nexuses: Data, knowledge, and governance systems are fundamental to addressing the interconnected challenges of climate adaptation. Improved data management enhances decision-making across sectors and systems, while strong governance ensures coordinated and effective responses. Expanding institutional capacity and fostering collaboration across sectors are key to overcoming climate challenges and supporting resilience in all areas, from food security to infrastructure.

7. Implementation Strategy

7.1. Projects for implementation

Designing adaptation projects and programmes to implement actions that address key impacts resulting from the key risks remains challenging and a process that relies mostly on expert judgment and experience of sectoral agencies. Ensuring that projects and programmes implementation achieve quantifiable and verifiable outcomes that effectively address the adaptation objectives is even more challenging. Policies and legislation to enable successful outcomes should also be suggested in case there are obvious gaps in the policy landscape.

An initial set of projects has been compiled based on key sectors and systems above and considering existing strategies and plans related to climate change adaptation from efforts in different sectors. These projects have been selected for implementation based on national stakeholder consultations and government priorities.

[73] GoL (2007) Lesotho NAPA
[74] Ibid.
[75] IOM (2024)

Table 4: *Adaptation priorities and needs*

Sector / System	Investment Needs	Strategic Objective	Strategic Outcome	Strategic Actions	Key Stakeholders	Collaborating Partners	Costing	Potential Fund Sources
GCF Readiness and Preparatory Support Programme	- Institutional capacity and coordination - NAP development and implementation - Stakeholder engagement and consultation - Accreditation and access to climate finance - Monitoring, Evaluation, and Learning (MEL) Systems	Advance on the NAP process	- Strengthened Institutional capacity and coordination for NAPs - Improve climate information generation and use - Climate adaptation mainstreamed into national policies - Enhanced enabling environment for financing of the NAP process - Enhanced MEL systems	- Define institutional arrangements and strengthen institutional capacity - Strengthen agricultural extension services	Ministry of Environment and Forestry Lesotho Meteorological Services	UNEP	$3 million	GCF Readiness Programme
Agriculture	- Climate-resilient crop varieties - Sustainable land and soil management - Efficient irrigation infrastructure - Capacity-building for farmers	Promote resilient agricultural systems and ensure food security	- Increased agricultural productivity - Enhanced resilience of rural communities - Improved food security and income diversification - Improved gender-responsive climate-smart practices and innovations - Strengthened	- Develop and distribute resilient seeds - Expand farmer training - Strengthen agricultural extension services - Support women-led agricultural initiatives and cooperatives to foster entrepreneurship and innovation - Partner with research institutions to test and promote innovative post-harvest solutions	Ministry of Agriculture, Nutrition and Food Security; National Farmers' Associations; Lesotho Agricultural College; National University of Lesotho;	FAO, IFAD, UNDP	Approx. $10 - 25 million	GCF, Adaptatio Fund, World Bank, IFAD

			agricultural research systems to support development of climate-resilient and high-yield farming solutions	- Invest in locally adapted climate-smart agriculture research and technologies - Strengthen irrigation infrastructure and technology	Ministry of Natural Resources			
Renewable Energy Development	- Renewable energy infrastructure (solar, hydro, wind) - Mini-grid and off-grid solutions - Capacity-building for maintenance and operations	Expand access to affordable clean energy and reduce emissions	- Increased rural electrification - Reduced greenhouse gas emissions - Enhanced energy security	- Develop renewable energy projects - Support private sector initiatives - Build technical skills for renewable energy deployment - Develop guiding poli-cies, regulatory frame-work/legislation	Ministry of Energy; National Energy Utilities	UNDP, AfDB, Sustainable Energy for All (SE4ALL)	Approx. $30 - 50 million	GCF, World Ban AfDB, Private sector
Water Resource Management	- Water harvesting systems - Improved irrigation networks - Resilient water storage infrastructure - Integrated catchment management	Enhance sustainable water management under climate variability	- Improved water security - Reduced vulnerability to droughts and floods - Strengthened community water governance	- Implement gender responsive and integrated water resource management - Promote traditional knowledge and practices for water conservation. - Rehabilitate and climate-proof water infrastructure	Ministry of Natural Resources; Water Management Agencies; ReNOKA; Lesotho Highlands Development Authority	UNEP, WaterAid, UNDP	Approx. $15 - 25 million	Adaptation Fun GCF, World Ban
Disaster Risk Reduction and Early Warning Systems	- Early warning technologies (weather monitoring, risk mapping) - Community disaster preparedness	Strengthen resilience to climate-related disasters	- Improved early warning coverage - Reduced loss of life and property - Strengthened local disaster response	- Establish community-based early warning systems - Train first responders - Integrate DRR into local planning	Ministry of In-formation, Communica-tions, Science, Technology	UNDRR, WMO, UNDP, African Risk Capacity	Approx. $5 - 25 million	GCF, Adaptatio Fund, DRR-specific funds (e.g., Wo Bank DRR)

	- Infrastructure resilience against hazards		capacities		and Innovation; Lesotho Meteorological Services; National Disaster Management Authority (NDMA)			
Health Sector Resilience	- Climate-resilient healthcare facilities - Climate-sensitive disease surveillance systems - Health sector training and awareness	Safeguard public health against climate risks	- Reduced incidence of climate-sensitive diseases - Strengthened healthcare delivery during extreme events	- Strengthen disease surveillance - Upgrade health infrastructure - Integrate climate into health sector policies	Ministry of Health	WHO, UNDP, UNICEF	Approx. $10 - 25 million	GCF, Global Fu World Bank
Ecosystem Restoration and Biodiversity Conservation	- Reforestation - Wetland conservation - Community-based conservation programs	Restore ecosystems and strengthen natural climate resilience	- Enhanced carbon sequestration - Preserved biodiversity - Improved livelihoods through eco-based enterprises	- Implement large-scale reforestation - Protect critical ecosystems - Promote eco-friendly livelihoods	Ministry of Environment and Forestry; Basotho Enterprises Development Corporation (BEDCO)	UNEP, IUCN, WWF	Approx. $5 - 25 million	GEF, LDCF, Ada tation Fund
Cultural Heritage and Indigenous Knowledge	- Documentation of indigenous knowledge - Protection of cultural heritage sites - Integration of indigenous practices into adaptation planning	Preserve cultural identity and enhance climate adaptation through indigenous knowledge	- Strengthened cultural resilience - Increased use of indigenous practices in adaptation - Protected cultural heritage assets	- Document indigenous adaptation strategies - Train local communities - Protect sites against climate impacts	Ministry of Local Government, Chieftainship, Home Affairs and Police	UNESCO, UNDP, Local NGOs	Approx. $2 - 5 million	UNESCO Herita Funds, GCF (capacity-buildi windows)
Civil Society Organizations Engagement	- Support for CSO-led adaptation projects - Capacity-building for	Empower local civil society in	- Increased grassroots ownership of	- Build CSO advocacy skills - Foster community	Civil Society Networks;	UNDP, local NGOs, regional	Approx. $75,000 - 3 million	GEF Small Gran Programme, G

	advocacy and project management - Community mobilization and participation	driving inclusive climate action	adaptation projects - Strengthened community resilience - Greater accountability and transparency	Participation mechanisms	Community-Based Organizations; Ministry of Local Government, Chieftainship, Home Affairs and Police	networks		Readiness Pro-gramme, Bilateral partne
Institutional Capacity Building	- Strengthen government climate adaptation units - Training for climate risk management - Mainstreaming adapta-tion into national plan-ning	Enhance governance and institutional readiness for climate adaptation	- Improved policy frameworks and adaptation strategies - Increased access to climate finance - Strengthened imple-mentation capacities	- Conduct institutional audits - Build technical skills - Mainstream adaptation into national development plans	Ministry of Environment and Forestry; Ministry of Finance and Development Planning	UNDP, UNEP, regional adaptation hubs	Approx. $500,000 - 3 million	GCF Readiness Programme, World Bank Capacity Buildi Grants
Gender and Social Inclusion	- Women's empowerment in climate action - Youth-led adaptation initiatives	Promote inclusive climate resilience	Gender-responsive and socially inclusive adaptation outcomes	- Vocational training - Community leadership programs - Gender audits and action plans	Ministry of Gender, Youth and Social Development	Local NGOs, community groups	Approx. $10 - 25 million	GCF, UN Wome UNDP
Private Sector and Innovation	- Strengthen business resilience - Support adaptation entrepreneurship - Climate finance access for SMEs	Boost private sector leadership in adaptation	Private sector engagement in national adaptation efforts	- PPP development - SME training and finance access - Business model innovation	Basotho Enterprises Development Corporation (BEDCO); Ministries of Trade, Indus-try and Small Business; Min-istry of Environment and Forestry	Private banks, innovation hubs	Approx. $2 - 15 million	National Development Banks, GCF private sector window

Critical infrastructure	- Resilient infrastructure development - Climate-responsive standards and codes	Enhance the resilience of critical infrastructure and basic services to climate change impacts	- Climate-proof water, power, sanitation, and transport systems - Develop and update climate-resilient building codes and standards	- Promote climate-resilient infra-structure and services in transport, settlements, energy, and water and sanitation - Strengthen and enforce structural codes for resilient infrastructure - Mainstream adaptation measures and budgets into infrastructure planning.	Ministry of Natural Resources; Ministry of Finance and Development Planning; Ministry of Energy; Ministry of Public Works and Transport	Approx. $15 - 25 million	World Bank, GC Bilateral partne Public-Private-Partnerships

8. Considerations of Guiding Principles (Best Practices) of Adaptation

8.1. Gender responsiveness

Gender equality is a cornerstone of sustainable development and an essential consideration in climate adaptation planning. In Lesotho, climate change intensifies existing gender inequalities, especially in rural communities where livelihoods are highly dependent on climate-sensitive sectors such as agriculture and livestock. Effective and inclusive adaptation requires that the distinct needs, roles, and contributions of women, men, and youth are recognized and integrated into national planning processes.

8.1.1 Policy and institutional context

Lesotho has demonstrated a strong policy foundation for promoting gender equality, which serves as a critical pillar for climate adaptation. At the national level, Vision 2020 and the National Strategic Development Plan II (NSDP II) mandates gender mainstreaming across all development sectors, while the Lesotho Gender and Development Policy (2018–2030) outlines priority areas for achieving gender equality, including the enhancement of gender-responsive legislation, institutions, and development programs. These national efforts are reinforced by Lesotho's commitment to international and regional frameworks, including the Sustainable Development Goals (SDGs), the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), the SADC Protocol on Gender and Development, the Beijing Declaration and Platform for Action, the AU Protocol on the Rights of Women in Africa, and the AU Solemn Declaration on Gender Equality in Africa.

8.1.2 Gendered climate impacts in Lesotho

Climate change impacts are not gender neutral. The Lesotho Gender Assessment[76] identifies critical disparities in access to health, education, economic opportunities, and political participation, many of which are magnified by the effects of climate change. Rural livelihoods based on subsistence farming and livestock herding are highly vulnerable to increasingly frequent droughts, irregular rainfall patterns, and land degradation. In response to economic and environmental stressors, many school-aged boys are withdrawn from formal education to take up herding responsibilities, reflecting both traditional gender roles and climate-induced hardship.

Women in rural areas, particularly those heading households, play a central role in agricultural production. However, they often lack secure land tenure, access to credit, and agricultural technologies, which limits their ability to adopt climate-resilient practices. Although the Land Act of 2010 was introduced to strengthen women's land rights, its implementation has been inconsistent, especially in areas governed by customary law. Furthermore, climate-related shocks increase the burden of unpaid care work, such as fetching water and caring for ill or elderly family members, responsibilities that disproportionately fall on women. These overlapping challenges reduce women's capacity to engage in adaptive and income-generating activities, thereby lowering overall household resilience.

8.1.3 Gender mainstreaming in the NAP process

The NAP formulation process recognized that the impacts of climate change, as well as the capacity to respond, differ significantly across gender and age groups. To ensure that adaptation priorities

[76] World Bank (2022)

reflect the realities of those most affected, and guided by the LEG's approach to a gender-responsive NAP process,[77] meaningful participation of women, men, and youth in identifying adaptation priorities and shaping national strategies was a key focus.

Efforts were made to use sex-disaggregated data where available and to include perspectives from women and marginalized groups, particularly those in climate-vulnerable regions. By drawing on the diverse knowledge, roles, and experiences of different social groups, the NAP process reflects Lesotho's commitment to inclusive and participatory adaptation planning.

8.1.4 Gender-responsive adaptation actions

The NAP process identified several adaptation actions aligned with national development objectives. To strengthen gender equality in climate adaptation, these actions need to consider gender as a cross-cutting measure. To ensure sustainable food and nutritional security for all, it is necessary to improve land tenure security for women and marginalized groups by reinforcing the legal implementation of the Land Act and supporting gender-sensitive land governance systems. Expanding financial inclusion is also vital, particularly for women in rural communities, through targeted credit schemes, savings mechanisms, and insurance services that enable investment in adaptive practices. Investments in basic infrastructure, such as reliable water supply systems, can reduce the burden of unpaid domestic labour, freeing up time for economic and adaptation activities. Equally important is the integration of gender-responsive training and access to climate-smart agriculture techniques that are tailored to both male and female farmers. Moreover, research institutions and knowledge-sharing platforms must support the generation of evidence on gendered climate impacts and adaptation responses and promote the leadership of women in local adaptation planning and natural resource management. Strengthening these knowledge systems will allow for more effective tracking of progress toward gender equality in adaptation outcomes and help inform future decision-making.

Women's indigenous knowledge of farming practices, seed preservation, and water management is a valuable resource in the face of increasing climate stress. Likewise, men's involvement in land and livestock management can support more sustainable natural resource use when aligned with inclusive strategies. Creating spaces for both men and women to participate in decision-making, capacity building, and implementation will strengthen collective ownership of adaptation measures.

8.2. Indigenous Peoples and traditional knowledge in adaptation

Traditional knowledge and cultural heritage are foundational elements of resilience in Lesotho's mountain ecosystems and rural communities. Generations of indigenous Basotho, especially those residing in highland and remote areas, have cultivated deep knowledge of weather patterns, soil and water management, seasonal mobility, livestock care, seed preservation, and ecosystem-based coping strategies. These systems of knowledge remain relevant and effective in the face of increasing climate risks.

The NCCP and the NBSAP recognize the importance of indigenous knowledge in strengthening environmental governance, biodiversity conservation, and community-based adaptation. This NAP reinforces those commitments by ensuring that traditional knowledge systems are respected, safeguarded, and integrated into national and subnational adaptation planning. This follows the LEG's technical guidance on the consideration of vulnerable groups, communities and ecosystems in the

[77] NAP Global Network & UNFCCC (2019)

formulation an implementation of NAPs, which underscores the importance of leaving no one behind when adapting to climate change.[78]

Key priorities in the NAP for advancing indigenous and traditional knowledge include:

1. **Recognition and inclusion in adaptation planning:** Traditional knowledge holders such as elders, herders, and community leaders, are engaged in the design and implementation of adaptation strategies. Their insights inform vulnerability assessments, early warning systems, and ecosystem-based solutions, ensuring that adaptation responses reflect lived realities and long-standing practices.
2. **Safeguarding knowledge systems and practices:** Cultural heritage, indigenous languages, and place-based knowledge are documented, protected, and passed on through intergenerational learning. This includes supporting storytelling, oral history preservation, and community-driven mapping of climate impacts and traditional responses.
3. **Integrating traditional knowledge in key sectors:** Traditional practices are incorporated into agriculture, rangeland management, water harvesting, and housing design; especially in areas where scientific solutions are inaccessible or unaffordable. Adaptive farming techniques, seasonal livestock mobility, and indigenous seed systems are supported and scaled as part of broader resilience strategies.
4. **Respecting customary institutions and governance structures:** Customary institutions play a vital role in natural resource governance, conflict resolution, and communal adaptation efforts. The NAP promotes coordination with local chiefs and traditional councils to co-manage resources and strengthen community-based adaptation planning and enforcement.
5. **Strengthening legal and institutional protection:** Efforts to protect intellectual property rights, cultural knowledge, and community protocols are enhanced. National legislation and policy coherence are promoted to ensure that traditional knowledge is not exploited or marginalized, but rather elevated as a legitimate and equal contributor to adaptation governance.

8.3. Youth

Youth in Lesotho, comprising over a third of the population, are among the most affected by climate change. Disruptions to education, unemployment, climate-induced migration, and declining agricultural opportunities directly impact their lives. Yet, young people also offer a unique combination of energy, innovation, and deep-rooted community presence, making them essential actors in building resilience.

Lesotho's NSDP II and the NCCP both recognize youth as critical to sustainable development. This NAP builds on those priorities by integrating youth engagement across all phases of adaptation planning, implementation, and monitoring.

To enable meaningful participation, the NAP prioritizes five key areas of action:

1. **Participation in decision-making:** Youth are engaged throughout the NAP process, from consultations and stakeholder dialogues to sectoral working groups and coordination mechanisms. Formal inclusion in adaptation governance structures ensures that youth voices inform national priorities and locally led action.
2. **Climate education and skills development:** Climate-related knowledge and vocational training are strengthened through national curricula and extracurricular programmes. Young people are equipped with practical skills relevant to adaptation sectors such as sustainable

[78] LEG 2018

agriculture, ecosystem restoration, renewable energy, and water resource management. Training institutions and community-based platforms expand access to these opportunities.

3. **Youth innovation and green entrepreneurship:** Support mechanisms including grants, incubators, and mentorship, foster youth-led adaptation initiatives and green businesses. Youth are encouraged to develop and implement context-specific solutions that enhance community resilience, create employment, and contribute to low-emission development.
4. **Awareness and peer engagement:** Climate education is embedded in schools and extended through informal avenues such as climate clubs, awareness campaigns, and community dialogues. These platforms strengthen environmental awareness while fostering a sense of ownership and shared responsibility among young people.
5. **Youth-led monitoring and accountability:** Young people play an active role in tracking the implementation of adaptation measures through participatory monitoring, data collection, and feedback mechanisms. Their involvement enhances transparency and ensures that adaptation efforts remain responsive to the needs of future generations.

9. Resource mobilization for NAP implementation

The NAP aims to boost the country's resilience and adaptive capacity. However, its success largely depends on effectively mobilizing sufficient financial resources. This strategy details how Lesotho plans to access, manage, and use both domestic and international funds to achieve its NAP goals.

9.1. Current climate finance landscape

Lesotho has accessed various climate financing mechanisms with varying degrees of success. The **Global Environment Facility (GEF)** has supported projects addressing biodiversity loss, land degradation, and climate change adaptation. The **Least Developed Countries Fund (LDCF**) has funded projects to enhance climate resilience in agriculture and water sectors. The **Green Climate Fund (GCF)** has provided readiness and preparatory support to strengthen institutional capacities and engage the private sector. The **Adaptation Fund (AF)** has significantly supported Lesotho's climate adaptation efforts by providing financial and technical assistance for projects aimed at enhancing water management, agriculture, livelihoods, and capacity building, thereby boosting the resilience of vulnerable communities. The **Climate Investment Funds (CIF)** have supported renewable energy access. Despite these efforts, Lesotho struggles to fully access available climate finance due to limited institutional capacity and project preparation systems. Currently, the Central Bank of Lesotho under process of accreditation as a national Direct Access Entity (DAE) to facilitate access to these funding sources. **Multilateral development banks** such as the African Development Bank, and the World Bank support socio-economic development and climate change adaptation initiatives in Lesotho through loans and grants.

9.2. Strategic approach to resource mobilization

The Government of Lesotho aims to adopt a comprehensive resource mobilization approach that combines domestic resources, bilateral and multilateral funds, private sector investments, and innovative financing instruments to implement the NAP. This entails integrating climate change adaptation into **national and sectoral budgets** and developing strong project pipelines to attract international funding. Emphasis will be placed on strengthening partnerships with **bilateral development partners** and exploring blended finance opportunities. By enhancing these partnerships, Lesotho aims to secure additional funding, technical expertise, and capacity-building opportunities essential for the successful implementation of its NAP. These collaborative efforts will help to upscale existing projects and ensure a coordinated and effective response to climate resilience challenges.

Additionally, Lesotho intends to attract **private sector investments** and **philanthropic** support, and to collaborate with **non-governmental organizations (NGOs)** and **civil society organizations (CSOs)**. The government will also consider **innovative financing instruments** such as green bonds, climate risk insurance, debt swaps, public private partnerships, community-based financing models, crowd funding, and others. By leveraging community-based financing, Lesotho will further support the financial needs of NAP implementation, ensuring a comprehensive and sustainable approach to climate resilience.

The table below outlines the phased approach to mobilizing and utilizing resources for the effective implementation of Lesotho's NAP, detailing strategic activities, financing objectives, and priority areas for adaptation action across a five-year period.

Table 5: *Five-Year Resource Mobilization and Implementation Timeline for Lesotho's National Adaptation Plan (NAP).*

Year	Strategic focus	Resource mobilization targets	Implementation priorities
Year 1 Planning and establishing foundations	- Stakeholder engagement - Establish Financing mechanisms - Develop resource mobilization strategy - Capacity building	- Secure initial grants and technical support - Start applying for funding through global climate funds	- Conduct vulnerability assessments - Set up institutional mechanisms for monitoring - Develop baseline data for projects
Year 2 Proposal development and partnership building	- Develop project proposals - Engage donors and investors - Align with GGA and climate finance sources	- Secure funding for project development - Build partnerships for co-financing	- Begin implementation of prioritized adaptation projects - Strengthen monitoring and evaluation frameworks
Year 3 Implementation of pilot projects and scaling up	- Launch 3 pilot projects - Mid-term evaluation - Develop scaling-up strategy	- Secure additional funding for scaling pilot projects - Co-financing with private sector	- Continue implementing pilot projects - Scale successful projects to wider regions
Year 4 Full-scale implementation and resource diversification	- Full-scale project roll-out - Diversify funding sources - Policy alignment and advocacy	- Secure long-term funding through national budget and donors - Explore innovative financing (e.g., green bonds)	- Implement major adaptation programs (e.g., flood defenses, resilient infrastructure) - Capacity-building for sustainability
Year 5 Monitoring, evaluation and adjustment	- Monitor and evaluate projects - Adjust implementation strategy - Update the NAP	- Secure continued financing beyond Year 5 - Continue working with international climate funds	- Continue adaptation efforts based on evaluation outcomes - Sustain key interventions, especially in vulnerable sectors

9.3. Integration of sectoral investment strategies into adaptation planning

Lesotho has taken significant strides in aligning national development priorities with climate resilience, particularly through its sectoral investment strategies. The NSDP II serves as a cornerstone in this effort, identifying four key productive sectors: agriculture, manufacturing, tourism and creative industries, and technology and innovation as drivers of inclusive economic growth. The NSDP II emphasizes the importance of climate-resilient infrastructure, sustainable land management, and investment in skills development as cross-cutting enablers that directly support national adaptation goals. These sectoral priorities provide a strong foundation for integrating adaptation into national planning processes and for mobilizing investment toward climate-resilient development pathways.

In the agriculture sector, the Climate-Smart Agriculture Investment Plan (CSAIP)[79] provides a detailed framework for transitioning to sustainable, resilient, and low-emission food systems. This plan identifies investment priorities and policy actions aimed at increasing agricultural productivity while enhancing the adaptive capacity of farmers and reducing greenhouse gas emissions. CSAIP is critical to building food security under a changing climate and is directly aligned with the objectives of the NAP in strengthening the resilience of rural communities and ecosystems.

Moreover, Lesotho's Comprehensive Investment Policy, launched in 2024, reinforces the country's commitment to climate-responsive economic transformation. [80] By prioritizing sustainable development, economic diversification, and investor confidence, the policy fosters an enabling environment for long-term climate investments across multiple sectors, particularly in key sectors like infrastructure, manufacturing, and financial services. The policy's emphasis on transparent governance and streamlined regulations is expected to enhance the mobilization of both public and private finance for adaptation efforts.

Ongoing reforms to improve the investment climate, including updates to legal and regulatory frameworks and the promotion of public-private partnerships (PPPs), present further opportunities to scale up climate adaptation. These reforms create the conditions necessary for leveraging external support and domestic resources for adaptation-related infrastructure, innovation, and service delivery. Aligning these investment efforts with the NAP will ensure that sectoral development contributes to building national resilience and reducing climate risks in a coherent and coordinated manner.

10. Monitoring and Reporting

Currently, the GoL does not have a systematic or institutionalised approach to monitoring and reporting (M&R) on climate change adaptation initiatives. The implementation of the GCF Readiness and Preparatory Support Project will be established to enable effective tracking of outputs under the NAP process to assess its effectiveness, and to iteratively feed back into the process, ensuring its long-term sustainability. Training will be provided to relevant institutions, including line ministries and NGOs, on the use of the M&R framework.

[79] World Bank (2019c) Lesotho Climate-Smart Agriculture Investment Plan (CSAIP)
[80] GoL (2024)

11. Further assessments and updates to the NAP process

11.1. Roadmap for reviewing and updating the NAP process

The NAP complements the NCCP in driving towards the establishment of a coherent and effective adaptation programme for Lesotho. For updating Lesotho's NAP the following steps will be undertaken:

- Through the GCF Readiness and Preparatory Support Project, institutional arrangements will be formalized by establishing a formal legal mandate. Ownership at local levels will also be ensured.
- Sectoral impact chain analysis and vulnerability/risk assessments will be carried out. Improved risk and vulnerability assessments will provide evidence-based linkages between the physical processes of climate change to the direct and indirect impacts on different people and places.
- A stocktaking exercise will be carried out to measure progress on the priorities and programmes that have been outlined in Chapter 7. Based on the impact chain analysis and stakeholder consultations, the NAP process will generate adaptation options for the identified vulnerabilities to supplement the existing priorities that have been identified. This will include projects and actions to integrate climate change adaptation considerations.
- Progress reports on the implementation of the above activities will be produced annually and reported to the NCCC and through national adaptation communication instruments.

11.2. Data and information requirements for future assessments

11.2.1 Research

There are several key research gaps that need to be addressed to enhance climate change adaptation and environmental sustainability efforts in Lesotho. First, improving the capabilities of the Lesotho Meteorological Service in projecting future climate trends and identifying hazards is essential. Additionally, it is crucial to broaden the participation of the public, scientific institutions, both women and men, youth and local communities in planning and management processes, ensuring that gender equity approaches are incorporated. Strengthening environmental observation and monitoring capabilities will lead to more effective environmental management. Expanding the capacity to use and apply analytical tools and models will enhance decision-making efficiency. Increasing research priority on climate change and environmental sustainability is necessary for informed policy and action. Finally, it is important to strengthen the technical capacity to integrate climate-smart agriculture, agricultural financing opportunities, and risk management strategies for small-scale farmers.

11.2.2 Data and Information

Addressing data and information gaps is critical for effective climate change adaptation in Lesotho. Increasing the availability of sectoral data, particularly in land use and land cover change, agriculture, forestry, and health sectors, is essential. Developing early warning systems for dangerous hydrometeorological phenomena and climate risk management (CRM) will enhance preparedness and response capabilities. Implementing a geo-information-based approach for data storage and management will improve data accessibility and manipulation within Lesotho's National Spatial Data Infrastructure. Establishing a dedicated Unit within the Bureau of Statistics will facilitate comprehensive data collection and archiving for environmental and climate change studies. Additionally, quantifying the international financial, technological, and capacity-building support

needed for vulnerability abatement measures up to and beyond 2030 is necessary. Ensuring that nationwide climate change monitoring systems are maintained and enhanced, including through monitoring networks at appropriate spatial density and frequency, will support ongoing and future adaptation efforts.

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Annexes

Annex 1: National documents relevant for climate change adaptation

	Instrument	Title/type	Year	Objective
Economic	Strategy	National Strategic Development Plan	2018/19 - 2022/23	Identify key levers for getting Lesotho on a sustainable development path by addressing the challenges and exploiting the opportunities for the youth, enhance the skills base, promote technology adoption, improve health, combat HIV and AIDS, reverse environmental degradation, adapt to climate change, promote peace and democratic governance, and build effective institutions.
Climate Change	Policy	National Climate Change Policy	2017-2027	The National Climate Change Policy establishes 22 strategies in order to ensure that stakeholders address climate change impacts and their causes through the identification, mainstreaming and implementation of adaptation and mitigation measures, while promoting sustainable development.
	Strategy	National Climate Change Policy 2017-2027 Implementation Strategy	2017	Effect implementation of the climate change Policy. It identifies action guidelines to build a climate resilient society and promote green development pathways by mainstreaming and integrating climate change into key national socio – economic and environmental sectors.
	National reports	Third National Communication	2021	Communicate to the Conference of Parties (COP), policies and measures the country has taken and envisaged to implement the Convention. The TNC highlights Lesotho's efforts in areas of mitigating climate change and adaptation to the impacts thereof. The report also includes greenhouse gases (GHGs) inventories for the period 2005-2010 and addresses issues of public awareness, technology transfer and capacity building needs as well as gaps, constraints and recommendations.
		Nationally Determined Contribution	2017	Put forward mitigation and adaptation actions that the country will take to tackle its growing vulnerability to climate change and greenhouse gas emissions.
		Second National Communication	2013	To communicate to the Conference of Parties (COP), what policies and measures the country has taken and envisaged to implement the Convention. The SNC, particularly, highlights Lesotho's efforts in areas of mitigating climate change and adaptation to the impacts thereof. The report also includes greenhouse gases (GHGs) inventories for 1995-2000 (base year 2000), and addresses pertinent issues, particularly with regard to public awareness, technology transfer and capacity building needs as well as gaps, constraints and recommendations

		National Adaptation Programme of Action (NAPA)	2007	Identify regions and communities vulnerable to climate change, assess the impact of climate change on community livelihoods, identify and prioritise responsive adaptation activities for implementation in the vulnerable zones
Environment	Act	Environment	2008	Makes provision for the protection and management of the environment and conservation and sustainable utilization of natural resources of Lesotho.
	Policy	National Forestry Policy	2008	Secure tree cover on lands and to improve the legal and administrative framework related to forests. Carbon sequestration is a notable objective of the policy. Promotes integrated approach to forest management, conservation and development (including sustainability concerns, ecological values and social interests)
		National Environment Policy	1998	Protect and conserve the environment with a view to achieving development in Lesotho by among others, halting environmental degradation, enhancing ecosystem services, raising public awareness, protecting cultural heritage, fostering community engagement, and ensuring non-government and private sector participation in environmental management.
		National Range Resource Management Policy	2014	Provide guidance for the development of effective strategies that combat land and vegetation degradation and motivates for improved legislation and implementation thereof.
		Plant Protection Policy For Lesotho	2015	Develop plant protection legislation and related subsidiary regulations; promote strategic partnerships and linkages with all stakeholders and institutions at national, regional and international level; promote the use of environmentally friendly and sustainable plant protection strategies to maximize agricultural productivity; protect the natural environment from the harmful impact of invasive plant pests.
		National Seed Policy	2006	Among others, to develop an effective, efficient and sustainable seed system capable of supplying high quality seeds to satisfy national seed demand as well as for export; support and encourage variety development, maintenance and seed production programmes; and promote the use of improved varieties and high quality seed in extension messages and materials used in farmer training and demonstrations to reinforce the message.
		Draft Soil and Water Conservation Policy	2021	To facilitate a robust and comprehensive integrated approach to conserving Lesotho's natural resources by engaging approaches that will effectively reduce soil erosion, strengthen catchment management systems that allow for enhanced supply of water to sustain both natural and socio-economic requirements and to facilitate the restoration of and sustained productivity of the natural resource base.

	Plan	Draft National Biodiversity Strategic Plan	2020	Outlines measures the country will take towards achieving the CBD objectives; Integration of biodiversity issues into relevant sectoral and cross-sectoral plans; and promotion of public education and awareness on biodiversity issues;
		Lesotho National Action Programme in Natural Resource Management, Combating Desertification and Mitigating the Effects of Drought National Range Action Plan	2015	To structure and guide the implementation of the UNCCD and define the elements of strengthening environmental capacities, enhance public awareness and mobilize active participation in order to better manage the natural resources, combat desertification, land degradation and drought.
		Environmental Education Strategy	2014	Provides a framework for enabling a comprehensive and inclusive education for sustainable living and solutions for environmental issues and challenges in Lesotho. It is intended to guide Lesotho in its concerted efforts to respond to environmental degradation, unsustainable livelihoods and poverty.
		Biodiversity Strategy and Action Plan	2000	Promote the conservation of biological diversity, sustainable use of the components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.
Agriculture	Strategy	Country Strategic Opportunities Programme	2020 – 2025	Contribute to transformation of rural Lesotho towards a more resilient and economically productive environment which allows the population to sustain its livelihoods and overcome poverty and malnutrition
		Strategic Plan for Agriculture and Rural Statistics for Lesotho	2019/20 – 2023/24	Improve evidence-based decision making for poverty reduction, increased food security, sustainable agriculture and rural development.
		National Conservation Agriculture Strategy Framework	2012-2017	Enhance sustainable food and nutrition security, create the enabling environment for sustainable agri-business development, strengthen sustainable management of natural resources, and strengthen capacity for better agricultural service delivery

		Agriculture Sector Strategy	2003	
Energy	Policy	Lesotho Energy Policy	2015-2025	This Policy aims at providing Lesotho's citizens with an affordable, reliable and environmentally friendly energy supply. Bioenergy, renewable energy sources, energy efficiency are the main objectives laid out by the document, which details how the government intends to foster them.
		Renewable Energy Policy	2013	To enhance the energy security of Lesotho by reducing reliance on fossil fuels and imported electricity; enhance the access to modern energy for rural and decentralized areas of Lesotho; and protect the environment through reduction of Greenhouse Gas emissions from energy sector in Lesotho as well as prevent other related environmental damages.
Health	Policy	National Health Policy	2017	Achieving universal health coverage and delivery of quality health care services to all Basotho at affordable costs. Promotion of disease prevention, early diagnosis and treatment of diseases.
	Plan	Lesotho Food and Nutrition Strategy and Costed Action Plan	2019 – 2023	To promote, implement and scale-up proven and innovative multi-sectoral interventions for a well-nourished, healthy and productive nation.
		National Health Strategic Plan	2018/19 – 2022/23	Provides guidance for harmonization and coordination in the implementation of programmes in the health sector. It seeks to achieve universal health coverage for all people of all ages.
Infrastructure	Policy	Transport Policy	2006	Provide an enabling environment for efficient, cost effective and safe transport, within Lesotho, regionally and internationally and facilitate the sustainable development of the economy, social services and of the population in general.
Water	Policy	Water and Sanitation Policy	2007	Promote proper management of the country's water resources and its sustainable utilization; adequate and sustainable supply of potable water and sanitation services to all of the population of Lesotho; co-ordination and coherence in the management and development of water and other related natural resources in order to maximize the resultant socio-economic benefits without compromising the sustainability of vital ecosystems; and harmonization of processes and procedures followed by different development partners and other stakeholders in order to optimize available internal and external resources as well as ensure timely implementation of sector programmes.

	Strategy	Long Term Water and Sanitation Strategy	2014	Ensure adequate and sustainable supply of potable water and sanitation services to all of the population of Lesotho
Disaster Risk Reduction	Policy	National Disaster Risk Reduction Policy	2007	
	Plan	National Disaster Risk Reduction Strategy and Action Plan	2020 - 2030	Prevent new and reduce existing natural and non-natural disaster risks and losses significantly in life and property, health, livelihood and means of production, physical and social infrastructure, cultural and environmental heritage and to manage residual risk thus contributing to the strengthening of resilience and reduction of disaster losses
		National Early Warning Strategic Action Plan	2020	To reduce risks of hazards and manage them by providing early warning on imminent hazards through an Early Warning System.
	Social/ Cultural	Gender and Development Policy	2018 – 2030	Ensure equal participation of men, women, boys, girls and other marginalized groups in addressing gender and climate change as well as sustainable development issues.
		National Youth Policy	2017-2030	National Youth Policy 2017 - 2030 has been developed with and for all youth in the Kingdom of Lesotho as a step forward to invest in the Youth. The policy document provides an operational framework to all actors with a set of realistic guidelines from which action programmes and services can be developed to facilitate meaningful involvement of Youth

Annex 2: NAP process roadmap: linkages and sequencing of different elements

Steps	Key activities	Responsible Institutions	Outputs	Time-frame	Funding source	Progress indicators	Targets
1. Lay the groundwork and address gaps (Element A)							
1. Initiating and launching of the national adaptation plan (NAP) process	c. Create or enhance a national vision and mandate for the NAP process	NCCC, line ministries	Vision statement with concrete adaptation targets plus a unified nation-wide adaptation vision	6 months	GoL, EU, UNDP	Vision statements and targets.	5 vision statements (4 sector + 1 national)
	d. Operationalize the NAP process through access to support	Ministry of Environment and Forestry	National NAP work plan on the basis of initial consultations with ministries	6 m	GoL, EU, UNDP	Synthesized Government NAP strategy work plan.	1
	e. Define an NAP strategy containing a prioritized activity list	NCCC, line ministries	Ministry-level work plans and capacity development plans for the NAP process developed	6 m	GoL, EU, UNDP	Ministry work plan and capacity development plans for the NAP process	4
2. Stocktaking	a. Conduct a stocktaking and establish baselines, consisting of lessons learned, gaps and opportunities.	Line ministries	Stocktaking report at ministry level and aggregated to government level	6 m	GoL, EU, UNDP,	Sector-level stocktaking report National stocktaking report.	4 1
	c. Conduct a gap analysis to assess strengths and weaknesses regarding the capacity, data and information, and resources required to effectively engage the NAP	Line ministries	Delivered as part of the ministry-level NAP strategy work plan	6 m	GoL, EU, UNDP	Capacity development plan	4 delivered as part of Ministry NAP strategy

	e. Assess potential barriers to the planning, design and implementation of CCA including policy incoherencies.	Line ministries	Delivered as part of stocktaking report at ministry level and aggregated to government level	6 m	GoL, EU, UNDP	Delivered as part of stocktaking report.	
3. Addressing capacity gaps and weaknesses in undertaking the NAP process	a. Develop and enhance enabling institutional and technical capacity for the formulation of NAP, e.g. training workshops.	Ministry of Environment and Forestry	Skills and capability development strategy and procurement strategy to address capacity development needs	6 m	GoL, UNDP	Funded skills and capability strategy	1
	c. Design and implement a CCA public awareness campaign	Ministry of Environment and Forestry	CCA public awareness and education programmes developed on the basis of stocktaking and visioning exercises Report comprising outputs implemented and results	6 m	GoL, UNDP	Public awareness campaign proposal Outcomes report	1 1

2. Preparatory Elements (Element B)							
2. Assessing climate vulnerabilities identifying adaptation options at sector, subnational, national and other appropriate levels	a. Assess vulnerability to climate change at sector, subnational, national or other appropriate levels (by applying appropriate framework) b. Rank climate change risks and vulnerabilities c. Communicate projected CC information to all stakeholders and the public	Line ministries	Quantitative analyses of impacts for medium- and longer-term climate change, geographically disaggregated, assuming with no adaptation The results should be integrated into the public awareness campaign	6 m	GoL, EU, UNDP	An agreed set of socio-economic pathways for Lesotho (assuming no adaptation) Sector level impact analyses	1 4
3. Reviewing and appraising adaptation options	a. Appraise individual adaptation options	Line ministries	Quantitative analyses of cost effectiveness of CCA-relevant experiences to date and comparative cost-effectiveness appraisals for each sector The range of adaptation implementation pathways to reach the sector target, identified on the basis of experience and costed Adaptation output benchmarks developed through community surveys, meta-evaluations and expert opinion	6 m	GoL, EU, UNDP	Sector-level analytical reports comprising cost-effectiveness data, chosen implementation pathway, adaptation cost benchmarks	4
4. Compiling and communicating national adaptation plans	a. Compile draft national adaptation plans.	Ministry of Environment and Forestry	Sector Adaptation Plans published as stand-alone documents and reported in UNFCCC processes, amalgamated into a national report	6 m	GoL EU, UNDP	Adaptation plans	4 sector level. 1 national level.

5. Integrating CCA into sectoral planning, budgeting and implementation processes	a/c. Identify opportunities and constraints for multi-annual planning, budgeting and implementation processes at national and subnational levels; b/c. Build and enhance capacity for integrating CC into multi-planning, budgeting and implementation processes at national and subnational levels.	Line ministries	Institutional assessment of processes, workflows and entry points to determine options for mainstreaming and efficiency improvements Capacity needs assessment updated and training programmes developed E-management systems installed and functional Coordination/management structures functional Policy review structures in place and functional Monitoring protocol in place and functional	6 m	GoL, EU, UNDP	Sector-level institutional assessments. Outputs to be scoped out following on from the institutional assessments	4
3. Implementation Strategies (Element C)							
2. Developing a (long-term) NAP implementation strategy	a. Define an implementation strategy (target areas, responsible entities, timing, sequencing of activities and resources) b. Develop training for implementation capacity development (project planning and monitoring) c. Conduct regular review processes for implementation effectiveness	Line ministries	As above: Element B, Step 5	As above	GoL, UNDP, donors	As above	
4. Monitoring and Review (Element D)							

1. Monitoring the NAP process	a/b/c: Define qualitative and quantitative metrics for monitoring of effectiveness and implementation progress	Line ministries Ministry of Environment and Forestry	Regular progress reports	Continuous	GoL, UNDP, donors	Sector-level progress reports	4 annually
2. Iteratively updating national CCA plans.	Update the national CCA plans and related documentation at a specified frequency	Line ministries	Process to develop annual spending plans and medium-term expenditure plans which integrate adaptation in place	6 m	GoL, UNDP, donors	Standard operating procedures	4

Annex 3: Projected climate changes, associated hazards and their impacts over three different time horizons. NF – near future (2020-2040), MF – mid-future (2041-2069), FF – far future (2070-2099)

High temperatures						
Hazard	**Impacts**	**Vulnerabilities at Scale**	**Affected Sectors**	**Risk (NF)**	**Risk (MF)**	**Risk (FF)**
Heat waves	- Reduced crop and animal production/productivity and reproduction - Heat stress - lowered immune systems - Higher temperatures exacerbate incidences of diseases and pests. - Introduction of new diseases - Crop wilting due to higher temperatures - Crop failures leading to famine and food shortages. - Decrease in forestry resources negatively impacts on the stability of energy supplies for both cooking and heating	Increased susceptibility to disease (heat stroke) and general discomfort, particularly in the southwestern part of the country	- Crop production - Livestock production - Horticulture and cash crops - Forestry - Fisheries - Grasslands - Infrastructure - Water resources - Wetlands - Health, - Ecosystems - Social-Cultural - Human settlements living spaces	Low	Med	High
Wildfires	- Destruction of crops and vegetation - Air pollution		- Crop production - Livestock production - Ecosystems and biodiversity - Health	Low	Low	Med
Biome shifts	- Change in ecosystem services for humans, water, forest, mammals, birds, and other species due to biome shifts - Change to the ecosystems and vegetation.	- Diminished wellbeing, particularly for the rural poor and unemployed whose livelihoods depend heavily on rangelands, indigenous plant and animal species, wetlands, and ecotourism. - Rapid spread of alien invasive species	- Ecosystems and biodiversity - Social-Cultural - Energy - Tourism	Low	Med	High

Biodiversity loss	- Biome shifts - Reduced ecosystem services	- Rate of change in the natural environment likely to be too fast to allow most species to adapt to the changes - Drakensberg-Maloti mountains, important for their high-altitude flora, estimated at 3,094 species (30 percent endemic) - Eastern alpine areas of Lesotho which support a network of unique high-altitude bogs and sponges, a system of wetlands found nowhere else in the world with a high proportion of endemic species. - Reduced human wellbeing, particularly for the rural poor and unemployed whose livelihoods depend heavily on rangelands, indigenous plant and animal species, wetlands, and ecotourism	- Ecosystems and biodiversity - Social-Cultural - Tourism	Low	Med	High
Low temperatures						
Hazard	**Impacts**	**Vulnerabilities at Scale**	**Affected Sectors**	**Risk (NF)**	**Risk (MF)**	**Risk (FF)**
Snow **Frost**	- Increased minimum temperatures and reduced frost events lead to changes in composition/structure of vegetation cover - Heavy snow/ severe frost kills animals and crops - Reduces animal and crop productivity - Reduced tourism (Afriski-shortage of snow) - Damage to power lines due heavy snow - Reduced economic activities due to heavy snow/severe frost	- Natural grassland/pasture cover may diminish due to reduced die-back of shrubs in winter, and changes in nutrient cycling in grasslands, encouraged by the warming conditions - Crop maturity curtailed by early frost particularly in the highlands - Increases food insecurity	- Crop production - Livestock production - Fruit trees - Social/Cultural - Energy - Human settlements and living spaces - Health - Transport - Manufacturing and trade - Tourism	Low	Med	Med
Below normal rainfall						
Hazard	**Impacts**	**Vulnerabilities at Scale**	**Affected Sectors**	**Risk (NF)**	**Risk (MF)**	**Risk (FF)**

Droughts	- Food insecurity - Low soil moisture - Reduction in agricultural yield and forest growth - Reduction in livestock numbers-livestock mortality - Introduction of new pests and pathogens (army worm and locusts) - Shortage of water for agriculture and industrial use, selling - Degraded soils, rangelands, and wetlands - Loss of soil fertility - Soil cover changes affect range and forest resources negatively - Extinction of flora and fauna - Increased food prices for both human and livestock consumption - Limited availability and lowered quality of water - Reduced hydropower generation - Reduced economic activities in general	- Growth of winter crops will be particularly affected, especially wheat - Over 70 percent of communities derive their livelihoods from agriculture - Mostly small-scale and rain-fed agriculture - High dependency on maize (60 percent of crop production) - Absolute and relative poverty increasing over time - Increased susceptibility to drought - Famine and malnutrition - Insufficient agricultural know-how at farmer level - Low awareness of climate change - Lowlands more prone to dry conditions - Water insecurity, particularly in the lowlands with two-thirds of the national population and in urban centres that are growing rapidly - Country lacks a strategy for planning and managing water deficits - Potential loss in water export earnings - High HIV/AIDS prevalence undermines livelihoods and exacerbates poverty - Inability to use available water resources effectively and efficiently	- Crop production - Livestock production - Ecosystems and biodiversity - Manufacturing and trade - Social-Cultural - Water resources and supply - Energy - Health - Knowledge and information - Gender	High	High	High
Biodiversity loss	- Biome shifts - Reduced ecosystem services - Reduced eco - tourism	- Drakensberg-Maloti mountains, important for their high-altitude flora, estimated at 3,094 species (30 percent endemic) - Eastern alpine areas of Lesotho which support a network of unique high-altitude bogs and sponges, a system of wetlands found nowhere else in the world with a high proportion of endemic species. - Reduced human wellbeing, particularly for the rural poor and unemployed whose livelihoods depend heavily on rangelands, indigenous plant and animal species, wetlands, and ecotourism	- Ecosystem and biodiversity - Rangelands - Social-Cultural - Water resources and supply - Tourism - Gender - Knowledge and Information	Low	Med	High

Land degradation	- Degraded soils, rangelands, wetlands, and forests - Loss of soil fertility - Soil cover changes affect range and forest resources negatively - Turbid rivers - Compromised ecosystem services - Improper land use management due to drought and high temperature. - Decreasing availability of arable agricultural land - Desertification encroachment	- Reduced livestock production due to degradation of rangelands. - Increased livestock mortality rate - Reduced quality of livestock products. - Increased disease and pest incidences. - National economy affected by reduced production of meat, milk, wool and - Mohair - High household dependency on wood for heating and / or cooking across the nation, but particularly in mountain regions where natural forests/woodlots are lacking - Reduced human wellbeing, particularly for the rural poor and unemployed whose livelihoods depend heavily on rangelands, indigenous plant and animal species, wetlands, and ecotourism - Competition for arable land as a result of population growth, deteriorating soil and water resources in highlands - Late onset of rains results in multiple tillage operations, reduces soil quality, and increases the time and cost of crop production - Very small portions of the country are under protection or conservation, or classified as forests - Inadequate legislation and poor implementation addressing range management	- Crop production - Livestock production - Horticultural and cash crops - Ecosystems and biodiversity - Health - Water resources and supply - Social-Cultural - Energy - Gender - Knowledge and Information	Med	High	High
Above normal rainfall						
Hazard	**Impacts**	**Vulnerabilities at Scale**	**Affected Sectors**	**Risk (NF)**	**Risk (MF)**	**Risk (FF)**
Floods **Storms** **Intense runoff**	- Destroyed crops - Killed animals - Destroyed infrastructure and property (roads, houses, cars, bridges) - Loss of lives and casualties/injuries- some were not found/still missing	- Highly reduced crop production, particularly beans, in low lying areas prone to flooding and waterlogging - Reduced farmer incomes/livelihoods - Poor state of infrastructure (roads and bridges) - Increased susceptibility of infrastructure to damage	- Crop production - Livestock production - Cities and human settlements - Energy - Infrastructure	High	High	High

Hail	- Soil erosion and land degradation - Waterborne diseases - Land use-change - Reduced eco-tourism	- Heightened risk of loss of lives/injury - Adverse health risks	- Social-Cultural - Ecosystems and biodiversity - Health - Tourism - Fisheries			
Storms						
Hazard	**Impacts**	**Vulnerabilities at Scale**	**Affected Sectors**	**Risk (NF)**	**Risk (MF)**	**Risk (FF)**
Strong winds	- Damage to property/ infrastructure including transmission and power lines - Uprooting of trees - Transmission of airborne diseases - Increased rate of soil loss through dust - Increased evapotranspiration	- Degraded lands are susceptible to wind erosion - Infrastructural damage - Increased transmission rate of airborne diseases	- Human settlements and living spaces - Ecosystems and biodiversity - Health - Fruit trees - Infrastructure - Manufacturing and trade	Low	Med	Med

Sources: GoL (2007) Lesotho NAPA; Lesotho NAP Stocktaking Report (2015); LMS (2000) Lesotho's Initial National Communication; LMS (2017) NDC.

Annex 4: Sub-regional climate change projections for Lesotho, 2020-2040

Climate Trends	Zone 1: The Southern Lowlands and Senqu River Valley – Tosing Community Council (INR 2015a)	Zone 2: The Mountains – Linakeng Community Council (INR 2014)	Zone 3: The (Western) Lowlands and Foothills – Qibing Community Council (INR 2015b)
Total Monthly Rainfall	Increase in monthly rainfall in the summer seasons of up to 22 percent, particularly in December and January (up to 22mm per month). Uncharacteristically, there is also a large 22 percent increase projected for March (up to 23mm). There is a general decrease expected in winter, especially in June of up to 100 percent (up to 21mm). This demonstrates a polarisation of seasonal rainfall patterns.	Large variation, projections could range from a decrease of 11mm to an increase of 19mm of rain per month, throughout the year. Generally, there is a projected increase in the wet season (spring and summer months), and a predominant decrease in the dry, winter periods (particularly in June).	Predominant increase expected in the summer months (December, January February and even March) of up to 36 percent (up to 25mm). Levels in winter are expected to decrease by up to 100 percent (13mm and 14mm in May and June respectively). In general, an increase is expected in the cropping season (spring and summer) and a decrease in the dry, winter months.
Max. Daily Rainfall	Although there are large variations in projections, it is evident that there is a likely decrease in June of up to 58 percent (up to 7mm) and a likely increase in October and December of up to 45 percent and 32 percent respectively (up to 10mm and 9mm). Interestingly, there is a large projection that there will be a decrease in November rainfall.	Mostly notably is the decrease in May and June, of up to 4mm, and the large increase in January and October of up to 7mm. The rest of the year shows a large variability in the model projection and is thus difficult to identify any trends or likelihoods.	Large variations in projections, however it is evident that there is a distinct 70 percent decrease in June (up to 7mm) and 24 percent increase in January (up to 6mm). Patterns in the interim seasons (Spring and Autumn) vary greatly and therefore no solid predication can be made.
Count of Wet Days (95th percentile)	Clear increase of wet days in the spring months (September and October) by up to a ¼ of a day. A decrease in wet days in winter, however not very significant due to the current lack of wet days in winter months. Trends for the rest of the year vary greatly and thus no clear projection can be made.	Small reduction of wet days in May and June, however there are currently so few wet days during this period, so the change is not significant. There is a projected increase by up to 0.35 days in January, followed by a 0.3 increase in August.	No data available
Avg. Max Temperature	All year-round increase expected, between 0.5°C and 2.3°C. Greatest increase expected in September (spring), followed by February (end of summer). Demonstrating a shift in seasons due to the sooner onset of spring but a longer summer period.	All year-round increase expected, between 0.5°C and 2.4°C. Greatest increase expected in September, demonstrating an early onset of spring conditions.	All year-round increase expected, between 0.4°C and 2.4°C. Greatest increase expected in September (spring), followed by February (end of summer). Demonstrating s shift in

	Summer months that already have relatively high temperatures are expected to increase more than winter temperatures.	Summer months that already have relatively high temperatures are expected to increase more than winter temperatures.	seasons due to the sooner onset of spring but a longer summer period. Summer months that already have relatively high temperatures are expected to increase more than winter temperatures.
Avg. Min. Temperature	All year-round increase expected, between 0.6°C and 2.3°C. Greatest increase expected in September, followed by October, January and February (cropping season). This replicates the average maximum temperature trends.	All year-round increase expected, between 0.3°C and 2.4°C. Greatest increase expected in September, followed by October. This replicates the average maximum temperature trends.	Predominantly an all-year round increase, between 0°C and 2.4°C. Greatest increase projected to be in September, followed by February. This replicates the average maximum temperature trends.
Count of Hot Days (>32°C)	All year round increase projected, except in June and July where no change is evident. Large changes in the number of hot days expected, up to 4.8 days in January and 3.7 days in December (summer). Cropping season expected to have between 1.5 and 4.5 more hot days per month.	Range from an increase in hot days in the summer and spring months (particularly in January and October) by almost half a day. Winter does not show any change (temperature not likely to currently exceed 32°C in winter). Possible decease at the start of spring and end of summer.	All year round increases projected. Large changes in the number of hot days expected, up to 6 days in December and between 1.5 and 5 days in January, February and March (end of summer). Cropping season expected to have between 0.5 and 6 more hot days per month.
Mean Dry Spell Duration	Increase of dry spell duration of by up to 7.4 days in June (winter), closely followed by a significant increase evident in the other dry, winter months. Decrease of duration by up to 2.4 days in the wet season (January), followed by small decreases in the other wet, summer months.	Increase in the duration of dry spells in the predominantly dry, winter months (May-August), of up to 7 days. Duration projected to decrease in wet season, but not by a significant amount.	Increase in the duration of dry spells in June (winter) by up to 6 days, followed by May, July and August, with duration increases of up to 3 days. Little change (slight decrease) in dry spell duration is expected in the summer months.
Count of Frost Days (<0°C)	All year round decrease of frost days, by up to 1 day in winter (July). This followed by the other winter months were a decrease of 0.6 and 0.9 days is expected. However, some models show an increase in days, even in the winter months and particularly in the spring months and start of the cropping season (September-November).	All year round decrease of frost days, by up to 4 days in winter (July). This followed by the other winter months were a decrease of 2.8 and 3 days is expected. This is most likely due to the general increase of average temperatures.	All year round decrease of frost days, by up to 4.4 days in winter (July). This followed by the other winter months were a decrease of 3.9 and 4.2 days is expected. This is most likely due to the general increase of average temperatures.

For further information please contact:

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