

**SECOND NATIONALLY
DETERMINED
CONTRIBUTIONS
OF LESOTHO**

SEPTEMBER
2024

SEPTEMBER 2024

Pursuant to decision 1/CP.21 of the Paris Agreement, The Kingdom of Lesotho, a country highly vulnerable to climate change impacts, presents its Second Nationally Determined Contributions (NDCs) to strengthen the global efforts of both adaptation and mitigation.

All rights reserved

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical photocopying, recording, or otherwise, without the prior permission of the Lesotho Meteorological Services (LMS).

Recommended citation format:

LMS 2024. Lesotho's Second Nationally Determined Contribution under the United Nations Framework Convention on Climate Change. Ministry of Environment and Forestry, Lesotho

Copyright © 2024, Ministry of Environment and Forestry

Foreword



As we stand at the forefront of global efforts to address climate change, it is with great pleasure and humility that the Government of Lesotho through the Ministry of Environment and Forestry pledges its Second Nationally Determined Contribution. In the face of unprecedented environmental challenges, our nation remains steadfast in its commitment to sustainable development and the preservation of our planet for future generations.

This Second NDC underscores Lesotho's unwavering commitment to combating climate change by setting forth the mitigation target that is not just ambitious but also reflective of the evolving national circumstances. Lesotho intends to unconditionally reduce her net Greenhouse Gas emissions (GHG) by 6% (419 ktCO₂eq) by 2030 relative to a Business As Usual (BAU) scenario emission of 7.2 MtCO₂eq. An additional 18% (1,270 ktCO₂eq) GHG emission reduction is attainable on condition that external support (finance, technology development and transfer, and capacity building) is made available to cover the implementation of the adaptation and mitigation actions. Those as mentioned above conditional and unconditional targets will result to a combined total emission reduction of 24% (1,689 ktCO₂eq) below the BAU emission levels can be achieved by 2030.

Notwithstanding her minimal contribution to the climate change phenomenon, Lesotho is obliged to contribute to the global mitigation effort and is aware of the need for her emphasis to be placed on

adaptation. Lesotho identified several adaptation options of which it intends to implement in order to reduce vulnerability of her population, environment and economy to the adverse effects of climate change.

The country is adopting a two-fold strategy against climate change. Firstly, the main focus is on activities which includes the countries resilience and adaptive capacity to the impact of climate change. In fact, climate change effects are already adversely affecting the livelihoods of the majority of Lesotho's population in a significant way and continue to deteriorate unless drastic measures are taken to fight and mitigate climate change. Secondly, Lesotho is transitioning to low carbon and more climate resilient development pathway as stipulated in the National Climate Change Policy (2017), therefore it intends to implement various mitigation initiatives in four sectors namely; Energy, Agriculture, Forestry and Other Land Use (AFOLU), Industrial Processes and Product Use (IPPU) and Waste to reduce its greenhouse gas (GHG) emissions.

In pursuance of Article 2 of the Paris Agreement, the Second NDC will contribute towards achieving the global long-term goal on holding the increase in the global temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

The information presented in this submission is based on the data available at the time of preparing this Second NDC.

Thank You,

A blue ink signature of Hon. Letsema Adontsi, written over a horizontal line. The signature is cursive and stylized.

Hon. Letsema Adontsi
Minister of Environment and Forestry

Acknowledgements

Lesotho's Second Nationally Determined Contributions preparation was made possible through the collaborative efforts of local and international resource persons, as well as Development Partners. The Ministry of Environment and Forestry, through the Lesotho Meteorological Services (LMS) greatly acknowledges the assistance received from various institutions and individuals during the preparation and finalisation of the 2ND NDC for submission to the United Nations Framework Convention on Climate Change (UNFCCC). The contributing resource persons and Development Partners include:

- a) The United Nations Development Programme (UNDP) Climate Promise for providing financial and technical support to cover Adaptation component and three sectors of the Mitigation Component (Waste, Industrial Processes and Product Use (IPPU), Agriculture, Forestry and other Land Use (AFOLU)).
- b) The Initiative for Climate Action Transparency (ICAT) for providing financial and technical support to cover the Energy Sector of the Mitigation component while the United Nations Office for Project Services (UNOPS) was the implementing entity.
- c) The staff of Lesotho Meteorological Services for steering the preparation process, spearheading, managing and coordinating the Lesotho's 2ND NDC preparation process.
- d) Various institutions at national and district level, government departments, academic institutions, private sector, civil society organizations, Non-Governmental Organizations and development partners provided expertise and data for the preparation of this document. Their contributions are greatly appreciated.
- e) The National and International Consultants who undertook the assignment to completion are also being acknowledged for their immense expert contribution to the development of the 2ND NDC.

TABLE OF CONTENTS

Contents

1	Introduction	1
1.1	<i>Background.....</i>	<i>1</i>
2	National circumstances	2
2.1	<i>Geographical information.....</i>	<i>2</i>
2.2	<i>National socio-economic characterisation.....</i>	<i>2</i>
2.3	<i>Climate and climate change.....</i>	<i>3</i>
2.4	<i>Institutional framework for climate change policies</i>	<i>4</i>
2.5	<i>Review of Lesotho’s first NDC</i>	<i>5</i>
2.6	<i>Challenges for the implementation of NDCs.....</i>	<i>6</i>
3	Updated Nationally Determined Contributions	8
3.1	<i>Adaptation.....</i>	<i>8</i>
3.1.1	<i>Baseline</i>	<i>8</i>
3.1.2	<i>Adaptation goal</i>	<i>9</i>
3.1.3	<i>Adaptation Measures</i>	<i>9</i>
3.2	<i>Mitigation.....</i>	<i>36</i>
3.2.1	<i>Baseline</i>	<i>36</i>
3.2.2	<i>Assumptions and methodological approaches for emissions projections.....</i>	<i>36</i>
3.2.3	<i>Mitigation targets</i>	<i>40</i>
3.2.4	<i>Mitigation Measures</i>	<i>41</i>
3.3	<i>Cross-cutting issues</i>	<i>41</i>
4	Means of implementation	41
5	Transparency.....	72
5.1	<i>Adaptation.....</i>	<i>72</i>
5.2	<i>Mitigation.....</i>	<i>72</i>
6	Annex 1 – Long lists prior to consolidation.....	79
6.1	<i>Long list of possible measures for adaptation - Water.....</i>	<i>79</i>
6.2	<i>Long list of possible measures for adaptation – Human Settlements.....</i>	<i>82</i>
6.3	<i>Long list of possible measures for adaptation – Economy.....</i>	<i>87</i>
6.4	<i>Long list of possible measures for adaptation – AFOLU.....</i>	<i>91</i>
6.5	<i>Long list of possible measures for mitigation - IPPU.....</i>	<i>98</i>
6.6	<i>Long list of possible measures for mitigation – AFOLU.....</i>	<i>99</i>
6.7	<i>Long list of possible measures for mitigation - WASTE.....</i>	<i>101</i>
6.8	<i>Long list of possible cross-cutting measures.....</i>	<i>102</i>

LIST OF FIGURES

List of figures

<i>Figure 1 - Observed Temperature for the Lowlands and Highlands of Lesotho, 1967- 2020 (Source: Lesotho Meteorological Services, 2022)</i>	4
<i>Figure 2: Institutional framework for climate change coordination. (Source: National Climate Change Policy Implementation Strategy, 2017)</i>	5
<i>Figure 3: Trajectory of Lesotho's conditional and unconditional contribution for the period 2015-203 (using GACMO model), based on GHG inventory data from the year 2000 as presented in Lesotho's First NDC</i>	6
<i>Figure 4: Projection of BAU GHG emissions for the 2011-2030 period).</i>	38
<i>Figure 5 Conditional and unconditional emissions reductions targets for Lesotho.</i>	41

List of tables

<i>Table 1: Number and sector attribution of adaptation measures.</i>	12
<i>Table 2: Adaptation measures for the water sector, largely focusing on water management and availability of water for society, the economy, and the environment.</i>	14
<i>Table 3: Adaptation measures for to human settlements.</i>	20
<i>Table 4: Adaptation measures related to the Local Economy</i>	25
<i>Table 5: Adaptation measures related to AFOLU and food production.</i>	30
<i>Table 6: Projection Factors for BAU GHG emissions path estimation from 2011 to 2030.</i>	38
<i>Table 7 Proposed mitigation measures in the residential energy subsector.</i>	45
<i>Table 8 – Active vehicle fleet in Lesotho. (source: Department of Traffic and Transport)</i>	49
<i>Table 9 Proposed mitigation measures in the transport energy subsector.</i>	51
<i>Table 10 Proposed mitigation measures in the waste sector in a conditional scenario.</i>	55
<i>Table 11:Proposed mitigation measures in the IPPU sector.</i>	57
<i>Table 12: Proposed mitigation measures in the AFOLU sector.</i>	59
<i>Table 13: Proposed mitigation measures in the waste sector.</i>	63
<i>Table 14: Crosscutting measures.</i>	66
<i>Table 16: Quantifiable information on the reference point, Dec 4/CMA.1, Annex I.</i>	73

ACRONYMS

AFOLU	Agriculture, Forestry, and Other Land Use
BAU	Business As Usual
BTR	Biennial Transparency Reports
BUR	Biennial Update Reports
CA	Conservation Agriculture
CBD	Convention on Biological Diversity
CBNRM	Community Based Natural Resources Management
CE	Circular Economy
COP	Conference of Parties
ETF	Enhanced Transparency Framework
EWS	Early Warning System
GCF	Green Climate Fund
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GOL	Government of Lesotho
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
JICA	Japanese International Cooperation Agency
LMS	Lesotho Meteorological Services
LPG	Liquefied Petroleum Gas
LULUCF	Land use, land use change and Forestry
MEAS	Multilateral Environmental Agreements
MEM	Ministry of Energy and Meteorology
MIT	Mitigation
MPG	Modalities, Procedures, Guidelines
MRV	Measurement, Reporting and Verification
NAP	National Adaptation Process
NC	National Communication
NCCC	National Climate Change Committee
NDC	Nationally Determined Contribution
NDP	National Development Plan
NGO	Non-governmental Organisation
PA	Paris Agreement
SDG	Sustainable Development Goals
UNFCCC	United Nations Framework Convention on Climate Change

1. INTRODUCTION

1.1 Background

Pursuant to Article 4, Paragraph 2 of the Paris Agreement, Parties to the United Nations Framework Convention on Climate Change (UNFCCC) are required to prepare, communicate, and maintain successive Nationally Determined Contributions (NDCs) that they intend to achieve. NDCs include efforts by each country to reduce national emissions and adapt to the impacts of climate change. According to the NDC cycle, as set under the Paris Agreement, countries shall update their NDCs every five years.

In 2017, Lesotho submitted its first Nationally Determined Contributions (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat. In this initial document, the focus is firmly on adaptation actions as they tend to have strong developmental benefits such as poverty reduction that are a priority for developing countries. At the same time, the only objectives with quantitative targets included in the NDC were on mitigation, namely a 10% unconditional GHG emissions reduction with a further 15% target conditional on international support.

As one of the most vulnerable countries to climate change, Lesotho is committed to reducing its contribution to climate change (mitigation) and combating the effects of climate change that the country is already experiencing, such as rising temperatures, droughts/floods, and rising food insecurity due to stress on agricultural production, on which the Lesotho population is heavily reliant. The problem is expected to worsen in the future as global temperatures rise. By 2030, the country's population is expected to grow by roughly 9%, resulting in increased demand for power, water, fossil fuels, land use change, and industrial products (BOS, 2019).

Since the 2017 NDC, Lesotho's government has been working on developing frameworks and implementing climate action in response to the increased need for climate change action, both to reduce its climate change impact (mitigation) and to increase the country's resilience to the changing climate (adaptation). In its pursuit to address climate change challenges, the Government of Lesotho established the National Climate Change Committee (NCCC), which is a multi-sectoral committee that includes representatives from government departments, local and international NGOs, academia, and technical experts to facilitate specific activities of climate change. The committee forms a platform for interacting and exchanging information, views and ideas and connecting efforts to address climate change issues in Lesotho. As part of efforts to curb climate change impacts, Lesotho has developed policies and strategies such as the National Climate Change Policy (NCCP) and its implementation strategy (NCCPIS), Lesotho's Climate-Smart Agricultural Investment Plan and Lesotho Energy Policy.

2. NATIONAL CIRCUMSTANCES

2.1 Geographical information

Lesotho is a mountainous, land locked country located between latitudes 28°S and 31°S and longitudes 27° E and 30° E in the interior of Southern Africa. It is an enclave surrounded by the Republic of South Africa. It has a total land area of about 30,355 square kilometres dominated by rugged terrain of the Maluti and Drakensberg ranges. The country is situated at the highest part of the Drakensberg escarpment with elevation ranging from 1,400m to 3,482m above sea level (Chakela, 1997). Based on latitude the climate of Lesotho is classified as temperate, however due to the high elevation, the mean temperature is noticeable lower than would be expected based on latitude.

The country is divided into four agro-ecological zones, the Lowlands, Foothills, Mountains, and Senqu River Valley. The lowlands make up 17% of the total area of the country and are located in the western part of the country. The Lowlands have a north-south extension of about 200km and a width of 25km (Hyden and Sekoli, 2000). They have an approximate elevation of 1,800m above sea level. To the east of the Lowlands are the Foothills which make up 15% of the total area and lie between 1,800m and 2,000m above sea level. The Mountains cover 59% of the total country area and lie between 2,000m and 3,482m above sea level. The Senqu River Valley forms a narrow strip of land along the banks of the Senqu (Orange) River and penetrates the Drakensberg Mountain ranges. The Senqu River Valley only makes up 9% of the total country area. The valley is 1,400m to 2,000m above sea level.

2.2 National Socio-economic Characterisation

Lesotho is classified as a lower-middle income country with a Gross Domestic Product (GDP) of about M20.649 billion (USD1.25 billion) (2020) and a national gross income per capita of about M11,036 (USD670) (BOS, 2021). However, this was a 6.5 % decline from the previous year's GDP (CBL, 2021). The decline was mainly attributed to the impacts of the Covid 19 pandemic. The key contributors to the country's GDP (2020) include the primary sector comprising of agriculture, mining and quarrying contributing 18.9 %, the secondary sector at 20.9 % and the tertiary sector contributing 49.7 % (BOS, 2021). Lesotho's Human Development Index (HDI) value for 2021 was 0.514, which puts the country in the low development category (UNDP, 2022). The agricultural activities play a more significant role than the estimated contribution to GDP suggests as a large proportion of the population rely on subsistence agriculture activities to feed themselves (World Bank, ⁷).

According to the national census, Lesotho's population was 2,007,201 in 2016 with an estimated growth rate of 0.68% per annum (BOS, 2019). An estimated 28 percent of the population resides in

¹ Chakela, Q. K. (1997) State of the Environment in Lesotho. National Environment Secretariat

² Hyden, L. and T. Sekoli (2000). Possibilities to forecast early summer rainfall in Lesotho lowlands from the El-Nino/ Southern Oscillation. Water SA, 26: 83-90

³ Bureau of Statistics (2021) Annual National Accounts of Lesotho 2011-2020. National Statistical System of Lesotho Statistical Reports. No 38 of 2021. Kingdom of Lesotho

⁴ Central Bank of Lesotho (2021). 2021 Annual Report. Lesotho

⁵ Bureau of Statistics (2021) Annual National Accounts of Lesotho 2011-2020. National Statistical System of Lesotho Statistical Reports No 38 of 2021. Kingdom of Lesotho

⁶ United Nations Development Programme (2022). Human Development Report 2021/2022: Uncertain Times, Unsettled Lives: Shaping our Future in a Transforming World. New York, USA

⁷ World Bank (2019) Lesotho - Second Smallholder Agriculture Development Project (English). Washington, D.C.: World Bank Group. Available at: <http://documents.worldbank.org/curated/en/513221559527246365/Lesotho-Second-Smallholder-Agriculture-Development-Project>

⁸ Bureau of Statistics (2019). Census 2016: Vol VIII A Population Dynamics. Kingdom of Lesotho

urban areas, which is expected to increase to 34 percent by 2030. The total population has been projected to increase to 2,192,356 by 2030 (BOS, 2019).

Lesotho's peak demand for electricity stands at 196 MW with locally generated hydropower accounting for 72 MW (Muela plant), Semonkong, 0.18 MW and 2 MW from mini hydro-power plant situated along the Mants'onyane River, and solar power of 30 MW (Ramarothole Solar Plant). To meet its electricity demand, the country imports additional electricity from Mozambique and South Africa. Most of the population still relies on traditional biomass resources and liquid fuels to meet its energy needs which is closely associated with environmental degradation due to deforestation and soil erosion. However, there are plans to establish 80 MW hydropower plant at Oxbow Area, 1 MW Minihydro at Katse Dam, Government.

Agricultural activities and deforestation are causing significant environmental damage and land degradation that threaten the country's ability to feed its population. Forestry currently covers around 1.5 % of the land area but efforts to protect and grow forests have been ineffective and strong initiatives are needed. Furthermore, the land cover suitable for agriculture has declined to 9 percent due to encroachment on the most productive and potentially high-yielding land over the past decades, soil erosion, and other forms of environmental degradation and climate change. The encroachment is due, in part, to the lack of law enforcement and neglect by administrative authorities (GoL 2018).

2.3 Climate and climate change

Lesotho's location and topography expose it to the influences of both the Indian and Atlantic Oceans, with wide temperature differences. In Lesotho, temperatures are highly variable on diurnal, monthly and annual timescales, and are generally lower than those of other inland regions of similar latitudes in larger landmasses of both the northern and southern hemispheres. However, an overall trend of temperature increase has been observed as depicted in Figure 1, with the highlands warming faster than the lowlands.

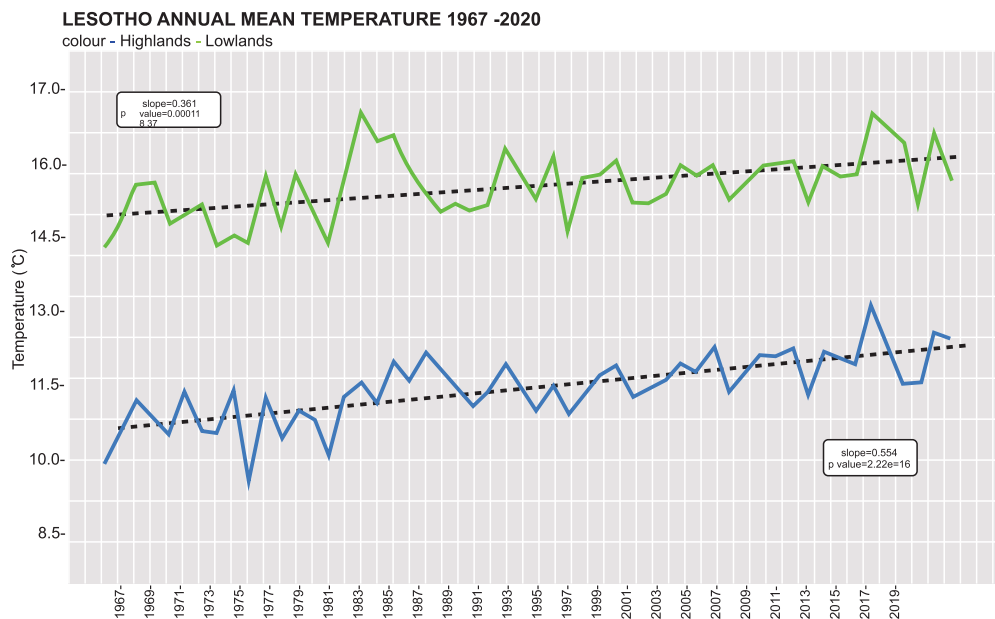
A gradual increase in the mean daily maximum and minimum temperatures is projected for the near future until the end of the 21st century under all emission scenarios (LMS, 2021). The projected increase in temperatures becomes more significant during the mid and far future periods, especially under the high emission scenario. Nevertheless, slightly lower temperature increases are expected to occur in the mountain zones. Increased incidences of extreme heat and higher rates of evapotranspiration are also expected. These will have negative impacts on various aspects of local economic development and agricultural productivity.

⁹ Bureau of Statistics (2019). Lesotho Population Projections 2016-2036 Report, Vol VI: Population Projections. Kingdom of Lesotho.

¹⁰ GoL. 2028. National strategic development plan II – 2018/19 to 2022/23.

¹¹ LMS (2021) The Kingdom of Lesotho's Third National Communication on Climate Change. Lesotho

Figure 1 - Observed Temperature for the Lowlands and Highlands of Lesotho, 1967- 2020 (Source: Lesotho Meteorological Services, 2022)



Precipitation is highly variable both spatially and temporally and according to Lesotho Third National Communication, most of the precipitation is received during the seven-month “rain” season from October to April. The peak rainfall period is from December to February when most of the country record over 100 mm per month. Trend analyses indicate a high degree of interannual precipitation variability over Southern Africa with a general decrease in annual precipitation for Lesotho. The country is expected to experience below-normal precipitation throughout the century with a high degree of variability. The changes in precipitation patterns for Lesotho are also expected to experience an increase in extreme precipitation events and a potential for prolonged dry periods in between events¹².

2.4 Institutional framework for climate change policies

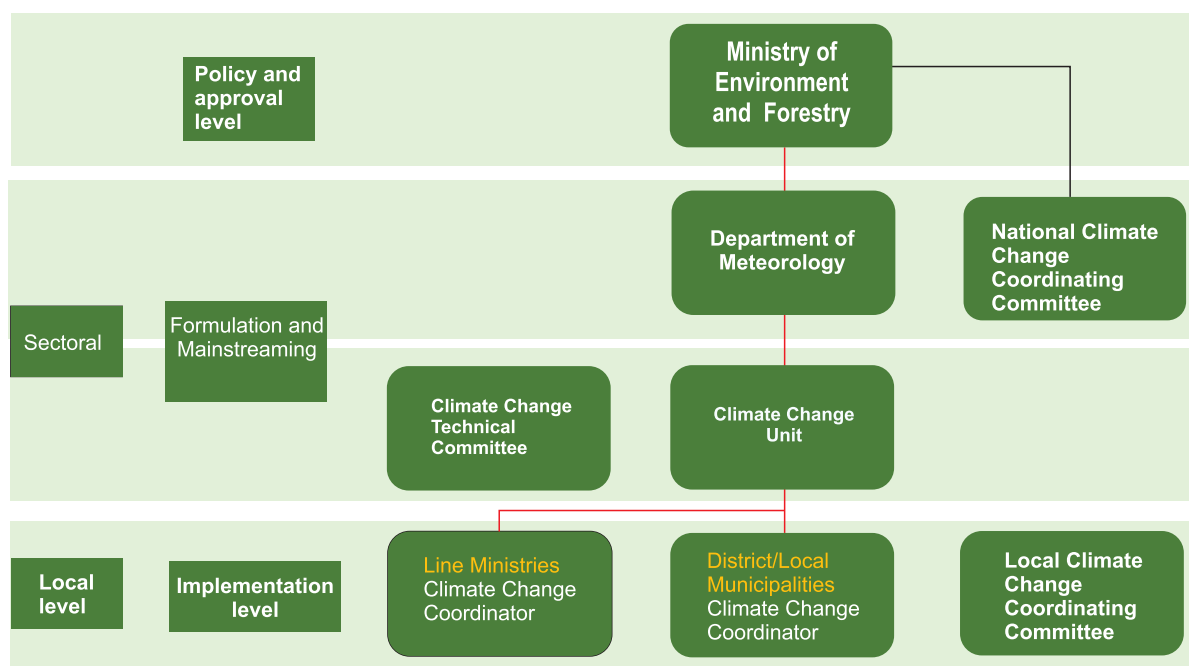
The Ministry of Environment and Forestry through the Lesotho Meteorological Services (LMS) department is charged with the responsibility of monitoring and reporting on weather, climate, and climate change issues. In addition, LMS ensures that the country fulfils Lesotho’s obligations under the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. Other major responsibilities of the MEM 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). A National Climate Change Committee (NCCC) was formally established in 2013 to effectively coordinate climate change related matters in the country and act as a link between LMS and the various social and economic sectors.

To effectively achieve the objective of the National Climate Change Policy, members that serve in the NCCC have to be familiar with projected climate change episodes and events in the short and long term and must be appraised of the likely impacts of climate change. Institutions, as a result, should have in place, adequate response measures to climate change. Educational institutions and all tiers of government including central government, local government as well as NGOs have a role to institutionalize climate change. A culture of networking and building on synergies at all levels and amongst the institutions is key to achieving the objective of the NCCC. It is against this background

¹² Lesotho Meteorological Services. (2021). The Kingdom of Lesotho’s Third National Communication on Climate Change. United Nations Framework Convention on Climate Change.

that the following institutional framework (Figure 2) and set up that will be effective in enabling coordination of climate change in the country was proposed.

Figure 2: Institutional framework for climate change coordination. (Source: National Climate Change Policy Implementation Strategy, 2017)



2.5 Review of Lesotho's first NDC

The 2017 Lesotho NDCs identified the management and availability of water as the key priority as it is essential for critical subsistence activities (food production) as well as human wellbeing, sanitation and more. The NDCs also identified key initiatives to support the long-term management of water resources including:

- Rehabilitation of degraded wetlands as a form to reduce runoff, and soil erosion, and increase groundwater infiltration.
- Development of clear, environmentally sustainable policies to improve and maintain vegetation cover, through actions including improved pasture and grazing management.
- Encouragement of fodder production and reduce open grazing as a form to secure watershed protection and conservation.
- Decentralization of economic and political activity to relieve pressure from urban centres, reducing pressure on water resources.
- Expanding the construction of dams to enhance water storage capacity.
- Development of improved and efficient use of water in agriculture, infrastructure, and energy sectors.

Several of these activities overlap with objectives also identified in other sectors such as agriculture, food security, and human settlements, and many of the specific initiatives in this sector will include many of the same stakeholders across the sectors.

Additional actions include programs to expand rainwater harvesting, water storage and conservation techniques, water reuse, water use, and irrigation efficiency. Commentary on the background information and data sets that may have been used to support the development of these objectives and to further assess change.

In terms of mitigation, the NDC focuses largely on energy emission reductions. However, these other sectors are specifically mentioned as potential areas for action. The key mitigation targets for

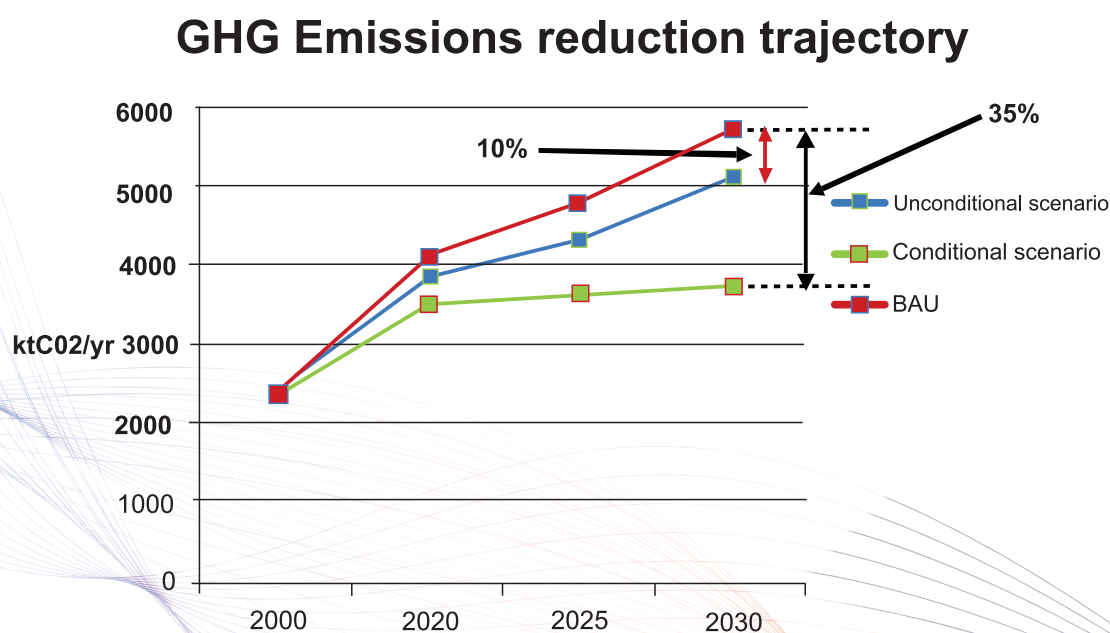
mitigation include a 10% GHG emission reduction from an assessed BAU, with an additional 25% reduction based on the international support for mitigation actions (Figure 3).

The key sectors/actions targeted for mitigation include:

- **Energy** – Improved government direction and policy certainty for markets through the development of policy and strategy documents; increased access to renewable electricity, particularly through the installation of solar home systems and improvement of hydro supply from the Highlands water projects; reduction of reliance on biomass for cooking and heating; and increased awareness of the market through the provision of information and awareness campaigns.
- **IPPU** – Reduction of emissions of high GWP refrigerants from refrigeration and air conditioning activities; reduction of emissions from industry.
- **Waste** – Improved methane capture from landfill and implementation of waste incineration with waste recovery; improved wastewater treatment to reduce methane emissions.
- **Agriculture** – Improve agricultural practices to reduce gastroenteric fermentation emissions; promote biodigesters for agricultural waste processing.
- **Forestry** – Increase forestation and afforestation activities as well as increasing/improving protected forest reserves.

It is of note that aside from the headline targets, there are no targets indicated for mitigation actions outside of the energy sector.

Figure 3: Trajectory of Lesotho's conditional and unconditional contribution for the period 2015-2033 (using GACMO model), based on GHG inventory data from the year 2000 as presented in Lesotho's First NDC



2.6 Challenges for the implementation of NDCs

As part of the consultation process for this NDC update, discussions on the barriers for the implementation of NDC actions. Some of the key barriers are discussed in this chapter as these barriers generated measure recommendations to overcome them in the implementation of future NDCs.

The detailed analysis of the individual mitigation measures revealed that baselines and projections are not transparently described and yet several measures were overly optimistic in terms of the speed of implementation. Similarly, it has not been possible to obtain the baseline data that was used for the development of the existing GHG inventories.

The process of gathering data on progress achieved on the current set of NDC measures posed a challenge. This is largely because monitoring needs have often not been defined by stakeholders or have not been a priority resulting in little data collected and a lack of coordination to manage the available information. It was, therefore, difficult to assess the state of implementation of the several measures, both related to adaptation and mitigation, and to quantify the achieved emission reduction of the latter. Feedback received during the consultation process leads to the conclusion that some departments may not have been part of the formulation process of NDC measures or implementation plans and were not aware that a certain measure was a) part of the NDC and b) their responsibility for monitoring. Other identified issues include a perceived low priority for climate action, changes in government officials in charge, and weak coordination structures. This, understandably, would result in low support and ownership for the respective measure.

As a developing country aiming to develop, it was also noticed that many of the adaptation measures being pursued in Lesotho are not explicit responses to the threats of climate change. Instead, they are usually part of general development strategies (such as the provision of Water, Sanitation and Hygiene (WASH)), or because the country's existing climate extremes necessitate such measures. The implementation of such initiatives would result in stronger adaptation capacity as people (and the country) would be better able to adapt to a changing climate. Nevertheless, it is important to link ongoing initiatives so that they can be brought under the climate change adaptation umbrella and receive coordinated support and attention.

At the same time, it is clear that a major constraint to implementation of both adaptation and mitigation measures – as noted across all sectors – is a lack of human and institutional capacity and resources. The issue of sufficient resources and appropriate capacity is a major factor in determining what is achievable as NDC measures and formulated as a need for support.

Complex procurement procedures limit the efficiency of project implementation. Liaison with the sector of finances to review the procurement procedures for climate change adaptation projects is needed. Increased efficiency in climate change adaptation project implementation increases the effectiveness of the project and the reach of the objectives. Specific measures in the relevant sections have been recommended to address these challenges as they pose systemic barriers to:

- Identify gaps and suitable measures in both climate change adaptation and mitigation.
- Develop suitable responses and get the financial support required to fund them.
- Manage the progress of projects and change them when needed.
- Track progress in the achieve of objectives.
- Develop policy and strategies.

Much of the cross-cutting section aims to generate an environment where these barriers as addressed, and the climate change action is more seamless and achieving its intended results.

3. UPDATED NATIONALLY DETERMINED CONTRIBUTIONS

3.1 Adaptation

3.1.1 Baseline

The Lesotho National Climate Change Policy (2017-2027) sets the basis for addressing one of its core pillars, “adaptation and climate risk reduction”, noting that adaptation to climate change is of utmost importance to ensure socio-economic and environmental systems function and development, and to avoid loss and damage. It points out that adaptation in sectors such as water, agriculture and food systems, early warning, energy, land use, health, and biodiversity, among others, are key to paving the way to a climate resilient pathway.

On reviewing the existing NDCs, it can be noted that several adaptation measures are already being pursued country wide. This is because many of the activities assessed as potential ‘climate change adaptation measures’ are already taking place under socio-economic development agendas.

An important international trend taking place that recognizes the merging of adaptation and development activities is the mainstreaming of climate change needs into government’s policy development processes. This effectively makes climate change adaptation a key element of how countries develop. While this process is not taking place in Lesotho in an official capacity, but the development activities that are successful strongly advance climate adaptation due to its needs. A formal mainstreaming and strengthening of the climate change responses would increase the coverage and strength with which adaptation measures are pursued.

Water, Local Economy, AFOLU and food security, and Human Settlements are identified as key sectors to address adaptation measures in the implementation of the NDC.

3.1.1.1 Water sector

Lesotho is renowned for its abundant supply of pristine water resources, which is harnessed and exported to South Africa, capturing around 50% of the total catchment run-off and representing an important source of foreign income for Lesotho. Surface water is mainly used for water supply for both households and industrial consumption, hydropower generation and irrigation while groundwater is used for rural water supply. Climate change effects on Lesotho are expected to have a far-reaching regional impact on both the national and regional freshwater resources as the country forms major source of fresh water and drainage areas extending into the Atlantic Ocean basin through South Africa, Namibia, and Botswana. According to LMS (2021), near-term (2011-2040) projections indicate that Lesotho is expected to experience increased frequency and intensity of droughts and heavy rains and increased temperature (LMS,2021). The report further indicates that natural stream flows in rivers are expected to decrease spatially, seasonally, and annually. This loss impacts the water resources by changing the quantity and quality of water flowing in rivers and streams, wetlands, underground (aquifers), as well as water stored in dams and lakes changing moisture content in the soil¹³.

For Lesotho, reduced precipitation in winter and summer will reduce streamflow, the result of which will be hydrological drought. Changes in water quality and availability are expected to be the dominant challenges for Lesotho. Infrastructure developments intended to safeguard water supplies have increased the geographical imbalance of water resources, as many dams have been built to store water during unpredictable and often long dry periods. The low surface flow of water and river run-off could also affect the 30-year multi-billion water project, the Lesotho Highlands Water Project,

¹³ Lesotho Meteorological Services. (2021). The Kingdom of Lesotho's Third National Communication on Climate Change. United Nations Framework Convention on Climate Change..

and an elaborate water transfer system to South Africa¹⁴. Water availability is also expected to affect other economic and social development sectors, with emphasis to agriculture (crop production and livestock), industry, drinking water and sanitation, and health.

3.1.1.2 Human settlements

Human settlements and their development are essential to wellbeing and resilience and climate change will have a severe impact on them. Temperature increases will increase the incidence of heat related and waterborne diseases, water availability changes are likely to limit the ability provide sanitation and other services, and increased frequency of extreme events increases stress on infrastructure.

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 cause extensive damage to basic infrastructure, damage housing that displaces population (especially the poor), and they cause soil run-off that affects the productivity of the land further causing displacement. Displacement often turns into migration to cities and towns placing further stress on urban infrastructure.

The vulnerability is further compounded by other factors, including high levels of poverty, particularly in rural areas. The scattered nature of rural settlements can make the provision of and access to social services difficult and modern infrastructure. For example, only 44% of the total population has access to modern sanitation solutions (46% and 43% coverage in urban and rural areas, respectively). About 30 % of households do not have access to any toilet facilities and therefore practice open defecation exacerbating health conditions of the population.

As one of the countries with high level of prevalence of HIV/AIDS, women and child-headed households are among the most vulnerable groups. Gender equity and social issues including HIV/AIDS prevention shall be considered and fully considered in the capacity building activities as well as the development and management of facilities.

It is not possible to understand in detail what the changes in precipitation, increasing temperature, strong winds, snow etc. will have on human settlements, but the prevalence of precarious housing made of local material (mud, sticks and thatch grass), infrastructure that is not climate proofed and not available to all, and wide poverty, makes the human settlements of Lesotho very vulnerable, indicating a strong need for adaptation actions to support resilience.

3.1.1.3 Local Economy

The national economy is highly interconnected and directly or indirectly all sectors will be impacted by climate change. Impacts will vary by sector and will be felt through the impact of climate change on water availability, land productivity or useability, people's ability to work in a changing environment, or the impact in key infrastructure such as transport. Given this complexity, it is not relevant to delve into each sector in-depth, but rather, to focus on the key impacts and suggest actions that can increase the economy's resilience. It is also important to note that the Water, Human Settlements, and AFOLU sectors are strongly linked to the economy and its recommendations and outputs will also support an improved economy.

Local economy is key for promotion of inclusive development and reduction of vulnerability. Lesotho established the Ministry of Trade, Industry, Business Development and Tourism with the mandate for the development and implementation of policies that promote and facilitate establishment, operation, and growth of micro, small, and medium enterprises (MSMEs) and co-operatives, with a view to contributing to employment creation, economic growth, and poverty

¹⁴ World Bank Lesotho country profile (2021)

reduction. It is in this line, and in articulation with the Second National Strategic Development Plan that Local Economy is presented, in recognition of the high potential of the proposed measures to reduce community and ecosystem vulnerability and increase adaptation capacity.

The local economy of Lesotho is highly vulnerable to climate change as it is closely related to natural resource use, including weather dependent processes such as agriculture. One of the main economic activities are rainfed subsistence farming and animal husbandry, as well as small -scale industries that include clothing, footwear, textiles, food processing and construction. The small manufacturing base depends largely on farm products to support the milling, canning, leather, and jute industries.

In this context, climate change is likely to impact deeply the economy of Lesotho, particularly in relation to frequency and severity of extreme events and country's ability to respond and adapt to the changes. Droughts alone are estimated to reduce total GDP between 1% and 4% each time and soil erosion has been estimated to reduce agricultural GDP by 2% -3% (around 1% of total GDP). Even normal variability has a negative economic impact due to the sensitivity of agricultural output to climate.¹⁵

Unemployment and underemployment remain a significant problem in Lesotho, relegating a large proportion of the population to live under the poverty line. The unemployment rate remains at 23 % (using the strict definition) and 38 % (using expanded definition that includes discouraged job seekers) in 2019. The poverty rate is expected to improve at a slow pace as increases in food and energy prices as well as a fragile economic environment constrain budgets and livelihoods of lower income households. The World Bank has projected the \$2.15/person/day (in 2017 Purchase Parity Power terms) poverty rate to improve and reach 34% by 2024.¹⁶

3.1.1.4 AFOLU and food security

As previously mentioned, the climate-sensitive rain-fed agriculture industry is the mainstay of Lesotho's economy, accounting for between 7% and 10% of national GDP (down from 25% in the 1980s). Furthermore, up to 70% of Lesotho's rural population engage in some form of agriculture related activity of subsistence income highlighting the dependence on rain as other sources of water are scarce that infrastructure is not available for alternative irrigation (The World Bank, 2019). This vulnerability is highlighted as the country recorded poor harvests for three years in a row, 2017 -2020, due to **erratic rains experienced** during main cropping seasons.

Poor farming practices and overgrazing compounded by climate change and variability have led to a loss of nearly 800 km² of arable land during the past decades and that has left about 9.6 per cent of the total land arable ¹⁷. This has resulted in the increased competition for the limited arable land remaining. That being the case, human settlements tend to develop in an unplanned manner without adequate provision of safe basic infrastructure and services.

Floods and droughts have resulted in severe yield losses in agricultural crop and livestock resulting in food insecurity implications. It was estimated that about 40 % of Lesotho's population

¹⁵ Lesotho Meteorological Services. 2017. Lesotho's Nationally Determined Contribution Under the United Nations Framework Convention on Climate Change. Ministry of Energy and Meteorology, Lesotho

¹⁶ World Bank. (2024, April 9). The World Bank in Lesotho: Overview. <https://www.worldbank.org/en/country/lesotho/overview>

¹⁷ Ministry of Local Government and Chieftainship (2018). Lesotho National Housing Policy. Kingdom of Lesotho.

experienced acute food insecurity between October 2020 and March 2021¹⁸ and resulting varying degrees of malnutrition widespread across the country. Lesotho's potential for economic and social development is **grossly hindered** by the lack of progress in addressing the malnutrition issues that plague the poorer segments of society.

Added to this, the rangelands that are already threatened by socio-economic factors such as overgrazing and fuel collection affecting the productivity of pasture, the availability of biomass, and impacting biodiversity, they are further threatened by climate change. The changes in rainfall and frequency of extreme events will further stress the rangelands causing significant soil losses and droughts that impact the viability of living ecosystems. Lesotho only has 34,520 ha of forests (1.14% of the country surface) which are continuously threatened by mismanagement of sensitive ecological systems, and over harvesting of medicinal plants, poles, and fuelwood.

3.1.2 Adaptation goal

The national adaptation goal of Lesotho is expressed in key documents focusing on sustainable development and improving the wellbeing of Basotho. These include:

- **The OPEN National Adaptation Plan (OPEN- NAP)** - process has a vision of a *“well-adapted Lesotho that achieves its medium to long-term sustainable development objectives in the context of a changing climate”*.
- **National Climate Change Policy** - *“build climate change resilience through mainstreaming and implementing concrete measures for adaptation and climate risk reduction aiming at sustainable development, with active participation of all stakeholders in the social, environmental and economic sectors”*.
- **National Climate Change Policy Implementation Strategy (NCCPIS)** – *“to increase climate change resilience and improve the wellbeing of Basotho through mainstreaming and implementing concrete measures for adaptation and climate risk reduction, focusing on the most vulnerable, aiming at sustainable development, with active participation of all stakeholders in the social, environmental and economic sectors”*.

Gathering these existing definitions as overarching developmental objectives, the following adaptation goals add detail and sectoral dimensions in this revised NDC to enhance their reach and better enable the country to develop sustainably by:

- Reducing the risk and vulnerability to climate change, while increasing resilience, well-being, and the ability to anticipate, and respond to changing climate appropriately.
- Adjusting institutional and community processes, practices, and structures to enable faster and more effective responses to the changing climate to moderate the damage and benefit from arising opportunities where possible.
- Better shaping society and the economy to thrive in the changing climate by supporting cohesive, gender and socially inclusive, and well supported actions.

3.1.3 Adaptation Measures

The adaptation measures proposed in the revised NDC are presented and were compiled on a sectoral approach in accordance with the identified and the expressed priorities on existing policy and guiding documents as well as consultations carried out at the beginning of this process. As part of this process a “long list” of measures was developed by assessing existing measures, gathering information from stakeholders, reviewing best practice, and looking at options that have been practiced in other countries with similar economic and ecological conditions as presented in ANNEX-

¹⁸ Integrated Food Security Phase Classification. (2020, August). Lesotho: IPC Acute Food Insecurity Analysis July 2020 - March 2021. ReliefWeb. <https://reliefweb.int/report/lesotho/lesotho-ipc-acute-food-insecurity-analysis-july-2020-march2021-issued-august-2020>

1. Next, the measures were cross-checked against Lesotho governance structures and socio-economic institutions, so that they could focus on areas with a strong prospect of implementation, and where an intervention may have wide and long-lasting effects.

This process resulted in the identification of 78 possible actions, distributed across the sectors as follows as shown Table 1. These measures in Annex 1 were then submitted for consultation with key stakeholders and the key beneficiaries for discussion. During this time, stakeholders were given an opportunity to comment and provide feedback on a range of issues including: the validity of the proposed measures and suggested revisions, responsible government department for each measure; identify key partner organisations for each measure; and finally – revisit and adjust each measure in terms of goals and target potential.

Table 1: Number and sector attribution of adaptation measures.

Sector	Measures in Long List	Measures in this document
Water	12	9
Human Settlements	17	8
Local Economy	17	7
AFOLU and Food Security	32	13

The ‘long list’ was consolidated to select the measures that have a higher likelihood of implementation and resulting in long lasting adaptation benefits. The analysis also includes considerations for the financing ability arising from the operational requirements of international development funds to support adaptation activities in the country. Several of the activities selected are already underway and the NDC action refers to the continuation and strengthening of them. These activities are considered unconditional, but the expansion of the programmes will be conditional on international support. The consolidation process results in a set of 38 actions across the four key sector.

3.1.3.1 Water sector





Adaptation measures in the water sector focus on supporting Lesotho on its effort to adapt to the possible impacts of climate change by reducing its exposure to the perceived main risk of water availability (Table 2). This generally focuses on maximizing the availability of water for essential activities to all sectors as climate change shifts hydrological cycles. This is particularly important during extreme weather events that are becoming ever more common, and to which, Lesotho is so very vulnerable.

For Lesotho, the key priority is to support water availability for agricultural purposes (irrigation, and livestock survival), but as the country looks to develop this also include water availability for extending sanitation services. The ultimate vision is to see Lesotho supporting the development of its population through improved access to water for agriculture and sanitation while developing the necessary infrastructure and management practices to prevent socio-economic and environmental disruptions. There are many options possible to support this progress including infrastructure projects such as reservoirs construction, conservation practices such as choice of crops and irrigation methods, and economic options that maximize the flexibility of the responses available.



Some issues to consider in the implementation of the proposed measures in this chapter include:









1. **Identification of the technological capacity needs for climate change adaptation in the water sector.** Technological needs assessment (TNA) to support the adaptation with the appropriate and locally adjusted technologies. A list of priority needs assessment will guide the local adaptation strategies.
2. **Improvement of organizational capacity for coordination and project implementation.** Capacity building in project management, intersectoral coordination, data collection storage, and sharing, and report writing. The main outcome of this intervention will be and improved project implementation, monitoring, and reporting.
3. **Increasing the density of hydrometric network** which will improve quality of data to support decision making and part of the early warning system.

Table 2: Adaptation measures for the **water sector**, largely focusing on water management and availability of water for society, the economy, and the environment.









NDC MEASURE	INDICATOR	BASELINE	TARGET	SPONSIBLE DEPARTMENT	OTHER KEY IMPLEMENTING ENTITIES	MITIGATION CO-BENEFITS	ALIGNMENT WITH SDGs	TIMELINE	
								2020-2025	2025-2030
<p>1. Strengthen integrated early warning system (EWS), Including infrastructure, human resource capacity, and disaster preparedness plans.</p>	<p>Status of Risk maps</p> <p>A national monitoring system that generates data for land and water related annual national reports is set up and operational through cooperative approaches that are institutionalized.</p> <p>Number of staff trained to operate and maintain the hydro-meteorological infrastructure.</p>	<p>Pilot risk maps being implemented.</p> <p>Pilot Early Warning System being implemented.</p> <p>45 technicians being trained in the pilot EWS at LMS and DRM.</p> <p>5 Agro-meteorologists, 4 Forecasting Officers, 20 Senior Technical Officers and 10 GIS/IT operators/Technicians and 6 IT Maintenance & Repair Technicians¹⁹ to be trained under the pilot project EWS at LMS.</p>		<p>Disaster Management Authority</p> <p>Lesotho Meteorological Service</p> <p>Department of Water Affairs</p> <p>ReNOKA</p>	<p>National University of Lesotho</p> <p>Local authorities</p> <p>Department of Gender</p> <p>EU, GIZ</p> <p>NGOs</p>	Not applicable	   	✓	✓

¹⁹ United Nations Environment Programme. (2021). Project Implementation Report (PIR) for Lesotho: Reducing vulnerability from climate change in the Foothills, Lowlands and the Lower Senqu River Basin. Global Environment Facility.







<p>2. Implement the Integrated Catchment Management (ICM) program.</p>	<p>Number of climate resilient and gender sensitive catchment plans, local council action plans and measures of different categories for ecosystem services designed, approved and under implementation, based on national guidelines.</p> <p>Number of individuals trained on climate resilience in the context of ICM.</p>	<p>6 out of 74 catchments plans.</p> <p>37 individuals from the 6 pilot catchments trained on the concepts of climate change risk and resilience in context of ICM.</p>	<p>18 out of 74 catchments plans implemented by 2030.</p> <p>200 individuals trained in climate resilience in context of ICM by 2025.</p>	<p>Department of Water Affairs</p> <p>Department of Range Management</p> <p>Department of Soil and Water Conservation</p> <p>Department of Rural Water Supply</p>	<p>Department of Decentralisation and Chieftainship</p> <p>GIZ, EU, World Vision</p> <p>BUSARA Institute of Behavioural Change</p> <p>Local authorities</p> <p>Department of Gender</p>	<p>Reduced emissions from herd size reduction or increased regeneration of rangelands and forest cover.</p>		<p>✓</p>	<p>✓</p>
<p>3. Expand rainwater harvesting.</p> <p>Enhance water storage and conservation techniques, water re-use, water-use, and irrigation efficiency.</p>	<p>Percentage of households and rural institutions using water harvesting infrastructure.</p>	<p>No available information was found on percentage of households and institutions using water conservation techniques, but harvested rainwater used for gardening. The diamond mines, textile industry, and the SAB Miller brewery in Maseru also recycle water</p>	<p>Additional 15% of the households and 100% of rural institutions (schools, hospitals) fitted with rainwater harvesting infrastructure by 2030.</p>	<p>Department of Water Affairs</p> <p>Department of Soil and Water Conservation</p> <p>Local Government</p> <p>Building Design Services</p> <p>Department of Rural Water Supply</p>	<p>Lerotholi Polytechnic</p> <p>NGOs</p> <p>LHDA</p> <p>Lesotho Housing and Land Development</p> <p>LMS</p> <p>Ministry of Education and Training</p> <p>Local authorities</p>	<p>Not applicable.</p>		<p>✓</p>	<p>✓</p>

		within their processes ²⁰ .			Ministry of Tourism, Sports, Arts and Culture				
4. Support an expanded programme of constructing multipurpose dams to enhance water storage. Usage plans for utilization to be detailed as part of the project.	Number of small dams and reservoirs established.	Number of small dams and reservoirs not available, but there are 4 large dams (Mohale, Raleting, Tsa-Ilitlama, and Katse dams).	35 small dams established and operational.	Department of Soil and Water Conservation Department of Water Affairs Department of Rural Water Supply	Ministry of Local Government, Home Affairs & Chieftainship, and Police Local authorities	Not applicable	    	✓	✓
5. Revise water related legislation, policies, and strategies to include climate change issues.	Status of the update of regulation on water and sanitation strategy.	Lesotho Water and Sanitation Policy 2007.	Reviewed and Updated Water Act, Long Term Water, and sanitation strategy.	Water Commission Department of Water Affairs LMS	National University of Lesotho, Lerotholi Polytechnic NGOs Department of Gender, MCC, ICU, GIZ	Not applicable	  	✓	✓

²⁰ United Nations Development Programme. (2015). Reducing vulnerability from climate change in the Foothills, Lowlands and the Lower Senqu River Basin: Project document. Global Environment Facility.

<p>6. Strengthen and Support a national integrated catchment management framework. It should incorporate district and community-based catchment management.</p>	<p>Number of established coordinating and planning institutions at the sub-catchment area level.</p> <p>Number of catchments under integrated catchment resource management.</p>	<p>ICM coordinating and planning institutions have been established at national and catchment management area levels.</p> <p>1 catchment under Integrated Watershed Management for Improved agro-pastoral livelihoods in the Sepabala Sub-catchment.</p>	<p>18 out of 74 sub-catchments under ReNOKA have community structures in place and implementing measures.</p> <p>Six out of 74 sub-catchment management development plans completed by 2030.</p>	<p>Department of Water Affairs</p>	<p>Department of Decentralisation Department of Gender</p>	<p>Reduced emissions from herd size reduction or increased forest cover.</p>	    	<p>✓</p>	<p>✓</p>
<p>7. Protect and rehabilitate the wetlands areas.</p>	<p>Number of rehabilitated wetland areas.</p>	<p>14 wetlands (part of the palustrine system in Lesotho) rehabilitated by a Small Grant Project Khubelu sponge.</p>	<p>30 pilot wetland areas rehabilitated by 2030.</p>	<p>Department of Water Affairs Department of Range Management Department of Environment Soil and Water Conservation</p>	<p>Decentralisation Local Authorities GIZ, EU Department of Gender</p>	<p>Reduced emissions from possible increased vegetation cover.</p>	 	<p>✓</p>	<p>✓</p>
<p>8. Increase climate resilient rural water supply network. Supporting projects to</p>	<p>Percentage of population covered water supply network.</p>	<p>In 2020²¹, only 29% of the population had access to clean water. In 2016, 79.8 percent of rural households had access to</p>	<p>88% population with access to clean water by 2030.</p>	<p>Department of Rural Water Supply</p>	<p>Department of Decentralisation Department of Gender</p>	<p>Not applicable</p>		<p>✓</p>	<p>✓</p>

²¹ Macrotrends. (n.d.). Lesotho clean water access 2000-2024. Retrieved September 5, 2024, from <https://www.macrotrends.net/countries/LSO/lesotho/clean-water-access-statistics>

improve water access in rural areas.	Number of women and girls having access to portable water.	improved water sources ²² .					 		
9. Reduce loss of both treated water and wastewater. Increase the amount of water that is recycled, and water use efficiency. Increased wastewater and sewage treatment.	Percentage of treated water loss. Amount of wastewater reused or treated.	30- 50% treated water loss ²³ in Maseru Conventional activated sludge (CAS) ²⁴ treatment plant with a capacity of 80m ³ /day in the Diamond mine and Ratjomose Wastewater Treatment Plant ²⁵ with a capacity of 15,000 m ³ /day.	Reduce treated water loss to 5% 20% of municipal wastewater treated by 2030.	Department of Rural Water Supply Industry (ex. textile industry)	Decentralisation Local Authorities GIZ, EU WASCO Department of Gender	Reduced emissions from the wastewater and sewage	    	✓	✓

²² Bureau of Statistics (2019) Census 2016: Analytical Report Volume IIIB Socio-Economic Characteristics. Kingdom of Lesotho

²³ Climate Resilient Infrastructure Development Facility. (2017). Lesotho: Maseru water supply and demand assessment. Africa Portal.

²⁴ Crown Publications. (2022, July 4). New sewage treatment plant for Lesotho diamond mine. Crown. <https://www.crown.co.za/africa-updates/21383-new-sewage-treatment-plant-for-lesotho-diamond-mine-2>

²⁵ Government of Lesotho. (2012). National Strategic Development Plan 2012/13 – 2016/17: Growth and Development Strategic Framework. Ministry of Finance and Development Planning. Available: <https://europa.eu/capacity4dev/file/13783/download?token=mQPixfwX>

3.1.3.2 Human settlements






For human settlements, the key focus for adaptation is minimizing the disruptions from extreme weather, particularly on basic infrastructure that supports emergency responses, social activities, and economic activities such as roads and bridges (Table 3). At the same time, the country's development work and aspirations mean an increasing focus on human health and sanitation measures that are needed to support adaptation. Increasing adaptation capacity for human settlements also looks to reduce the vulnerability to climate change impacts including measures that improve and climate proof housing, strengthen the access to sanitation services, and improves the availability of health services.

One of the areas of previous focus has been improving disaster preparedness through improved meteorological services and warning systems. This theme is picked up and expanded in this NDC as climate change is expected increase the frequency of extreme events.










This chapter proposes measures that build upon existing initiatives to deliver an increasing developmental impetus to the country including:






- **Basic infrastructure and services that are climate resilient.** Climate-proof all public infrastructure to minimize disruption in events of extreme climate events, with focus on housing, health, education, water and sanitation, energy, and communication infrastructure. Improving building codes for these infrastructures to withstand extreme climate events is key. This action will reduce the risk of disruption of service provision, accessibility to the basic social services and humanitarian aid in event of disaster.
- **Human settlement development decisions that are informed by intreated risks assessment, risk maps, and GIS databases.** Ideally, these tools are integrated into coordinated land use planning and that can identify climate risk zones to be avoided or adjust the settlement to be resilient to the extreme climate events.
- **Strengthening Climate Services in Lesotho for Climate Resilient Development and Adaptation to Climate Change (EWS II)** aiming at expanding the coverage area and reach more communities. Use the lessons learned from the previous project in this area, and improve coordination with the other sectors (e.g., agriculture, water, tourism) and beneficiaries (farmers, extension service officers) by providing information in appropriate language. The outcomes should include increased number of sectors and communities that have access to appropriate and timely early warning information, appropriate and timely information of the EWS provided to different stakeholders, and reduced vulnerabilities and improved preparedness and response to climate hazards.
- **Provisions of safety nets for disaster recovery.** This includes the establishment of a national insurance mechanism to support disaster management and preparedness.
- **Housing improvement with suitable sanitation and improved of construction codes.** The potential occurrence of malaria will mean the need to introduce mosquito nets in the buildings, while increased temperature will also mean more ventilated buildings and other facilities. Housing development planning should be consistent with local community's culture but avoid areas with risk of flooding and land slide and soil erosion.






Table 3: Adaptation measures for to human settlements.

NDC MEASURE	INDICATOR	BASELINE	TARGET	RESPONSIBLE DEPARTMENT	OTHER KEY IMPLEMENTING ENTITIES	MITIGATION CO-BENEFITS	ALIGNMENT WITH SDGs	TIMELINE	
								2020-2025	2025-2030
1. Strengthen standards to climate proof roads and critical public infrastructure.	<p>Number of climate proofed infrastructure codes including:</p> <ul style="list-style-type: none"> Standard specifications for roads and bridges – Volume 1 Design guidelines for low volume roads – Volume 2 Design Standards and Guidelines for Pavement Materials Design - Volume 3 Design Standards and Guideline for Pavement Rehabilitation - Volume 8²⁶ 	<p>No specific guidelines established for climate proof infrastructure.</p> <p>Guidelines for the integration of climate change in national, sectoral, and local policies, strategies, and development plans.</p>	10 climate proof codes revised by 2025.	<p>Roads Directorate</p> <p>Building Design Services</p> <p>Department of Public Works</p>	<p>Department of Roads</p> <p>Department of Gender</p> <p>Local Authorities</p> <p>LMS</p>	Reduced emissions resulting from reduced travel time on the major roads and energy savings from buildings.	  	✓	✓
2. Improve infrastructure for flood controls and minimize flooding impacts on communities.	<p>Flood risk maps development status.</p> <p>Options of flood control measures and flood recovery plan.</p>	Guidelines for the integration of climate change in national, sectoral, and local policies, strategies,	<p>Flood risk maps established and implemented country wide.</p> <p>implementation of flood control</p>	<p>Building Design Services</p> <p>Department of Public Works</p>	<p>District Government Organizations</p> <p>Local Community</p>	Emissions reductions from rebuilding effort demand reduction.	 	✓	✓

²⁶ World Bank, 2023. National climate risk and vulnerability assessment for roads in Lesotho (P172476). World Bank Group.

		and development plans.	measures and flood recovery plans in place including: Design standards and explanatory notes for bridges, culverts, and low-level structures.	LMS Disaster Management Authority	Department of Gender Local Authorities		 		
3. Improve integrated risk (multi-hazard) assessment and vulnerability mapping for response planning.	Status of climate risk and vulnerability evaluation reports , including risk and vulnerability maps .	No integrated multi-hazard climate vulnerability in existence. But there are annual vulnerability assessments on food and nutrition security.	Assessment reports of integrated risk and vulnerability and maps prepared by 2025 and updated every three years.	Disaster Management Authority Lesotho Meteorological Services	Department of Land Management UN WFP FAO Red Cross Department of Gender Local Authorities	Not applicable	   	✓	
4. Establish a national insurance fund for disaster management and preparedness. Including relocation programmes to facilitate relocation of communities from disaster prone to safer climate areas.	Status of the feasibility of assessment for the establishment of a national climate insurance instrument.	Lesotho is signatory of the African Risk Capacity, but no national instrument for climate insurance has been scoped and assessed in detail.	Status of the feasibility of assessment for the establishment of a national climate insurance instrument completed by 2025.	Disaster Management Authority Ministry of Finance and Development Planning	Department of Land Management UN WFP Department of Gender Local Authorities	Not applicable	  	✓	✓

<p>5. Set up GIS- based climate database management systems to support policy development, planning, etc. This includes land cover data, risk data, etc.</p>	<p>Status of an integrated GIS-based information repository system to support climate change related decision making.</p>	<p>National land cover database and other thematic maps developed, but no integrated database to support climate change decision database.</p>	<p>GIS-based climate change support data base: Integrated National database with all layers needed to support climate change related decision making established by 2030.</p>	<p>Disaster Management Authority Lesotho Meteorological Service</p>	<p>National University of Lesotho UN FAO, WFP, UNDP Department of Gender Department of Land Management Soil and Water Conservation</p>	<p>Not applicable</p>	 	<p>✓</p>	<p>✓</p>
<p>6. Strengthening Climate Services in Lesotho for Climate Resilient Development and Adaptation to Climate Change (EWS II) aiming at expanding the coverage area and reach more communities. Application of the lessons learned from the previous system in this area and improve coordination with other sectors and beneficiaries by providing information in appropriate language.</p>	<p>Multi-sector EWS established. Number of beneficiaries (sectors, institutions, communities) of the EWS.</p>	<p>Early Warning Systems II project under implementation aiming at the establishment of multisector EWS.</p>	<p>Provision of appropriate, accurate and timely early warning information to different stakeholders. All economic and social development sectors and Communities benefit from information of the EWS.</p>	<p>Disaster Management Authority Lesotho Meteorological Service</p>	<p>World Vision Red Cross Local Government National University of Lesotho Department of Gender</p>	<p>Not applicable</p>	  	<p>✓</p>	<p>✓</p>

<p>7. Promote construction of resilient infrastructure and sanitation facilities to reduce losses and damage to housing infrastructure and reduce incidence of climate related diseases.</p>	<p>Percentage of households living in climate resilient housing.</p> <p>Percentage of households with access to modern sanitation and toilet facilities.</p>	<p>About 30% of the households live in with roofs made of thatch/straw.</p> <p>44% of the total population has access to modern sanitation solutions (46% and 43% coverage in urban and rural areas, respectively). About 30 % of households do not have access to any toilet facilities.</p>	<p>100% of the households living in climate resilient houses, with access to toilets and sanitation services.</p>	<p>Department of Public Works Disaster Management Authority</p>	<p>Department of Gender Local Authorities LMS</p>	<p>Not applicable</p>	    	<p>✓</p>	<p>✓</p>
---	--	---	---	---	---	-----------------------	---	----------	----------

3.1.3.3 Local Economy

The national economy is highly interconnected and directly or indirectly all sectors will be impacted by climate change (Table 4). Impacts will vary by sector and will be felt through the impact of climate change on water availability, land productivity or useability, people's ability to work in a changing environment, or the impact in key infrastructure such as transport. Given this complexity, it is not relevant to delve into each sector in-depth, but rather, to focus on the key impacts and suggest actions that can increase the economy's resilience. It is also important to note that the Water, Human Settlements, and AFOLU sectors are strongly linked to the economy and its recommendations and outputs will also support an improved economy.

For example, the National Strategic Development Plan II identifies manufacturing and technology alongside tourism and agriculture as four key pillars for the development of the Lesotho economy²⁷. In this NDC the tourism and agriculture sectors are addressed through multiple measures as they are dependent on natural resources and provide ready options. On the other hand, technology and manufacturing are less directly impacted and present less options.



Related to water and AFOLU, adapting the economy to minimize the impact of climate change is currently centres on reducing the impact to the agriculture sector and food production. However, other efforts to support a thriving economy that is resilient to climate change involve diversification into other industries to reduce reliance on agriculture as well as creating new sources of income for people and the country. Potential options for diversification include ecotourism and forestry.

Diversification with appropriate support for the creation of the needed skills will also create a wider base of educated professionals and related infrastructure that can spur further growth around these new industries and even branching out into new industries. Similarly, the proposed industries present significant synergies with climate change actions in terms of providing direct economic, conservation, and mitigation co-benefits to Lesotho arising from adaptation efforts. Supporting the adaptation journey for the Lesotho's economy will be linked to the achievement of objectives in other sectors, but sector exclusive measures include:

- **Increasing the capacities of local people to engage in activities in the sectors of Tourism industry and agriculture** (referred as the areas with high potential for job creation for low skilled people). Initiatives such as Man and Biosphere (MAB), Smallholder Agriculture Development Project (SADP), Wool and Mohair Promotion Project (WAMPP) projects would provide good lessons that could be expanded to other regions of the country. At least one community in each district engaged in sustainable eco-based business. Ensure inclusive climate change adaptation planning and implementation processes.
- **Capacity building is required at all levels, including high level decision-makers, technicians, and community in general.** Capacities are needed to understand the impacts of climate change and the advantages of adapting now to reduce the risk and the cost in the future. Inter sectoral coordination, project implementation, data collection and systematization, and report writing capacities are also crucial.







²⁷ Government of Lesotho. (2021). National Strategic Development Plan II 2018/19 to 2022/23. <https://www.gov.ls/wp-content/uploads/2021/06/National-Strategic-Development-Plan-II-2018-19-2022-23.pdf>



Table 4: Adaptation measures related to the Economy




NDC MEASURE	INDICATOR	BASELINE	TARGET	RESPONSIBLE DEPARTMENT	OTHER KEY IMPLEMENTING ENTITIES	MITIGATION CO-BENEFITS	ALIGNMENT WITH SDGs	TIMELINE	
								2020-2025	2025-2030
<p>1. Strengthening and stabilizing ecotourism based rural livelihoods. This includes climate change adaptation research and capacity building in the tourism-recreation sector.</p>	<p>Number of communities engaged in eco-tourism.</p> <p>Research and capacity building program on tourism-recreation in place.</p>	<p>12 rural villages of Sehlabathebe National Park with partial and limited participation.</p> <p>There is a nucleus of researchers in community and eco-tourism in Lesotho that needs to be strengthened (e.g., ²⁸, ²⁹).</p>	<p>20 communities participating in eco-tourism business related initiatives.</p> <p>Countrywide implementation of research and capacity building program in the tourism-recreation sector.</p>	<p>Department of Tourism</p> <p>Lesotho Tourism Development Corporation</p> <p>National University of Lesotho</p>	<p>Limkokwing University Lesotho</p> <p>UNESCO, UNDP</p> <p>Department of Environment</p> <p>Department of Culture</p> <p>Department of Gender</p> <p>Local Authorities</p>	<p>Reduced emissions from greening tourism industry.</p>		✓	✓
<p>2. Identify and assess tourist sites vulnerable to Climate Change and provide appropriate policies and adaptation strategies including:</p> <ul style="list-style-type: none"> Assessment of eco-tourism risks and opportunities in Lesotho. 	<p>Status of assessment of the tourism areas vulnerable to climate change.</p> <p>Number of tourism operators implementing extreme weather preparedness.</p>	<p>No specific vulnerability assessment has been conducted to the tourism sector in Lesotho.</p> <p>No specific guidelines for climate change resilience in the</p>	<p>Report of assessment of the tourism areas vulnerable to climate change completed by 2030.</p> <p>Guidelines for a climate resilient tourism sector and extreme weather preparedness</p>	<p>Department of Tourism</p> <p>Lesotho Tourism Development Corporation</p>	<p>UNESCO</p> <p>UNDP</p> <p>UN WFP, FAO</p> <p>Disaster Management Authority</p> <p>Department of Gender</p>	<p>Reduced emissions from greening tourism industry.</p>		✓	✓

²⁸ Limpho Lekaota, 2016. Rural communities’ participation in the planning and management of tourism developments: a case study from Lesotho African Journal of Hospitality, Tourism and Leisure Vol. 5 (4): http://www.ajhtl.com/uploads/7/1/6/3/7163688/article_15_vol_5__4_.pdf

²⁹ Makwindi, N. & Ndlovu, J. (2021). Prospects and Challenges of Community-Based Tourism as a Livelihood Diversification Strategy at Sehlabathebe National Park in Lesotho. African Journal of Hospitality, Tourism and Leisure, 10(1):333-348. DOI: <https://doi.org/10.46222/ajhtl.19770720-104>

<ul style="list-style-type: none"> Improved preparedness to extreme events. Greening tourism industry. 	Number of tourism operators with a “green label”.	sector of tourism Lesotho.	implemented by 2025. 60 tourism operators that comply with extreme weather preparedness and “green label” by 2030.		Local Authorities				
<p>3. Include resource efficiency criteria in the grading of tourist facilities.</p>	<p>Status of Green Label for tourism industry standards.</p> <p>Number of tourist facilities granted the ‘green’ label.</p>	No national green label for tourism established in Lesotho.	<p>Green Label for tourism industry standards established by 2025.</p> <p>60 tourist facilities granted ‘green’ labels by 2030.</p>	<p>Department of Tourism</p> <p>Lesotho Tourism</p> <p>Development Corporation</p>	<p>Limkokwing University Lesotho</p> <p>Department of Gender</p> <p>Local Authorities</p>	<p>Reduced emissions from greening tourism industry.</p>	  	✓	✓
<p>4. Support and implement programmes for alternative sustainable livelihoods. This includes eco-tourism, recycling industries, locally produced goods and services, cultural, heritage, AC technicians, forestry, biodiversity management, waste management, etc.</p>	<p>Number of people involved in alternative sustainable industries.</p> <p>Number of companies or cooperatives established in sustainable industries.</p>	No statistics on the number of people involved in sustainable local business. However, there are scattered initiatives in agriculture, tourism, and SME providing sustainable local produce and content.	<p>600 people involved in alternative sustainable industries by 2030.</p> <p>60 companies or cooperatives established in sustainable industries by 2030.</p>	<p>Department of Environment</p>	<p>Ministry of Finance and Development Planning</p> <p>Lesotho Revenue Authority</p> <p>Ministry of Trade, Industry & Small Business</p> <p>Department of Cooperatives and Marketing</p>	<p>Reduced loss of forest cover.</p> <p>Reduced emissions from greening of related industries.</p>	  	✓	✓

<p>5. Develop a program to engage rural communities specifically on alternative sustainable industries with a strong capacity building component.</p>	<p>Number of pilot programs that engage rural communities.</p> <p>Number of capacity building programmes implemented.</p>	<p>There are no statistics on the number of community training programs, but there are ongoing initiatives across the country in sectors such as agriculture and food security.</p>	<p>2 Pilot programs that engage rural communities in alternative sustainable industries developed and implemented by 2025.</p> <p>10 Capacity building programs in alternative sustainable industries implemented by 2030.</p>	<p>Department of Labour</p> <p>Ministry of Education and Training</p>	<p>Tertiary Institutions</p>	<p>Reduced loss of forest cover.</p> <p>Reduced emissions from greening of related industries.</p>		<p>✓</p>	<p>✓</p>
<p>6. Support the development of technical courses to train technicians to support sustainable industries.</p>	<p>Number of programs offered to meet Lesotho climate change related specific needs.</p> <p>Number of trained technicians.</p>	<p>Contents on climate change have been introduced in different subjects in the teaching curricula, but no specific degree or specialization is offered yet on climate change.</p>	<p>2 programmes developed and offered at intermediate and higher education to meet Lesotho climate change related specific needs by 2025.</p> <p>100 trained technicians at intermediate and higher education level by 2030.</p>	<p>Council on Higher Education</p> <p>Ministry of Education and Training</p>	<p>Tertiary Institutions</p> <p>Ministry of Education & Training</p> <p>Local Government</p>	<p>Reduced loss of forest cover.</p> <p>Reduced emissions from greening of related industries.</p>		<p>✓</p>	<p>✓</p>

<p>7. Capacity development and awareness on climate change at local level and national level including private sector and civil society.</p>	<p>% of public and private organizations aware of climate change impacts in Lesotho.</p>	<p>No specific data on climate change awareness or district and council plans.</p>	<p>50 % of public and private organizations aware of climate change impacts in Lesotho by 2025, increasing to 100% by 2030.</p>	<p>National Climate Change Committee LMS Local government</p>	<p>Various</p>		  	<p>✓</p>	<p>✓</p>
---	--	--	---	---	----------------	--	---	----------	----------









3.1.3.4 AFOLU and food security

As previously mentioned, the AFOLU sector in Lesotho is closely linked with the other key priority sectors, especially the local economy and the water sectors as they are intrinsically linked (Table 5). As such, many of the measures identified provide benefits for several of the sectors, and with the current focus on food security the existing measures tend to be grouped on AFOLU.




The proposed measures for the AFOLU sector aim to support the mission of a strongly adapted sector that is resilient to climate variability. An adapted AFOLU sector is able to continue the productivity of the land despite climate variability, maintain biodiversity and habitats in a changing environment, and conserves or improves the quality/support capacity of the land over time. The measures proposed aim to support these outcomes over time including:

- **The application of integrated land-use planning in the development of new measures to increase resilience to climate change.** These systems need to integrate land use planning, improved production systems for increased productivity, processing, and storage for added value, and market systems. Further, integrated production systems should consider the creation of local capacities, consider women and marginalized groups, and include the most vulnerable.
- **Integrated land use planning is a basis for inter sectoral coordination to reduce vulnerability in land-based sectors such as agriculture, human settlements and urban planning, infrastructure, among others.** While there are actions being carried out in land use planning, it seems that they are focused within each sector and do not integrate different land use needs and capacities.
- **The implementation of conservation agriculture practices to support increased productivity while limiting the impact on the soil quality and secure the long-term viability of agricultural activity.** Similarly access to climate resilient seeds and climate smart practices and technologies can support improved productive and reduce the food insecurity issues.
- **Many people in Lesotho are still food insecure, and the situation is aggravated by climate change.** As such, strategies to address food insecurity need to have climate change as one of the core components and consider the variations on productivity caused by climate change (i.e., drought, extreme events, etc.).
- **Increase the forest cover in Lesotho, which is currently very low and located mainly within conservation areas.** Support increased forest cover will support the recovery of degraded land, reduce erosion, increase habitat, and provide co-benefits by sequestering carbon. Forest expansion requires increased plantation efforts of non-invasive and native species, combined with much stronger protection for planted and existing forest.

Table 5: Adaptation measures related to AFOLU and food production.

NDC MEASURE	INDICATOR	BASELINE	TARGET	RESPONSIBLE DEPARTMENT	OTHER KEY IMPLEMENTING PARTNERS	MITIGATION CO-BENEFITS	ALIGNMENT WITH SDGs	TIMELINE	
								2020-2025	2025-2030
LAND USE PLANNING									
1. Land use management - Develop an integrated land use and management plan focusing on conservation agriculture and forestry practices and related concepts.	Number of district councils adopting integrated land management plans. Number of community councils adopting integrated land management plans. Number of urban councils adopting integrated land management plans.	Ongoing preparation of Integrated Catchment Development Plans by ReNOKA at national level and catchment management area level ³⁰ .	10 district councils that adopted an integrated land use plan by 2030. 64 community councils with integrated land management plans by 2030. 11 urban councils with integrated land management plans by 2030.	Local Government Department of Land Management Department of Crops Department of Forestry Department of Soil and Water Conservation	Local Authorities Department of Gender GIZ, EU, UN FAO, WFP NGOs	Increase in soil carbon storage capacity and reduced emissions from the use of conservation agriculture (avoided use of chemical fertilizers)	    	✓	✓
2. Land degradation slow/stop. Implement plans for the management and reclamation of degraded land (in line with the Lesotho's	Number of hectares protected. Number of hectares of rehabilitated rangelands.	Over 60% of the country is classified as degraded rangelands.	Rehabilitate 600,000 hectares of degraded land to functionality by 2030. Convert 135,600 ha of bush land back to rangeland by 2030.	Department of Land Management Local Government Department of Range Resources Management	Grazing Associations Local Authorities Ministry of Agriculture, Food Security and Nutrition	Emission reduction associated with reduced soil erosion and land degradation	  	✓	✓










³⁰ ReNOKA (2022). The integrated programme for integrated catchment management in Lesotho. Operational Plan 2022. https://renoka.org/wp-content/uploads/2022/03/ReNOKA_Operational-Plan-2022.pdf

Land Degradation Neutrality ³¹ targets).			Halt the conversion of forests and rangelands to other land cover.						
3. Land use planning legislation. Implement land use planning law and national land-use policy integrating climate change adaptation.	Status of integrated land use legislation. Number of districts implementing land use management plans.	Outdated land use plan in use. ReNOKA project has potential to provide inputs for revised land use policy.	Integrated land use legislation enacted by 2025. 10 districts that have adopted the integrated land use plans and management by 2030.	Local Government Land Administration Authority (LAA) Soil and Water Conservation Department of Livestock Services	UN FAO, WFP National University of Lesotho Local Authorities ReNOKA	Emissions reduction from improved land use	 	✓	✓
4. Land Conservation. Increase land under conservation and protection (in line with the NBSAP and IUCN conservation areas categories ³²).	Proportion of national land under conservation areas. Percentage of highland areas under conservation.	Protected areas account for 0.5% of the country's total area. ³³	12% of national land under conservation areas by 2030. 49% of Lesotho Highlands under some form of conservation management by 2030.	Department of Soil and Water Conservation Department of Environment Department of Water Local Government	Local Authorities Grazing Associations Department of Land Use Planning	Emission reduction associated with soil erosion and land degradation	 	✓	✓

³¹ United Nations Convention to Combat Desertification. (2019). Land degradation neutrality target setting in the Kingdom of Lesotho: Summary report. https://www.unccd.int/sites/default/files/ldn_targets/2019-03/Lesotho%20LDN%20TSP%20Country%20Report.pdf

³² International Union for Conservation of Nature. (2020). State of Protected and Conserved Areas in Eastern and Southern Africa: Country Profile - Lesotho. BIOPAMA Programme. <http://s3.amazonaws.com/biopama-rris.rcmrd.org/s3fs-public/2021-02/IUCN2020%20ESA%20SoPACA%20Country%20Profile%20-%20Lesotho.pdf>


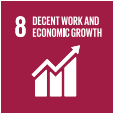



³³ World Bank. (n.d.). Terrestrial protected areas (% of total land area) - Lesotho. Retrieved September 5, 2024, from <https://data.worldbank.org/indicator/ER.LND.PTLD.ZS?locations=LS>

AGRICULTURE										
<p>5. Livestock. Promote the diversification of livestock and livestock management practices, including livestock species resilient to climate change.</p>	<p>Percentage of livestock under improved management (zero grazing and rotational grazing, etc.).</p> <p>Disaggregated data on the percentage of most vulnerable groups (women, youth) engaged in improved livestock management.</p>	<p>No specific data available on the percentage of livestock under improved grazing, but there are pilot projects promoting different alternative grazing practices around the country.</p>	<p>Livestock under improved management to 60% by 2030.</p> <p>Increase women, youth, and vulnerable groups engaged in livestock diversification to 35% by 2030.</p>	<p>Department of Livestock Services</p> <p>Department of Range Resources Management</p> <p>Department of Agricultural Research</p> <p>Faculty of Agriculture, National University of Lesotho</p>	<p>NGOs</p> <p>Lesotho Agricultural College</p> <p>Farmers, Farmer Associations</p> <p>Local Authorities</p> <p>Grazing Associations</p> <p>Herders</p> <p>Local Authorities</p> <p>Department of Gender</p>	<p>Reduction of methane emission from livestock</p> <p>Emission reductions from restored pastures</p>	    	<p>✓</p>	<p>✓</p>	
<p>6. Conservation agriculture. Reinforce conservation agriculture practices (low water irrigation, soil conservation, herd size limiting, etc) through economic, technical, and awareness support.</p>	<p>Percentage of land under conservation agriculture.</p> <p>Number of hectares under irrigation.</p> <p>Percentage of total agricultural</p>	<p>No data available on land under conservation agriculture, but an ongoing project³⁴ can generate this information.</p> <p>Irrigated land area was 3000 hectares in 2020³⁵</p>	<p>50% of land under conservation agriculture practices by 2030.</p> <p>Number of hectareage under irrigation to 12500³⁸ ha by 2030.</p>	<p>Department of Crops</p> <p>Department of Engineering and Irrigation (Ministry of Agriculture, Food Security and Nutrition)</p>	<p>UN FAO, WFP</p> <p>Department for Water Affairs</p> <p>Farmers</p> <p>Farmers Associations</p> <p>Local Authorities</p>	<p>Increase in soil carbon storage capacity and reduced emissions from the avoided use of chemical fertilizers.</p>	   	<p>✓</p>	<p>✓</p>	

³⁴ World Bank (n.d). Smallholder agriculture development project – II (2019-2026). <https://projects.worldbank.org/en/projects-operations/project-detail/P165228?lang=en>

³⁵ Knoema. (n.d.). Lesotho - Total area equipped for irrigation. World Data Atlas. Retrieved September 5, 2024, from <https://knoema.com/atlas/Lesotho/topics/Land-Use/Area/Total-area-equipped-for-irrigation>










³⁸ According to FAO, this is the maximum land area with potential for irrigation. Food and Agriculture Organization of the United Nations. (2005). AQUASTAT Country Profile – Lesotho. FAO. <https://www.fao.org/3/i9750en/i9750EN.pdf>

	land under irrigation systems	Less than 1% of the arable land is under irrigation ^{36, 37}	Increase the proportion of irrigated land to 4% by 2030						
7. Crops. Promote and support the access to climate change resilient crops (drought and pest resistant). This includes a component of capacity building on farming these crops optimally.	<p>Percentage of farmers with access to quality seed.</p> <p>Disaggregated data on the proportion of farmers adopting new climate smart crop technologies.</p>	<p>Farmer saved seed and seed from social networks for maize, sorghum, and wheat accounts for 80%, the remainder comes from the market and seed aid.</p> <p>Local seed production is at infancy and there are currently 67 individual seed growers who produce maize and bean seeds.³⁹</p>	<p>Increase the percentage of farmers having access to quality seed to 20% by 2030.</p> <p>Increase proportion of farmers especially women, youth, vulnerable groups adopting new climate smart crop technologies to 20% by 2030.</p>	<p>Department of Crops</p> <p>Department of Agricultural Research</p>	<p>FAO</p> <p>Lesotho Agricultural College</p> <p>National University of Lesotho</p> <p>Farmers</p> <p>Local Authorities</p> <p>Department of Gender</p> <p>Farmers Association</p>	CO ₂ removal from crop biomass	    	✓	✓

³⁶ Ministry of Agriculture and Food Security (2022). Draft National Irrigation Policy of 2021. Kingdom of Lesotho.

³⁷ World Bank. (n.d.). Agricultural land area equipped for irrigation (% of total agricultural land) - Lesotho. Retrieved September 5, 2024, from <https://data.worldbank.org/indicator/AG.LND.IRIG.AG.ZS?locations=LS>

³⁹ Food and Agriculture Organization of the United Nations. (2016). Seed security assessment – Lesotho 2016: Response to the drought effects related to El Niño. <https://www.fao.org/3/i6086e/i6086e.pdf>

<p>8. Food and Nutrition security. Improving food and nutrition security by implementing an updated food security policy/strategy that mainstreams climate change impacts and adaptation needs.</p>	<p>Status of food security policies and strategies with regards to climate change.</p> <p>% of the population that is food insecure.</p>	<p>Lesotho Food and Nutrition Policy 2016-2025⁴⁰ in place but climate change is not a core issue.</p> <p>508,125 people are food insecure⁴¹</p>	<p>Climate change mainstreamed into the Lesotho Food and Nutrition Policy by 2025</p> <p>Zero hunger by 2030 (in line with SDG 2)</p>	<p>Department of Crops</p> <p>Department of Agricultural Research</p>	<p>UN FAO, WFP</p> <p>Ministry of Agriculture, Food Security and Nutrition</p> <p>Other Development Partners</p>	<p>Not applicable</p>	   	<p>✓</p>	<p>✓</p>
<p>FORESTRY</p>									
<p>9. Forestry expansion. Expand afforestation programmes with climate considerations such as promoting drought tolerant, fast-growing species.</p>	<p>Number of hectares of planted forests</p>	<p>17,100 ha of planted forests⁴²</p>	<p>61,325 ha of planted forests by 2030⁴³.</p>	<p>Department of Forestry</p> <p>Department of Land Management</p> <p>Soil and Water conservation</p>	<p>Local Authorities</p> <p>Local Government</p>	<p>Increased capacity for Carbon sequestration</p>	  	<p>✓</p>	<p>✓</p>
<p>10. Forestry. Strengthening legal protection for plantations, endangered tree species, and critical habitats.</p>	<p>Area of protected forest.</p>	<p>Protected areas account for 0.5% of the country's total area.⁴⁴</p>	<p>Increased legally protected forests to 5% of the country's total land area.</p>	<p>Department of Forestry</p> <p>Department of Environment</p>	<p>Local Authorities</p> <p>Department of Culture</p>	<p>Increased capacity for Carbon sequestration</p>	 	<p>✓</p>	<p>✓</p>










⁴⁰ Food and Agriculture Organization (n.d.). *Lesotho: National policy on irrigation*. Retrieved September 5, 2024, from <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC209966/>

⁴¹ World Food Programme. (n.d.). *Lesotho*. Retrieved September 5, 2024, from <https://www.wfp.org/countries/lesotho>

⁴² Food and Agriculture Organization (2014). *Global forest resources assessment 2015: Country report - Lesotho*. <https://www.fao.org/3/az258e/az258e.pdf>

⁴³ Government of Lesotho. (2021). *Lesotho's first biennial update report (BUR 1)*. United Nations Framework Convention on Climate Change. https://unfccc.int/sites/default/files/resource/NAI_BUR1.pdf

⁴⁴ World Bank. (n.d.). *Terrestrial protected areas (% of total land area) - Lesotho*. Retrieved September 5, 2024, from <https://data.worldbank.org/indicator/ER.LND.PTLD.ZS?locations=LS>

							 		
<p>11. Forestry. Promote research, education, and local consultation as key needs to develop strategies from lessons learnt derived from experience.</p>	<p>Number of research and education integrated programmes in agriculture, forestry, and land use.</p>	<p>No information was found on forestry research and education programme.</p>	<p>4 research and education integrated programmes in agriculture, forestry, and land use by 2030.</p>	<p>Department of Agricultural Research Lesotho Agricultural College Lesotho College of Education</p>	<p>National Curriculum Development Centre National University of Lesotho</p>	<p>Not applicable</p>	   	<p>✓</p>	<p>✓</p>
<p>12. Capacity building on climate change. Capacity building is needed at all levels. Capacity building includes extension workers, farmers, and local leaders in Climate Smart Agriculture Practices</p>	<p>Percentage of technicians, and community members with awareness to climate smart agriculture</p>	<p>No data available staff and community members trained on climate smart agriculture, but an ongoing project⁴⁵ has potential to generate this information</p>	<p>Increase capacity and awareness on climate smart agriculture to 50% of the technicians (government and civil society) and the community.</p>	<p>Ministry of Agriculture, Food Security and Nutrition Local Government Department of Land Management</p>	<p>FAO, WFP</p>	<p>Not applicable</p>	  	<p>✓</p>	<p>✓</p>

⁴⁵ World Bank (n.d). Smallholder agriculture development project – II (2019-2026). <https://projects.worldbank.org/en/projects-operations/project-detail/P165228?lang=en>

3.2 Mitigation

3.2.1 Baseline

The focus of mitigation is on actions that aim to reduce GHG emissions and increase carbon sinks on various emitting sectors (energy, IPPU, Waste, AFOLU). The mitigation objectives in the 2017 NDC are very generalised with a countrywide unconditional target of a 10% GHG emission reduction by 2030 from the assessed BAU emissions level, and an additional 25% reduction dependent on the international support for mitigation actions.

The key sectors and/or actions that were mentioned in the 2017 NDC for mitigation are:

- **Energy** – Improved government direction and policy certainty for markets through the development of policy and strategy documents; increased access to low carbon technologies including:
 - **Substitution** of lower quality (higher emissions) energy technologies and reduction of traditional household fuels, especially firewood, coal, dung and illuminating paraffin for the areas that cannot be effectively electrified. This can also reduce deforestation, reduce health impacts of smoke inhalation and accidental household fires.
 - **Improving energy efficiency** to lower energy intensities across key economic sectors such as Transport, Industry, Buildings (Residential, Commercial, Institutional, and Industrial), Public lighting and Agriculture.
 - **Decarbonizing Transportation** through improved vehicle efficiency, improved system-wide efficiency, and mode switching (e.g., from passenger vehicles to mass transit).
- **IPPU** – Reduction of emissions of high Global Warming Potential (GWP) refrigerants from refrigeration and air conditioning activities; reduction of emissions from industry.
- **Waste** – Improved methane capture from landfill and implementation of waste incineration with waste recovery; improved wastewater treatment to reduce methane emissions.
- **Agriculture** – Improve agricultural practices to reduce gastroenteric fermentation emissions; promote biodigesters for agricultural waste processing.
- **Forestry** – Increase forestation and afforestation activities as well as increasing/improving protected forest reserves.

It is of note that aside from the headline targets, the 2017 NDC does not provide targets for the indicated areas of mitigation action outside of the energy sector. One of the key gaps observed in the 2017 NDC was a lack of sectoral targets for IPPU, Waste, and AFOLU to spur specific activities in each of the indicated sectors.

The targeted mitigation contributions targeted in this updated NDC are expressed in terms of the reductions compared to an estimated “business-as-usual” (BAU) emissions path. The estimation of the BAU path is based on a number of assumptions related to economic growth, population, and planned policies and strategies. Therefore, the updated NDC presents an increased ambition for GHG reduction (compared to the 2017 NDC) generated largely through improved target setting in the different emitting sectors listed above. Mitigation actions with high GHG abatement potential and closely aligned with the sustainable development objectives of the country have been prioritised for implementation over the period 2022 to 2030.

The development of this NDC included the review and assessment of existing policies, strategies, and national documentation at a national or sectoral level including the National Strategic Development Plan II (2018/19 – 2022/23), Lesotho Climate Change Policy and Implementation Strategy (2017), Lesotho Energy Policy 2015 – 2025, Lesotho’s 3rd National Communication (2021), Lesotho’s 1st Biennial Update Report (2021), Lesotho’s 4th National Greenhouse Gas Inventory Report

2019 (LMS, 2019) and Lesotho's 1st Biennial Update Report 2020 (LMS, 2021). Relevant data were collected from pertinent sources and subsectors. In general, low-carbon and energy-efficient practices and circular economy concepts are supported through the above policy directions.

The process to review and update this NDC included a series of steps designed to increase robustness of the data produced, and agreement/ownership of the results and proposed measures from the key stakeholders in Lesotho that will need to implement these measures in the coming years. This included an extensive document review, data collection, model development and validation, stakeholder consultation, and validation workshops where results were discussed with wider audiences to support buy-in.

The technical analysis of the mitigation comprises five concisely defined methodological steps:

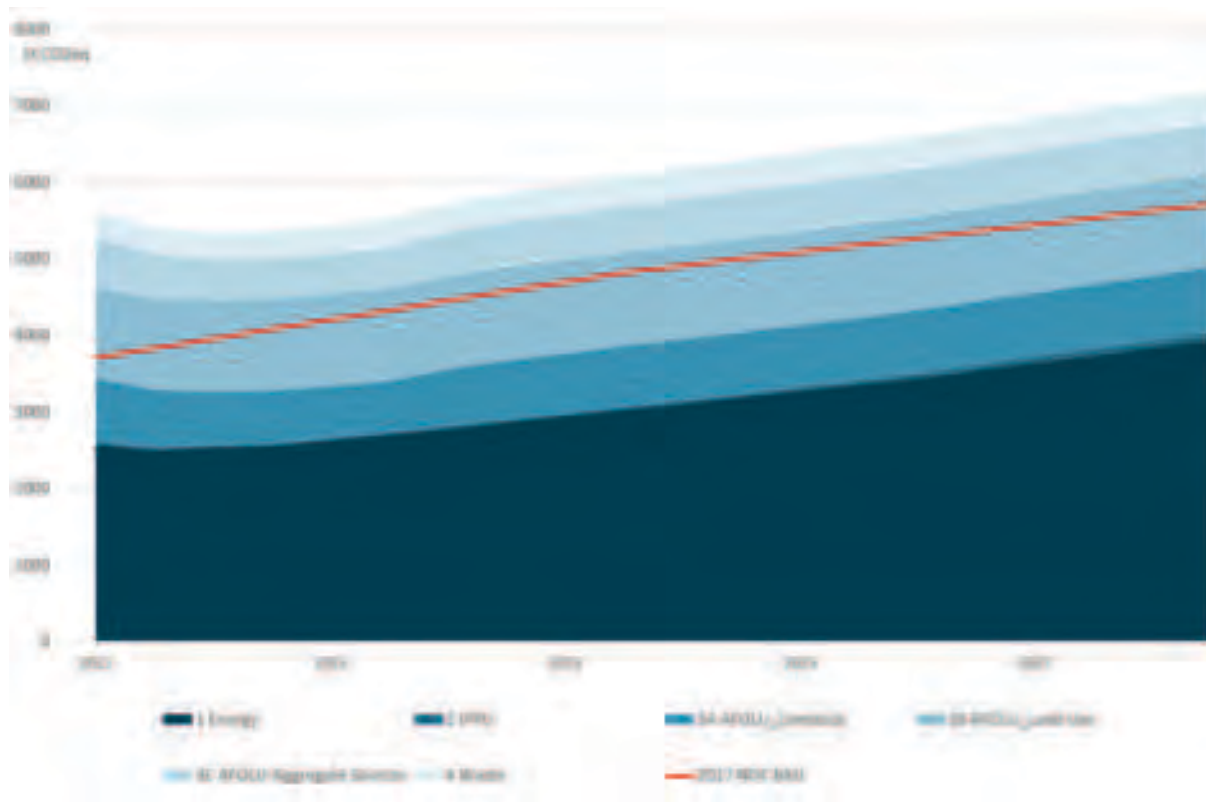
- 1) Preparing an updated BAU Scenario
- 2) Preparing updated GHG abatement policy scenarios for 2030
- 3) Setting 2025 interim and 2030 final NDC targets
- 4) Prioritising mitigation interventions and indicator selection
- 5) Determining conditional and unconditional policy action

3.2.1.1 BAU GHG emissions projection until 2030

In the BAU projection carried out for the revised NDC, emissions rise from 5.6 MtCO₂-eq in 2011 to 7.2 MtCO₂-eq in 2030, this is an increase of 28% over this period (Figure 4). The growth from 2020 is limited to 18% over the period. This projection differs significantly from the projections generated for the 2017 NDC as there have been a major redevelopment of the inventories that changed the baseline data. As such, the emission reductions estimated in this report are based on the inventory data reported in the First BUR (2021). The BAU emissions path estimated for the 2017 NDC can be observed in Figure 4.

As shown in Figure 4, energy is, and will continue to be, the largest emitting sector with its total contribution increasing from 46% of the total in 2011 to 54% by 2030. This is largely, due to the reliance on fossil fuels for transport, industry, and many household end-uses. This means that while the other sectors continue to increase in overall emissions, the proportion of their contributions and profile will decrease over time. However, it is essential to understand that all sectors have an equal imperative to achieve emissions reductions as it is important to find the most cost-effective and easiest savings regardless of the sector.

Figure 4: Projection of BAU GHG emissions for the 2011-2030 period).



3.2.2 Assumptions and methodological approaches for emissions projections

The **2017 Lesotho National Greenhouse Gas Inventory Report** constitutes the basis for the projection of GHG emissions in the BAU scenario. Activity data was extracted from the report, where possible, as a basis for the projection. Where activity level data was not available, the BAU emissions were projected directly using the annual population growth of 0.72% up to 2030 and a projected GDP growth of 2.6 % annually. The projection was carried out on a reporting category level, using both or only GDP growth projections, as appropriate. An overview on applied drivers of change for the projects is provided in Table 6.

For the energy sector, the GACMO model was used to generate projections and estimates savings. The starting point for the projection, 2017, CO₂ emissions from the fuel combustion sectors were estimated using the energy balance data for Lesotho from the UN Statistics Division. For the remaining emissions from the energy sector, the Lesotho 2017 GHG Emissions Inventory was used. Growth rates for the BAU scenario were based on the historical GHG emissions trends from the GHG emissions inventory BUR1 (2011-2017).

Table 6: Projection Factors for BAU GHG emissions path estimation from 2011 to 2030.

GHG reporting category		Applied projection factors
1A1a	Energy emissions related to: Fuel Combustion Activities – Energy Industries – Main Activity Electricity and Heat Production – Electricity Generation – Transport – Road Transport – Cars – Residential.	BAU emissions were estimated using the GACMO model. Assumed annual growth rate for BAU scenario were based on the historical growth rate from BUR1 (2011-2017):
1A2		
1A3		
1A4a		
1A4b		
1A5	<ul style="list-style-type: none"> • Industry 2.3% • Transport 4.1% • Households 1.5% • Services 1.6% • Agriculture 1.5% 	

2A4a	Industrial Processes and Product Use – Mineral Industry – Other Process Uses of Carbonates –Ceramics	Average clay consumption per capita (2011-2017) as starting point, projection using GDP growth and population increase.
2F1a	Industrial Processes and Product Use – Product Uses as Substitutes for Ozone Depleting Substances – Refrigeration and Air Conditioning – Refrigeration and Stationary Air Conditioning	HFC consumption trends resulting from Montreal Protocol obligations (implementation of HCFC phase-out and HFC phase-down).
2H2	Industrial Processes and Product Use – Other – Food and Beverage Industry	Average beer production per capita (2011-2017) as starting point, projection using GDP growth and population increase.
3A1	Agriculture, Forestry, and Other Land Use – Livestock – Enteric fermentation	Average head per capita (2011-2017) as starting point, projection using population growth (separate time series for each livestock category).
3A2	Agriculture, Forestry, and Other Land Use – Livestock – Manure management	Average head per capita (2011-2017) as starting point, projection using population growth (separate time series for each livestock category).
3B1a	Agriculture, Forestry, and Other Land Use – Land	Constant
3C1a	Agriculture, Forestry, and Other Land Use – Aggregate sources and non-CO ₂ emissions sources on land – Emission from Biomass Burning – Biomass burning in Forest Lands	Accounted as disturbance under 3B1a.
3C1c	Agriculture, Forestry, and Other Land Use – Aggregate sources and non-CO ₂ emissions sources on land – Emission from Biomass Burning – Biomass burning in Grasslands	Constant
3C3	Agriculture, Forestry, and Other Land Use - Aggregate sources and non-CO ₂ emissions sources on land – Urea Application	Per capita emission projection based on average urea application per capita (2011-2017) as starting point, projection using population growth.
3C4	Agriculture, Forestry, and Other Land Use - Aggregate sources and non-CO ₂ emissions sources on land – Direct N ₂ O emissions from managed soils	Per capita emission projection based on average emissions per capita (2011-2017) as starting point, projection using population growth.
3C5	Agriculture, Forestry, and Other Land Use - Aggregate sources and non-CO ₂ emissions sources on land – Indirect N ₂ O emissions from managed soils	Per capita emission projection based on average emissions per capita (2011-2017) as starting point, projection using population growth.
3C6	Agriculture, Forestry, and Other Land Use - Aggregate sources and non-CO ₂ emissions sources on land – Indirect N ₂ O emissions from manure management	Per capita emission projection based on average emissions per capita (2011-2017) as starting point, projection using population growth.
4A	Waste - Solid Waste Disposal	Per capita emission projection based on GDP growth, multiplied with projected population.
4C1	Waste – Incineration and Open Burning of Waste – Waste Incineration	Historic per capita emission multiplied with projected population.
4C2	Waste – Incineration and Open Burning of Waste – Open Burning of Waste	Per capita emission projection based on historic CAGR (2011-2017), multiplied with projected population.
4D	Waste - Wastewater Treatment and Discharge	Per capita emission projection based on historic CAGR (2011-2017), multiplied with projected population.

3.2.3 Mitigation targets

For this NDC, the government of the Kingdom of Lesotho is committed to an unconditional reduction of GHG emissions of 6 % (419 ktCO₂eq) from the BAU by the year 2030. Further, the government of the Kingdom of Lesotho commits to an additional conditional reduction of GHG emissions of 18 % (1,270 ktCO₂eq) from the 2021 baseline by the year 2030, provided that commensurate international support is received in the form of finance, investment, technology development and transfer, and capacity building to cover the full cost of implementing proposed additional mitigation actions, **bringing the total emission reduction to 24 % or 1,689 ktCO₂eq below BAU emission levels in 2030** to achieve these emissions reductions.

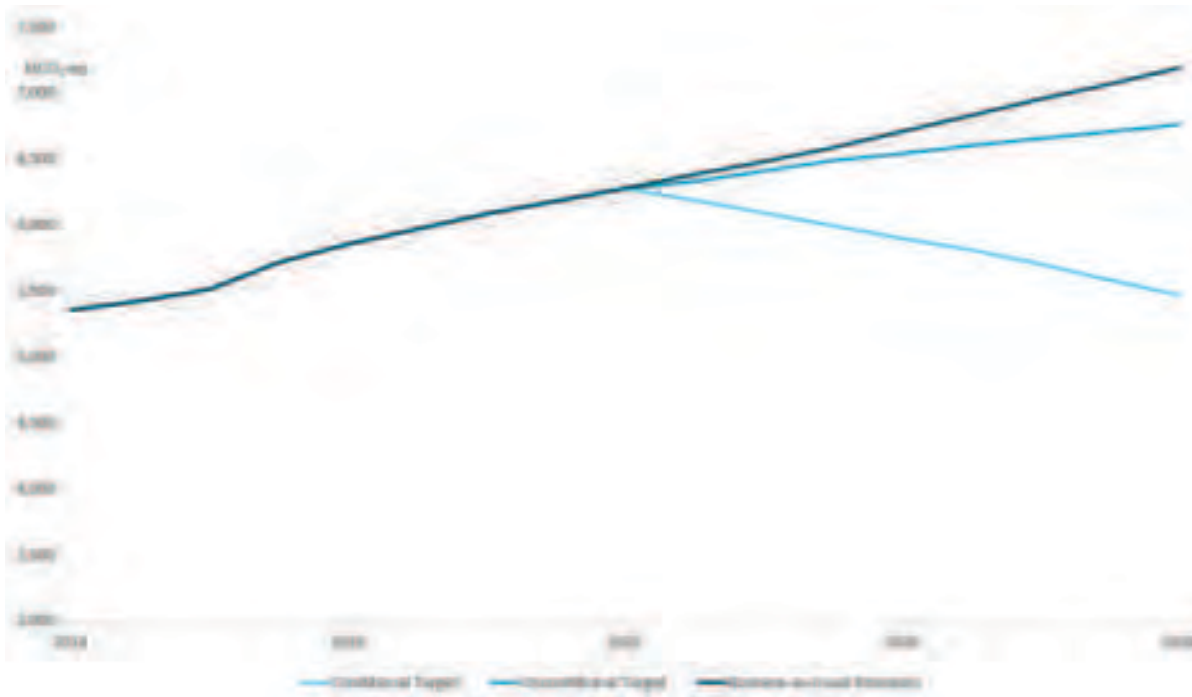
3.2.3.1 Sectoral targets

One of the proposed upgrades for this NDC, is presentation of sectoral targets to support specific action within each of the sectors. The proposed targets were generated based on the availability of policy and technical options to reduce emissions in each of the sectors as well as activities that are already being carried out in sectors to reduce emissions such as in forestry and IPPU. The sectoral targets are also aimed to be challenging, yet achievable through the implementation of concerted action. Lesotho commits to the following sectoral targets in support of the overall target:

1. **Energy** - Lesotho commits to unconditionally reduce its GHG emissions in the energy sector by **4.2% (166 ktCO₂eq)** by 2030. Additionally, Lesotho commits to a further reduction **25.8% (1,017 ktCO₂eq)** by 2030 conditional to timely and adequate international support in the form of finance, investment, technology development and transfer, and capacity building to cover the full cost of implementing the proposed additional mitigation actions. This brings the total emission reduction to 30.1% (1,183 ktCO₂eq) below BAU by 2030.
2. **Industrial Processes and Product Use (IPPU)** – Lesotho commits to unconditionally reduce emissions from the IPPU sector by **25% by 2030 (24 ktCO₂eq)** compared to the BAU, mainly through the implementation of Kigali Protocol in the cooling sector. A further **25% (24 ktCO₂eq)** reduction commitment is conditional to the necessary international support to accelerate a reduction on the reliance of HFCs.
3. **Agriculture, Forestry, and Other Land Use (AFOLU)** – Lesotho commits to unconditionally reduce emissions from the AFOLU sector by 6% (164 ktCO₂eq) by 2030 compared to the BAU through the implementation of forestry cover and sustainable farming practices measures. Another 6% (164 ktCO₂eq) reduction commitment is conditional on international support provided to increase reforestation efforts and sustainable agriculture advancement.
4. **Waste** - Lesotho commits to unconditionally reduce emissions from the waste sector by 15% by 2030 (65 ktCO₂eq) compared to the BAU through the implementation of recycling and waste separation initiatives. A conditional commitment to further reduce waste emissions if sufficient support is received to improve access to formal waste management and expand sustainable waste management practices can increase emissions reductions by another 15% (65 ktCO₂eq) in the period.

It is important to note that aside from the emissions reductions from direct mitigation actions, the Government of Lesotho expects emissions reduction co-benefits from the effective implementation of adaptation actions. This is especially salient in the AFOLU sector as actions in this sector focus on sustainable agriculture and would require some reductions in herd sizes, soil improvement (which can increase carbon sequestration in the soil), improved forest cover, and more. The total expected co-benefits cannot be estimated at the moment due to lack of data, and the fact that they are dependent on the form that adaptation actions take, but they could significantly increase total reductions.

Figure 5 Conditional and unconditional emissions reductions targets for Lesotho.



3.2.4 Mitigation Measures

Mitigation measures aim to reduce GHG emissions and increase carbon sinks in the country to minimize its contribution to climate change. Within the NDC, mitigation measures are usually divided into:

- Unconditional/Unilateral measures, which the country commits to implement from its own resource pool although they may request technical support,
- Conditional/Supported measures, which can only be implemented with the aid from the international community. International aid may include technology transfers, technical assistance, and financial support or any combination of the three.

The overall aim of this NDC update is to increase the ambition of the mitigation commitment to the highest feasible extent for Lesotho and spell out the support that is required to achieve the implementation. To this end, periodic, long-term planning cycles need to be established as a recurring iterative process. A long-term planning process can include regular short-term planning cycles, informed by long-term objectives. For example, regular NDC or national climate action planning cycles could provide an opportunity to regularly reassess current policy pathways, and new developments which may affect the range of possible ambition.

As part of the NDC action development process, a long list of possible actions was developed to cast wide net of realistic, actionable, emissions reduction option within each of the sectors. From this long list a shorter and more focused list would be developed containing only the most significant and realizable options.

This section proposes as total of 26 mitigation measures, with 14 of them aimed at the energy sector as it has the largest emissions and presents the most opportunities to reduce emissions. The individual measures are presented on sectoral basis in the sub-chapters below.

3.2.4.1 Energy

The energy sector has a huge mitigation potential available to explore for this update of Lesotho's NDC to achieve deep emissions reductions. Mitigation initiatives in this sector needed to consider that the electricity generated nationally is 100% renewable. Therefore, several mitigation options based on renewable energy power generation projects have been excluded from this analysis as they would not result in net emissions reductions of emissions from Lesotho. As such reducing carbon emissions from the energy sector in Lesotho looks to address three primary objectives:

- **Substitution of lower quality (higher emissions) energy technologies and reduction of traditional household fuels, especially firewood, coal, dung and illuminating paraffin for the areas that cannot be effectively electrified:** This objective can be addressed through accelerating the delivery of cleaner sources of energy to remote villages and rural populations. This objective also serves other important goals of reducing deforestation and eliminating negative health effects of smoke inhalation and accidental household fires.
- **Improving Energy Efficiency** to lower energy intensities across key economic sectors such as Transport, Industry, Buildings (Residential, Commercial, Institutional, and Industrial), Public lighting and Agriculture. Efficiency opportunities are widespread across the economy, ranging from newer lighting to appliance technologies.
- **Decarbonizing Transportation:** Reducing emissions from transport will be essential in the race against climate change. Potential decarbonisation pathways in the transportation sector include the use of improved vehicle efficiency, improved system-wide efficiency, and mode switching (e.g., from passenger vehicles to mass transit).

It is of note that additional mitigation options in the energy sector could be explored in future iterations of NDC updates but have not been included due to low information availability in the country and difficulty of implementation in the short term. Some of these interventions include passenger transport mode shift to public transport, reducing traffic congestion, and efficient operation of public transportation.

The key subsectors/actions targeted for mitigation include:

- **Residential Energy Use:** Improved government direction and policy certainty for markets through the development of policy and strategy documents; increased access to renewable electricity, particularly through the installation of solar home systems reduction of reliance on biomass for cooking and heating; and increased awareness of the market through the provision of information and awareness campaigns.
- **Waste to Energy:** Improved methane capture from landfill and implementation of waste incineration with waste recovery; improved wastewater treatment to reduce methane emissions.
- **Road Transportation:** Reducing emissions from transport will be essential in the race against climate change. Potential decarbonisation pathways in the transportation sector include the use of improved vehicle efficiency, improved system-wide efficiency, and mode switching (e.g., from passenger vehicles to mass transit)

The estimated savings for each of the measures included in the description tables below each section.

Residential subsector

In 2017, the residential sector was the largest contributor to Lesotho's energy sector emissions accounting for 1,901 ktCO₂e, or over 66% of all energy emissions. Part of the reason for this high number is the high reliance on fossil fuels and traditional fuels for basing home end-uses such as cooking, lighting, and water heating, but also for the generation of electricity in areas that are not connected to the grid to run basic electric equipment.

Mitigation in the Residential Energy Use Sector aims to:

- **Substitution of lower quality (higher emissions) energy technologies and reduction of traditional household fuels, especially firewood, plants residues, animal dung, dung and illuminating paraffin for the areas that cannot be effectively electrified:** This objective can be addressed through accelerating the delivery of cleaner sources of energy to remote villages and rural populations. This objective also serves other important goals of reducing deforestation and eliminating negative health effects of smoke inhalation and accidental household fires.
- **Improving Energy Efficiency to dramatically lower energy intensities across key sectors such as Buildings (Residential, Commercial, Institutional, and Industrial) and public lighting and Agriculture.** Efficiency opportunities are widespread across the economy, ranging from newer lighting to appliance technologies.

The key focus of the mitigation options in the residential sector are as follows:









1. **Implementation of efficient wood stoves to replace inefficient traditional cooking stoves that require much more wood and charcoal than necessary.** In addition to threatening forest resources, their use leads to avoidable greenhouse gas emissions. The rapid adoption of energy-efficient cook stoves will reduce the demand for biomass fuels alleviating environment impacts including deforestation. This measure would entail an increase in current government initiatives by putting adequate policies in place to promote this mitigation option. The projected number of efficient stoves is 1,250 in 2025 and 9,030 in 2030 under the unconditional scenario.
2. **Implementation of biogas plants that make use of organic waste streams to generate biogas reducing the demand for kerosene, charcoal, and traditional biomass for domestic use.** This measure would involve direct support for the purchase of the equipment but also capacity building in the form of skills and technology transfer.
3. **Deployment of solar LED lamps.** Aimed at rural households that are largely excluded from the electricity grid. This measure would improve the quality of the service provided by kerosene and biomass lighting and would reduce emission significantly.
4. **Replacing wood stoves with liquefied petroleum gas (LPG) stoves as it is considered to be a cleaner energy source although it is not renewable.** Government support is needed to provide to improve access to the technology. It is also imperative that information on the safety in use and handling of LPG stoves is provided to the intended beneficiaries in order to avoid any accidents that may be caused by improper handling of technology. This measure will reduce the strain placed on biomass resources in the residential subsector for cooking and water heating.
5. **Solar Cookers implementation to address energy poverty in rural areas.** Although the technology is proven to be reliable, its penetration level is very low in the country. One of the major factors contributing to this is the lack of information to the users and reliable supply of the technology. Scaling up access and adoption of solar cooking technology will reduce quantities of biomass and kerosene used for cooking.
6. **Supporting and promoting the deployment of solar home systems (SHS) to enable access to clean high quality energy services.** This renewable source of energy improves the socio-economic status of rural areas, but its penetration has been limited to date. It has faced financing and business model challenges that has limited access from end users. Some options for this sector include the provision of capacity building to the finance sector to better understand opportunities, capacity building to private enterprises to develop innovative business models such as energy-as-a-service programmes, monetary incentives,



















and more. This is largely aimed at lighting in rural areas that are not connected to the grid to reduce kerosene and candles used for lighting.








- 7. Implementation of residential solar water heaters to reduce dependence on kerosene used for water heating and improve the access to this service.** This option can be adopted for both urban and rural households. This technology can also provide demand-side management for urban grid-connected households, enhancing the efficiency of the electricity grid. Specific actions that need to be taken with this measure will include capacity building of technicians in the proper installation of the systems and putting in place basic standards for areas where there is no running water.
- 8. Extension of the electricity grid to rural areas to increase the electrification of end-uses in households to reduce GHG emissions produced by the excessive reliance in kerosene, charcoal, and traditional biomass.** As part of government initiatives to promote this, the government has developed a 20-year plan (2018 – 2038) to increase access to electricity across the country.

The GHG reductions for each of the measures in this sub sector is presented below.

Table 7: Proposed mitigation measures in the residential energy subsector.

NDC Measure	Indicator (s)	Baseline (2023)	2030 Target	Responsible Department	Other Key Implementing Entities	Adaptation and Resilience Co-Benefits	Alignment With SDGs	Timeline		
								2023	2025	
1. Efficient Woodstoves: <i>Introduction of high efficiency stoves, resulting in carbon sink preservation through reduced demand of traditional biomass fuel.</i>	Percentage of households and rural institutions using Efficient Woodstoves.	No available information was found on percentage of households and institutions	Unconditional: 9030 stoves by 2030 - GHG reduction 24 kt CO ₂ eq/year in 2030.	Department of Energy Department of Forestry	District Forestry Offices District Councils NGOs Area and Village Development Committees	Reduced demand for traditional biomass, which helps to reduce pressure on forestry resources with associated reduced impacts from extreme rainfall events.	 	 	✓	✓
			Conditional: 30,800 stoves by 2030 GHG reduction 83kt CO ₂ eq/year in 2030.						✓	✓
2. Biogas Plants	Percentage of households and rural institutions using Biogas Plants	No available information was found on percentage of households and institutions	Unconditional: 6300 stoves by 2030 - GHG reduction 9 kt CO ₂ eq/year in 2030.	Department of Energy Department of Environment	District Councils Private Sector CSOs NGOs	Reduced dependence on traditional biomass. Reduced pressure on forests and forest biodiversity. Increased off-farm business for rural communities. Access to energy also improves adaptive capacity.	 	 	✓	✓
			Conditional: 12,600 stoves by 2030 GHG reduction 18 kt CO ₂ eq/year in 2030.						✓	✓

3. Solar LED Lamps	Percentage of households and rural institutions using Solar LED Lamps	No information was found on percentage of households and institutions	Unconditional: 32,025 LED lamps by 2030 - GHG reduction 8 kt CO ₂ eq/year in 2030. Conditional: 64,050 stoves by 2030 GHG reduction 16 kt CO ₂ eq/year in 2030.	Department of Energy	District Councils Private Sector CSOs NGOs		 	 		
4. LPG Stoves Replacing Wood Stoves: <i>Deployment of efficient LPG cook stoves to urban and rural households, thereby reducing demand for fuel wood.</i>	Percentage of households and rural institutions using LPG Stoves to replacing Wood Stoves:	No available information was found on percentage of households and institutions	Unconditional: 8,820 stoves by 2030 - GHG reduction 14 kt CO ₂ eq/year in 2030. Conditional: 31,500 stoves by 2030 GHG reduction 50 kt CO ₂ eq/year in 2030.	Department of Energy, Ministry of Local Government Chieftainship, Home affairs & Police	District Councils Private Sector CSOs NGOs	Reduced dependence on traditional biomass. Reduced pressure on forests and forest biodiversity. Increased off-farm business for rural communities. Access to energy increases adaptive capacity.	 	 		
5. Solar Cooking	Percentage of households and rural institutions using Solar Cookers	No available information was found on percentage of households	Unconditional: 8,400 solar cookers by 2030 - GHG reduction 12 kt CO ₂ eq/year in 2030.	Department of Energy, Ministry of Local Government, Chieftainship,	District Councils Private Sector CSOs NGOs	Reduced dependence on traditional biomass. Reduced pressure on forests and forest biodiversity.	 	 		

		and institutions	Conditional: 9,450 stoves by 2030 GHG reduction 13 kt CO2eq/year in 2030.	Home-Affairs & Police		Increased off-farm business for rural community. Access to energy increases adaptive capacity.				
6. Solar Home Systems (SHS)	Percentage of households and rural institutions using Solar Home Systems		Unconditional: 10,500 SHS installed by 2030 - GHG reduction 2 kt CO2eq/year in 2030. Conditional: 28,000 stoves by 2030 GHG reduction 7 kt CO2eq/year in 2030.	Department of Energy Local Government	District Councils Private Sector CSOs NGOs	Reduced dependence on paraffin	 	 	✓	✓
7. Increased Electrification Access <i>(Increasing number of households connected to the grid for lighting, cooking and space heating)</i>	Number of Additional Households Connected to the Grid		Unconditional: 44,330 households connected by 2030 - GHG reduction 62 kt CO2eq/year in 2030. Conditional: 134,332 stoves by 2030 GHG reduction 188 kt	Department of Energy Local Government Department of Energy	IPPs Private Sector Department of Lands LEC	Reduced dependence on fossil fuels, the supply and distribution of which are vulnerable to climate impacts both globally and regionally.	 		✓	✓

			CO2eq/year in 2030.							
8. Solar Water Heater (Residential)	<i>Number of additional households with SWH</i>		<p>Unconditional: N/A</p> <p>Conditional: 11,200 stoves by 2030 GHG reduction 25 kt CO2eq/year in 2030.</p>	<p>Department of Energy</p> <p>Local Government</p>	<p>Private Sector</p> <p>District Councils</p> <p>NGOs</p>				✓	✓

Road transport

The transport sector is one of the major emission-intensive sectors in Lesotho increasing consistently from 391 ktCO₂eq in 2011 to 467 ktCO₂eq in 2017, with road Transport accounting for over 99% of all the transport emissions. At a national level transport accounted for just over 15 % and 16% of all energy emissions, in the same reference years.

The on-road transportation, which includes passenger cars, light-duty trucks (e.g., vans and SUVs), medium- and heavy-duty trucks, buses, and motorcycles, accounts for a significant contribution to the GDP (6.9%) and to Lesotho's economy in general; and also accounts for nearly 10% of the employment in the country. Petroleum supplies more than 99% of the sector's energy, and essentially all its GHG emissions come from the combustion of petrol and diesel. Thus, managing emissions in this sector remains crucial for tackling climate change.

Based on the prevailing conditions in the Lesotho road transport sector, reducing GHG and pollutant emissions from passenger transport means (per passenger-kilometre) has become a must, which implies reducing the dependence on fossil fuels. Reviewing the existing conditions in the passenger transport sector requires the consideration of several factors need to be considered for mitigation: (1) reduce the number of passenger cars, (2) introduce mass transit means, (3) improve vehicle efficiency, (4) increase urban average traffic speed, and more. With this in mind, Lesotho will focus on the following.

- 1. Improve the fuel efficiency of road vehicles:** energy demand (and emissions) in road transport has been increasing continuously in the past decade (Table 8) sparking the need to take action. Some of the key actions for the sector are to improve the maintenance of cars on the road, information dissemination on the importance of fuel-efficient cars in terms of transport costs and reducing the climate impact. There is also a need to capacitate ministries that have a role to play in energy and transport on data collection and disaggregation of such data by fuel type **This mitigation option will be realised through legislative framework and smart incentives to promote the uptake of efficient gasoline cars.**

Table 8- Active vehicle fleet in Lesotho. (source: Department of Traffic and Transport)

Year	2016	2017	2018	2019	2020
No. of Vehicles	124,086	151,081	174,631	186,070	215,273

- 2. Regulate the importation of used vehicles to ensure that poor performing cars are not allowed in the country.** Like many developing countries, Lesotho does not have a car manufacturing industry relying on imports to supply the market. However, most of these imports are used vehicles, and their condition and emissions are not controlled. A legislative framework to restrict the import of used, high emitting and fuel-inefficient cars/vehicles is needed together with capacity and (human and technical) to implement it.
- 3. Improving the efficiency of the public transport through the use of larger buses to replace the dominating mini-buses and the sedans.** Larger buses are estimated to replace 4 times the number of mini-buses and 18 times the number of sedans reducing traffic congestion, reducing overall emissions, and improving the liveability of the city. This can be achieved through financial support to encourage the transport operators to move from smaller vehicles to buses. It will also require legislation regulating the operations of minibuses. The measure requires capacity building, information dissemination and financing for public transport operators.
- 4. Shifting passengers from private cars to public transportation:** The key cause for congestion of roads is abundance of private vehicles causing significant emissions, noise, pollution, etc. This measure focuses on reducing emissions in this sector by shifting some of the passenger activity from personal vehicles to public transport. This will require, in turn, an improvement





on the efficacy and reduced cost of the public transport to attract passengers. Other possible actions include taxing private vehicles more effectively and higher prices on fuel for private use.







5. **Replace gasoline motorcycles with electric options to reduce emissions.** Currently, there is limited data, so it is difficult to assess the GHG reduction potential of this particular option, but with cars remaining out of reach of many, some opt for motorcycles and motor scooters. The increased use by the public adds to motorcycle use by the Police, Defence, and Health to access remote clinics as well as the increasing use by food and retail delivery services. As such, electrifying this end use provides a good opportunity for emissions reduction.
6. **New Bicycle Lanes:** The existing infrastructure does not promote the safe use of bicycles for short to medium distance commuting, having to share the road and/or sidewalks with vehicles and pedestrians increasing the risk of crash or slowing down journeys. It is proposed that the government undertakes strong public information campaigns to promote bicycles and develop bicycle only lanes to increase convenience and safety. **This mitigation measure has an indirect effect on demand and consumption of petroleum fuels as it reduces the number of passengers using motorised transport.**





Emission reduction targets for transport are unlikely to be met without a significant shift from motorised travel. Technological fixes such as electrification of the vehicle fleet will not be sufficient and will not happen fast enough to achieve the magnitude of difference needed. Investment in urban protected bicycle lanes can significantly reduce greenhouse gas (GHG) emissions, lower transport costs, and prevent road fatalities.

The GHG reductions for each of the measures in this sub sector is presented below.

Table 9 Proposed mitigation measures in the transport energy subsector.

NDC Measure	Indicator(s)	Baseline (2022)	2030 Target	Responsible Department	Other Key Implementing Entities	Adaptation and Resilience Co-Benefits	Alignment With SDGs	Timeline	
								2023 – 2025	2025 – 2030
1.Improve the fuel efficiency of road vehicles	Number of Efficient Gasoline Cars	No specific guidelines established	<p>Gasoline vehicles</p> <p>Unconditional: 21,838 efficient vehicles by 2030 - GHG reduction 9 kt CO2eq/year in 2030.</p> <p>Conditional: 43,677 efficient vehicles by 2030 GHG reduction 18 kt CO2eq/year in 2030.</p> <p>Diesel vehicles</p> <p>Unconditional: 4,368 efficient vehicles by 2030 - GHG reduction 1 kt CO2eq/year in 2030.</p> <p>Conditional: 8,735 efficient vehicles by 2030 GHG reduction 2 kt CO2eq/year in 2030.</p>	<p>Ministry of Public Works & Transport</p> <p>Ministry of Energy</p>	Private sector	<p>Decreased dependence on fossil fuel products.</p> <p>Improved health and reduction of harmful local air pollutants, enhancing the resilience of the population to disease and adverse climate impact.</p>	   	✓	✓

<p>Regulation of imported used cars.</p> <p>Regulations to reduce the number of poor performing vehicles entering the country.</p>		No specific guidelines established	<p>Unconditional: 15,287 efficient vehicles by 2030 - GHG reduction 14 kt CO₂eq/year in 2030.</p> <p>Conditional: N/A</p>	<p>Ministry of Public Works & Transport</p> <p>Ministry of Energy</p>	<p>Private sector</p>	<p>Decreased dependence on imported fossil fuel energy products.</p> <p>Improved health and reduction of harmful local air pollutants, enhancing the resilience of the population to disease and adverse climate impact</p>	 	 		✓
<p>New bicycle lanes: <i>Create secure and attractive urban cycling</i></p>	Number of Kilometres of urban cycling routes	No specific guidelines established	<p>Unconditional: 15 km by 2030 - GHG reduction 10 kt CO₂eq/year in 2030.</p> <p>Conditional: 30 km by 2030 GHG reduction 21 kt CO₂eq/year in 2030.</p>	<p>Ministry of Public Works & Transport</p> <p>Ministry of Local Government, Chieftainship, Home-Affairs & Police</p>	<p>Private Sector</p> <p>NGOs</p>				✓	✓
<p>Electrification of motorcycles.</p>	Number of electric motorcycles	No electric two-wheeler registered to date.	<p>Unconditional: N/A</p> <p>Conditional: 910 electric two wheelers by 2030 GHG reduction 0.2 kt CO₂eq/year in 2030.</p>	<p>Ministry of Public Works & Transport</p>	<p>Private Sector</p>					✓

<p>Modal Shift: Private to Passenger Transport:</p>	<p>Percentage of passengers shift to public transport</p>		<p>Increasing the share of passenger transport from around 10% at present to 30% in 2030 - GHG reduction not quantified.</p>	<p>Ministry of Public Works and Transport</p>	<p>Passenger Associations Bus Operators Associations City Councils</p>	<p>Increased resilience of transport infrastructure. Improved health and reduction of harmful local air pollutants, enhancing the resilience of the population to disease and adverse climate impacts.</p>	 	 	<p>✓</p>	<p>✓</p>
--	---	--	--	---	--	---	--	--	----------	----------

Waste-to-energy

The waste sector is responsible for 370 ktCO₂e or around 6.5% of all GHG emissions in Lesotho's, this represents an over 6-fold increase since 1994, while the energy sector increased by around 2.5 times. Most of these emissions are in the form of methane (CH₄) generated through the anaerobic decomposition of organic waste in landfills along with CO₂ and other gases. Besides the emissions, landfills also produce several environmental impacts such as unpleasant odour, and contaminated leachate, among others.

The waste disposal method practiced in Lesotho is open dumping. There is a complete absence of engineered landfills. Instead, there are many dumpsites available in proximity to major communities posing a threat to human health and water resources.







There is potential for methane gas capture in municipal landfills in Maseru and other towns in the country that depending on the quality (% of methane content) needs to be flared or can be used for electricity generation.

A fully-emissions mitigated sector will aim to:

1. Generate of up to 20 MWh of electrical power from landfill gas extraction, collection and utilization applied to sanitary landfills, resulting in reduced CH₄ emitted to the atmosphere from landfill sites and avoided CO₂ from the displacement of fossil-based electricity use.
2. Instead of escaping into the air, LFG can be captured, converted, and used as a renewable energy resource. Using LFG helps to reduce odours and other hazards associated with LFG emissions and prevents methane from migrating into the atmosphere and contributing to local smog and global climate change.

The GHG reductions for each of the measures in this sub sector is presented below.

Table 10 Proposed mitigation measures in the waste sector in a conditional scenario.

NDC Measure	Indicator(s)	2030 Target	Responsible Department	Other Key Implementing Entities	Adaptation and Resilience Co-Benefits	Alignment With SDGs		Timeline	
						2023-2025	2025-2030		
<p>Introducing Landfill and wastewater Gas Recovery in existing and new solid waste disposal and wastewater sites</p> <p>Gas recovery for electricity generation from solid waste disposal sites and wastewater treatment extraction, collection and utilization applied to sanitary landfills, resulting in reduced CH₄ from landfill sites and avoided CO₂ from the displacement of fossil-based electricity use.</p>		<p>Unconditional: N/A</p> <p>Conditional: 1 plant processing 1,171 tons of waste per day by 2030 - GHG reduction 728 kt CO₂eq/year in 2030.</p>	<p>Department of Environment</p> <p>Department of Energy</p>	<p>City and District Councils</p> <p>Department of Energy</p> <p>Lesotho Electricity and Water Authority</p>	<p>Improved quality of water, soil, and local atmosphere.</p> <p>Increasing human and environmental resilience.</p> <p>Increased access to electricity and reduced dependency on traditional biomass energy.</p> <p>Creation of revenue generation opportunities.</p>	  	  	<p>✓</p>	<p>✓</p>

3.2.4.2 Industrial Processes and Product Use (IPPU)

Mitigation in the IPPU sector looks to minimize fugitive emissions of GHG through the improvement of the industrial systems, reducing the reliance on high GWP substances in the products and appliances that are used in many daily activities such as refrigeration and air conditioning, and increasing the efficiency of systems and products such that future demands are reduced compared to BAU.

In Lesotho, IPPU emissions are very low considering its small industrial base and relatively low cooling demand. However, the cooling sector is projected to increase significantly in the next decade due to increasing development, urbanization, the influence of warmer temperatures. For this, the key focus of the proposed mitigation actions in this NDC is to adopt measures that will primarily limit the growth of emissions in the cooling sector and make the measures more targeted and specific.









As indicated, industrial emissions are small, but they should still be considered. As such, industrial emitters should be supported by implementing a mechanism that supports emissions reductions through process optimization. However, considering that the key tools for this process centre on system audits and process improvements, these are often focused on, and result in energy demand reductions as they are a much higher operational cost than IPPU. As such, it is proposed that these are better addressed in the energy sector.

The resulting key areas of focus in the IPPU sector are described below and detailed in Table 11. They include:

1. **Support the implementation of the Montreal Protocol and the Kigali Amendment to reduce the reliance on high GWP substances.** This is relevant for the cooling sector in Lesotho as it is expected to increase in the coming years and is currently reliant on HFC based refrigerants which have very large GWP values. For this, it is essential that Lesotho support the introduction of low GWP refrigerant-based cooling technologies and ban (or restrict) the use of HCFCs and HFCs. Import and consumption reductions of HFCs in line with the obligations of the Kigali Amendment should be treated as Business as Usual, as the HFC phase-down is internationally agreed and funded. Additional mitigation can be achieved by moving to alternative, preferably natural refrigerants ahead of the HFC reduction schedule and thus limit HFC growth as early as possible. The set-up of a national cooling action plan can inform this process and ensure that all relevant national stakeholders are involved.
2. **Develop strong measures to improve the thermal performance of buildings to reduce the demand for cooling equipment and appliances.** While this is more related to the energy sector in its implementation, the outcomes are also relevant for the IPPU sector.

The estimated GHG reductions from this sector is 25 ktCO₂eq by 2030 compared to the baseline. this is equivalent to 25% of the sectors emissions, or 6% of the overall unconditional target for this NDC. Should the national implementation be supported with international support the overall emissions could increase significantly.

Table 11: Proposed mitigation measures in the IPPU sector.

NDC MEASURE	BASELINE	INDICATORS	TARGET	RESPONSIBLE DEPARTMENT	OTHER KEY IMPLEMENTING ENTITIES	ADAPTATION /RESILIENCE CO-BENEFITS	ALIGNMENT WITH SDGs	TIMELINE	
								2020-2025	2025-2030
<p>1. Reduce refrigerant (HFC) emissions: implement HFC phase-down ahead of Kigali Amendment to avoid lock-in of HFC.</p> <p>Set up a National Cooling Action Plan including making operators of equipment responsible for system tightness and recovery, work performed by certified technicians, ban high GWP equipment, and promote natural refrigerants.</p>	<p>No specific measures for curtailing the use of HFC refrigerants have been identified.</p> <p>National Cooling Action Plan not developed.</p> <p>Status of low GWP refrigerants unknown.</p>	<p>Total GHG emissions from HFC refrigerants.</p> <p>Proportion of refrigerants that are low GWP refrigerant in refrigeration and cooling.</p> <p>Status of National Cooling Action Plan</p>	<p>25% GHG emissions reduction from HFC refrigerants by 2030 compared to BAU.</p> <p>National Cooling Plan developed in implementation by 2025.</p>	<p>Lesotho Meteorological Services (Ozone Unit)</p>	<p>Lesotho Revenue Authority</p> <p>Association of refrigeration and air conditioning</p> <p>Tertiary institutions</p>	<p>Reduced incidence of PFAS.</p>	    	<p>✓</p>	<p>✓</p>
<p>2. Energy efficiency improvement in buildings.</p> <p>Improve the performance of buildings to reduce the demand for cooling and related refrigerants. This is an energy efficiency measure that will not be estimated here, but relevant as it can result in HFC demand decreases.</p>	<p>No reference to energy performance in existing building codes.</p> <p>Current building codes are outdated.</p> <p>Poor enforcement of existing building codes.</p>	<p>Status of building Minimum Energy Performance Standards (MEPS).</p> <p>Proportion of residences and buildings with high energy performance standard.</p>	<p>Not quantified</p> <p>Building MEPS completed, or building code updated with relevant energy performance requirements.</p>	<p>Department of Energy</p>	<p>Lesotho National Development Corporation</p> <p>Lesotho Electricity Company</p>	<p>Improved housing quality.</p>	  	<p>✓</p>	<p>✓</p>

3.2.4.3 Agriculture, Forestry and Other Land Use AFOLU

Much of the 2017 NDC effort supported outcomes in the AFOLU sector, although from an adaptation perspective rather than mitigation. However, one of the key attractions of interventions in the AFOLU sector is that they can often provide both mitigation and adaptation benefits. When this is added to the fact that AFOLU is the second largest emitting sector in Lesotho, it makes it very attractive as a sector for action.








The emissions reductions opportunities vary by subsector, but they centre on reducing enteric fermentation emissions from livestock or sequestering emissions in forests. The enhanced NDC will continue with this approach but adding more specific and ambitious targets along with more specific implementation options.





- **Agriculture** - Reducing emissions from the enteric fermentation of livestock is difficult as it is a natural digestive process of ruminant animals. The key options to reduce emissions include reducing herd sizes (destocking), improving feed quality, and feeding practices focusing on domestically available species. Similarly, it is important to match the animal species to the available environment and feeding as well as looking after the health of the animals to maintain production. However, these interventions are difficult for traditional farmers due to low awareness and a lack of human and financial resources. Efforts, both in terms of promoting additional feed and data collection should begin with commercial farmers as they have greater resources. Similarly, capacity building efforts to raise awareness and education of farmers and communities on conservation agriculture practices need to be stepped up to protect the soil and reducing herd sizes resulting in emissions reductions.
- **Forestry** – Increasing the efforts to plant new forests along with the needed awareness raising and protection to ensure their longevity are proposed to reduce emissions. Similarly, the selection of appropriate trees for this activity is important in terms of resilience to drought, survivability, and carbon sequestration.
- **Other Land Use** - Because of Lesotho's semi-arid conditions, much of the land use, in terms of area, is associated with agricultural activities and poor practices which can lead to poorer productivity and carbon sequestration. Increase in land-use change to forestry, especially in key threatened areas could support emissions reductions and provide big adaptation wins for the sector.
- **Degraded land restoration** including the restoration of wetlands that have a large capacity to sequester carbon. Wetlands also provide a range of ecosystem services, including water regulation, flood control, and biodiversity conservation providing significant adaptation benefits. Finally, the restoration of wetlands can also provide opportunities for sustainable livelihoods, particularly in rural areas where wetlands can be sustainably used for agriculture and grazing.⁴⁶







The estimated GHG reductions from this sector is 164 ktCO₂e by 2030 compared to the baseline, this is equivalent to 6% of the sectors emissions, or 38% of the overall unconditional target for this NDC. Should the national implementation be supported with international support the overall emissions could increase significantly.

⁴⁶ Government of Lesotho. (2021). *Lesotho's first biennial update report (BUR 1)*. United Nations Framework Convention on Climate Change. https://unfccc.int/sites/default/files/resource/NAI_BUR1.pdf.

Table 12: Proposed mitigation measures in the AFOLU sector.

NDC MEASURE	BASELINE	INDICATORS	TARGET	RESPONSIBLE DEPARTMENT	OTHER KEY IMPLEMENTING ENTITIES	ADAPTATION/ RESILIENCE CO-BENEFITS	ALIGNMENT WITH SDGs	TIMELINE	
								2020-2025	2025-2030
LAND USE PLANNING									
<p>1. Land use planning</p> <p>Strengthening planning and political and legal support for land use, especially in terms of grazing in the rangelands, forestry plantations, and water catchments.</p> <p>This would result in less trees cut down, smaller herds to fit carrying capacity of the land, and sufficient water for smart irrigation where possible.</p>	<p>Land use planning receives significant attention from government, but it faces significant opposition from farmers and land users.</p> <p>National Land Use Plan not developed.</p>	<p>Status of the National Land use Plan.</p> <p>Number of land use initiatives implemented.</p>	<p>Not quantified</p> <p>Emissions reductions not quantified.</p> <p>National Land use Plan published by 2025.</p> <p>3 Initiatives in the National Land Use Plan under implementation by 2030.</p>	<p>Department of Land Management</p> <p>Ministry of Agriculture, Food Security and Nutrition</p> <p>Ministry of Local Government, Chieftainship, Home-Affairs & Police</p>	<p>Grazing Associations</p> <p>UN FAO, WFP</p> <p>Various</p>	<p>Greater food security</p> <p>Improved rangelands condition.</p> <p>Reduced degradation of soils.</p> <p>Reduced erosion risks.</p>	   	✓	✓
AGRICULTURE									
<p>2. Livestock diet change</p> <p>Increase the number of ruminants provided with supplementary high-quality feeds or nutritional supplements that reduce GHG emissions as they reduce digestion needs (e.g., lablab, corn silage, soybean meal, etc.</p>	<p>Currently the great majority of cattle is fed through traditional grazing putting pressure on grassland systems and generating significant emissions.</p> <p>The feasibility of alternative feed</p>	<p>Proportion of livestock that received improved feed.</p> <p>Feasibility study status</p>	<p>GHG reductions not quantified.</p> <p>Feasibility study completed by 2025.</p> <p>Three recommendations from feasibility study</p>	<p>Department of Livestock Services</p>	<p>Department of Agricultural Research</p> <p>Department of Range Management</p> <p>Lesotho National Farmers Union (LENAFU)</p>	<p>Reduced reliance and pressure on grazelands.</p>	  	✓	✓

<p>A feasibility study should be performed to assess the alternative feed options available, assess costs, and generate recommendations.</p>	<p>options has not been studied or established.</p>		<p>implemented by 2030.</p>		<p>Lesotho National Dairy Board (LNDB)</p>				
<p>3. Reduce synthetic fertilizers reliance. Increase the proportion of organic and compostable fertilizers in the total mix used in the country.</p>	<p>No controls on the use of fertilizer in place. Synthetic fertilizer freely available and low-cost option. No data available of organic fertilizer in total fertilizer mix.</p>	<p>Proportion of organic and compostable fertilizers in total mix. Assessment of fertilizer options to promote organic fertilizers status.</p>	<p>Not quantified Assessment of fertilizer options to promote organic fertilizers completed by 2025. 20% fertilizer reduced by year 2030.</p>	<p>Department of Crops Department of Agricultural Research</p>		<p>Restored soil structure, reduced soil erosion Increased soil fertility.</p>	 	<p>✓</p>	<p>✓</p>
<p>4. Increased use of conservation agriculture practices. Increase the number of farmers (or proportion of the land) practicing conservation agriculture, including minimum tillage, micro fertilising, etc.</p>	<p>Some capacity building provided, and projects aimed at conservation practices. No data available on the number of farmers (or proportion of land) under conservation agriculture.</p>	<p>Proportion of land (crop) or livestock under conservation agriculture. Proportion of farmers practising conservation Agriculture</p>	<p>Not quantified 20% of productive land under conservation agriculture practices by 2030.</p>	<p>Department of Crops Department of Agricultural Research LENAFU</p>	<p>Local Authorities</p>	<p>Reduced soil degradation. Reduced erosion risks.</p>	 	<p>✓</p>	<p>✓</p>
<p>FORESTRY</p>									

<p>5. Reduce fuelwood use to avoid deforestation.</p> <p>Increase awareness of the general population and make it a socially undesirable activity.</p>	<p>High reliance in some sectors of society due to poverty or ease of procurement.</p>	<p>Proportion of population using traditional biomass for residential uses.</p>	<p>Not quantified</p> <p>Population using traditional biomass for residential uses reduced to under 5% by 2030.</p>	<p>Department of Energy Department of Forestry</p>	<p>Ministry of Information, Communication, Science, Technology and Innovation Ministry of Environment and Forestry Local Authorities</p>	<p>Reduced soil degradation pressure. Reduced erosion risks.</p>	 	<p>✓</p>	<p>✓</p>
<p>6. Expand Forest cover, turn AFOLU into net sink.</p> <p>Expand and strengthen forest planting activities to increase forest cover.</p> <p>This includes increasing number of trees planted, improve social awareness of the need for healthy forest cover, and improve political and legal protection for the activity.</p>	<p>17,100 ha of planted forests⁴⁷</p> <p>Under 1% of total land is covered by forests⁴⁸.</p> <p>Significant planting efforts take place; however, tree survivability is very low due to vandalism, fuelwood harvest, farmer opposition.</p>	<p>Number of hectares of planted forests.</p> <p>Total proportion of land covered by forests.</p>	<p>Not quantified</p> <p>Increase by 61,325 ha of planted forests by 2030 compared to 2015⁴⁹.</p> <p>Increase forest land cover to a total of 5% of the total land.</p>	<p>Department of Forestry Department of Land Management</p>	<p>Local Authorities</p>	<p>Reduced Land degradation. Increased social awareness. Increased habitat for ecotourism.</p>	   	<p>✓</p>	<p>✓</p>

⁴⁷ Food and Agriculture Organization (2014). *Global forest resources assessment 2015: Country report - Lesotho*. <https://www.fao.org/3/az258e/az258e.pdf>

⁴⁸ Food and Agriculture Organization (2014). *Global forest resources assessment 2015: Country report - Lesotho*. <https://www.fao.org/3/az258e/az258e.pdf>

⁴⁹ Government of Lesotho. (2021). *Lesotho's first biennial update report (BUR 1)*. United Nations Framework Convention on Climate Change. https://unfccc.int/sites/default/files/resource/NAI_BUR1.pdf.

3.2.4.4 Waste

The waste sector accounts for around 7% of emissions and it is expected to continue to grow as the country's population grows and the economy develops. As such this sector presents an opportunity to significantly reduce the growth of GHG emissions into the future. Further, as the formal waste management sector looks to increase the reach of its services to a greater proportion of the population (currently limited to around 45%), the opportunity to reduce emissions increases as a greater proportion of waste can be managed more efficiently.







A fully emissions mitigated sector will aim to have NO waste reaching landfills, rather, a significant waste segregation effort will take place to maximize recycling (plastics, glass, e-waste, etc) and separate the maximum amount of organic waste in the waste stream and use it for composting or biodigesters. Finally, the remaining will be incinerated with heat recovery to supply industry or district heating.







While this solution is not feasible in the short or medium term for Lesotho, some actions can be taken to assess the feasibility and requirements of this transition and begin the process limiting emissions increases from the sector in the future. Some of the actions include:

1. **Methane capture research.** Determine the feasibility of implementing methane capture from the existing landfills in Maseru. Also, if/when developing a new landfill, ensure that methane capture is included from the inception phase.
2. **Waste segregation innovation opportunities.** Increase the attractiveness of recycling by supporting recycling initiatives and industries and promoting a change in attitude from government, industry, and the public. **Attitude towards waste management.** Awareness raising and capacity building development at all levels of the sector from the community level to increase awareness about appropriate waste disposal and segregation to policy makers to increase the political support for the development of a robust system.
3. **Waste incineration with heat recovery.** Implement an assessment of the feasibility of implementing a waste incineration with heat recovery and begin implementation of the key recommendations.
4. **Wastewater capacity and treatment options.** Increase the capacity wastewater treatment and ensure that the industry considers GHG emissions as core component of performance.

The estimated GHG reductions from this sector is 65 ktCO₂eq or 15% of the sectors emissions by 2030 compared to the baseline. This is also equivalent to 15% of the unconditional emissions in this NDC. Should the national implementation be supported with international support the overall emissions could increase significantly.

Table 13 Proposed mitigation measures in the waste sector.

NDC MEASURE	BASELINE	INDICATORS	TARGET	RESPONSIBLE DEPARTMENT	OTHER KEY IMPLEMENTING ENTITIES	ADAPTATION/ RESILIENCE CO-BENEFITS	ALIGNMENT WITH SDGs	TIMELINE	
								2023-2025	2025-2030
<p>1. Capture and utilization of methane from landfills. Perform feasibility for methane capture on existing landfills and include the requirement for methane capture on future landfills in the legislation.</p>	<p>Feasibility of methane capture from landfills not established.</p> <p>No requirement for methane capture in legislation.</p>	<p>Feasibility of methane capture status.</p> <p>Methane capture recommendations status.</p> <p>Status of methane capture from landfills in applicable legislation.</p>	<p>Feasibility studies for methane capture at existing landfills completed.</p> <p>At least one recommendation from feasibility studies implemented.</p> <p>Methane capture from new landfills made mandatory in applicable legislation</p>	<p>Department of Environment</p> <p>Local Government</p>	<p>Community Councils</p> <p>Maseru City Council</p> <p>Urban Councils</p>	<p>None</p>	  	<p>✓</p>	<p>✓</p>
<p>2. Waste separation and recycling. Perform waste audit to understand the nature of waste streams available and design possible waste separation and utilization schemes where possible such as composting, biodigesters, etc</p>	<p>Limited waste segregation performed largely by private sector on a piecemeal basis.</p>	<p>Waste audit status.</p> <p>Number of Waste segregation initiatives started.</p> <p>Proportion of waste separated and used.</p>	<p>Waste audit performed with opportunities for waste segregation and treatment identified.</p> <p>At least two waste segregation initiatives implemented.</p>	<p>Department of Environment</p> <p>Local Government</p>	<p>Community Councils</p> <p>Urban Councils</p> <p>Maseru City Council</p>	<p>Creation of skills and ancillary industries.</p> <p>Improved sanitation.</p>	  	<p>✓</p>	<p>✓</p>

<p>3. Waste incineration with energy recovery. Perform feasibility study to increase the proportion of waste that is incinerated and implement heat recovery.</p>	<p>No waste incineration with energy recovery performed.</p> <p>Feasibility of waste incineration with energy recovery in not established.</p>	<p>Feasibility of waste incineration with energy recovery status.</p> <p>Proportion of waste incinerated w/heat recovery.</p>	<p>Feasibility assessment completed with opportunities for waste incineration implementation steps identified.</p>	<p>Department of Environment</p> <p>Department of Energy</p> <p>Ministry of Health</p>	<p>Maseru City Council</p> <p>Community Councils</p> <p>Urban Councils</p>	<p>Industry solutions development.</p> <p>Improved sanitation outcomes.</p>	  	<p>✓</p>	<p>✓</p>
<p>4. Wastewater implementation with methane capture. Assess performance to increase the reach of the formal wastewater sector. Increase wastewater treatment requirements for industry and agriculture emphasising water quality and GHG emissions.</p>	<p>Wastewater treatment limited to a proportion of Maseru's water use. No methane (emissions, or capture) considered in the design and operations of the wastewater treatment plant.</p> <p>No regulatory requirements related to GHG emissions or methane capture of domestic or industrial wastewater.</p>	<p>Wastewater assessment status.</p> <p>Wastewater regulations status</p> <p>Industrial wastewater regulations status.</p>	<p>Wastewater assessment completed with opportunities identified to increase its reach, reduce GHG emissions, and determine feasibility of methane capture.</p> <p>Wastewater policy/regulations updated for new municipal wastewater treatment plants to minimize operational GHG emissions and implement methane capture where feasible.</p> <p>Wastewater regulations for industry updated to mandate methane capture where feasible.</p>	<p>Water and Sewerage Authority</p> <p>Department of Environment</p> <p>Ministry of Local Government, Chieftainship, Home-Affairs and Police</p>		<p>Improved sanitation.</p>	  	<p>✓</p>	<p>✓</p>

3.3 Cross-cutting issues










The section discusses a wide range of possible interventions that aim to generate a political, institutional, social, and economic environment that is more able to identify, plan, and implement climate change interventions, whether mitigation or adaptation. Creating such an environment requires:








- **Awareness and social inclusion** - Strong awareness of climate change issues at all levels (general public, business, government, etc) and their impact on social issues such as social inclusion and **gender equality**. This essential to participate in the policymaking process, support the implementation of actions, and guide responses to achieve positive goals for all groups in society. Awareness can begin at school with general education covering all of these issues.
- **Capacity needs** - Adequate technical, policy, and financial capacity in key sectors to enable actors the identify the need for action, assess possible responses, and develop implementation plants that adequately address the problems identified. The achievement of results requires the participation of different sectors and as such, capacity building is needed across all actors of climate action.
- **Institutional arrangements** - Strong responsible institutions with clear mandates, responsibilities, and communication channels that have climate change as a central responsibility or are required to consider climate change actions as part of their development activities. These institutions also have strong coordination processes to optimize the use of resources, avoid gaps in actions, and ensure clear understanding.
- **Sustainable finance** – the presence of dedicated sustainable finance mechanisms to support climate action is also essential. This can include the monetisation of emissions to encourage the private benefits from emissions reductions.
- **Monitoring, reporting, and verification** – The availability of transparent and robust detailed information is essential to identify actions, develop responses, and assess progress against objective. Further, clear information is becoming more important to enable access to international climate finance. As such having a strong MRV systems with safe and accessible repositories of information should be implemented.
- **Early warning system** – an early warning system was included as a cross cutting measuring considering the that it benefits all sectors to implement adaptation measures in a timely manner, minimizing costs and impacts.






Embedding climate-proofing into the day-to-day policy development and planning is perhaps the most essential. This process looks to mainstream climate change actions and bringing them to the top of the agenda of government officials and policymakers in all sectors to ensure that climate actions more likely to be identified and prioritized for implementation.











Table 14: Crosscutting measures






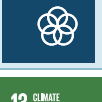


Table 14: Crosscutting measures.

NDC MEASURE	BASELINE	INDICATOR	TARGET	RESPONSIBLE DEPARTMENT	OTHER KEY IMPLEMENTING ENTITIES	ADAPTATION/ MITIGATION CO-BENEFITS	ALIGNMENT WITH SDGs	TIMELINE	
								2020-2025	2025-2030
1. Mainstream climate change mitigation and adaptation language and measures across all sectoral and national development strategies.	Climate change is sparsely considered outside of climate specific policies and projects.	Number of strategies adopted that include climate change aligned measures.	At least 5 sectoral, national, and regional strategies and policies with climate change as a core consideration by 2025.	Department of Planning Ministry of Finance and Development Planning Parliament	National Climate Change Committee Department of Gender.	Accelerator of climate action	     	✓	✓
2. Strengthen the role and activities of the NCCC.	Responsibilities and activities are unclear with a broad participation group but no records, mandates, etc.	Status of responsibilities set for cross government coordination. Inclusion of women in leadership/ decision making position	Directives for coordination roles across government on climate change are set unambiguously in law by 2025. At least 30% of climate change leadership positions are held by women.	Lesotho Meteorological Services	National Climate Change Committee Department of Planning	Accelerator of climate action	  	✓	✓

<p>3. Implement education programmes on sectoral climate risks and vulnerabilities in schools' curricula</p>	<p>Climate change education is limited and usually not inclusive of its social and wide-ranging implications for everyday life.</p>	<p>Proportion of schools successfully adopting curriculum that includes climate risks and vulnerabilities.</p>	<p>50% of Schools have climate change courses as part of standard teaching practices.</p>	<p>National Curriculum Development Centre</p>	<p>Lesotho Meteorological Services National University of Lesotho Lesotho College of Education Lesotho agricultural college Limkokwing University of creative technology Lerotholi polytechnic</p>	<p>Accelerator of climate action</p>	    	<p>✓</p>	<p>✓</p>
<p>4. Implement a capacity building programme on climate change for the public and private sectors and the civil society.</p>	<p>Piece meal approach to capacity building limited to specific sectors and actions.</p>	<p>Number of capacity building programmes on climate change implemented.</p>	<p>At least 10 climate change capacity building programmes on climate change implemented.</p>	<p>Public Service Lesotho Meteorological Services LNDC</p>	<p>Local Authorities National Climate Change Committee</p>	<p>Increased adaptive capacity and community resilience</p>	 	<p>✓</p>	<p>✓</p>

<p>5. Communication and awareness raising campaigns on climate change for the public and private sectors and civil society.</p>	<p>Poor communication across agencies and with the public on actions, data, prospects, etc.</p> <p>Low level of awareness across sectors of climate change action, impacts, etc.</p>	<p>Number of programmes to raise awareness and education on climate change in different sectors.</p>	<p>5 Climate communication program being implemented by 2030 targeting different sectors.</p>	<p>Lesotho Meteorological Services</p> <p>Ministry of Education and Training</p>	<p>National Climate Change Committee</p> <p>Local Authorities</p>	<p>Increased adaptive capacity and community resilience</p>	 	<p>✓</p>	<p>✓</p>
<p>6. Ensure meaningful engagement and participation of women, vulnerable groups, and youths in policy making processes and programme implementation.</p>	<p>Women and at-risk groups are underrepresented in the consultation, development, and execution of climate change projects and policies.</p>	<p>Number of women youth and vulnerable groups engaged in policy making and implementation process.</p> <p>Number of women in senior positions in climate change related agencies, project teams, and decision-making bodies.</p>	<p>30% of minimum average participation in consultation, development, and execution of climate change projects and policies.</p> <p>30% of senior positions in climate change related agencies, project teams, and decision-making bodies occupied by women.</p>	<p>Department of Gender</p> <p>Lesotho Meteorological Services</p>	<p>National Climate Change Committee</p> <p>Local Authorities</p>	<p>Accelerator of climate action</p>	  	<p>✓</p>	<p>✓</p>

<p>7. Conduct a gender-sensitive vulnerability assessment on impacts of climate change.</p>	<p>Vulnerability assessments and other policy development tools do not consider gender and other social impacts.</p>	<p>Number of gender sensitive vulnerability assessments conducted.</p>	<p>One national gender sensitive vulnerability assessment report published</p>	<p>Department of Gender LMS</p>	<p>National Climate Change Committee Social Development BOS</p>	<p>Builds adaptive capacity of population and enhancing resilience</p>	 	<p>✓</p>	
<p>8. Improve the availability and accuracy of information to support robust monitoring and evaluation (M&E) or monitoring, reporting, and verification (MRV) systems to support climate actions.</p>	<p>Irregular and incomplete data sets available with little information and no coordination on status, ownership, etc.</p>	<p>Status of publication of annual GHG inventory. Status of M&E Framework for adaptation Status of MRV framework to monitor mitigation actions.</p>	<p>Annual inventory published annually including relevant methodological data. M&E Framework for adaptation published. MRV framework to monitor mitigation action.</p>	<p>Department of Planning LMS</p>	<p>National Climate Change Council</p>	<p>Accelerator of climate action</p>	  	<p>✓</p>	<p>✓</p>
<p>9. Develop a financial plan to begin the monetisation of GHG emissions to provide reduction incentives as well as fund raising for climate adaptation action implementation.</p>	<p>No existing GHG emissions monetisation or feasibility assessment performed.</p>	<p>Status Feasibility assessment on implementation of GHG monetization plan.</p>	<p>Feasibility study performed by 2025 including the Identification of viable mechanisms and generation of suitable plan of implementation.</p>	<p>Department of Planning Lesotho Meteorological Services</p>	<p>National Climate Change Council</p>	<p>Accelerator of climate action</p>	    	<p>✓</p>	<p>✓</p>

<p>10. Strengthen institutions to support climate action including assigning roles and responsibilities and climate targets to government offices or roles.</p>	<p>Poor allocation of objective and specific achievement of responsibilities.</p>	<p>Proportion of NDC objectives allocated to institutions with periodic review mandate. Number of women in leadership and decision-making positions.</p>	<p>All NDC responsibilities assigned to specific institutions and roles by 2025. Institutional assessment to increase climate actions efficiency and effectiveness.</p>	<p>Lesotho Meteorological Services</p>		<p>Accelerator of climate action</p>	  	<p>✓</p>	
<p>11. Develop national climate change adaptation indicators. To include gender aspects, and their inclusion in national statistics.</p>	<p>No formal adaptation monitoring indicators framework in place.</p>	<p>Number of indicators of climate change adaptation and gender included in national statistics.</p>	<p>National statistics and national accounts include climate change and gender specific indicators.</p>	<p>Lesotho Meteorological Services Bureau of Statistics</p>	<p>Department of Planning Department of Gender</p>	<p>Not applicable</p>	  	<p>✓</p>	
<p>12. Early Warning System (EWS) Strengthening. Establish and capacitate institutional mechanisms for coordination and implementation of integrated EWS in Lesotho.</p>	<p>Improved EWS (institutional and human capacity).</p>	<p>EWS in place but limited in focus.</p>	<p>Operational multisector and multi-hazard EWS. Enhanced institutional capacity (institutional and human) to manage EWS.</p>	<p>Disaster Management Authority, Lesotho Meteorological Service</p>	<p>NGOs Local Authorities Department of Land Management</p>	<p>Not applicable</p>	 	<p>✓</p>	

4. Means of Implementation

4 Means of implementation

Considering the low availability of financial and technical resources, **NOT all the measures identified in this NDC will be able to be implemented with the country's resources.** For this, Lesotho would need financial support, capacity development, and technology transfer to fully implement the mitigation and adaptation measures identified in this NDC.

Lesotho will implement the identified NDC measures using both conditional and unconditional scenarios based on the finance, capacity building and technology development and transfer it receives. The estimated total cost of implementing the revised NDC is **US\$1 billion for mitigation and US\$ 1.5 billion for adaptation.** A full cost estimation will be provided in the revised NDC implementation and investment plans, which is under development. Lesotho also needs technical capacities, technology transfer and skills development for implementing adaptation and mitigation measures. There is a need to raise awareness across sectors nation-wide and with all stakeholders to implement the NDC and track its progress. **Depending on the nature of the measure, Lesotho is committed to ensure that marginalized groups of the population and gender are considered in the implementation.**

5. Transparency

5 Transparency

5.1 Adaptation

A high-level framework of monitoring and evaluation (M&E) indicators for use in tracking and reporting on implementation of the adaptation component of the NDC is planned as one of the key measures.

The framework should reflect the requirements of global and national level requirements for tracking progress of medium to long-term interventions through alignment of indicators with the SDGs and the proposed set of adaptation measures. Suitable indicators are selected for each adaptation measure and listed in thematic tables, containing:

- **Headline indicators:** These include carefully selected adaptation indicators linked to the SDGs relevant to the thematic area.
- **Supporting indicators:** The headline indicators are underpinned by a set of more detailed indicators which track progress in implementing the adaptation measures required for impact in the sectors defined by the thematic area.

The tables are introduced for seven thematic areas namely: meteorological services, water, livestock and crop production, forestry and land use, biodiversity and ecosystems, health, and cross-cutting and local interventions.

Limited, albeit increasing, monitoring capacity demands prioritization of indicators. However, it is envisaged to continuously expand on the number of indicators being tracked and promote disaggregation.

This system is to be integrated in the National Monitoring and Evaluation System (NMES), as indicated in the NAP framework and is focused on the measures proposed and still needs to be linked with the adaptation national and international goal and may be interconnected with the M&E of the SDGs.

5.2 Mitigation

The overall indicator for the implementation of the NDC is the total annual GHG emission, expressed in t CO₂-eq, covering all IPCC sectors and all gases that are reported in the most recent GHG Inventory Report (2017): CO₂, CH₄, N₂O and HFCs.

Lesotho GHG Inventory Report (2017) uses the 100-year horizon Global Warming Potential (GWP) values from the IPCC's Second Assessment Report. The Paris Agreement calls for using the values of the Fifth Assessment Report. In 2017, 62.4% of Lesotho's reported emissions are from CO₂, 24.4% from CH₄. The difference between applying the GWP as listed in the Fifth Assessment Report is 4%.

The quantifiable information on the reference point to transparently describe the target is contained in Table 15, listing all items as Dec 4/CMA.1, Annex I. Those items also do cover all information requested in Dec 18/CMA.1 Annex, Part III/B on the Description of a Party's nationally determined contribution under Article 4 of the Paris Agreement, including updates.

Table 15: Quantifiable information on the reference point, Dec 4/CMA. 1, Annex I

Item	Information describing Lesotho NDC
<p>1. Quantifiable information on the reference point (including, as appropriate, a base year):</p>	
<p>1a. Reference year(s), base year(s), reference period(s) or other starting point(s);</p>	<p>Reference year: 2000 with baseline scenario to 2030</p>
<p>1b. Quantifiable information on the reference indicators, their values in the reference year(s), base year(s), reference period(s) or other starting point(s), and, as applicable, in the target year;</p>	<p>Indicator: GHG emission in 2030</p> <p>BAU scenario 2030: 1st NDC: 5,713 kt CO₂eq</p> <p>Updated NDC: 7,192 kt CO₂eq</p> <p>The 1st NDC target was based on the most recent inventory data set available then, i.e. 2000. After compiling inventory data up to 2017, it became apparent that the data set for 2000 is not representative of the current situation in Lesotho. This update takes this into account and applies a more disaggregate projection method.</p>
<p>1c. For strategies, plans and actions referred to in Article 4, paragraph 6, of the Paris Agreement, or policies and measures as components of nationally determined contributions where paragraph 1(b) above is not applicable, Parties to provide other relevant information;</p>	<p>N/A</p>
<p>1d. Target relative to the reference indicator, expressed numerically, for example in percentage or amount of reduction;</p>	<p>Unconditional emissions reduction target Emission reduction target 2030: 166 ktCO₂-eq.</p> <p>Conditional emissions reduction target Emissions reduction target: 1,436 ktCO₂-eq.</p>
<p>1e. Information on sources of data used in quantifying the reference point(s);</p>	<p>Lesotho's Greenhouse Gas Inventory of 2017 constitute the basis for the projection of GHG emissions in the BAU scenario.</p> <p>BAU emissions were projected using historic activity data and top-down growth projections such as annual population growth of 0.7% and a projected GDP growth of 2.6% annually.</p> <p>The projection was carried out on a reporting category level.</p>

<p>1f. Information on the circumstances under which the Party may update the values of the reference indicators.</p>	<p>Improved MRV capacities could enable a projection based on activity data per category. Especially in the energy sector, efforts to enhance the MRV system are undertaken.</p> <p>Large changes of the projected population and/or GDP growth will lead to a reassessment of the BAU scenario.</p>
<p>2. Time frames and/or periods for implementation:</p>	
<p>2a. Time frame and/or period for implementation</p>	<p>until 2030</p>
<p>2b. Whether it is a single-year or multi-year target, as applicable.</p>	<p>Single-year target: 2030</p>
<p>3. Scope and coverage:</p>	
<p>3a. General description of the target;</p>	<p>Economy wide, reduction target relative to a BAU scenario estimate until 2030. Sectoral targets have been also identified for the Energy, IPPU, AFOLU, and Waste sectors.</p>
<p>3b. Sectors, gases, categories and pools covered</p>	<p>Total annual GHG emission, expressed in t CO₂-eq, covering all IPCC sectors and all gases that are reported in the most recent GHG Inventory Report (2017): CO₂, CH₄, N₂O and HFCs.</p>
<p>3c. How the Party has taken into consideration paragraph 31(c) (include all categories of anthropogenic emissions) and (d) of decision 1/CP.21 (explanation for category exclusion of anthropogenic emissions);</p>	<p>Described in the GHG inventory 2017.</p>
<p>3d. Mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans, including description of specific projects, measures and initiatives of Parties' adaptation actions and/or economic diversification plans.</p>	<p>Several adaptation measure, especially in the AFOLU and Human Settlement sectors targeting increased forest cover, improved grazing practices and conservation agriculture resulting in increased forest cover that enhances carbon sequestration. Reduced soil degradation, on the other hand, enhances soil's ability to store carbon and improves its fertility, further supporting carbon sequestration and reducing greenhouse gas emissions from degraded land. These actions also help in maintaining the ecological balance, supporting water retention and reducing the risk of natural disasters like floods and landslides, which are exacerbated by deforestation and soil erosion. Overall, these adaptation measures effectively contribute to climate change mitigation by enhancing natural carbon sinks and maintaining ecological integrity.</p>

	Other co-benefits for mitigation result from a more conscientious use of resources in the country resulting from the implementation of water, agriculture, waste, and more would result in reduced consumption of fossil fuels, and greater adaptive capability.
4. Planning processes:	
4a. Information on the planning processes that the Party undertook to prepare its nationally determined contribution and, if available, on the Party's implementation plans, including, as appropriate:	The National Climate Change Committee (NCCC) has been setup as a coordination body. The NDC update was led by the Lesotho Meteorological Services, and invited all stakeholders from inception, during consultations at national and district levels as well as during validation, including an evaluation of the implementation of NDC measures published in 2017, the formulation of new measures, and strategy development for financing and improving the MRV system.
4ai. Domestic institutional arrangements, public participation and engagement with local communities and indigenous peoples, in a gender-responsive manner;	Gender based analysis was considered in the development of the NDC. Regional presentations were also carried out.
4aii. Contextual matters, including, inter alia, as appropriate: 4aii1. National circumstances, such as geography, climate, economy, sustainable development, and poverty eradication. 4aii2. Best practices and experience related to the preparation of the nationally determined contribution. 4aii3. Other contextual aspirations and priorities acknowledged when joining the Paris Agreement;	Contained in Third National Communication. High political support is required to mainstream climate aspects into all new sectoral development plans. High levels of poverty are prevalent, especially in a rural context.
4b. Specific information applicable to Parties, including regional economic integration organizations and their member States, that have reached an agreement to act jointly under Article 4, paragraph 2, of the Paris Agreement, including the Parties that agreed to act jointly and the terms of the agreement, in accordance with Article 4, paragraphs 16–18, of the Paris Agreement;	N/A
4c. How the Party's preparation of its nationally determined contribution has been informed by the outcomes of the global	No stocktake has taken place so far

<p>stocktake, in accordance with Article 4, paragraph 9, of the Paris Agreement;</p>	
<p>4d. Each Party with a nationally determined contribution under Article 4 of the Paris Agreement that consists of adaptation action and/or economic diversification plans resulting in mitigation co-benefits consistent with Article 4, paragraph 7, of the Paris Agreement to submit information on:</p>	<p>No quantification of co-benefits of adaptation measures, but forest cover initiatives are assumed to have large sequestration potential.</p>
<p>4di. How the economic and social consequences of response measures have been considered in developing the nationally determined contribution;</p>	<p>No analysis carried out so far</p>
<p>4dii. Specific projects, measures and activities to be implemented to contribute to mitigation co-benefits, including information on adaptation plans that also yield mitigation co-benefits, which may cover, but are not limited to, key sectors, such as energy, resources, water resources, coastal resources, human settlements and urban planning, agriculture and forestry; and economic diversification actions, which may cover, but are not limited to, sectors such as manufacturing and industry, energy and mining, transport and communication, construction, tourism, real estate, agriculture and fisheries.</p>	<p>The NDC contains over 30 adaptation measures targeting the sectors:</p> <p>Water – to increase supply and reduce the impact of rainfall variability.</p> <p>Human settlements – to decrease the impact of climate change through better provision of services such as sanitation.</p> <p>Economy – to support a resilient economy in the face of changing rainfall affective productive systems.</p> <p>AFOLU and food security – looking to maintain livestock and crops productivity and increase forest cover to reduce land degradation.</p>
<p>5. Assumptions and methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals:</p>	
<p>5a. Assumptions and methodological approaches used for accounting for anthropogenic greenhouse gas emissions and removals corresponding to the Party's nationally determined contribution, consistent with decision 1/CP.21, paragraph 31, and accounting guidance adopted by the CMA;</p>	<p>The current approach is in accordance with methodologies and common metrics assessed by the IPCC.</p>
<p>5b. Assumptions and methodological approaches used for accounting for the implementation of policies and measures or strategies in the nationally determined contribution;</p>	<p>Not applicable. The NDC target refers to an absolute, economy-wide reduction in greenhouse gas emissions.</p>
<p>5c. If applicable, information on how the Party will take into account existing methods and guidance under the Convention to account for anthropogenic emissions and removals, in</p>	<p>See 5 (d), below.</p>

accordance with Article 4, paragraph 14, of the Paris Agreement, as appropriate;	
5d. IPCC methodologies and metrics used for estimating anthropogenic greenhouse gas emissions and removals;	Methodologies: IPCC Guidelines 2006. Metrics: Global Warming Potential on a 100 timescale in accordance with IPCC's 4th Assessment Report
5e. Sector-, category-or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, as appropriate, including, as applicable:	
5e1. Approach to addressing emissions and subsequent removals from natural disturbances on managed lands;	Disturbances due to fire were included in the GHG inventory under category 3B1.
5e2. Approach used to account for emissions and removals from harvested wood products;	Harvested wood is for fuel wood only and this is accounted for in category 3B1.
5e3. Approach used to address the effects of age-class structure in forests;	Not accounted for.
5f. Other assumptions and methodological approaches used for understanding the nationally determined contribution and, if applicable, estimating corresponding emissions and removals, including:	
5f1. How the reference indicators, baseline(s) and/or reference level(s), including, where applicable, sector-, category-or activity-specific reference levels, are constructed, including, for example, key parameters, assumptions, definitions, methodologies, data sources and models used;	These elements of the GHG accounting approach have been developed in accordance with IPCC 2006 guidelines for GHG inventories; consistent with decision 18/CMA.1
5f2. For Parties with nationally determined contributions that contain non-greenhouse-gas components, information on assumptions and methodological approaches used in relation to those components, as applicable;	Not applicable. The target refers to an absolute, economy-wide reduction in greenhouse gas emissions.
5f3. For climate forcers included in nationally determined contributions not covered by IPCC guidelines, information on how the climate forcers are estimated;	Not applicable. The NDC includes only forcers covered by IPCC guidelines.
5f4. Further technical information, as necessary;	Not applicable
5g. The intention to use voluntary cooperation under Article 6 of the Paris Agreement, if applicable.	Lesotho is committed to contributing towards developing market and non-market mechanisms via international cooperation under Article 6 of the Paris Agreement. While at present, there is no clarity on Article 6, Lesotho does not exclude the possibility of utilizing international market and non-market mechanisms to achieve its NDC targets

6. How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances:	
6a. How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances;	Given the minor share of Lesotho's GHG emissions compared to global emissions, and its negligible contribution to climate change, Lesotho's efforts are highly ambitious and strive for a decoupling of economic and societal development from GHG emissions.
6b. Fairness considerations, including reflecting on equity;	NDC measures consider equal access of all population groups.
6c. How the Party has addressed Article 4, paragraph 3, of the Paris Agreement;	With this update, the overall level of ambition has not increased from the previous NDC as the BAU path has been revised upwards significantly.
6d. How the Party has addressed Article 4, paragraph 4, of the Paris Agreement	Lesotho complies with this provision by having an economy-wide absolute target
6e. How the Party has addressed Article 4, paragraph 6, of the Paris Agreement.	Lesotho's development plan accounts for its special circumstances.
7. How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2:	
7a. How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2;	Lesotho considers its NDC being in line with the objective of the UNFCCC and long-term goal of the Paris Agreement
7b. How the nationally determined contribution contributes towards Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement.	

The monitoring, reporting and verification (MRV) system of mitigation measures in Lesotho is not developed and presents large gaps. The challenge is a) to set targets and baselines and b) transparently track the progress of implementation and the emission mitigation of each measure and transfer the information to a central place to draw conclusions on the overall progress of emission mitigation.

6 Annex 1 – Long lists prior to consolidation

This section presents an unedited version of the long list of actions that were considered before their consolidation into the final tables of proposed actions presented in the preceding chapters. It should be noted that considering their unedited state, a number of actions have moved to different sectors as needed, new indicators and baselined have been developed, and more detailed explanations have been included into each action to support better understanding. It should also be noted that this long list has not been formatted for official use, therefore it have uneven formatting.

6.1 Long list of possible measures for adaptation - Water

Adaptation measures		Key indicator	Baseline Value of the Key Indicator	Target Value of the key indicator	Projected benefit
Commitments under 1st NDC and in NCCPIS					
Water					
1	Implement the Integrated Catchment Management (ICM) program.	<i>Percentage of Local Councils in sub-catchments (including in other ICM related projects and programmes) adoption and implementation of the ICM framework.</i>	<i>No Local Councils in supported sub-catchments with developed ICM Plans.</i>	<i>RENOKA: 80% of Local Councils in supported sub-catchments (6/74) implemented more than 75% of their ICM Plans.</i>	<i>Sustainable sub-catchments management.</i>
2	Expanded rainwater harvesting to enhance water storage and conservation techniques; water re-use; water-use and irrigation efficiency.	<i>Number of Communities and institutions benefiting from water harvesting.</i>	<i>BoS reports, Hydrological reports from DWA.</i>	<i>Additional 15% of the households and 100% of rural institutions (schools, hospitals).</i>	<i>Supply of water increased.</i>
3	Support an expanded programme of constructing multipurpose dams to enhance water storage.	<i>Number of dams built.</i>	<i>Katse, Mohale and Muela, Metolong, small dams.</i>	<i>35 small dams.</i>	<i>Supply of water increased.</i>

4	Support the revision of water related legislation, policies, and strategies to include climate change issues e.g., LHDA.	<i>Number of reviewed and updated water related policies, Legislation and strategies (Water Act, Water and Long-Term Water and Sanitation Strategy), including climate change issues.</i>	<i>Outdated strategy (LTS) does not include climate issues and Water Act overlapping with other related legislations.</i>	<i>Reviewed and Updated Water Act, Long Term Water and sanitation strategy.</i>	<i>A climate resilient water sector.</i>
5	Establish a national integrated catchment resource management framework that incorporates district and community-based catchment management.	<i>Number of local CMJCs, CPUs capacitated and implementing catchment planning guidelines.</i>		<i>6 out of 74 sub-catchments under ReNOKA. 1 Catchment (Sebapala) under ROLL (MFRSC-UNDP). 2 Catchment Management Areas under ReNOKA.</i>	<i>Sustainable sub-catchment management at community level.</i>
6	Protect and rehabilitate the wetlands areas.	<i>Number of ha of wetlands rehabilitated and protected.</i>	<i>Area of degraded wetland, (take from sustainable land management toolkit).</i>	<i>30 pilot areas implemented.</i>	<i>Improved wetlands and their associated functions such as improved water quality, erosion control, habitat enhancement, water supply and aesthetic appeal.</i>
7	Increasing rural water supply network.	<i>Number of Community Councils with improved water supply as indicated by water points.</i>	<i>Access to water is 80% BoS of which 65% has an operating system.</i>	<i>88% population reached.</i>	<i>Improved water security in rural areas.</i>
8	Promote gender mainstreaming in policies programmes and projects.	<i>Number of women participating in projects. Number of women in decision making positions. Number of projects /programmes include gender components.</i>		<i>National Gender policy requiring 30% representation.</i>	<i>To ensure gender equity and inclusiveness in development programmes.</i>

9	Support capacity building programmes for vulnerable groups.	<i>Number of women trained. Number of incentives/actions implemented to encourage skilling of women.</i>			<i>To ensure an inclusive process of climate change adaptation process.</i>
10	Capacity building and technical support to provide the necessary skills including abilities for technical policy dialogs to facilitate implementation of existing projects and disseminate existing information.	<i>Number of policy makers trained in climate change vulnerability and adaptation.</i>		<i>80% of the key decision-makers aware of climate change issues and the role of climate change adaptation actions in vulnerability reduction.</i>	<i>Climate conscious planners and decision makers. Mainstreaming of climate change in policies.</i>
11	Training local technicians to prepare meaningful climate change adaptation proposals and mobilize climate adaptation funds either from the UNFCCC climate funds (GCF, GEF, LDCF, AF, etc.) or from bilateral funding mechanisms. ^[1]	<i>Number of national agencies accredited to submit proposals to UNFCCC climate funds.</i>	<i>None accredited</i>	<i>At least one accredited national agency certified to propose and submit climate change adaptation proposals to UNFCCC climate funds.</i>	<i>Increased climate change adaptation interventions. Increase access to climate financial resources.</i>
12	Development of national climate change adaptation indicators, including gender aspects, and their inclusion in national statistics.	<i>Climate change and gender indicators in national statistics and national accounts.</i>		<i>National statistics and national accounts include climate change and gender specific indicators.</i>	<i>To ensure adequately (gender and climate change) disaggregated indicators to inform evidence-based programming.</i>

^[1] Although this measure was brought out in the Water sector, it is valid for all sectors.

6.2 Long list of possible measures for adaptation – Human Settlements

<i>Adaptation measures Commitments under 1st NDC and in NCCPIS</i>	<i>Key indicator</i>	<i>Baseline Value of the Key Indicator</i>	<i>Target Value of the key indicator</i>	<i>Projected benefit</i>	
Transport/Infrastructure					
1	Strengthen standards to ensure that roads and critical public infrastructure are climate proofed.	<p><i>Standards reviewed and updated:</i></p> <ul style="list-style-type: none"> • Standard specifications for roads and bridges – Volume 1 • Design guidelines for low volume roads – Volume 2 • Design Standards and Guidelines for Pavement Materials Design - Volume 3 • Design Standards and Guideline for Pavement Rehabilitation - Volume 8⁵⁰ 	<p><i>Outdated standards</i></p> <p><i>Lesotho Roads National Risk Assessment final draft report (National climate risk and vulnerability assessment (CRVA) for Lesotho roads.)</i></p>	<p><i>Updated standards</i></p>	<p><i>Climate proofed infrastructure</i></p>
2	Construct infrastructure for flood control, transport, etc.	<p><i>Number of infrastructure projects for flood control.</i></p> <p><i>Design standards and explanatory notes for bridges, culverts and low-level structures.</i></p> <p><i>Development of RID Mainstreaming Framework</i></p>	<p><i>Lesotho Roads National Risk Assessment final draft report.</i></p> <p><i>National climate risk and vulnerability assessment (CRVA) for Lesotho roads.</i></p>	<p><i>Included possible change in design rainfall into calculating runoff and design flood estimates for culverts and bridges.</i></p>	<p><i>Reduce the risk of flooding.</i></p> <p><i>Reduce cost of damage to infrastructure caused by flooding.</i></p>
Disaster prevention and management					

⁵⁰ World Bank. (2023). Lesotho Roads National Risk Assessment (P172476). World Bank Group.

3	Conduct risk assessments and vulnerability mapping.	Identification of hotspots for disaster prone areas.	No information available.	Conduct risk assessments and vulnerability mapping.	To ensure more targeted interventions and reduced exposure to extreme climate risks.
4	Strengthening of an integrated early warning system, and disaster response plans.	Timely issuance of early warning messages.	Pilot stage.	Functional EWS.	Reduced cost and damage due to disasters.
5	Establish international insurance fund for disaster management and preparedness such as relocation programmes / schemes to facilitate relocation from disaster prone to safer climate areas.	<i>Level of insurance.</i>	<i>ARC MOU.</i>	<i>Established and functional insurance scheme.</i>	<i>Reduced cost and damage due to disasters.</i>
6	Establish and operationalize necessary infrastructure to provide all climate information necessary for future monitoring, climate trend detection, management of climate variability, early warning and disaster management and human capacity to enable functional national Early Warning System (EWS)	<i>Comprehensive and operational early warning infrastructure.</i> <i>Level of capacity.</i>	<i>1 PUMA synergy 2015.</i> <i>120 Meteorological Observer: staff 10% trained 15 automatic weather stations 22 climate stations 52 rainfall stations.</i> <i>10 District disaster Management Team.</i>	<i>Hydro-meteorological infrastructure is installed.</i> <i>Staff capacity increased.</i>	<i>Early detection of disasters.</i> <i>Improved disaster preparedness.</i> <i>More targeted interventions and disaster response measures.</i>

7	Strengthen and capacitate institutional mechanisms for coordination and implementation of Early Warning System in Lesotho and for use of climate information for policy making and sector planning.	<i>Coordination Mechanism for early warning in place.</i>	<i>DMA Early warning Preparedness coordination unit.</i>	<i>Enhanced institutional capacity.</i>	<i>Early detection of disasters. Improved disaster preparedness. More targeted interventions and disaster response measures.</i>
8	Pilot testing of EWS system and response strategies and sustainability plan.	<i>Real time, reliable, consistent early warning messages.</i>	<i>Update Report on the existing early warning systems.</i>	<i>Delivery of timely high quality climate information.</i>	<i>Nationally/Locally adapted EWS system in place.</i>
9	Set up remote sensing and GIS- based climate database management systems.	<i>Remote-sensing and GIS-based climate Change Database Management System.</i>	<i>Climsoft (LMS expertise)</i>	<i>Climate Change Database.</i>	<i>Availability of database to support climate change decision making processes.</i>
10	Strengthening Climate Services in Lesotho for Climate Resilient Development and Adaptation to Climate Change (EWS II) aiming at expanding the coverage area and reach more communities. Use the lessons learned from the previous project in this area, and improve coordination with the other sectors (e.g., agriculture, water, tourism) and	Number of sectors and communities that have access to appropriate and timely early warning information. Include gender disaggregated data.		Appropriate and timely information of the EWS is provided to different stakeholders.	Reduced vulnerabilities and improved preparedness and response to climate hazards.

	beneficiaries (farmers, extension service officers) by providing information in appropriate language.				
Human Health					
11	Build capacity to diagnose, prevent and control climate-sensitive diseases such as diarrheal diseases and malnutrition. Support expanded programme for preventing and controlling climate sensitive diseases.				Early detection and prevention of climate sensitive diseases. To protect human health against climate induced diseases.
12	Enhance public awareness about water, sanitation, and hygiene practices; and enhance health surveillance.				Early detection and prevention of water borne diseases outbreaks. To protect human health against water related diseases.
13	Construct more health centres to improve access to health facilities within a walking distance of 8 km.				Improved access to health services. Facilitates early action of health conditions.
14	Support the establishment of centre of excellence for				Early detection of climate-sensitive diseases.

	research and disease control targeting climate-sensitive diseases.				
15	Implement the National Plan for Libreville declaration 2013; Improve national resilience to CC and CC governance in health.	<i>Funds disbursed</i>	<i>Not yet started</i>	<i>National plan implemented.</i>	Enhanced capacity to address environmental problems that affect human health.
Housing					
16	Develop and implement climate related building codes/standards. Revise existing building standards in line with climate change.	Climate related building codes/standards. Planning and Building standards.	National Climate Change Policy 2017-2027. Lesotho Housing Profile report ⁵¹ .	Climate building codes and standards Established climate-responsive building standards. Established integrated Land Information System platform.	Climate proofing the built environment.
17	Develop climate vulnerability maps for human settlements to guide urban and rural development plans, including sustainable land use planning and management.	<i>Vulnerability maps.</i>	<i>Outdated Town and Regional Planning Act not considering vulnerability.</i>	<i>Countrywide climate vulnerability maps.</i> <i>National Land-Use Policy.</i>	<i>Reduced vulnerability to impacts of climate change.</i>
18.					

⁵¹ United Nations Human Settlements Programme. (2015). Lesotho urban housing profile. https://unhabitat.org/sites/default/files/documents/2019-05/lesotho_urban_housing_profile_1.pdf

6.3 Long list of possible measures for adaptation – Economy

<i>Adaptation measures</i> <i>Commitments under 1st NDC and in NCCPIS</i>		<i>Key indicator</i>	<i>Baseline Value of the Key Indicator</i>	<i>Target Value of the key indicator</i>	<i>Projected benefit</i>
	Tourism				
1	Strengthening and stabilizing ecotourism based rural livelihoods.	<i>Number of communities participating in ecotourism. The department of tourism will provide the data.</i>			<i>Sustainable and equitable use of ecosystem services.</i>
2	Identify and assess tourist sites that are vulnerable to Climate Change and provide support to planners and policy makers in selecting appropriate policies and adaptation strategies that meet climate adaptation, developmental and environmental goals.	<i>Assessment Report of the tourism areas vulnerable to climate change.</i>	<i>No information on climate change vulnerability to tourism.</i>	<i>Climate change vulnerability to tourism assessed.</i>	<i>Build a climate resilient tourism sector.</i>
3	Climate change adaptation research and capacity building in the tourism-recreation sector.	<i>Research and capacity building program implemented.</i>			<i>Science-based information to support decision-making in the tourism sector.</i>
4	Increase the preparedness of tourism and recreation operation to extreme weather conditions.	<i>Number of tourism operators that comply with extreme weather conditions preparedness.</i>			<i>Increase EWS information and preparedness to the tourism industry to extreme climate events.</i>

5	Develop methodology to climate proof current and future tourism investments.	Number of climate proofed infrastructure.	Tourism audits needed.	At least 15% of infrastructure protected.	Enhance climate resilience of tourism investments.
7	Include resource efficiency criteria in the grading of tourist facilities.	number of green labels issued	inadequate consideration of resource efficiency in current grading system.	10% of the sector to shift to resource efficiency.	Mainstreaming climate change into the tourism sector.
Job creation					
8	Support and implement programmes for alternative livelihoods in order to reduce unsustainable resource use that contributes to loss of biodiversity	<i>Number of households implementing sustainable management of biodiversity to generate income.</i>			<i>Promotion of sustainable natural resources use.</i>
9	Encourage alternative livelihoods to reduce pressure on land and rangeland resources through SME and cooperative development.	<i>Number of SMEs and cooperatives established.</i>	<i>ILO study on informal economic activities.</i>	<i>xx number of SMEs and cooperatives established.</i>	<i>Diversification of income sources.</i>
10	Increase the capacities of local people to engage in activities in the sectors of Tourism industry and agriculture (referred as the areas with high potential for job creation for low skilled people). Initiatives such as MAB,	<i>Number of communities engaged in sustainable eco-based businesses.</i>		<i>At least one community in each district engaged in sustainable eco-based business.</i>	<i>Ensure inclusive climate change adaptation planning and implementation processes.</i>

	SADP, WAMPP projects would provide good lessons that could be expanded to other regions of the country.				
Capacity Development					
11	Capacity building of local government and chieftainship on climate change issues.	<i>5 district councils capacitated</i>	<i>Low level of awareness</i>	<i>Increased level of awareness within 4 district councils.</i>	<i>Ensure inclusive climate change adaptation planning and implementation processes.</i>
12	Strengthen institutions in formulating the National Adaptation Plan.	<i>NAP</i>	<i>draft NAP</i>	<i>NAP ready (2020).</i>	<i>Ensure inclusive climate change adaptation planning and implementation processes.</i>
13	Develop capacity across all sectors to mainstream Climate Change and to mobilize resources to support climate projects.	<i>Specialized units established.</i>	<i>Limited capacity.</i>	<i>Established and staffed LMS (5 specialized units).</i>	<i>Ensure inclusive climate change adaptation planning and implementation processes.</i>
14	Improve the capacity of each planning unit at ministry level to manage climate change issues in coordination with LMS and NCCC.	<i>Focal points capacitated.</i>	<i>Limited capacity.</i>	<i>Sectoral focal point on climate change within the planning units.</i>	<i>Ensure inclusive climate change adaptation planning and implementation processes.</i>
15	Develop and implement gender and social inclusion program in climate change programmes.	<i>Level of climate awareness of women, youth, and vulnerable groups.</i>	<i>To be established.</i>	<i>Inclusive program designed and implemented.</i>	<i>Ensure inclusive climate change adaptation planning and implementation processes.</i>

16	Deliver trainings and capacity building programme for private sector on climate related issues, including climate finance, proposal formulation, threats, and opportunities.	<i>Number of PS accessing climate finance.</i>	<i>No Private Sector accessing climate finance.</i>	<i>xx number of PS accessing finance.</i>	<i>Ensure inclusive climate change adaptation planning and implementation processes.</i>
17	Given the predominance of rural population and limited skills of local communities, ecotourism, climate smart agriculture, and ecosystem valuation seem to be the easy options to promote job creation, engage rural households in income generation activities, and establish markets for ecosystem-based services.				<i>Ensure inclusive climate change adaptation planning and implementation processes.</i>

6.4 Long list of possible measures for adaptation – AFOLU

Adaptation measures Commitments under 1st NDC and in NCCPIS	Key indicator	Baseline Value of the Key Indicator	Target Value of the key indicator	Projected benefit	
Agriculture and livestock					
1	Diversify livestock and livestock management.	<p>-Number of livestock improved</p> <p>-Number of women, Youth and vulnerable groups farmers engaged under livestock management.</p>	<p>Consult the (Department of Livestock/ BOS) for further information.</p> <p>SADP has a product that aimed at supporting women aged 18-35.</p>	<p>Increase the number of livestock under the improved management by 60% by 2030.</p> <p>-Increase the number of HH implementing improved livestock management practices.</p> <p>-Increase number of women, youth and vulnerable groups engaged in livestock diversification and management by 40% by 2030.</p>	<p>Reduce climate risk on livestock.</p> <p>Improve livestock value.</p>
2	Improve range management.	<p>Number of hectares under improved range management.</p> <p>Number of women, youth and vulnerable groups participating in range management activities.</p>		<p>Increase number of hectarage under improved range management.</p> <p>Increase women, youth, and vulnerable groups in participating in range management activities.</p>	<p>Improve range health and quality.</p> <p>Sustainable rangeland management.</p>
3	Increase access to drought resistant, disease resistant, early maturing and bio fortified crops.	<p>Number of farmers in targeted areas have access to improved quality seeds.</p> <p>Number of technologies developed and adopted.</p> <p>Number of farmers especially women adopting newly released technologies of crops.</p>	<p>Improved technologies on maize and beans in place.</p>	<p>Increase number of farmers having access to quality seed of drought resistant, pests and disease resistant, early maturing and bio fortified crops by 20% in 2030.</p> <p>Increase the number of improved technologies on crops by 80% by 2030.</p>	<p>Reduce the impacts of climate change.</p> <p>Ensure sustainable crop production.</p>

				<i>Increase number of farmers especially women, youth, vulnerable groups adopting newly released technologies of crops</i>	
4	Provide early warning/ meteorological forecasts and related information feeds.	<p><i>Number of Publications on weather released.</i></p> <p><i>Number and frequency of information release on weather forecast.</i></p> <p><i>Number of platforms used to share weather information.</i></p> <p><i>Number of farmers with access to early warning agrometeorological information.</i></p>	<i>Consult LMS,</i>	<i>Increase the number of publication frequencies, increase the number of weathers forecast platforms.</i>	<i>Enhance measures to manage and reduce climate risks.</i>
5	Implement conservation agriculture and agroforestry practices. And adopt better soil management practices (conservation agriculture (CA), crop rotation, intercropping systems, cover cropping, residue and manure application, agroforestry systems, organic farming).	<p><i>Number of mechanization plants procured.</i></p> <p><i>The number of farmers the is capacitated on soil management practices.</i></p> <p><i>Number of farmers implementing conservation agriculture and agroforestry.</i></p>	<i>Insufficient mechanized equipment.</i>	<p><i>Increase number of mechanized equipment.</i></p> <p><i>Increase number of farmers implementing and adopting better soil management practices.</i></p>	<p><i>Reduce exposure and sensitivity to climate change.</i></p> <p><i>Ensure sustainable agricultural production.</i></p>
6	Increase use of irrigation systems that use low amounts of water; increase	<i>Number of hectares under irrigation system with low amount of water.</i>	Drafted irrigation policy in place	<i>Increase number of irrigation systems.</i>	<i>Ensure sustainable agricultural production. during drought and dry spells.</i>

	rainwater and sustainable groundwater harvesting for use in agriculture.			<i>Increase number of hectarage under irrigation.</i>	
7	Intensify crop and livestock production.	Number of hectares restored with native vegetation.			<i>Ensure food security.</i>
8	Build adaptation capacity in climate resilient agronomic practices for smallholder farmers. Promotion of climate-smart agriculture (Agrometeorology).	Number of farmers (female, male and youth) trained (using) in climate resilient agronomic practices.	Consult SADP	<i>Increase number of farmers in climate resilient practices.</i> <i>Increase number of women and youth engaged in climate smart agriculture practices.</i>	<i>Enhance knowledge and information about climate change adaptation in agricultural production.</i>
9	Support and expanded program of constructing multipurpose dams for irrigation and aquaculture.	Number of multipurpose dams constructed.	Consult Ministry of Forestry, Department of Livestock and LHDA.	<i>Increase number of multipurpose dams for aquaculture.</i> <i>Increase number of women engaged aquaculture and irrigated farming using.</i>	<i>Reduce vulnerability (exposure and sensitivity) of agricultural production to climate change.</i>
10	Promote innovations in post-harvest storage and food processing.	<i>Capacity (tones or cubic meters) of innovative food storage (cold and grain).</i>	<i>limited and declining food processing, national food processing sector cannot compete with SA</i>	<i>Capacity of functioning food storage and processing unit.</i>	<i>Enhance measures to manage and reduce impacts of climate change on food security.</i>
11	Promote the growing of drought-tolerant and heat tolerant crop	<i>Number of hectares (or number of farmers) using drought tolerant crop varieties.</i>	<i>DAR is already promoting drought tolerant crops.</i>	<i>Increase hectarage under production of drought and heat tolerant crops.</i>	<i>Reduce vulnerability (exposure and sensitivity) of agricultural production to climate change.</i>

	varieties and hardy livestock.	<i>Number of female and youth farmers engaged in production of drought and heat tolerant crop varieties.</i>			
Land Use					
12	Integrated approach to Sustainable Land Use Planning and Management.	<i>Number of districts adopting integrated land use plans and management.</i>	<i>Town and Country Planning Act 1980. Land Act 2010. Local Government Act 1997 (as amended). Housing Policy 2018. Land Use and Settlement Planning Manual 2009. Maseru Urban Planning and Transport Study 2010.</i>	<i>10 districts that have adopted the integrated land use plans and management.</i>	<i>Mainstreaming climate change into spatial planning.</i>
13	Develop a new spatial planning law which will incorporate climate change issues.				<i>Climate change mainstreaming into spatial planning.</i>
14	Establish National Land Use Policy to determine layout of every piece of land and incorporate climate change.				<i>Climate change mainstreaming into spatial planning.</i>
15	Promote sustainable and climate-responsive land use practices.	<i>Number of districts that promote sustainable and climate-responsive land use practices.</i>			<i>Climate resilient land use practices. Sustainable land use practices.</i>

16	Develop Climate smart land use plans.	<i>Number of sectors that have climate smart land use plans</i>	2017-2027 NCCP Policy statements SDG 13		<i>Implementation of climate resilient land use practices.</i>
17	Management and Reclamation of Degraded and Eroded Land in the Flood Prone Areas.	<i>Number of hectares reclaimed and restored land. Proportion of land that is degraded over total land area.</i>	<i>Sustainable Land Management (SLM) tool kit.</i>		<i>Integrated sustainable catchment management.</i>
18	Conservation and Rehabilitation of Degraded Wetlands in the Mountain Areas.	<i>Number of hectares of conserved/protected and rehabilitated wetlands in the mountain areas.</i>	<i>Range Policy Rangeland Resources Policy ORASECOM Plan</i>		<i>Improve wetlands and their associated functions such as improved water quality, erosion control, habitat enhancement, water supply and aesthetic appeal.</i>
19	Promote conservation and regeneration of biodiversity.	<i>Proportion of national land under conservation areas.</i>	<i>Environment Act 2008 Local Government Act 1997 Fauna and Flora Act</i>		<i>Sustainable integrated catchment management.</i>
Food Security					
20	Improvement of Community Food Security Through the Promotion of Food Processing and Preservation Technologies.	<i>Proportion of "the most vulnerable people" with access to nutritious food.</i>	<i>Consult Food Management Unit (FMU) and DMA.</i>	<i>Increase number vulnerable people with access to nutritious food.</i>	<i>Enhance measures to manage and reduce climate risk on food security.</i>
21	Promote science and technology to enhance food security, productivity and resilience.	<i>Number of appropriate technologies tested.</i>	<i>Agricultural Productivity Program for Southern Africa (APPSA) project in place.</i>	<i>5 technologies adapted.</i>	<i>Enhance measures to manage and reduce climate risk on food security.</i>

22	Update sector policy and food security strategy to mainstream climate smart agricultural approaches.	<i>Updated Agriculture policy.</i>	<i>Consultants engaged in updating sector policy.</i>	<i>Climate mainstreamed sector policy and food security strategy.</i>	<i>Improve public and investment planning.</i>
Forestry					
23	Expand afforestation and forest regeneration programmes.	<i>Ha of forests planted.</i>	<i>NSDP report 13550 ha in 2012</i>	<i>NSDP 20,000 ha by 2020, 22,500 by 2023</i>	<i>Enhance measures to manage and reduce climate risks.</i>
24	Promote growing of drought tolerant and fast-growing tree species.	<i>Number of drought tolerant tree species planted.</i>	<i>BoS report</i>	<i>30% increase</i>	<i>Reduce exposure and sensitivity of forests to climate change.</i>
25	Strengthen the implementation of the national Community-Based Forest Resources Management Programme.	<i>Number of communities engaged in implementation of CBFMR.</i>			<i>Building adaptive capacity to climate change.</i>
26	Develop and maintain a frequent forest inventory system to facilitate monitoring of forest status; and initiate a research programme on a range of climate change related topics. Preserve natural forest cover to maintain	<i>Land Use and cover Maps</i> <i>Forest cover change map</i> <i>Percentage of natural forest cover change.</i>	<i>Lack of forestry inventory</i> <i>National Plant Protection Policy for Lesotho 2019.</i>	<i>National Forest Inventory</i>	<i>Improving resilience of forests against climate change.</i>

	biodiversity and ecosystems.				
27	Enhance regulatory protections for species potentially at risk due to climate changes.	<i>Revised policy plans and regulatory frameworks.</i>	<i>Policy, Act</i>	<i>Climate change mainstreamed into environmental management systems.</i>	<i>Reduce exposure and sensitivity of forests to climate change.</i>
29	Support review and implementation of policies to ensure climate change is a central pillar for the development.	<i>reviewed policy including climate issues</i>	<i>Outdated policy Forestry Policy 2008</i>	<i>Updated climate smart policy.</i>	<i>Improve public and investment planning.</i>
30	Promote gender mainstreaming in policies, programmes and projects	<i>MDP project format.</i>	<i>Inadequate MDP project format.</i>	<i>Gender, youth, vulnerable groups, and CC incorporated in project format (2019).</i>	<i>Ensure inclusive climate change adaptation planning and implementation processes.</i>
31	31 Support capacity building programmes for vulnerable groups.	<i>Number of women/vulnerable groups trained.</i>	<i>Lesotho Inclusive Education Policy. SDG 4 and 10</i>	<i>Increased climate training of women, youth, and vulnerable groups.</i>	<i>Ensure inclusive climate change adaptation planning and implementation processes.</i>
32	Promote research and education as key for success as local knowledge required for adoption needs to be derived from lessons learned in novelty of the agriculture and land use practices such as climate smart agriculture and integrated land use management.	<i>Number of research and education programs in agriculture and land use.</i>			<i>Promote measures to enhance knowledge and information about climate change adaptation in different sectors.</i>

6.5 Long list of possible measures for mitigation - IPPU

Measure	Proposed action to achieve reduction	Potential reduction in 2030 [Gg CO ₂ -eq]	Potential reduction in 2030 Comments	Required baseline data	Required data for monitoring	Stakeholders to discuss measure
Industrial processes and Product Use						
1. Reduce refrigerant (HFC) emissions	Set up a National Cooling Action Plan including a regulation to make operators of equipment responsible for system tightness and recovery, work performed by certified technicians and ban of HCFC/ high GWP equipment where possible, promote the safe use of natural refrigerants.	Not estimated yet.	Refrigerant emissions reduction – top-down estimation based on projections from GHG inventory.	HFC import, minimum Tier 1 GHG inventory, better Tier 2.	HFC import, Tier 2 GHG inventory data (e.g., mass balance approach).	National Ozone Unit, possibly Ministry of Energy, if combined with EE measures.
2. Energy efficiency improvement in buildings.	Improve the performance of buildings to reduce the demand for the cooling appliances and related refrigerants. This is an EE measure that will not be estimated here, but relevant to be mentioned for completeness as it can result in HFC demand decreases.	Not estimated yet.	Combined with indirect emissions, savings can be 20% or more depending on stringency.			Ministry of Energy.

6.6 Long list of possible measures for mitigation – AFOLU

Measure	Proposed action to achieve reduction	Potential reduction in 2030 [Gg CO ₂ -eq]	Potential reduction in 2030 Comments	Required baseline data	Required data for monitoring	Stakeholders to discuss measure
Agriculture, forest, and other land use						
1. Land use	<p>Strengthening planning and political and legal support for land use, especially in terms of grazing in the rangelands, forestry plantations, and water catchments.</p> <p>This would result in less tress cut down, smaller herds to fit carrying capacity of the land, and sufficient water for smart irrigation where possible.</p>	not quantified	based on IPCC, biomass is assumed to be lost when land is converted to settlements, resulting in e.g., for grassland 32 t CO ₂ /ha of emissions.	Area of land cleared for settlement.	Annual increase in aa of land cleared for settlement.	Dept Town and Regional Planning.
2. Livestock diet improvement	Increase the number of cattle being given supplementary (low GHG) feeds such as lablab.	not quantified	Estimates to be based on stable cattle population, 20% reduction per cattle head, 30% of traditional, 70% of commercial cattle being given lablab.	No. of cattle being given supplementary feed.	Annual no. of cattle being given supplementary feed.	Dept of Livestock
3. Fertilizers	Increase the mix of organic and compostable fertilizer in the total mix used in the country.	not quantified	estimate based on 10 Gg N, missing: quantity of fertilizer used (Emission factor IPCC: 0.01 kg N ₂ O/kg N).	<p>No. of farmers using organic fertilizers in their mix.</p> <p>Proportion of organic fertilizer in them mix.</p>	No. of tons of fertilizer applied annually.	Dept of Crops

4. Reduce firewood use to avoid deforestation	Increase awareness of the general population and make it a socially undesirable activity.	not quantified	No data available.	Tree survival rates. Reliance on fuelwood.	Annual change in reliance on fuelwood.	Dept of Forestry
5. Increased use of conservation agriculture practices.	Increase the number of farmers (or proportion of the land) practicing conservation agriculture, including minimum tillage, micro fertilising, etc.	not quantified	not estimated, method to be defined.	No. of ha under conservation agriculture.	Annual change in no. of ha under conservation agriculture.	Dept of Crops
6. Expand Forest cover, turn AFOLU into net sink	Expanding and strengthening forest planting activities to increase forest cover. This includes increasing number of trees planted, improve social awareness of the need for healthy forest cover, and improve political and legal protection for the activity.	not quantified	not estimated, method to be defined	% Of total area of the country under forest cover. Annual change in the above.	Annual change in forest cover. Annual tree plantation, number of trees and hectares.	Dept of Forestry

6.7 Long list of possible measures for mitigation - WASTE

Measure	Proposed action to achieve reduction	Potential reduction in 2030 [Gg CO ₂ -eq]	Potential reduction in 2030 Comments	Required baseline data	Required data for monitoring	Stakeholders to discuss measure
Waste						
1. Waste incineration with energy recovery	New measure: include existing project plan in NDC.	not quantified, depends on amounts of waste and energy produced.	methodology to be defined (with attention to sector attribution and precaution against double counting).	waste collected from selected sites (Waste to Energy Feasibility study).	Energy production data, amount of waste treated.	Department of Energy, Department of Waste Management and Pollution Control.
2. Capture and utilization of methane from landfills.	Perform feasibility for methane capture on existing landfills and include the requirement for methane capture on future landfill developments in the relevant legislation.	not quantified, depends on amounts of waste and energy produced.		Feasibility test results.	Methane leak testing	
3. Waste separation and recycling.	Perform waste audit to understand the nature of waste streams available and design possible waste separation and utilization schemes where possible such as composting, biodigesters, etc.	not quantified, depends on amounts of waste and energy produced.	Could be large if organic waste is successfully segregated.	Waste streams composition and quantification.	Waste volume by disposal methods.	
4. Wastewater implementation with methane capture.	Increase the reach of the formal wastewater sector (piped drainage included) ensuring GHG minimization from the onset. Increase wastewater treatment requirements for industry and agriculture emphasising water quality and GHG emissions.	not quantified, depends on amounts of waste and energy produced.				

6.8 Long list of possible cross-cutting measures

Proposed measure	Target	Indicators	Projected benefits
1. Mainstream climate mitigation and adaptation language and measures across all sectoral and national development strategies.	Next iteration of sectoral and national development plans includes climate proofing, mitigation, and adaptation.	Number of sectors with climate proofing, mitigation and adaptation actions.	Ensuring the consideration of climate change in the development activities of the country, increased awareness of climate change impacts and improved responses for adaptation and mitigation.
2. Strengthen the role and activities of the NCCC or support the formation of a National Climate Change Unit (NCCU) in a relevant senior government department.	1 clear set of directives and coordination roles across government on climate change under one body.	A stringer NCCC or a NCCU in place	To ensure that measures are prioritised and implemented as well as better coordination of efforts national and engagement internationally.
3. Implement an education programme on sectoral climate risks and vulnerabilities in schools' curricula. Programme to include gender issues awareness and solutions.	Climate education program being implemented across the education sector.	Proportion of the student population that undergoes climate change studies.	To increase understanding of and support for climate change measures. Improve effectiveness of climate change actions.
4. Implement a capacity building programme on climate change for the public and private sectors and the civil society. Programme to include gender issues awareness and solutions.	1 Capacity building program being implemented for each of the relevant sectors.	Number of beneficiaries, per year, sex, age, and vulnerable group.	To ensure understanding of and support for climate change measures. Improve women's and vulnerable groups' outcomes in climate change initiatives.
5. Implement a communication/ awareness raising campaign on climate change for the public and private sectors and the civil society.	1 Climate communication program being implemented.	Number of beneficiaries, per year, sex, age, and vulnerable group.	To ensure understanding of and support for climate change measures.
6. Ensure meaningful engagement and participation of women and youth in policy making processes and programme implementation on climate adaptation.	2 existing grants for women and youth incorporating initiatives on climate adaptation.	Number of women, youths who access grants Number women and youth stakeholder consultation held.	To ensure an inclusive process of climate adaptation action design and implementation hence eliminating gender inequality.
7. Conduct a gender-discerning vulnerability assessment on impacts of climate change on women, girls and	1 national gender vulnerability assessment undertaken.	Extent of coverage, per year, sex, age, and vulnerable group.	To provide useful data and enable better and targeted policymaking and action on gender-sensitive climate adaptation.

young people that considers risks and protective measures.			
8. Include gender analysis in every climate adaptation measure and actions in Lesotho including social assistance programmes for people who lost their livelihoods in climate change-related disasters and propose gender sensitive solutions.	Sectorial gender analysis in relation to climate impacts on health, protection and SRHR.	Number of gender analyses done on climate adaptation.	To provide information on how gender can be integrated in every climate adaptation measure of Lesotho. Improve the relief for women and families affected by climate change and reduce harmful practices including gender-based violence.
9. Improve the availability and accuracy of information tools to support robust monitoring and evaluation (M&E) or monitoring, reporting, and verification (MRV) systems to support climate actions.	1 M&E program being implemented.	NDC M&E program in place.	To ensure that measures are prioritised and implemented. To generate important data for monitoring, analysis, and support decision making in future iteration of NDC updates.
10. Develop a financial plan to begin the monetization of GHG emissions to provide incentives and disincentives for producers and consumers as well as fund raising for climate adaptation action implementation.	Identification of viable mechanisms and generation of suitable plan of implementation.	Programme identified and the in development.	Reduced emissions as lower emitting options are advantaged, generation of funds for climate actions.
11. Strengthen institutions to support climate action including assigning roles and responsibilities and allocating responsibility for climate targets to government offices or roles. This would support an increase of political will for climate actions.	NDC Responsibilities assigned to institutions and officials. Institutional assessment performed with a view to increase climate actions efficiency and effectiveness.	Institutional rearrangements identified and scheduled. Institutions targeted for specific responsibility of NDC achievements.	Stronger institutions are able to lend more weight to actions. Ensures that high level officials push objectives in their agendas.



Ministry of Environment and Forestry (MEF)
P.O. Box 10993, Maseru 100
TEL: +266 22320534