Initiative for Climate Action Transparency – ICAT Project in Lesotho

Report on designing the national MRV system

Initiative for Climate Action Transparency – ICAT

Deliverable 4.2- Deliverable 4.1- Report on designing the national MRV system using the ICAT guidance tailored to the energy related policy, establishment of roles and responsibilities and providing recommendations on how to address barriers/ gaps to improve data collection and reporting for the Energy sector emissions.

AUTHORS

H. M. Buddika Hemashantha**,** ClimateSI

Jyoti Prasad Painuly, UNEP Copenhagen Climate Centre

Ivana Audia, UNEP Copenhagen Climate Centre

Molibeli Taele, Energy Research Centre, National University of Lesotho

Leloko Mokhutšoane, Independent Renewable Energy Consultant

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PREPARED UNDER

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LIST OF ACRONYMS

BAU	Business As Usual Scenario
BBCDC	Bethel Business and Community Development Centre
BTR	Biennial Transparency Reports
BUR	Biennial Update Reports
DoE	Department of Energy
DOT	Department of Traffic
ETF	Enhanced Transparency Framework
GHG	Greenhouse Gas
ICAT	Initiative for Climate Action Transparency
IPCC	Intergovernmental Panel on Climate Change
LEC	Lesotho Electricity Company
LEGCO	Lesotho Electricity Generation Company
LEWA	Lesotho Electricity and Water Authority
LHDA	Lesotho Highlands Development Authority
LSES	Lesotho Solar Energy Society
MoE	Ministry of Energy
MPWT	Ministry of Public Works and Transport
MRV	Measurement, Reporting and Verification
MTI	Ministry of Trade and Industry
NC	National Communication
NCCC	National Climate Change Committee
NDCs	Nationally Determined Contributions
O&M	Operations and Maintenance
PA	Paris Agreement
QA/QC	Quality Assurance and Quality Control
RE	Renewable Energy

RSL	Revenue Services Lesotho
SHSs	Solar Home Systems
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added Tax

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1. INTRODUCTION

1.1 Background

In December 2015, the Paris Agreement introduced standardized provisions for the measurement, reporting, and verification (MRV) of greenhouse gas (GHG) emissions, aiming to enhance the transparency of climate change mitigation efforts by member countries (UNFCCC, 2016). Adopted at the twenty-first session of the Conference of the Parties (CoP) to the UNFCCC, the Paris Agreement entered into force on November 4, 2016. Article 13 of the Paris Agreement established an Enhanced Transparency Framework (ETF) for action and support, designed to foster mutual trust and confidence among the Parties and ensure the effective implementation of the Agreement.

Key components of the ETF include National Communications (NC), Biennial Update Reports (BUR), Biennial Transparency Reports (BTR), and Nationally Determined Contributions (NDC). Developing countries must submit their final BURs before 2024 and their initial BTR by December 31, 2024. Least developed countries and small island developing states have the flexibility to submit their first BTR at a later date. From 2024 onward, all parties are required to submit BTRs instead of BURs.

To fulfil the international reporting obligations for the energy sector, the Initiative for Climate Action Transparency (ICAT), with technical support from the UNEP Copenhagen Climate Centre, has assisted in establishing a MRV system for the energy sector in Lesotho.

The MRV system for Lesotho's energy sector has been designed with a specific focus on the transport sector policy and renewable energy policy. Parameters for these policies are established using the ICAT transport pricing methodology and the ICAT renewable energy methodology, respectively.

The ICAT transport pricing methodology has been applied in Lesotho, emphasising vehicle purchase incentives to promote the adoption of more fuel-efficient vehicles. A specific mitigation action identified under this approach is the "Reduction of VAT from 15% to 10% for purchasing more efficient vehicles (Hybrid)," aligning with the

country's mitigation action 07, with a particular emphasis on enhancing the efficiency of gasoline cars.

The ICAT renewable methodology has been applied, highlighting tax incentive policies aimed at fostering the adoption of solar home systems in the country. A specific mitigation action identified within this framework is the "reduction of the VAT rate to 10% from 15% for all renewable energy systems and equipment, particularly focusing on solar home systems.

Following the thorough development of a proposed MRV system, the subsequent crucial step involves its actual implementation. Successful implementation necessitates the establishment of an enabling environment, which includes a robust legal framework, sufficient institutional, human, technical, and financial capacity, and regular engagement with stakeholders.

1.2 Objectives

The objective of this report is to formulate an implementation plan for the institutionalisation and launch of the MRV system for selected mitigation actions within the energy sector in Lesotho. This forms a crucial component of the MRV system design, involving the delineation of roles and responsibilities for the government of Lesotho.

2. IMPLEMENTATION APPROACH

The proposed MRV system in Lesotho comprises an MRV framework, procedures and protocol. To effectively implement this MRV system, it is crucial to address supplementary elements such as capacity building for MRV and continuous improvement based on acquired experience. Consequently, the success of the proposed MRV system hinges largely on the implementation of the recommendations outlined in the implementation plan.

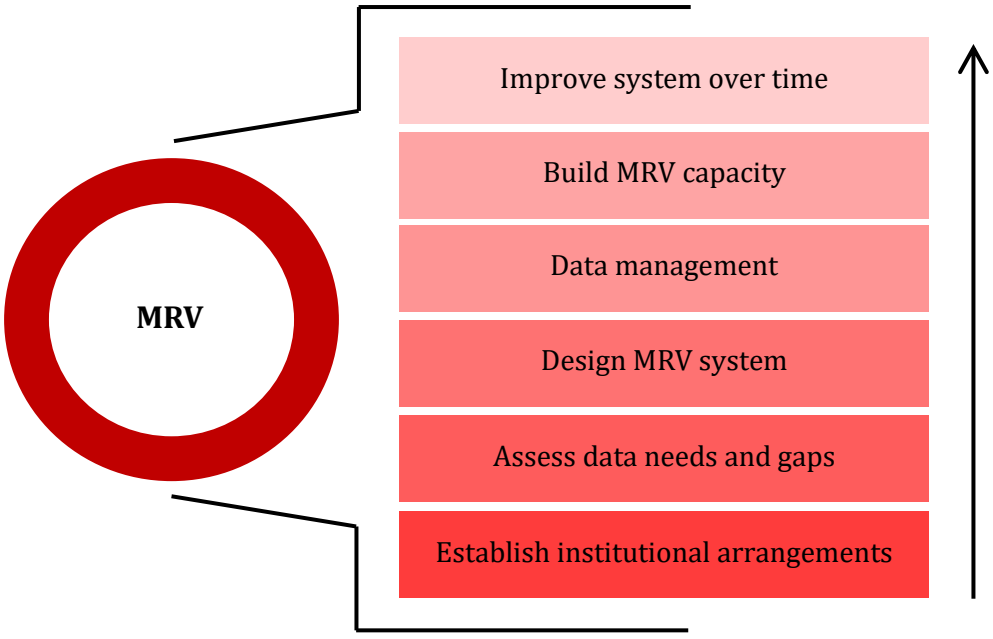

Figure 1: Implementation approach of MRV system. *Source:* (CDKN, 2024)

Implementing an MRV system involves several key activities, as depicted in Figure 1.

A well-structured institutional arrangement is essential for overseeing and coordinating the MRV system. Identification of data requirements for analysing GHG impacts is necessary based on the chosen methodology. The MRV system should be developed to encompass the methodology, reporting, and verification requirements. Establishing a data management system for data collection, processing, quality assurance, and quality control is critical. Introducing necessary legal and regulatory arrangements is essential. Capacity building for stakeholders is crucial for successful implementation. Continuous updates to the MRV system are required based on national

and international reporting requirements. The following sections elaborate on the steps outlined in Figure 1.

2.1 Establish Institutional Arrangement for MRV Implementation Plan

2.1.1. Existing Institutional Arrangement for an MRV system

Lesotho presently lacks a formalised institutional arrangement to regulate MRV activities. Existing MRV activities are carried out through a technical working group that comprises various line ministries and national entities.

Even though a formal institutional arrangement for MRV mitigation action is not available in the country, there is an established institutional arrangement for national communication and BUR. Figure 2 illustrates the institutional arrangement presented in the country's first BUR.

Figure 2: Institutional Arrangements for National Communications and BUR. Source: (Lesotho, 2021), Biennial Update Report (BUR)

The country highlights the proposed institutional arrangement for the BUR in the same document.

Figure 3: Proposed BUR institutional arrangements. Source: (Lesotho, 2021). Biennial Update Report (BUR).

Based on the available institutional arrangements in the climate change sector, the following institutions are suggested to be key players in the proposed institutional arrangement for the MRV of mitigation actions.

1. Ministry of Energy and Meteorology (MEM):
   Through the Lesotho Meteorological Services (LMS), the MEM serves as the focal point for climate change and spearheads the initiatives to implement the National Climate Change Policy.
2. Lesotho Meteorological Services (LMS):
   The LMS monitors weather and climate, safeguards the ozone layer, and detects climate change. Additionally, it assesses vulnerability and formulates response measures while coordinating activities aligned with Lesotho's obligations and relevant agreements.

3. National Climate Change Committee (NCCC):

   The NCCC operates under the umbrella of Lesotho Meteorological Services (LMS). Its primary role is to advise the Ministry of Energy and Meteorology (MEM) on the effective implementation of the National Climate Change Policy. Additionally, it acts as a bridge between the LMS and various social and economic sectors, facilitating information gathering and stakeholder coordination. The NCCC comprises three sub-committees on Finance, Public Outreach, and Monitoring and Evaluation (M&E).

2.1.2. Institutional Arrangement for MRV of Mitigation Actions for the Energy Sector

Establishing a robust institutional structure is crucial for the effective implementation of any MRV system. When crafting an institutional framework for the energy sector, particularly focusing on both the renewable energy pricing policy (Solar Home System) and transport pricing policy (More Efficient Gasoline Cars), it is imperative to comprehend the current governance structure and reporting lines. The proposed institutional arrangement is built upon existing systems outlined in the previous section and incorporates stakeholder engagement.

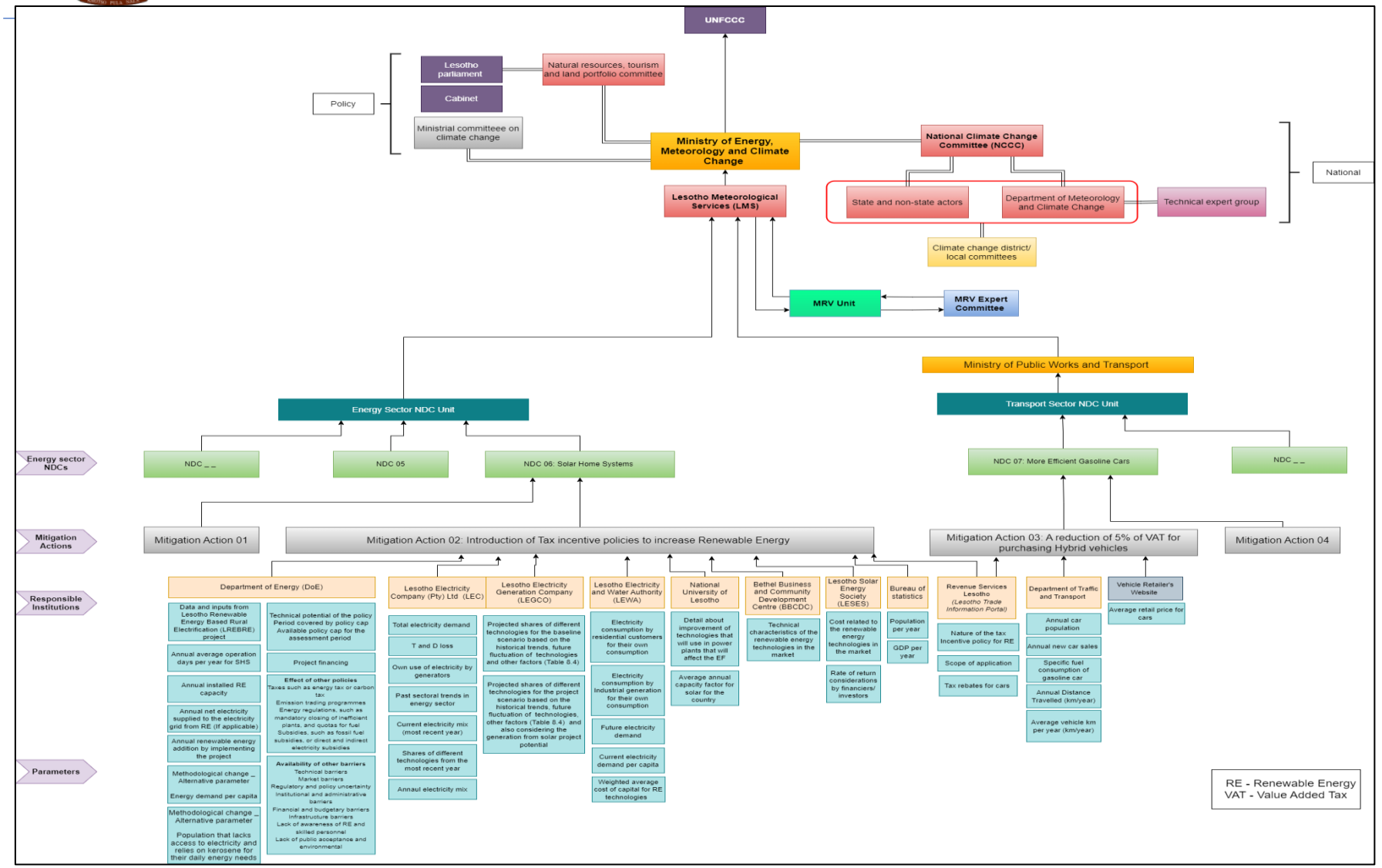

Figure 4: Proposed institutional arrangement for implementing the MRV system
Source: Own work of author, 2024

2.1.3. Roles and Responsibilities of Stakeholders

Comprehending the roles and responsibilities of each key stakeholder within the MRV system is essential for establishing and managing a robust institutional arrangement. However, the absence of a proper QA/QC system for data collection relevant to mitigation actions and the lack of technical support necessary to assess emissions from mitigation actions/policies underscore the importance of introducing a new unit or upgrading an existing institution's functionality.

Therefore, a proposal for establishing a common unit under LMS will offer the required technical support for calculating the GHG impacts of policies or actions and implementing proper QA/QC procedures. The MRV coordination unit, functioning as a unit under the LMS, may include an MRV expert representing each sector, such as an MRV expert for the energy industry, transport sector, manufacturing industry, forestry, agriculture, etc. The following tables provide the roles and responsibilities of each unit in detail.

The responsibilities of the LMS regarding the MRV system are presented in Table 1 below.

Table 1: MRV-related responsibilities of the LMS

Responsibilities of the LMS
Collect information related to MRV mitigation actions in energy policies and coordinate stakeholders.
Coordinate the flow of information from individual institutions and ministries to facilitate a collective assessment of the impacts and multiple benefits of policies, strategies, and actions.
Maintain overall quality assurance and quality control of the assessment.
Identify all institutions that will be involved in data collection.
Allocate responsibilities for all institutions, ensuring that each has a clear lead, and establish an institutional-level formal approval process.
Develop and monitor a timeframe and schedule for preparing and submitting necessary data, including specific dates for deliverables.

Provide support to storage and safekeeping of data and calculations.

Source: Adapted from National MRV framework for the transport sector in Sri Lanka, 2019 (ClimateSI, 2019)

The responsibilities of the MRV Unit are outlined in Table 2 below.

Table 2: Responsibilities of the MRV Unit under Lesotho Meteorological Services (LMS)

Responsibilities of the MRV Unit
Facilitate technical and financial support for MRV of mitigation actions in the energy sector.
Enhance stakeholders' capacities and monitor domestic (unilateral) and international capacity-building initiatives.
Offer guidance and training to stakeholders on two key aspects: i) accurate collection, recording, reporting, and analysis of data; and ii) calculation of the GHG impact of mitigation policies and actions.
Plan and conduct all consultation activities with the government and, if appropriate, nongovernment stakeholders in relation to MRV of policies, strategies and mitigation actions.
Compile and integrate individual sectoral MRV reports into a cohesive document for submission to UNFCCC.
Include reports from all line ministries and their regulatory bodies, maintaining an updated registry of relevant actions, such as policies and projects.
Maintain and update the registry of all the energy sector projects in the country.
Evaluate the progress of policy implementation and adapt to new circumstances accordingly.
Develop guidelines for quality control and assurance of collected data and oversee the implementation of a strategy to ensure the quality of the entire MRV process.
Aid to calculate the GHG impacts of the energy sector policies, strategies, and actions
Systematically document all assumptions, data, and methods used as appropriate.
Storage and safekeeping of data and calculations

Source: Adapted from National MRV framework for the transport sector in Sri Lanka, 2019 (ClimateSI, 2019)

The responsibilities of the MRV expert committee are outlined in Table 3 below.

Table 3: Responsibilities of the MRV expert committee

Responsibilities of the MRV expert committee
Verify the emission reduction calculations done by the MRV unit.
Offer recommendations on appropriate methodologies for assessing the impacts of mitigation actions.
Offer essential guidance and feedback to the NDC units and MRV unit regarding calculations and selected methodologies.
Provide recommendations for enhancing the data collection process.
Conduct a study and revise the emission factors for pertinent sectors.
Establish systems and procedures for the verification of reported impacts of policies.

Source: Adapted from National MRV framework for the transport sector in Sri Lanka, 2019 (ClimateSI, 2019)

The responsibilities of the NDC unit are outlined in Table 4 below.

Table 4: Responsibilities of the NDC unit

Responsibilities of the NDC unit
Coordinate the flow of information at the sub-sector level (e.g., energy and transport)
Calculate the GHG impacts of policies, strategies, and actions at the sub-sector level.
The sub-sector level quality assurance and quality control of the assessment
Identify all institutions that will be involved in data collection at the sub-sectoral level.
Develop and monitor a timeframe and schedule for preparing and submitting necessary data, including specific dates for deliverables at the sub-sector level.
Documenting systematically, as appropriate, all the assumptions, data and methods used at sub-sector level analysis
Store and safekeeping of data and calculations for sub-sector level analysis

Source: Adapted from National MRV framework for the transport sector in Sri Lanka, 2019 ((ClimateSI, 2019)

2.2 Assess data needs and gaps

The following data will be required to analyse the GHG impact of the identified energy policies in line with the ICAT renewable energy methodology and ICAT transport pricing methodology. Most data are typically collected by the institutions involved in the current reporting system as part of regular data collection efforts.

Table 5: Availability of required data for GHG impact assessment of NDC 06 – Solar Home Systems

Parameter	Responsible organisation	Publicly available	Only documented internally	Data requirement
The technical potential of the policy	Department of Energy (DoE)	No	Yes	Ex-ante
Period covered by policy cap		No	Yes	Ex-ante
Available policy cap for the assessment period		Yes	No	Ex-ante
Availability of taxes such as energy tax or carbon tax		No	Yes	Ex-ante
Availability of emission trading programme		No	Yes	Ex-ante
Availability of energy regulations, such as mandatory closing of inefficient plants and quotas for fuel		No	Yes	Ex-ante
Availability of subsidies, such as fossil fuel subsidies or direct and indirect electricity subsidies		No	Yes	Ex-ante
Identify technical barriers available.		No	Yes	Ex-ante
Availability of regulatory and policy uncertainty		No	Yes	Ex-ante
Availability of institutional and administrative barriers		No	Yes	Ex-ante
Availability of market barriers		No	Yes	Ex-ante
Availability of financial or budgetary barriers		No	Yes	Ex-ante
Availability of infrastructure barriers		No	Yes	Ex-ante
Lack of RE and skilled personnel		No	Yes	Ex-ante
Lack of public acceptance and environmental		No	Yes	Ex-ante
Annual installed RE capacity		Yes (BoS)	Yes	Ex-post

Annual net electricity supplied to the electricity grid from RE (If applicable)		Yes (BoS)	Yes	Ex-post
Annual renewable energy addition by implementing the project		No	Yes	Ex-post
Annual average operation days per year for SHS		No	Yes	Ex-ante and Ex-post
Alternative parameters due to methodological change – Energy demand per capita		Yes	Yes	Ex-ante and Ex-post
Alternative parameters due to methodological change – Number of households targeted per year		Yes	Yes	Ex-ante
Alternative parameters due to methodological change – Population that lacks access to electricity and relies on kerosene for their daily energy needs		Yes (BoS)	Yes	Ex-ante and Ex-post
Data and inputs from the Lesotho Renewable Energy Based Rural Electrification (LREBRE) project	DoE, GEF, IEA and UNDP	Yes	No	Ex-ante and Ex-post
Project financing	DoE and GEF	Yes	No	Ex-ante
Total electricity demand per year	Lesotho Electricity Company (Pty) Ltd (LEC) and Lesotho Electricity Generation Company (LEGCO)	Yes	Yes	Ex-ante and Ex-post
Transmission and distribution loss per year		Yes	Yes	Ex-ante and Ex-post
Own use of electricity by generators per year		No	Yes	Ex-ante and Ex-post
Past sectoral trends in the energy sector		Yes	Yes	Ex-ante
Projected shares of different technologies for the baseline scenario based on the historical trends, future fluctuation of technologies and other factors		No	Yes	Ex-ante
Projected shares of different technologies for the project scenario based on the historical trends, future fluctuation of technologies, other factors and also considering the generation from solar project potential		No	Yes	Ex-ante
Current electricity mix (most recent)		Yes	No	Ex-ante

Shares of different technologies from the most recent year	LEC, LEGCO and DoE	Yes	No	Ex-ante
Annual electricity mix		Yes	No	Ex-post
Electricity consumption by residential customers for their own consumption	Lesotho Electricity and Water Authority (LEWA)	No	Yes	Ex-ante and Ex-post
Electricity consumption by Industrial generation for their own consumption		No	Yes	Ex-ante and Ex-post
Future electricity demand		No	Yes	Ex-ante
Current electricity demand per capita		Yes	No	Ex-ante and Ex-post
Weighted average cost of capital for RE technologies		No	Yes	Ex-ante and Ex-post
Cost related to the renewable energy technologies in the market	Installers	No	Yes	Ex-ante
Rate of return considerations by financiers/ investors		No	Yes	Ex-ante
Detail about the improvement of technologies that will be used in power plants that will affect the EF	DOE and the National University of Lesotho	No	Yes	Ex-ante
Average annual capacity factor for solar for the country	DOE and the National University of Lesotho	Yes	Yes	Ex-ante
Technical characteristics of the renewable energy technologies in the market	DOE, Installers, National University of Lesotho and Bethel Business and Community Development Centre (BBCDC)	No	Yes	Ex-ante
Nature of the tax Incentive policy for RE	The Revenue Services Lesotho (RSL)	Yes	No	Ex-ante and Ex-post
Scope of application		Yes	No	Ex-ante and Ex-post
Population per year	Bureau of statistics	Yes	No	Ex-ante and Ex-post
GDP per year		Yes	No	Ex-ante and Ex-post
Alternative parameters due to methodological change – Default EF for Kerosene	IPCC	Yes	No	Default (Ex-ante and Ex-post)
Technology-specific EF	IPCC, IEA and ICAT	Yes	No	Default (Ex-ante and Ex-post)

CO_2 EF for power plants	IEA and ICAT	Yes	No	Default (Ex-ante and Ex-post0

Source: Own work of author, 2024[1]

Table 6: Availability of required data for GHG impact assessment of Mitigation Action 07 – More efficient gasoline cars

Parameter	Responsible organisation	Publicly available	Only documented internally	Data requirement
Vehicle kilometres travelled (Projected) – Baseline scenario.	Department of Traffic and Transport	Yes	Yes	Ex-ante and Ex-post
Specific fuel consumption. Average consumption per VKT in municipal, regional, or national fleet – Baseline scenario		Yes	Yes	Ex-ante and Ex-post
Car population (Gasoline and hybrid) Projected – Baseline scenario.		No	Yes	Ex-ante and Ex-post
Annual new car sales – GHG impact		No	Yes	Ex-ante and Ex-post
Average annual km per car – GHG impact		Yes	No	Ex-ante and Ex-post
Market share of conventional and efficient gasoline cars		Yes	No	Ex-ante and Ex-post
Density of fuel type gasoline	IPCC	Yes	No	Default
The net calorific value of gasoline		Yes	No	Default
Emission factor for gasoline		Yes	No	Default
Default value for elasticity beta	ICAT	Yes	No	Default
Tax rebate	Revenue Services Lesotho	Yes	No	Ex-ante and Ex-post
Average retail price of cars	Vehicle retailer's website	Yes	No	Ex-ante and Ex-post

Source: Own work of author, 2024[2]

[1] Most parameters listed as ex-ante data requirements are intended to determine the potential renewable energy additions resulting from the policy. However, once the project is implemented, the annual renewable energy additions can be calculated based on the installed renewable energy (RE) capacity and net electricity supplied to the electricity grid from RE. It should also be noted that the ICAT RE methodology recommends recalculating baseline emissions each time an ex-post assessment is undertaken under the emissions trajectory method.

[2] Note: It is a key recommendation from the ICAT transport pricing guidance to estimate or update baseline emissions using observed values for parameters unaffected by the policy and estimated values for parameters affected by the policy.

2.3 Design of MRV system

The Government of Lesotho, represented by Lesotho Meteorological Services (LMS), as a signatory to both the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Climate Agreement, is obligated to meet international reporting requirements. This is crucial to enhance the global response to climate change. Article 4(24) of the Paris Agreement stipulates that each party must prepare, communicate, and maintain successive nationally determined contributions (NDCs) with the intention of achieving their stated goals. Article 4(8) also requires all parties to provide information necessary for clarity and transparency, as outlined in Decision 1/CP21. Therefore, the Initiative for Climate Action Transparency (ICAT) receives support from the UNEP DTU Partnership to enhance capacity and establish a robust Measurement, Reporting, and Verification (MRV) system in Lesotho as part of this project.

The Lesotho team, following consultations with stakeholders, has chosen two policies for the development of an MRV system: "Reduce 5% VAT for purchasing more efficient vehicles (Hybrid)" and "All renewable energy systems and equipment will attract a reduced VAT rate of 5%, similar to electricity supplies." This MRV system aims to track the contribution of mitigation action 6 (Solar home systems) and mitigation action 7 (More efficient gasoline cars) to Lesotho's NDCs and to facilitate the preparation of the Biennial Transparency Report (BTR). Both policies fall under the tax incentive category, focusing on vehicle purchasing and incentives for renewable energy technologies, aligning with the pricing policies outlined in the ICAT methodologies.

2.4 Data Management

2.4.1. Data Management System

The suggested data management systems have been formulated considering the current institutional setup for the country's National Communication and Biennial Update Report (BUR) assessments. This encompasses specifics on what data needs to be collected, the timing of data collection, the methodology for data collection, and the designated reporting entities.

The LMS will gather data and sub-sector level impact assessments from the NDC units within each ministry and will perform quality assurance and quality control on the data and share it with the MRV unit.

Data Management System for Action No. 6

As depicted in the figure below, the Department of Energy (DoE), leveraging its experience as the managing institution for the NAMA-Solar Technologies Programme of Activities, will be the primary source for sharing most of the data. This includes technical potential related to the policy, parameters influencing other energy policies, and insights into existing barriers to the successful implementation of the policy. Specifically, data related to the VAT reduction from 15% to 10% on renewable energy technologies in the country, with a primary focus on Solar Home Systems (SHSs), will be collected by the DoE. Additionally, the department will gather information on project financing and monitor regular parameters crucial for determining the actual renewable energy additions resulting from the project. Alternative parameters, such as energy demand per capita and population relying solely on kerosene, which are specific to Lesotho's situation and were established due to necessary methodological changes in the baseline scenario considering kerosene consumption, will also be collected under the DoE.

The Lesotho Electricity Company (LEC) and Lesotho Electricity Generation Company (LEGCO) will be crucial in collecting electricity-related data. This includes information on electricity demand, transmission and distribution losses, own use of electricity, and the electricity mix in the country.

Information pertaining to tax incentives for Renewable Energy (RE) technologies will be obtained from the Revenue Services Lesotho (RSL). Technical details related to RE technologies can be sourced from the National University of Lesotho or Bethel Business and Community Development Centre (BBCDC). Certain data required to assess the financial feasibility of the policy will be collected from the Lesotho Solar Energy Society (LSES). The Bureau of Statistics will provide the country's annual population and GDP data necessary for the assessment. Finally, the NDC unit under the energy sector will not only gather all energy sector-related data necessary to assess the energy policies but will also regularly check and update default emission factors relevant to the assessment.

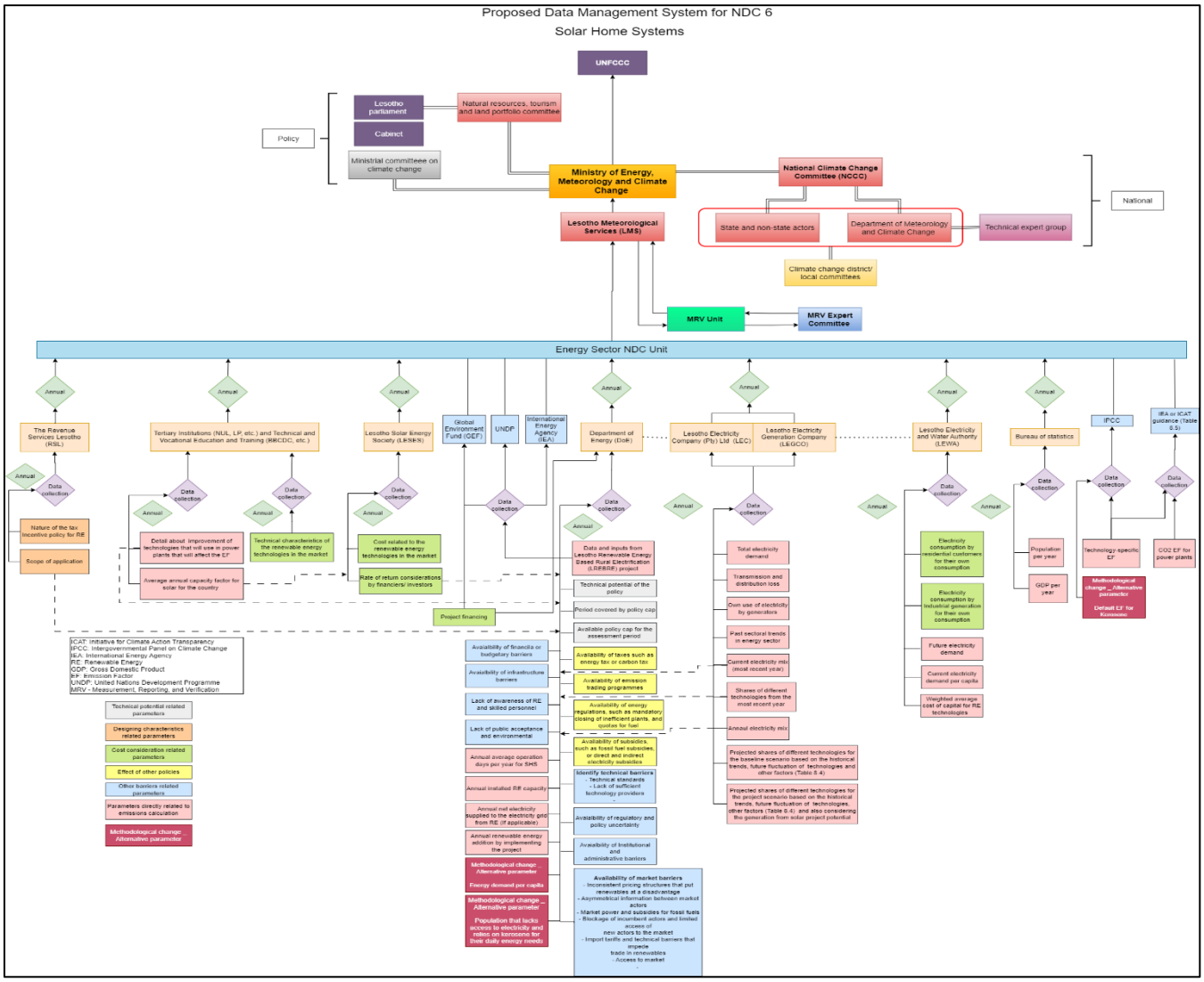

Figure 5: Proposed data management system for Mitigation action 06

Source: Own work of author, 2024

Data Management System for Mitigation Action No. 7

The data management system for "Reduce VAT from 15% to 10% for purchasing more efficient vehicles" has been developed, suggesting that most data will come from the Department of Traffic and Transport under the Ministry of Public Works and Transport. The department will monitor and share data such as the total annual car population, new car sales according to fuel types, and the annual average distance travelled by vehicles. Information and updates related to tax rebates for more efficient vehicles will be collected by the Revenue Services Lesotho (RSL). Finally, the NDC unit under the transport sector will not only gather all transport sub-sector-related data necessary to

assess the transport sector policies but will also regularly check and update default emission factors relevant to the assessment (via IPCC and ICAT) and collect average retail prices for cars from vehicle retailers' websites[3].

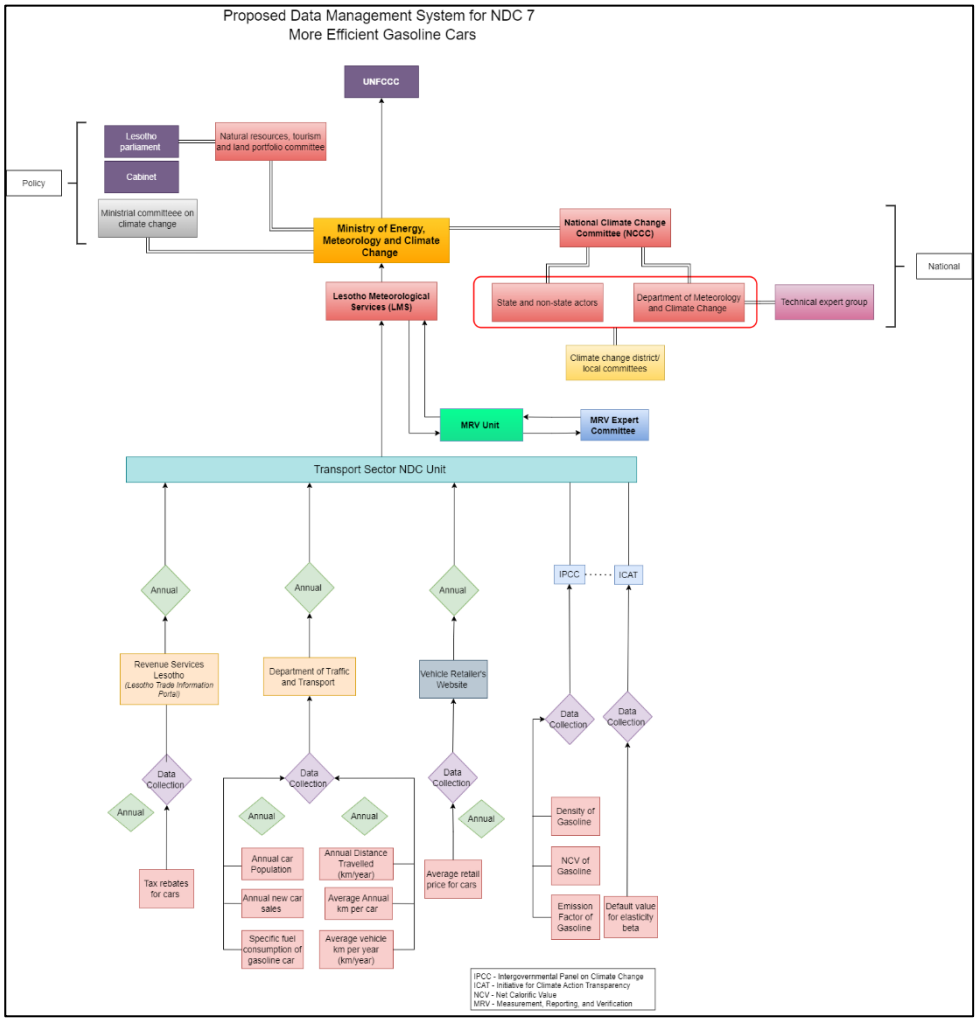

Figure 6: Proposed data management system for NDC 07

Source: Own work of author, 2024

2.4.2. Data Quality

LMS is tasked with ensuring the quality of the entire assessment. Comparable to the Quality Assurance/Quality Control (QA/QC) plan utilised in the Biennial Update Report (BUR) and National Communication (NC) assessments, LMS will create a QA/QC plan outlining criteria and processes. This plan aims to guarantee and verify that the data aligns with specific quality objectives throughout the Data Lifecycle of the MRV system

[3] Collecting the most reliable data is essential.

for mitigation actions. These objectives may be derived and fine-tuned based on principles like transparency, accuracy, completeness, comparability, consistency, timeliness, and improvement. The NDC units responsible for each sub-sector will be tasked with supporting LMS in properly managing the QA/QC system by assuring the data quality at the sub-sector level.

2.4.3. Legal arrangement on implementation of identified policies under the MRV system

In addition to the enabling factors crucial for the smooth implementation of the proposed MRV system, a well-defined legal framework imposes the obligation to report on institutions that must submit data as per the MRV system. Establishing a robust legal structure for data sharing serves as the foundation for institutional administrative compliance and provides a basis for enforcement arrangements within the system.

This section on legal assessment is confined to implementing the specific policies for which the MRV system has been developed. If the country desires to expand this MRV system further, it is emphasized and recommended that the national legal system regarding GHG-related data sharing be explored.

Most essential assessment data is not publicly available in the country (see Tables 5 and 6). However, most of the data needs to be collected from public institutions. Therefore, Lesotho can access this internally documented data by following the existing clearance process for data exchange between public institutions. The LMS under the MEM can prepare and send an official letter of request to the NDC unit under the relevant ministry and directly to the public institutions, signed by the Minister or an authorized senior management officer. This letter will clearly state the type of data needed and the procedure for sharing the official response. The institution that holds the data shall then prepare the requested data and issue their response through an official letter, which will be communicated to the LMS via their ministry's internal NDC unit.

When dealing with data owned by the private sector, establishing a robust, accurate, and reliable system is essential, as data collection from the private sector often depends on the willingness of private entities to share the requested data, especially when not legally bound. To ensure the necessary data is collected, the optimal approach is to enter into an agreement between the MEM and the private sector entities within the system.

This agreement assures the private sector entities that the data[4] will be used solely for the assessment under the MRV system.

2.5 Capacity Building

The capacity-building plan is integral to the implementation efforts for establishing the proposed MRV system. It encompasses various activities:

- Analyzing the capacity-building requirements for the country and stakeholders.
- Conducting a needs assessment for capacity building.
- Developing a strategy aligned with short- and long-term capacity-building objectives.
- Conducting training and awareness programs focusing on data collection, management, and computation.
- Exploring emerging practices, common challenges, and lessons from implementing MRV by observing similar exercises in other countries.

Areas that might require capacity-building support, both within the central MRV team and among stakeholders involved in the MRV system implementation, include:

- Compiling and improving the MRV system of mitigation action.
- Monitoring and evaluating the impacts of mitigation actions, along with their developmental co-benefits.
- Finance requirement for the establishment of the MRV system.
- Addressing data management issues, including robust quality assurance and archiving.
- Enhancing capabilities for reporting to the UNFCCC, particularly staying updated on guidance from the Ad Hoc Working Group on the Paris Agreement.

[4] The data requests from the private institutions currently in the MRV system do not involve confidential or financially sensitive information.

- Developing skills in drafting memoranda of understanding, understanding legal requirements, and implementing mechanisms to ensure relevant, long-term data provision.

2.6 Improve the system over time

It is crucial to establish a mechanism to ensure that the outputs from the MRV systems are regularly updated, allowing for the integration of lessons learned and insights into subsequent actions within the implementation of the NDC.

For continuous improvement of the MRV system, the following points need to be considered:

- Evaluate the effectiveness of the MRV system in collating and reporting relevant data and adjust the implementation plan and systems based on any lessons learned.
- Engage with stakeholders to seek feedback on the functioning and effectiveness of the MRV system.
- Collaborate with countries with similar NDC targets and MRV needs to share lessons learned and best practices.

3. ROAD MAP FOR IMPLEMENTATION

The implementation roadmap for the MRV system can be outlined in five stages: Setup policy MRV system, Setup next steps, Pilot, Refining, and Operational. The initial stage, the setup of the MRV system, has been completed with establishing all necessary documents and planning for the proposed MRV system. In the second step of the setup stage, the country can enhance the proposed MRV system by incorporating a legal framework to address data gaps. Additionally, improvements may involve integrating the social development co-benefits of the selected policy and digitalising the MRV system for increased efficiency and accuracy.

The primary objective of the pilot stage is to build stakeholders' capacity to maintain the MRV system and gather feedback based on hands-on experience. During the refining stage, components of the MRV system may be enhanced and adjusted based on the feedback collected during the pilot stage.

During the operational stage, the established MRV system will be fully operational. The newly formed MRV unit will assess the GHG impact of selected policies using data reported by respective institutions. Results will be submitted to the expert committee for verification. Annual monitoring reports will be generated based on the results. Sector-specific monitoring reports will be consolidated by the MRV unit and submitted to LMS for approval. LMS will approve the documents for submission to international agencies in accordance with requirements.

As discussed in the previous chapter (2.6. Improve the system over time), the MRV system requires regular updates to align with national and international reporting requirements changes and the country's governance structure. Additionally, annual training sessions should be conducted for stakeholders to educate them about any modifications to the MRV system. This iterative process ensures the system's adaptability and continued effectiveness in tracking and reporting relevant data.

Setup Stage (MRV)	Setup Stage (Next setup)	Pilot Stage	Refining Stage	Operational Stage
• MRV framework • MRV protocol • MRV procedure • Institutional arrangement • Data management systems • Data collection template	• Legal framework • Include SD co-benefits in the MRV system • Develop digitalized GHG MRV system	• Providing training to the stakeholders on the MRV system • Collect feedback from stakeholders • Improve the MRV system	• Assess outcomes of the pilot stage • Improve the system based on the outcomes • Improve data collection templates • Improve the procedures for documenting and reporting	• Fully operational system • Publish annual monitoring reports • Verify reported impacts annually • Upgrading the MRV system • Continue the annual training
2024	2025	2025/26	2026/27	2027 onward

Figure 7: Roadmap for implementation of renewable energy policy MRV, Source: Own work of author, 2024

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Annex 1: Additional tasks to be carried out before the implementation of the MRV system.

In addition to the roadmap for implementing the MRV system, several tasks must be completed to ensure successful implementation. These tasks are outside the scope of our current assignment and should be carried out early in the implementation stage.

1. **Implementation Support**
    - **Financial Support**: Secure budget and funding for the implementation.
    - **Technological and Material Support**: Acquire necessary hardware, software, facilities, and materials.
    - **Documentation Support**: Prepare additional documentation to support the deliverable system.
    - **Personnel Support**: Outline staffing requirements and provide training for implementation staff.
2. **Implementation Impact and Issues**
    - Address any known issues or problems relevant to implementation planning.
    - Describe how the implementation will impact network infrastructure, support staff, user community, etc.
3. **Success of the Implementation**
    - Identify the most critical aspects of the implementation.
    - Describe how these aspects will be used to determine the success of the implementation.
4. **Escalation Plan**
    - Define exit or acceptance criteria.
    - Decide whether the implementation team should discontinue a rollout, initiate the contingency plan, or continue implementing based on identified risks during execution.
5. **Contingency Plan**
    - **Post Implementation**
        - Monitor the progress of the implementation.
        - Address barriers faced and how to resolve them.
        - Estimate O&M (Operations & Maintenance) costs.

- Define the organizational structure for O&M.
- Manage documentation and data effectively.