Data Use and Statistical Capacity in Lesotho

Synthesis Report

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THIS PAGE: Young man and his donkey, Lesotho | Photo by Angelo Moleelo, Unsplash
COVER PAGE: A nurse capturing patient data on a tablet at a Lesotho health facility | Photo by ICAP Global Health

About this Report

This report is the synthesis of the study on Statistical Capacity and Data Use in Lesotho conducted by SBC4D for the Millennium Challenge Corporation (MCC) and Lesotho Millennium Development Agency (LMDA). The study includes four products:

1. The **complete study** that presents in detail the diagnostic of the data ecosystem in Lesotho and the proposed recommendations to address challenges identified in the diagnostic and leverage strengths of the Lesotho ecosystem.
2. The **synthesis report** (this report) that highlights only the main findings of the study and presents the recommendations.
3. An applied **political economy assessment on gender data and health** that investigates how gender data is collected and used in Lesotho's health sector
4. A **subnational data flows assessments** using two approaches: (1) IREX's Data Compass tool and (2) the SBC4D Data Flows method. Both are qualitative approaches to help public institutions (in our case, in the health sector) plan for effective, data-informed decision making.

This study is a qualitative study that explores two main elements:

1. The **data ecosystem**: The objective of this dimension is to explore not only the technical but also the social, political, legal and other aspects that inform statistical capacity and data use by different actors. Th ecosystem component covers governmental actors at the national level, but also actors at the subnational level as well as non-governmental and other actors at both levels. The national ecosystem study covers main government ministries, departments and agencies with a deeper dive on the Bureau of Statistics, the Ministry of Health and the Ministry of Agriculture and Food Security (MoAFS).
2. The **data flows**: This assessment investigates data sharing behavior, both horizontally (data flows between actors at the same level, national or subnational) and vertically (data flows between different administrative levels). The focus is on the flow of health data in Lesotho.

The diagnostic is structured around the investigations of nine major areas of enquiry (Leadership, Legal and Policy Environment, Capacity, Infrastructure, E-Government, ICT Innovation, Data Offer & Demand, Gender Data, Monitoring & Evaluation, and Subnational Data Flows). Looking into each of these nine areas helped us, through desk research and key informant interviews, to characterize the landscape in Lesotho, identify strengths and weaknesses, and propose a series of recommendations. The recommendations are presented in the first part of this report and the main findings of the diagnostic in the second part.

Solar power panels in a small village in Lesotho.
Photo by Herbert Bieser, Pixabay

Executive Summary

This report is a synthesis of the MCC-commissioned study "Data Use and Statistical Capacity in Lesotho". It includes the main findings of the diagnostic and the proposed action plan.

The study offers a deeper understanding of statistical capacity, data use and the data ecosystem in priority sectors relevant to the MCC Compact. This study aims to conduct a fine-grained diagnosis to identify the root causes of the limited statistical capacity and data use in Lesotho that characterize ineffective policy planning, coordination and execution, and restrict the growth of core productive sectors.

The picture that emerged from the research is homogeneous across sectors at the national and subnational level, and reveals that:

1. Lesotho is policy rich and implementation poor. Several ambitious strategies and critical legislation such as the Data Protection Act have been promulgated but has yet to be implemented. Accurate diagnosis has therefore been established without the effective resolution of the main challenges.
2. A data culture among Lesotho's leadership is limited. The use of data for policymaking or decision-making is also limited. This translates into low demand for data, low value attached to data and, therefore, low priority and low budget allocations for data activities. The Bureau of Statistics and the Department of Monitoring and Evaluation (in the Ministry of Development Planning) are particularly impacted by this limited data culture.
3. Sectors important for the development of Lesotho, such as health, agriculture, education and social protection, have benefited from major investments in robust information systems. These sectors have deployed or are in the process of scaling up critical systems such as an Electronic Medical Records (EMR) platform and a national farmer registry. These systems do not yet leverage the benefits of interoperability by, for example, connecting with the national electronic civil registry developed by the Ministry of Home Affairs. These system do, however, offer a solid platform for leveraging data approaches in public governance, and some gains in this respect are noted (for example, the roll-out and integration of an electronic patient register at the level of health facilities).

Based on these findings, the report proposes a series of recommendations to address some of the core issues that would create a foundational layer from a legal and organizational perspective.

The vision behind these recommendations is to use the two main sectors of the MCC Compact, health and horticulture, as examples to demonstrate the potential of data as a means to increase outputs and generate social and economic impacts in these sectors. In particular, the proposed interventions in these sectors will focus on increasing interoperability between systems, leveraging the civil registry, increasing the amount of data available, including sector statistics and gender disaggregated data, and increasing the value of these data by seeding reuse by public and non-governmental actors.

Frequently used abbreviations

BoS	Bureau of Statistics
CHAL	Christian Health Association of Lesotho
CSO	Civil Society Organization
dhis2	District Health Management Information System
DISA	Short name for DISA*Lab, Lesotho's proprietary Lab Management Information System
DM&E	Department of Monitoring & Evaluation of the Ministry of Development Planning
EMR	Electronic Medical Records system
GBV	Gender-Based Violence
GoL	Government of Lesotho
HSS	Health System Strengthening (MCC Compact component)
ICI	Improving Capital Investment (MCC Compact component)
LAA	Land Administration Authority
LIAMIS	Lesotho Integrated Agriculture Management Information System
MCST	Ministry of Communication, Science and Technology
MDA	Ministries, Departments and Agencies
MDP	Ministry of Development Planning
MLGCA	Ministry of Local Government and Chieftainship Affairs
MoAFS	Ministry of Agriculture and Food Security
MoH	Ministry of Health
MoHA	Ministry of Home Affairs
MoW	Ministry of Water
NGO	Non-Governmental Organizations
NICR	Department of National ID and Civil Registry (NICR) in the Ministry of Home Affairs
NISSA	National Information System for Social Assistance
NPB	National Planning Board
NRA	National Reform Authority
NSDP	National Strategic Development Plan
NSDS	National Strategy for the Development of Statistics
NUL	National University of Lesotho
PS	Permanent Secretary
VHW	Village Health Worker

1 Introduction

This report is a summary of a Millennium Challenge Corporation (MCC) commissioned study "Data Use and Statistical Capacity in Lesotho". The study offers a deeper understanding of statistical capacity, data use, and the data ecosystem in priority sectors relevant to the MCC Compact.

A functioning or ideal data ecosystem in a country includes government ministries, departments and agencies (MDAs) putting data at the core of their activities. Activities related to the institutionalization of data practice include collecting, storing, protecting, managing (maintaining, correcting, improving) and using data for policymaking, as well as for public policy evaluation. They also include sharing data with other MDAs, with local government authorities (LGAs) and publishing data for use by other stakeholders (e.g., media, researchers, innovators, etc.) to generate value and engage citizens in public matters.

The emergence of such an ecosystem requires the alignment of different elements that include an enabling legal environment, strong political leadership, the availability of a robust technical architecture, and the availability of required capacities at all levels.

The emergence of a data ecosystem requires the alignment of different elements that include an enabling legal environment, strong political leadership, the availability of a robust technical architecture and the availability of required capacities at all levels.

This study aims at conducting a fine-grained diagnosis to identify the root causes of the limited statistical capacity and data use in Lesotho that characterize ineffective policy planning, coordination and execution, and that restricts the growth opportunities of core productive sectors.

Based on the diagnosis, the study identifies operational actions that may help resolve the challenges, and it identifies champions from National Government, LGAs and non-government stakeholders to lead and support change.

2 Recommendations

This section presents the proposed recommendations to address challenges that have emerged from the diagnostic. These recommendations are organized according to MCC Compact main components, i.e., Health System Strengthening (HSS) and Improving Capital Investment (ICI). Certain recommendations cannot be attached directly to either of these two components or they are foundational to the implementation of one of the components. These are presented in the "Recommendations for the National Data Ecosystem" subsection of this report.

Note that some recommendations in the HSS or ICI sections require and rely on the implementation of some of the national data ecosystem recommendations. In the same way, some of the national ecosystem recommendations are proposed to address some challenges identified for HSS or ICI that are not specific to MoH or MoAFS. We therefore decided to present first the HSS and ICI recommendations and link from them to national data ecosystems items that are required and presented later in the report.

Recommendations for Health System Strengthening (HSS)

The MCC Health System Strengthening (HSS) project addresses the constraint of ineffective policy, planning, coordination and execution by increasing the efficiency and efficacy of health resource utilization resulting in a reduction in per unit treatment cost, improved health outcomes and, ultimately, improved cost-efficiency in Ministry of Health (MoH) expenditure. In addition, the project will reduce household medical and associated expenses, and increase labor productivity, complementing the ICI project.

Key to the success of the above strategy in ameliorating the effects of the binding constraints on Lesotho's development will be the collection, accessibility and use of relevant and reliable data by all stakeholders (private and public). Data can contribute in at least two ways: (1) data can inform and support evidence-based decision-making at all levels of the health sector to ensure efficiency and efficacy gains. This includes, for example, how the use of data analytics can contribute to identifying and addressing specific disease outbreaks, or specific trends in population migration, or linkages between the health situation and performance in other sectors. (2) Data provides the ability to measure, monitor and evaluate actual gains made in overcoming the binding constraint. This includes, for example, the ability to identify under-performing districts or health facilities and adopt specific action plan to address gaps or challenges.

Based on the findings of the study, we identified five main areas of intervention that could support HSS. The five areas are summarized here and then explained in greater detail later in this synthesis report.

1. **Improve current systems and data flows.** The Lesotho public health system integrates a number of information systems such as dhis2 and the e-register. Some of these systems could be leveraged to provide better health outcomes. In the same way, the organizational structure of public health from the national ministry down to the village health worker could be strengthened and provide better health outcomes with appropriate data flows and associated capacities at the different levels.
2. **Increase the availability of data (other than performance data).** One of main findings of the study is the low level of data use for public governance, decision-making and policy design. At MoH level, it appears that only performance data collected and presented in the national dhis2 dashboard are considered. Raw and other aggregated data offer opportunities for analysis and for answering key research or policy questions. To support such analysis, it is important to increase the availability of such data.
3. **Increase of health data use by MoH.** The availability and sustainability of data and information systems depends largely on their usefulness to GoL and to MoH in particular. It is therefore critical to see greater use of data for decision-making, policymaking, planning, and monitoring and evaluation.
4. **Improve data access and use by health partners.** Health services in Lesotho are implemented by MoH but also by a number of health partners. These include formal partners,

(e.g. CHAL), NGOs working in health, and some private facilities. While all these non-MoH health actors collect and use their own data, they have difficulty accessing and using MoH data that could inform their interventions and lead to the emergence of innovative services for better health outcomes.

5 **Improve gender-data practices.** Currently, limited capacity and resources exist among health facilities and within the MoH to efficiently identify and address gender issues with data. In addition to sex-disaggregation, Lesotho faces significant challenges in reporting on gender issues in national and international datasets, with the majority of data collection coming from CSO- and NGO-funded initiatives. To address this, key considerations to systems and processes must be made in relation to sensitive issues such as GBV and sexual and reproductive health as critical priorities in Lesotho's health sector.

DETAILED RECOMMENDATIONS FOR AREA I

Improve current systems and data flows

In terms of systems and data flows, we have identified six potential areas of intervention:

1 A number of systems have been put in place to ease patient monitoring, health data collection and upward data flows. However, these systems and their integration could provide **better services and greater overall health information**:

   a **Interconnect the e-register with the civil registry.** The e-register is a first step towards a national EMR system. For now, it is focused only on TB and HIV, and its inclusion of other diseases could make it a central tool for the health system. However, the lack of interconnection with the civil registry is a missed opportunity. Such interconnection would improve patient care as well as patient tracking when people move between districts. It will help to identify duplicate entries and to design appropriate patient treatment based on their medical history. The civil registry could also benefit from such interconnection, providing quicker updates of information on events such as births or deaths.[1] Note that we recommend focusing on the interconnection between NICR and the e-register before expanding the e-register with data from additional programs. This is to ensure that staff receive adequate training on the interconnected system prior to the expansion of the e-register.

   b **Interconnect the Lab Information Management System (DISA) with the civil registry.** In the same way and for the same reason, DISA would benefit from interconnection with the civil registry for patient identification.

   c **Make interoperable and connect DISA and the e-register.** The interconnection of the civil registry with both systems will also enable interoperability and interconnection of DISA and the e-register so that lab analysis becomes part of the patient record. This connection does not exist at present.

   d **Ensure validity at data collection points**. Data management applications ensure the validity and consistency of processes and systems. Data is centralized at the facility level and used at the national and district levels. This means data flow challenges, such as errors and even fraud, may occur at the village and outreach facilities. Reporting systems should include verification mechanisms (e.g., local feedback loop) at the village level to ensure the validity of data at the collection points.

2 Given the increasing importance of data systems within the broader health system, it is critical to ensure that data is safely stored and easily restored in case of disaster. Given that all data are stored in the data center operated by the Ministry of Communication, Science and Technology (MCST), this is not specific to MoH, and presented as a national data ecosystem recommendation #6 related to improving data security.

3 **VHW program recommendations**:

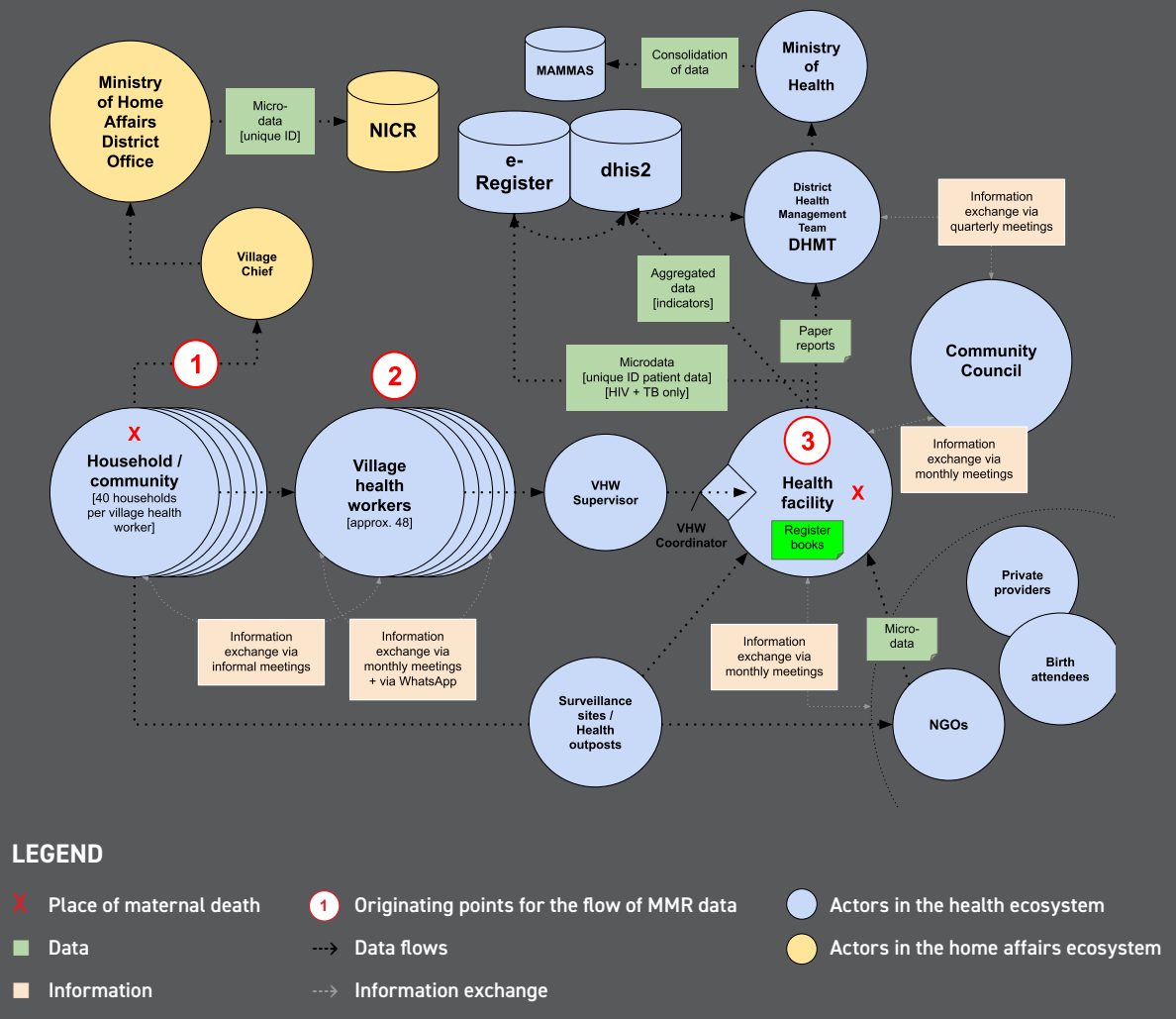
   a Design a global framework and policy to define VHW data collection tasks and how external parties should integrate new data collection exercises in existing frameworks and systems. This is to address the current fragmentation and silo-ed approach (e.g., Global Fund's proposed TB medication tracking app, UNDP's COVID-19 case reporting app, etc.).

   b Downward data flows could help VHWs provide better health service. Currently, VHWs are seen only as data collectors, but access to data could help them deliver better services. Until VHWs are professionalized and/or they are trained on the collection and use of sensitive patient data, and the Data Protection Act is implemented, the first step would be to make available non-sensitive data such as disease information, health indicators, referral pathways, checklists, etc. In a second step, this could be expanded to access to patient data. Between the two steps or where VHWs lack the skills and capabilities to interpret health data, a data intermediary could be introduced to provide VHWs

1 Note that the subnational data flow study (see section 3.10 of this report) identified challenges in the reporting and capture of maternal mortality data. This brings into question the reliability of data in the civil register and in dhis2. The connection of NICR and the e-register, and the upscaling of the e-register to cover other services in addition to HIV and TB is a first step toward addressing this issue, but the issue of multiple data flows needs to be addressed. It is also important to note that the data flow study focused on very specific datasets that led to the detection of this issue. It is likely that similar challenges exist in the case of other datasets.

FIGURE 01

The flow of data related to maternal mortality in Lesotho



with the health information they require to improve service delivery. For example, such an intermediary could be the VHW supervisor at health facility or a data officer at the District Health Office who would act as a central contact point for VHWs to request information. This would become more feasible when the e-register includes all health programs because currently the e-register (where it has been rolled out) only includes HIV and TB data, and dhis2 only provides aggregated data. Patient-level data resides in register books kept at each health facility in the district.

4 **Health Systems Data Management Master Plan**. Many of the recommendations above are proposed to address challenges that were created by the implementation of different initiatives supported by different donors acting in silos. For example, the UNDP funding to support COVID-19 data collection by VHWs was done independently of any other patient data collection such as the Global Fund data collection application for VHWs, with new systems setup, new tools and new data flows. Such an approach is unsustainable and creates major interoperability issues and extra work for all actors from VHWs to MoH staff. It also limits the potential for data exploitation. Recommendation 3(a) above should be generalized at a higher level, ensuring that any new intervention makes use of existing data systems, and data collection/reporting procedures; or at least links with them. It would therefore be essential to design a Health Systems Data Management Master Plan with which all new interventions must comply. This master plan will define how new data collection should be integrated into routine VHW work and tools, or how new MoH information systems should be interconnected with other systems. The master plan should also incorporate M&E indicators. M&E staff face conflicting priorities in reporting on indicators for donor-funded health activities and indicators for national M&E plans in dhis2. Apart from differences in reporting timelines, there are also differences in data collection methodologies resulting in variations in reported data for some indicators. The role of the master plan is to provide a coordination framework group between MoH, the donor community and other stakeholders.

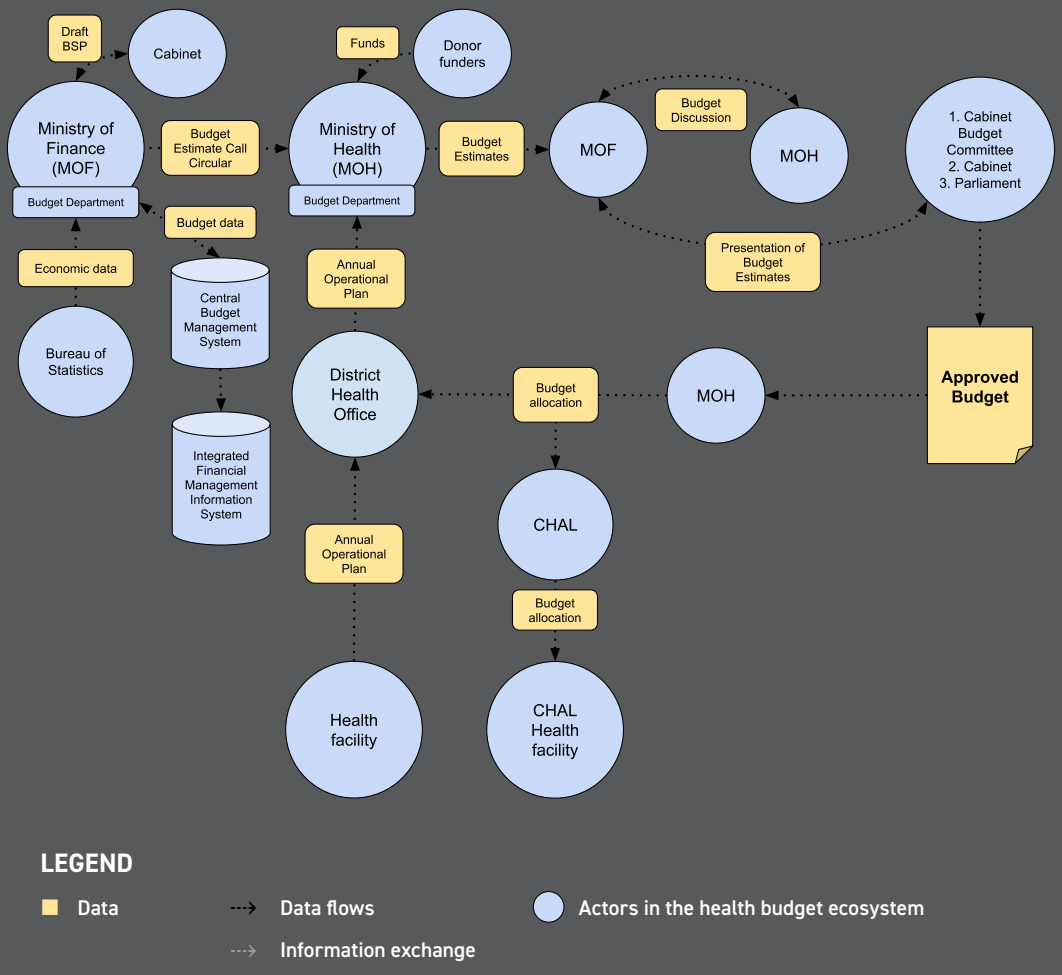


FIGURE 02

The flow of health budget data in Lesotho

Note that the proposed master plan is a critical complement to an eHealth or Digital Health Strategy. These strategies usually identify ICT components, information systems and ICT tools (mobile apps, etc.) that need to be put in place but do not focus on the interconnection of these components at the data level. Identifying and documenting data connections between systems is essential to integrate the various components, prevent data duplication and limit coherency challenges between systems.

DETAILED RECOMMENDATIONS FOR AREA II

Increase the availability of health data (other than performance data)

To increase the availability of health data other than performance data, we have identified three potential areas of intervention:

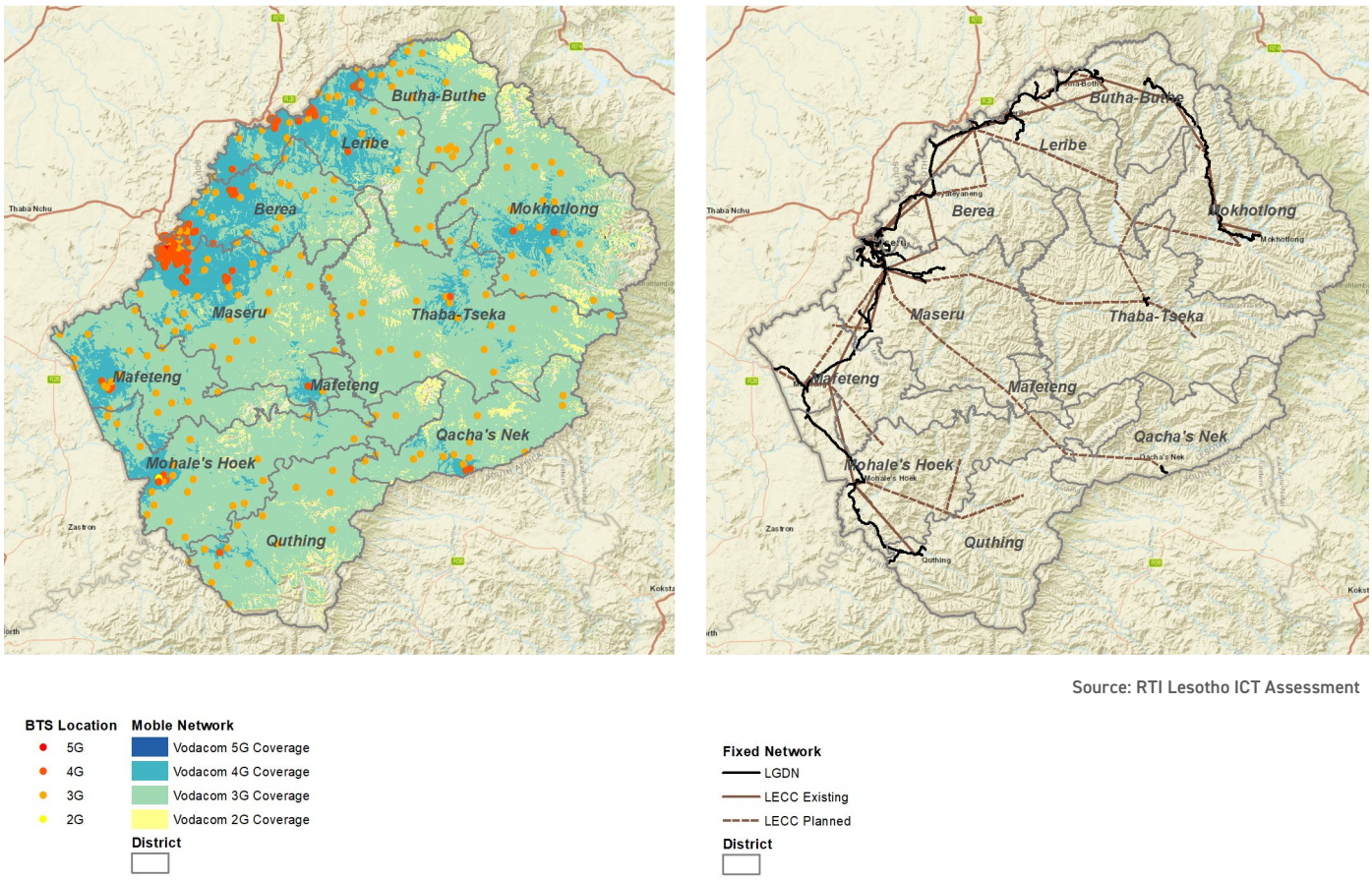
1 **Production of health statistics**: Health statistics are essential to monitor the status and the evolution of the health system and health outcome in a country. Health statistics are critical tools for a number of stakeholders in the country such as MoH to drive its strategy, to MDP to monitor SDG, to private sectors, NGOs, and donors. These official statistics are missing in Lesotho. For a reliable, sustainable production of health statistics, a detailed methodology must be designed in collaboration with BoS and be implemented. This recommendation will require the strengthening of MoH planning office capacities and tools. It will also require strengthening of BoS capacities and tools as presented in National Data Ecosystem recommendations section (recommendation 1).

2 **Development of an integrated data-supported M&E system & dashboard**: An integrated, national M&E system with clear targets and measurement of progress is essential to prioritize intervention, budget, and action both at MoH level and at the national level. With a national M&E Policy in the offing, it will become important for MoH to adopt an integrated M&E framework, implement and maintain it, and use it for budgeting and prioritization. This framework should also support other stakeholders and be integrated in the country M&E framework and should integrate quality

FIGURE 03

Left: Mobile coverage in Lesotho

Right: Fixed-line coverage in Lesotho



Source: RTI Lesotho ICT Assessment

measure procedures of the indicators as part of existing processes (monthly and quarterly coordination meetings, DHMT health facilities supervision & visits). This framework should also support other stakeholders and be integrated in the country M&E framework. This recommendation will require the national data ecosystem recommendation #8 (support of the implementation of the National M&E policy) to be implemented and will serve as a demonstrator.

3 **Access to raw patient data.** The availability and use of raw disaggregated data at patient level, coming from e-register and DISA is a gold mine to answer key policy or research questions, or to detect specific trends (new disease outbreaks, pollution and other environmental factors, nutrition issues, etc.). It would be important to make datasets available from e-register and DISA to enable such analysis and research. This could be achieved through the setup of Application Programming Interfaces (APIs) or through extraction and publication of datasets. This activity should be developed together with the recommendation related to open data publication (see area IV recommendation #2 below).

DETAILED RECOMMENDATIONS FOR AREA III

Increase data use by MoH

While leveraging the availability of raw and aggregated data is critical, it is as important to ensure that those data are used for governance, decision-making, and policy-making. We have identified the following potential areas of intervention in that area:

1 **Advocacy for data-driven approaches**. Given the low level of leadership in relation to the use of data in governance, it is important to demonstrate the impact of such approaches. Successful approaches include three elements:

   a The development of a portfolio of documented success stories at national, regional, and international levels. The objective is to compile and make available for advocacy purpose a series of concrete practical examples from countries across the continent demonstrating how data approaches in health generates social and economic impact such as e.g., detecting quickly disease outbreaks or improving budget allocation for better health outcomes.

b The organization of change management training to demonstrate the potential of data approach and the way to transform organizations toward putting the use of data at the DNA of the governance processes. This should include the importance of M&E and the use of M&E data in governance.
c The organization of regional and/or international visits to selected countries to show Lesotho officials the potential of these approaches implemented in the selected countries.

2 **Set up a data analysis team**: The improvement of existing information systems, the adoption and instantiation of an M&E framework, and the mainstreaming of the health statistics production will make a large set of data and information available at the MoH level. With an appropriately skilled team, these data resources can be transformed in actionable insights to improve health outcomes. Part of the tasks of this team will include the design and maintenance of a MoH-wide data inventory. It is expected that in the time-frame of the compact, this team will demonstrate its value and its importance so that it is absorbed by MoH budget at the end of compact intervention. A mixed model of sustainability could also be based on hosting on a regular basis data science fellows from successive cohorts.

The setup of the team, its training, mentorship and support and the integration of data science fellows will require the implementation of the ICT and data innovation hub (recommendation #2 in the national ecosystem recommendations section) that will provide the necessary expertise and manage the data science fellowship program. In the same way, given the budget constraints, this team will likely be limited in size (2 to 4 people) and should be reinforced by external experts that could mobilize external funding to support these activities. These experts and external funding will be more easily provided/mobilized by the ICT and Data science hub (see national data ecosystem recommendation #2).

3 **Integration of datasets from other ministries**. While interconnection between health systems is essential, such improved data flows across government agencies will also enhance performance and service delivery. MoH cannot take decisions based on health data alone; decisions need to consider data from other sectors. It is therefore essential that the data analytics team can access and use data from different ministries when the need arises. Flexible, responsive data sharing processes between sectors and between ministries require an enabling policy that defines a framework for data sharing, and the requirements that each MDA would have to implement to ease interoperability (see in recommendation #5 in the national data ecosystem recommendations section).

Improving the health data system:

1 all existing systems are linked together, made interoperable and leverage the civil register;
2 more data is made available and used by all public health actors from Village Health Workers to the Ministry of Health. This will require all staff to have the appropriate capacities to collect and use these data to execute their daily responsibilities;
3 more data is made available and used by non-governmental health actors for the emergence of innovative products and services;
4 more gender data is made available and used to inform and adapt interventions, characterize GBV issues and address them efficiently.

4 **Implement a sustainable health data inventory**. In order to ease the interconnection of various data systems, identify potential synergies, and ease data management and use, it would be critical to put in place a sustainable health data inventory. The aim is not to conduct a one-time data audit, but instead to support the setup of a data inventory tool, and the development of capacities and processes to keep the health data inventory up to date. This task should be one of the duties of the proposed data analysis team.

5 **Design and implement a capacity development master plan**. The interconnection and interoperability of various data systems to make a robust and sustainable health data platform would provide added value if the various actors from VHWs up to MoH central level staff have the capacities to interact with the systems and:

a Contribute to the update of information
b Are able to access and use data to increase their performance or to ease their tasks. This second element is a critical incentive to see the first element being implemented.
c It is therefore critical to design and implement a capacity development master plan. This activity will consist of:

i Mapping all the actors from VHW up to MoH office, as well as non-health actors such as village chiefs, community councils

and/or district councils that are involved in health data management.

ii For each actor, identifying the data-collection tasks and data needs (the information systems and the data the actor needs to interact with), and corresponding skills that need to be developed. For example, for VHWs this would include data collection using ICT tools, collection of sensitive health data, etc.

iii Identify tools that could support tasks (data portals, data quality checking tools, data playbooks or operational manuals, etc.).

The capacity development master plan will summarize all these elements and will define a global framework and prioritization tool for capacity building at the local, district and national level. This activity will not only identify skills gaps and needs but will also identify other tools that need to be put in place (data portals, data validation tools etc.).

DETAILED RECOMMENDATIONS FOR AREA IV

Increase data access and use by health partners

We have identified four potential areas of intervention to improve health service delivery by MoH partners.

1 **Increase access to MoH data by partners**. Several non-governmental actors are contributing to public health services, and in that regards are already collecting massive health data and input it in MoH systems such as E-register and/or dhis2. Depending on the partners, some of them (e.g., formal partners such as CHAL) are able to access part of these data. Some others like NGO have extremely limited access. Others, such as those in the private sector have no access to it. It would be essential to improve this situation and ease data access by partners who need it. Some of these accesses would be solved through the publication of open health data (see next

A woman carrying a bundle of branches in the Lesotho highlands.
Photo by Simon Allen | Pixabay

bullet). But some partners will need to access systems and non-anonymized data directly. A general framework for data sharing and access by health partners should be designed and offer homogeneous opportunities to those who are already massively contributing to the existing systems. Designing and signing data sharing agreements is a global issue that is presented in detail in recommendation #5 in the national data ecosystem recommendations section.

2 **Opening and publication of health data**. Health information systems, health statistics and other data sources (such as M&E indicators) are essential information that could support non-governmental actors' activities, and improve and increase health care and health service delivery by these actors. Leveraging open access to this information could transform the way these actors work and will enable them, and new actors, to increase their impact. The opening of government data will require several elements to be in place:

   a **Legal context.** Open data initiatives rely on two main pillars:
      i Access to information legislation to provide a legal basis and the requirement for MDAs to publish data. Such legislation is being developed by the National Reform Authority (NRA) and should be passed by mid-2022. However, given the history of the weak implementation of existing legislation and policies, it would be important to support the set-up of an oversight body as proposed in recommendation #4 in the national data ecosystem recommendations section.
      ii Personal data protection legislation to define a framework for data anonymization. Such legislation exists (Data Protection Act) but has not been implemented to-date. This is a pre-requisite before implementing any open data activities (see recommendation #3 in the national data ecosystem recommendations section).

   b **Skills**. Staff that manage data need capacities to prepare data (structuring it in a machine-readable format and documenting it), to publish it on an open data portal (such as, e.g., the Lesotho section of the AfDB data portal managed by BoS), and to maintain it (reply to comments and requests, correct reported errors and publish updated versions when required). It will also be essential to develop technical capacities on data anonymization. A capacity plan could be supported by the ICT and data innovation hub (see recommendation #2 of national data ecosystem recommendations).

3 **Support innovation on health data**. Making data available is a first step towards supporting non-governmental health actors, but other activities are required, from developing data capacities to supporting innovation and startups through initial funding and support. Based on experience in other African countries, such support will lead to the emergence of new innovative health services for the Basotho people at the community level. The implementation of this recommendation requires the implementation of the ICT and data innovation hub that will manage events, mobilize funding, organize challenges, and support innovators.

4 **Citizen report cards integrated in feedback loops**. Apart from public health information, data systems should also collect citizens' feedback on experiences of service delivery and other government operations. Data can be codified in a citizen report card and integrated into a feedback system so that government agencies have community-driven data on performance available to them, and become more transparent in terms of the quality-of-service delivery. Note that the Government of Lesotho together with the World Bank has recently announced the piloting of a cross-governmental platform for citizen feedback. Health is one of the pilot sectors, transport being the second. It will be important to evaluate this initiative and measure the extent to which it is impactful before engaging in complementary work.

DETAILED RECOMMENDATIONS FOR AREA V

Improve gender-data practices

We have identified six potentials areas of intervention to improve gender-data practices:

1 **Conduct a gender audit:** MoH should conduct in collaboration with the Ministry of Gender a gender audit. The Ministry of Gender is currently trying to conduct gender audits across the Government of Lesotho (GoL) MDAs as part of their 2030 mandate and it serves as a first step in identifying major gaps and supporting improvements. These improvements include data collection practices that can inform issues related to administration processes (e.g., gender pay gaps within health care workforce) and public services (e.g., clarify GBV data protocols). The current process incorporates an independent consultant to work with a respective ministry, but this can result in one-off recommendations that are not maintained or efficiently integrated. Having a Compact partner directly support these processes in an engaging way can help ensure there is continued engagement and continuity between activities.

2 **Standardize GBV reporting procedures** to include specific categories that are inclusive of the many different types of violence. Currently most facilities indicate domestic violence as

"trauma" which is clustered with other non-GBV related health issues. Support the separation of safe and timely response to the physical and psychosocial health needs of GBV survivors from legal reporting systems that are limited by the lack of criminalization of IPV specifically; law enforcement referrals must be secondary to health system response to avoid re-traumatizing survivors.

3 **Increase the number male VHWs** to better identify and manage sensitive health issues. Currently, over 90% of VHW volunteers are female, representing a massive shortage in male volunteers supporting clinical outreach and procedures. Because of the strong cultural stigma of men not being open to be seen by a female, there is a strong dis-incentive among men to come to the clinic to report issues and have procedures conducted. This poses the most significant impact in procedures and medications related to the reduction of the HIV and TB epidemics and was also documented during circumcision drives which help reduce the transmission of HIV. Many CSOs have clear awareness of this issue and adapted practices to accommodate this cultural norm, but government ministries have not widely identified this as an issue in their processes. The major challenge will be linked to increasing the attractiveness of the position. This could be potentially achieved by creating specific incentives in terms of social visibility or a robust fully implemented stipend scheme.

4 **Train VHW and healthcare administrators on the collection of sensitive health data** such as GBV and strive to ensure gender balanced enumerators. Research initiatives on topics like domestic violence are frequently conducted by a predominantly male research team to collect data in field visits, without awareness of the cultural stigmas and risks to a married woman sharing such information with another man near her home. Standard practices on these processes are essential to ensure sensitive issues are not under-reported.

5 **Collaborate with UNICEF on its work to develop child protection indicators** for Lesotho to ensure MoH data collection requirements and capacity building on GBV and harmful traditional practices are brought into alignment. With adequate support, VHWs can play an important role in child protection systems, particularly for adolescent girls subject to child marriage and early pregnancies.

6 **Convene regular discussions between MoH and non-GoL actors** that showcase recent research initiatives and identify common issues with the purpose of developing active collaboration and data sharing practices to address those issues**.** Non-GoL actors regularly collect and share gender data on common issues relevant to MoH to incorporate into their research and decision-making process. Many CSOs and NGOs have more efficient data collection processes than the ones currently available within government ministries with a heightened awareness of cultural stigmas and biases that exist. Fostering collaboration between these actors can address immediate needs while GoL ministries improve their own data collection practices.

A public health nurse (left) and a village health worker coordinator (right) make a home visit in Mohale's Hoek.
Photo by Cecile Joan Avila, Partners in Health

Recommendations for Improving Capital Investment (ICI)

In Lesotho, private entrepreneurs unaffiliated with the government face obstacles to job creating investments, because of insufficient provision of public goods, especially critical infrastructure and services, political interference, a weak policy environment, and institutionalized gender discrimination. The objective of MCC's Improving Capital Investment project is to enable and incentivize the Government of Lesotho to create and sustain a transparent enabling environment to support equitable private sector investment and growth of higher wage jobs and incomes and provide equal opportunity to women and men of all economic classes.

Key to the success of the above strategy in ameliorating the effects of the binding constraint on Lesotho's private sector and entrepreneurs will be the collection, accessibility and use of relevant and reliable data by all stakeholders (private and public). Data will contribute in at least two ways: (1) data can support different actors in decision making from investment to production to trade of agriculture commodities; (2) data provides the ability to measure, monitor and evaluate actual gains made in overcoming the binding constraint.

Based on the findings of the study, we identified four main areas of intervention that could support ICI (each of these is explained in greater detail below):

1. **Improvement of current systems and interoperability.** The Ministry of Agriculture and Food Security (MoAFS) has a number of critical information systems that already exist or are being rolled-out. Some of these systems could be improved and/or enhanced through their connection with other existing information systems available at the Government level.
2. **Increase of available data.** While some critical information systems and datasets are already available or being rolled-out, there are still some critical gaps to support ICI in particular with regard to irrigation and water resources, with regard to support trades and access to market, and with regard to national agriculture statistics.
3. **Increase of data use by MoAFS.** The availability and sustainability of existing or future information systems largely depends on their usefulness for GoL and for MoAFS in particular. It is therefore critical to see greater use of data for decision making, policy making, planning, and monitoring and evaluation.
4. **Support of entrepreneurs in the agriculture sector.** The focus of the ICI component is to support entrepreneurs in setting-up and developing their businesses. A key element of the success relies on their abilities to access, interpret and use key data for production and trade to make informed decisions.

DETAILED RECOMMENDATIONS FOR AREA I

Improve systems and interoperability

In terms of improving current systems, the core information system for MoAFS is LIAMIS that has important potential to support numerous activities from subsidiaries schemes to planning and policy making. However, this system could provide better services and greater overall agriculture information if the following steps are completed:

1. **Integration with NICR civil registry.** LIAMIS aims to host information about all Basotho farmers and has therefore the potential to be a central tool for all agriculture actors. However, the lack of interconnection with the civil registry is a missed opportunity. This interconnection could greatly reduce the current effort expended to collect data for LIAMIS and could ease the tracking of farmers. It could also support services such as traceability at the national level.
2. **Interconnection between the Land Administration Authority (LAA) and the Ministry of Local Government and Chieftainship Affairs (MLGCA)[2] land database.** In the same way, as part of the information about farms and farmers include identifying fields, it would be essential to connect the LAA/MLGCA land database to LIAMIS. Such a connection will reduce data collection and e.g., ensure that farmers have the right land title.
3. **Integration of LAA/MLGCA land database with soil database and land coverage database.** MoAFS has developed a number of databases in recent years, in particular a soil database and a land coverage database that provide critical information for agriculture activities. These databases are not integrated with the LAA/MLGCA land database. The interconnection of the two will enable the identification of soil information for each plot number and will support appropriate interventions.
4. **Country-wide scale-up of LIAMIS.** The current FAO funding covers the design of the LIAMIS system and its validation in two districts. Given the importance of the information and given that MCC compact timelines would fit with the scale-up timeline, MCC may want to consider supporting this activity. Note that the connection with NICR should be implemented before the scale-up to ensure that staff will get the right training on data collection.
5. **Improve data security**. Given the increasing importance of LIAMIS for agriculture and the set of recommendations above, it is absolutely critical to ensure that data is safely stored and could be easily restored in case of disaster. Even if the LIAMIS hosting arrangement has not been finalized, it seems natural and it should be recommended that it is hosted on the national data center with MCST support. If this solution is selected, the implementation of recommendation #6 of the national data ecosystem recommendations section related to improving data security would be critical.

DETAILED RECOMMENDATIONS FOR AREA II

Increase data availability

While LIAMIS is a core element in terms of data assets for all agriculture actors, a number of other data elements will be critical to support entrepreneurs:

1. **MoW information systems**: While MoAFS has invested in a number of data and information systems, investment of MoW are relatively weak. There used to be a water resource information system that is no longer functioning. In the same way, while water permits should be publicly disclosed, this information is not published due to lack of a proper publication and permit management system. Having reliable information about water resources, water permits, and other related information is critical for the future irrigation investment and to support entrepreneurs in the domain. It is also an essential stage for greater transparency of water usage.

2 The database is administratively hosted and under the authority of MLGCA, but information about land leases is managed by LAA.

2 **Irrigation infrastructure.** The study could not identify any information system that would host information about irrigation infrastructure. This will be a core element to support the ICI project and to help entrepreneurs identify opportunities and investments.

3 **Market price information system.** MoAFS is putting massive effort to support production and agriculture output. LIAMIS modules are almost exclusively focusing on that aspect. This is partly due to the fact that MoAFS has only recently received the mandate to cover marketing (previously under the Ministry of Small Businesses). In that area, one core element is a market prices information system that can provide critical information to producers for trading decisions. Such an information system is also an essential element for food security. We therefore recommend funding the design and deployment of such a system, leveraging existing activities (data collection, equipment, training) implemented as part of the LIAMIS project.

4 **Agriculture statistics.** Agriculture statistics are essential to monitor the status and the evolution of the agriculture sector in a country. Agriculture statistics are critical tools for a number of stakeholders in the country such as MoAFS to drive its strategy, MDP to monitor SDG, as well as private sector organizations, NGOs, and donors. These official statistics are largely missing in Lesotho. A robust plan (SPARS - Strategic Plan for Agricultural and Rural Statistics) has been designed in cooperation with BoS but there are no plans for implementation. This recommendation will require the strengthening of MoAFS planning office capacities and tools. It will also require strengthening of BoS capacities and tools as presented in National Data Ecosystems recommendations section (recommendation #1).

5 **Develop an integrated data-supported M&E system and dashboard**. An integrated, national M&E system with clear targets and measurement of progress is essential to prioritize intervention, budget, and action both at MoAFS level and at the government level. With a national M&E policy in the offing, it will become important for MoAFS to adopt an integrated M&E framework, implement it, maintain it and use it for budgeting and prioritization. This framework should also support other stakeholders and be integrated in the country M&E framework. This recommendation will require the national data ecosystem recommendation #8 (support of the implementation of the National M&E policy) to be implemented and will serve as a demonstrator.

6 **Access to raw farmer-data.** The availability and use of raw disaggregated data at farmer level in LIAMIS, is a gold mine to answer key policy or research questions, or to detect specific trend (new disease outbreak, production loss, under-performance of yields, etc.). It would be important to make datasets available from LIAMIS to enable such analysis and research. This could be achieved through the setup of API or through extraction and publication of datasets. This activity should be developed together with the recommendation related to open data publication (see area IV recommendation #2 below).

DETAILED RECOMMENDATIONS FOR AREA III

Increase data use by MoAFS

While leveraging the availability of reliable up-to-date data is critical, it is as important to ensure that those data are used for governance, decision making, and policy making. We have identified the following potential areas of intervention in that area:

1 **Advocacy for data approaches.** Given the low level of leadership in relation to the use of data in governance, it is important to demonstrate the impact of such approaches. Successful approaches include three elements:

   a The development of a portfolio of documented success stories at national, regional, and international levels. The objective is to compile and make available for advocacy purpose a series of concrete practical examples from countries across the continent demonstrating how data approaches in agriculture generates social and economic impact such as e.g., increasing small-holder revenues or yields, or helping public authorities design efficient subsidy programs.

   b The organization of change management training to demonstrate the potential of data approaches and the way to transform organizations toward putting the use of data at the center of the governance processes. This should include the importance of M&E and the use of M&E data in governance.

   c The organization of regional and/or international visits to selected countries to show Lesotho officials the potential of these approaches implemented in the selected countries.

2 **Set-up a data analysis team.** The improvement of existing information systems, the adoption and instantiation of an M&E framework, and the mainstreaming of the agriculture statistics production will make a large set of data and information available at the MoAFS level. With an appropriately skilled team, these data resources can be transformed in actionable insights to improve agriculture outcomes. Part of the tasks of this team will include the design and maintenance of a MoAFS-wide data inventory. It is expected that in the time-frame of the compact, this team will demonstrate its

value and its importance so that it is absorbed by MoAFS budget at the end of compact intervention. A mixed model of sustainability could also be based on hosting on regular basis data science fellows from successive cohorts and/or provide data analytics services outside governments (see e.g., the example of Ethiopia Agricultural Transformation Agency's data analytics team[3]). The team will benefit from linking to and benefiting from a number of existing international initiatives such as Digital Earth Africa[4] or CGIAR big data in agriculture platform and its component on gender data in Agriculture.[5]

The set-up of the team, its training, mentorship and support, and the integration of data science fellows will require the implementation of the ICT and data innovation hub (recommendation #2 in the national ecosystem recommendations section) that will provide the necessary expertise and manage the data science fellowship program. In the same way, given the budget constraints, this team will likely be limited in size (2 to 4 people) and should be reinforced by external experts that could mobilize external funding to support these activities. These experts and external funding will be more easily provided/mobilized by the ICT and Data science hub.

3 In order to ease the interconnection of various data systems, identify potential synergies, and ease data management and use, it would be critical to **put in place a sustainable data inventory both at the MoAFS and Ministry of Water (MoW)**. The aim is not to conduct a one-time data audit, but instead to support the setup of a data inventory tool, and the development of capacities and processes to keep the agriculture and water data inventory up to date. This task should be one of the duties of the proposed data analysis team (see below).

4 **Integration of datasets from other ministries.** While interconnection between agriculture and water systems is essential, such improved data flows across government agencies will also enhance performance and service delivery. Indeed, nowadays, it is not possible for MoAFS to take decisions only based on agriculture data, but public policies, and decisions need to consider other sector information such as population, economic situation, etc. It is therefore essential that data analytic team can access and use data from different ministries when a need occurs for a specific research or case. Such a flexible data sharing process between sectors and between ministries on demand requires an enabling policy that defines a framework for data sharing, and requirements that each MDA would have to implement to ease interoperability between data. This is presented in more detail in recommendation #5 in the national data ecosystem recommendations section.

Improving the horticulture data system:

1. existing systems such as the LIAMIS, land coverage and soil databases are connected, and linked with the national civil registry and the land registration databases;
2. more data is collected digitally, made available and used by all actors in the agriculture sector, from resource centers to the Ministry of Agriculture and Food Security staff, and also entrepreneurs. This will require that all actors have the appropriate capacities and skills to collect and use data to create value.

5 **Design and implement a capacity development master plan.** The completion of LIAMIS and its integration with other data systems will make a robust and sustainable agriculture data platform. However, such a platform would have value only if the various MOAFS staff from data collectors at the sub resource center level up to the Maseru Ministry Office level have the capacities to interact with the systems and:

- a contribute to the update of information.
- b are able to access and use data to improve their performance or to ease their tasks. These are critical incentives on which the implementation of (a) depends.
- c design and implement a capacity development master plan. This activity will consist of:
  - i mapping all the actors from sub resource center staff up to MoAFS office, as well as non-MoAFS actors such as village chiefs, community council or district council that are involved in water/land/agriculture data management (collection, use…)
  - ii for each actor, identifying the data-collection tasks and data needs (the information systems and data the actor needs to interact with), and corresponding skills that need to be developed, e.g., for sub-agricultural resource center staff this would include data collection using ICT tools, etc.
  - iii identify tools that could support tasks (data portals, data quality checking tools, data playbooks or operational manuals, etc.).

3 http://www.ata.gov.et/analytics/
4 https://www.digitalearthafrica.org/
5 https://bigdata.cgiar.org/big-data-on-gender/

Saplings growing in a tunnel on the largest apple farm in Lesotho.
Photo by Lehlohonolo Chefa

The capacity development master plan will summarize all these elements and will define a global framework and prioritization tool for capacity building at the local, district and national level. This activity will not only identify skills gaps and needs but will also identify other tools that need to be put in place (data portals, data validation tools etc.).

DETAILED RECOMMENDATIONS FOR AREA IV

Support entrepreneurs in the agriculture sector

The focus of the ICI component is to support entrepreneurs in setting-up and developing their businesses. A key element of the success relies on their abilities to access, interpret and use key data for production and trade to make informed decisions. We have identified two potentials areas of intervention in that area:

1 **Increase access to LIAMIS data by partners.** LIAMIS and in particular the national farmer registry has a strong potential to support non-governmental actors such as cooperatives, farmer organizations, agri-businesses or traders. These actors would benefit from accessing LIAMIS and non-anonymized data directly. A general framework for data sharing and access by these actors should be designed and offer homogeneous opportunities to all of them. Designing and signing data sharing agreements is a global issue that is presented in detail in recommendation #5 in the national data ecosystem recommendations section.

2 **Opening and publication of agriculture, water resources, irrigation and water permits data**: LIAMIS Information system, agriculture statistics and other data sources such as soil information, commodity prices information, M&E indicators are essential information that could support entrepreneurs and improve and increase the viability of their businesses or their investments. Leveraging open access to this information would transform the way these actors work, and will enable them, and new actors, to increase their impact. The opening of government data will require several elements:

a **Legal context.** Open data initiatives rely on two main pillars: 1) Access to information legislation to provide a legal basis and the requirement for MDAs to publish data. Such legislation is being developed by the National Reform Authority (NRA) and

should be passed in the next 12 months. However, given the history of weak implementation of existing legislation and policies, it would be important to support the set-up of an oversight body as proposed in recommendation #4 in the national data ecosystem recommendations section.
2) Personal data protection legislation to define a framework for data anonymization. Such legislation exists (Data Protection Act) but has been weakly implemented to-date. This is a prerequisite before implementing any open data activities (see recommendation #3 in the national data ecosystem recommendations section).

b **Skills**. Staff that manage data, need capacities to prepare data (structuring it in a machine-readable format and documenting it), publish it on an open data portal (such as e.g., the Lesotho section of the AfDB data portal managed by BoS), and maintain it (respond to comments and requests, correct reported errors, and publish updated versions when required). It will also be essential to develop technical capacities on data anonymization. A capacity plan could be supported by the ICT and data innovation hub (recommendation #2 of national data ecosystem recommendations).

3 **Support of innovation on agriculture data.** Making data available is a first step towards supporting entrepreneurs, but other activities are required from developing data capacities to supporting innovation and startups through initial funding and support. Based on experience in other African countries, such support will lead to the emergence of new innovative agriculture services for different actors of the sector (producers, traders, input providers, irrigation providers etc.) The implementation of this recommendation requires the implementation of the ICT and data innovation hub that will manage events, mobilize funding, organize challenges, and support innovators.

4 **Develop a network of entrepreneurs in the agriculture sector and develop data capacities among them.** Promoting and leveraging innovation on data is important to support the emergence of new services. However, the potential of data goes beyond these innovative services. Entrepreneurs in the agriculture sector need to be aware of available data and need to have the capacities to exploit them to make informed decisions for their businesses. We therefore recommend the development of a network of entrepreneurs so that they can support each other, and the development of data capacities. Such network should leverage the existing network of young entrepreneurs that already exists as identified in the Agribusiness Commercial Legal and Institutional Reform Assessment. It might also be relevant and useful to create a women network of agri-entrepreneurs that would ease women exchanges and support.

The implementation of this recommendation requires the implementation of the ICT and data innovation hub that will support the development of the network and develop and deliver training in targeted districts.

Recommendations for improving the National Data Ecosystem

The implementation of the recommendations proposed for HSS and ICI components and their effectiveness to generate sustainable impact also require action at the national system level. We have identified the following areas of intervention:

1 **Strengthen BoS.** The BoS is at the heart of Lesotho's statistical system and a critical actor in terms of production and dissemination of health and agriculture statistics. In that regard, it needs to be strengthened along different dimensions:

a *Organizational setup*: One of the main challenges of BoS relates to its position as a government department. This position gives BoS a limited political weight while interacting with other ministries. The following is recommended:

i support the transition of BoS to an autonomous agency. BoS should become an independent autonomous agency following the model of the Lesotho Revenue Authority or the CBL, so that it can generate its own revenue and provide services to non-governmental stakeholders (e.g. donors, private sectors, etc.) for the benefit of the whole statistical system in terms of funding and in terms of availability of data. The setup of BoS as an autonomous agency will include setting up a board that will drive BoS roadmap and make it independent of potential ministerial interference.

ii include a new decentralization approach in the new organizational structure. While BoS is in the process of installing offices in all districts, these BoS district offices focus exclusively on the coordination of data collection. It would be important to expand the scope and role of these offices to act as real district statistical offices informing and supporting district councils with statistics that support decision-making.

b *Legal context*: The statistical law is out-of-date with regards to new legislation such as the Data Protection Act. With the future adoption of the new NSDS, it would be

essential to support the redesign of a new statistical law that will integrate some of the elements included in the data dissemination policy, some elements of the new NSDS, and elements to support open data. This is critical to support HSS and ICI recommendations.

c *Infrastructure*: BoS needs a better infrastructure to support its activities and tasks. In particular, we recommend:

  i equipping BoS with the right set of tools for data collection, storage and analysis (e.g. digital data collection tools, software, computers).
  ii supporting the development of a data sharing platform for all Government data:
    1 include an open data portal
    2 integrate a formal request procedure
    3 integrate user feedback loop
    4 conduct, store and make available basic data audits at all MDA level[6] (a deeper data inventory at MoH and Agriculture will be conducted by the relevant data analysis teams in these ministries).
  iii Automate data publication as well as the generation and publication of reports.
  iv *Skills*: BoS needs capacity development particularly in the areas of data science and data publication. Such capacity development should cover national and district levels. A capacity master plan identifying BoS staff, activities and required skills in the production of statistics at the national and district level should be developed.

The proposed investment will lead to a reduction of the survey costs[7] and a reduction of the report publication effort that will create a case for ICT system maintenance budget and long-term sustainability.

2 **Implementation of an ICT and data innovation hub.** The lack of an ICT innovation center has contributed to Lesotho missing out on the ICT revolution taking place in many African countries. It is essential to have such a tool to support innovation. This diagnosis is well established in NSDP II but not implemented. It would be important to expand the scope of ICT innovation hubs to include data innovation to develop professional capacities, train fellows, and promote, support and develop impact of public government data that will be made available. It is also important that the hub be government-independent in order to support all actors of the ecosystem. The main functions of the hub will be:

a *Setup of a community space* to leverage interaction between actors at NUL with potentially a network of smaller spaces in Maseru and at the subnational level
b *Support of innovators through an innovation program, selected competitions, and incubation processes.* Such program aims to address the weakness of ICT entrepreneurship and innovation in Lesotho that is a missed opportunity in terms of social and economic impact observed all over the continent.
c *Development of a data fellowship program:* A data fellowship program is an important tool for two purposes: 1) it is a mean for people who get trained on data science to complement the theoretical skills with hands-on expertise in real life. Through the program and placement in professional settings, the fellows will grow their skills, their employability, and their references; 2) At the same time, the use of fellows for organizations is a way to experiment the value of data science application at low cost. For public agencies, it may also be a way to sustain in the longer term the setup the operation of a data analytics team that could be composed of a number of fellows that rotate as new cohort are trained.
d *Develop a data science capacity building program.*
e *Develop a M&E advanced program* that focus on the use of data science and innovative approach to M&E.
f *Develop an awareness raising program for government and non-governmental actors.*
g *Develop a consulting and research function to support governmental and non-governmental data projects and needs.*

Given the current activities at NUL, it is recommended that the hub is implemented in partnership with the university as part of its innovation activities.

3 **Support the implementation of the Data Protection Act**: The weak implementation of the Data Protection Act, and the absence of a Data Protection Commission, as established by the Act, creates a vacuum in the management of personal data protection, impacting initiatives related to publication of government data, and, more globally, the collection and use of data in the country. The study highlights the fact that staff at all levels are not sensitive to personal data protection or to appropriate behavior with regards to protection of privacy. The recommendation is to support MoHA in the implementation of the Data Protection Act and in particular:

a *Install and institutionalize the Data Protection Commission.*
b *Support the Data Protection Commission by*:
  i support the development of staff capacity,
  ii support the setup of systems and forms for declaration,

6 Note that this recommendation complements recommendation #2 in HSS "Improvement of current systems and data flows" section that recommend the setup of a detailed data inventory tool. BoS should maintain a statistics data audit for all MDA, and each MDA a detailed data inventory.

7 The use of digital tools reduces the costs of survey by eliminating paper costs, and paper digitization process.

iii support operational processes.

c *Develop advocacy material for both public and non-governmental actors.*

d *Deploy advocacy and awareness raising campaigns for both public and non-governmental actors.*

Note that MoHA is apparently currently discussing with the International Organization for Migration to receive support for the implementation of the Data Protection Act. The output of this support, if it materializes, will have to be reviewed at the time of the launch of the compact.

4 **Support Lesotho's Membership to the Open Government Partnership (OGP).** The current approach to reform, with the setup of the NRA and the multi-stakeholder approach is acknowledged by all actors. However, while the mission of the NRA is clear in terms of legislation to be passed, the future remains uncertain. Given the recurrent challenges in Lesotho related to the implementation of legislation, it is critical for the effectiveness of future interventions like access to information to have an oversight body in place. Lesotho will be eligible to join OGP after passing access to information legislation. By joining OGP, Lesotho will not only have access to international funding to implement its commitments, but the OGP multi-stakeholder national committee would be a natural oversight body. Finally, this membership will also give international visibility to Lesotho. This can be achieved through the following activities:

a *Socialize the opportunity to join OGP and support the process*. There is no knowledge or discussion around open governance or OGP as such, but given the multi-stakeholder approach, popularizing the idea could be advantageous.

b *Support the development of a National Action Plan that will integrate commitments on open data, horticulture, and health.*

5 **Develop an e-government framework and policy.** The design of coherent homogeneous e-government services requires an e-government policy to guide implementation and ease data sharing between sectors and MDAs. Such e-government policy should at least cover the following topics:

a **Data sharing and publication**. The policy should provide a general framework to ease data sharing between MDAs and with non-governmental partners. This should include raw non-anonymized data. The policy should also include a framework for open data publication.

b **Interconnection with the civil registry.** The integration and connection of the civil registry into different health and agriculture information systems is a critical element to increase the power, the interoperability, the usefulness and therefore the impact of these systems, but also more generally of all government information systems that require personal identification.

c **Development, integration and use of national data registers**. The e-government framework should go beyond only the integration of the civil registry, and should include the design, development and use of data registers that ease the interoperability and the mash-up of datasets from different sectors. Usual national data registers include an address database, a reference geographical name, or a database of company unique identifier. All these elements will have to be included in the national e-government interoperability guidelines.

6 **Improve data security.** MCST has a government-wide mandate to provide hosting for all ministries. This mandate is well implemented, and most ministries host all their information systems on MCST data center. However, given the critical importance of this data center, it is essential, from a policy and technical perspectives, that data integrity and security is insured through the setup of appropriate procedures (disaster recovery, off-site backups, security audits, physical protection, etc.). In particular, the recommendation is to support the following activities:

d *Develop of a data security policy that will define rules and requirements for data security, including backup and security audits; and*

e *Develop, validate, and adopt a disaster recovery procedure for the data center.*

7 **Development of a formal data science curriculum and diploma at NUL**: While in the short term the setup of a professional development program on data science by the ICT and data innovation hub will address the needs and enable the implementation of teams of data experts, it will also be important to target the longer-term formal introduction of relevant curricula to enable Lesotho to train its future data science experts, given the importance of these skills. Graduate pathways into the public sector should also be considered along with incentives for retaining scarce skills. This recommendation could be implemented through the ICT and Data innovation hub as a natural follow-up activity.

8 **Convene a gender working group** of MDAs across sectors to share insights and best practices to standardize gender-data collection and use. Gender-data can identify cross-sector issues and foster consistent collection, and sharing practices of gender-data between ministries can strengthen programming processes. The Ministries of Agriculture and Education, for example, have already completed Gender Audits with the MoGYSR and would have valuable insights on what they learned from the process and how they

are implementing certain recommendations. Building bridges of communication through a mechanism like an MDA working group can foster meaningful collaboration.

9 **Support the implementation of the National M&E Policy:** GoL has been developing a National M&E Policy and will finalize it in 2021. BoS and MDP have been strong supporters of this M&E initiative and MDAs should also commit to the effective implementation and execution of the policy. This will require the political commitment among leadership within the MDAs as well as budget allocations to recruit staff, expand on existing capacities, and invest in information systems and other M&E resources. Our assessment has identified the following areas for the effective implementation of M&E initiatives:

   a **Align and support policy implementation strategy.** The National M&E Policy will include an implementation strategy to define processes and systems, roles and responsibilities, data collection methodologies, reporting frequencies, and other components for the effective operationalization of the policy. DM&E, as the policy's implementing agency, should be strengthened to ensure planned activities are aligned with policy implementation.

   b **Data sharing policy**. The revision and implementation of the Data Sharing Policy is critical to facilitate the use of data across MDAs, private sector, and development partners, for M&E purposes. In particular, the policy should support the consolidation and interoperability of data across MDAs for more effective performance monitoring. This item should be implemented as part of both BoS and DM&E support.

   c **Big data and other innovative solutions**. In line with data sharing across MDAs, MDAs, BoS and DM&E should be trained on the use of potential big data solutions as relevant information sources for M&E

   d **Improve existing M&E staff capacities.** The implementation of the national M&E policy will require adequate capacities. Activities should include training courses, workshops, and other learning opportunities in M&E to improve staff capabilities within DM&E and the MDAs. To ensure the sustainability of capabilities built, a M&E Community of Practice could be established among MDA, the donor community, and local research and academic institutions to have periodic learning events and could be driven by the ICT & Data Innovation Hub.

   e **Redesign DM&E Mission.** DM&E main role today is to collect data from MDAs to measure progress on M&E indicators. Given the low level of support and the low capacities at MDA level, we recommend expanding the role of DM&E and include MDA support in the implementation of the M&E policy. This will include organizing activities such as advocacy campaign or capacities development. In relation with the ICT and Data innovation hub, this should include placement of data fellows to support these activities.

   f **Develop National M&E Policy integration campaigns.** The policy aims to give coherence to the whole M&E system across ministries. MoH, as well as other MDAs, have to realize M&E is related to their core work and integrating it in their project management responsibilities will improve their oversight of activities. It is therefore recommended to implement advocacy campaigns, communication efforts, and working groups with MDAs to accelerate this change management process. This could be included in the recommendation above as part of the DM&E new mission.

3 Main findings

This section is a summary of the main findings for each of the ten dimensions of the study. The details of the diagnostic as well as the methodology are available in the main document that provides greater information and background context related to the main findings below. Some of the dimensions benefited specific investigations that are presented in corresponding sections.

The diagram below presents an overview of the diagnostic. The evaluation of each dimension is color-coded: **GREEN** means there is clear evidence of readiness and no particular intervention are required to support the data ecosystem, **AMBER** means that some obstacles exist but the existence of favorable conditions would make short-term limited interventions impactful, and **RED** means there is evidence for significant obstacles that would require wider interventions with measurable impacts in the longer term.

3.1 Leadership

Strengths/Opportunities	Challenges
Since 2017, a new national reform program, based on a multi-stakeholder approach seems to be working and is acknowledged by all actors. The list of reforms includes key legislation such as access to information; increased transparency, accountability, and anti-corruption; and start-ups and infant enterprises.	The importance of statistics and M&E appearing in various development plans and strategies (Lesotho Vision 2020, NSDP I, NSDP II) have yet to translate into practice.
The future adoption of a national M&E policy will give legal support to MDP/DM&E.	The importance of data for governance or decision-making is low, and this is visible in many different aspects such as the budgeting processes; the absence of statistical units in MDAs; and the fact that most MDAs believe that data/statistics are not for internal consumption but the job of BoS.
The new data dissemination policy demonstrates that BoS understands the need for greater data sharing within and outside the government.	The major issue underlined by a number of interviewees is the instability of government. Awareness raising and data literacy programs take time and effort to bring leaders on board and these efforts are undermined each time a new government is put in place as they almost always change the head of administration in the MDAs.
There seems to be a positive relationship between the Government and non-governmental actors where e.g., some NGOs conduct tasks such as data collection for the Government.	BoS has limited autonomy and authority to play a leadership role in the data ecosystem

Summary

At the national government level, leadership is weak, particularly in terms of the role of data in governance and its use, and, more generally, when it comes to the implementation (of many, usually well-designed) policies. One of the core issues is the instability of government, particularly at PS level, and this results in data literacy programs and awareness-raising resulting in low sustained impact. Part of the issue also comes from donor-funded projects that rarely include change management training and engagement with administration leaders. While data leadership is inadequate government-wide, a number of champions are emerging at the ministry or agency level:

1 The new MDP minister understands the power of data approaches and is a champion and promoter of the development of the data ecosystem.
2 MoHA PS and the work of NICR on the citizen registry and e-id, making Lesotho a pioneer in this area, is acknowledged by international actors.
3 NRA and the multi-stakeholder approach to reform is acknowledged by all non-governmental actors.

At the non-governmental level, a wide variety of actors are active on the ground, including CSOs, media, NGOs and academics covering different areas such as transparency and accountability, open data, open budgeting, and access to information. In this landscape, NUL plays a central role in the academic sector but also in the innovation sector.

Finally, the new multi-stakeholder approach that started in 2017 led to the creation and launch of NRA. It envisages an ambitious reform program which appears to be working well and is acknowledged by all actors. This approach needs to be institutionalized, possibly by including a body not only in charge of reforms but also in charge of their oversight and implementation.

3.2 Legal and Policy Environment

Strengths/Opportunities	Challenges
A new data dissemination policy was published at the end of 2020	A number of critical laws and policies are missing, including: • Access to information • Data classification • E-government & IT (E-government policy; E-government technical architecture and framework; Interoperability framework) • Data security policy • Innovation • Innovation policy • Start-up legislation
A new National M&E Policy is being developed and will be finalized in 2021	A number of laws and policies exist but are yet to be implemented or enforced. In particular: • Science & technology policy • Personal data protection
NRA plans to pass access to information legislation in the next 12 months	The statistical law is not aligned with a number of other laws and should be updated
NRA plans to pass other key legislation such as laws related to start-ups and infant enterprises	

Summary

Lesotho is policy rich and implementation poor country. As a number of several interviewees confirmed, the design and publication of policies is often seen as the goal rather than as a means to an end. Implementation is a major issue. The best example is NSDP II that has yet to be implemented; instead, a parallel unlinked reform track, through NRA, is being implemented. In such a context, new policies (data dissemination, national M&E policy) have limited potential. The National M&E policy may have more impact when/if the National Planning Board is revived (as per the NRA road map) and a M&E officer hired and deployed under the authority of the NPB.

The root causes of such implementation failure are difficult to identify. It is likely due to organizational factors as well as the inadequate political weight of agencies and departments that have cross-governmental mandates (e.g., BoS, DM&E). One potential way to address this issue would be to expand the NRA's role and to give it an oversight and implementation role. Part of the issue might also be related to government staffing. Due to budget issues and recent increases in the salaries of civil servants, recruitment seems to be largely frozen. As a consequence, all public and governmental institutions we talked to have a large number of vacant positions, in some cases up to 50 or 60% of staff.

It is important to note that the implementation challenges are not only affecting policy implementation. The desk research identified a number of donor-funded projects that were announced and even often launched but that did not materialize in terms of activities or output.

3.3 Capacity

Strengths/Opportunities	Challenges
NUL has diploma in statistics offered by a dedicated department for statistics	There is little to no capacity on data science and analytics within government
	There are no professional training or formal education curriculum on data science
	BoS has limited skills to analyze existing data
	MDAs have limited skills across the whole data pipeline from collection to validation to management to exploitation to publication

Summary

While there are a number of statisticians in different MDAs and while NUL offers qualifications in statistics, there is a clear gap and a need for data science capabilities. This is underlined by all interviewees from donors to government actors to academics.

3.4 Infrastructure

Strengths/Opportunities	Challenges
Connectivity exists at all government offices down to the district level	MDAs and BoS have very limited infrastructure for reliable data collection, data storage and data analysis
Connectivity exists at all health facilities	There is not any policy or procedure related to data security. There is no disaster recovery procedure available and validated for the data center
A centralized data center is operated by MCST	Data collection equipment and statistical software are missing in many MDAs
Connectivity and cost of connectivity did not emerge as a barrier in any of the interviews (the only related challenge mentioned was the reliable supply electricity)	

Summary

Infrastructure does not appear to be a major issue among the actors we interviewed. MCST has a cross-governmental mandate for connectivity and hosting at their data center and this is well implemented. MCST data center may have space limitations, but this seems to be easily addressed when the need emerges. At a more micro level, agencies such as BoS require better tools and a stronger infrastructure in terms of computers, software, and information systems to perform their duties more efficiently in terms of data collection and data dissemination. However, this does not seem to be a major barrier.

3.5 E-Government

Strengths/Opportunities	Challenges
MCST has an inter-governmental mandate to manage the network and the data center. The setup seems to work well for all government agencies.	There is no e-government strategy and framework.
The NICR and population registries are strong: • They go far beyond a population registry and include data on plot/agri (livestock), etc. • Major opportunity as it is an area where Lesotho is ahead at the international level and there is a growing interest from the international community. • MoHA is a clear champion and has the right vision and understanding on the place of population registry as a cross-governmental service.	There is no technical framework for the design and deployment of e-government services (besides hosting).
MoH has a well-functioning health management system (including dhis2) and is currently rolling out an EMR (e-register) at all health facilities. MoH also has a professional laboratory information system.	NICR is not integrated as a core element of e-government services.
	A large number of e-government services on the government portal are not functioning anymore.
	Interoperability, besides the use of NICR registry, is inadequate between various MoH data systems.

Summary

The implementation of e-government services is limited. Major elements are missing such as an e-government policy, an e-government strategy, or an interoperability framework. While MCST has the mandate to support the development of e-government services, it focuses only on hosting and connectivity, and they are not yet able to support MDAs on the development of their e-services. Few services were developed through donor-funding by individual ministries but most of them were not sustainably maintained. More importantly, the civil registry is a core asset and a potential core building block to a number of critical e-services, but it has not been leveraged or integrated by any initiative we covered in this study. This is an opportunity to provide better e-services.

It is important to note that based on interviews, it appears that MoHA has the right vision for the civil registry and has implemented it to ease its integration in other services. However, other MDAs have yet to realize the potential of this service.

3.6 ICT Innovation

Strengths/Opportunities	Challenges
NUL has a holistic approach to innovation and a good understanding of the different phases as well as their respective constraints and requirements. One of the major weaknesses identified is funding for innovation, and in the absence of public support, NUL is currently focusing on providing a global funding mechanism.	There is no government innovation strategy.
Some limited but interesting initiatives such as Vodacom Innovation Park and Girl Coding Academy are active in focused areas.	There is no support for innovation in general and in ICT in particular. The 2006-2011 S&T policy has not been fully implemented (i.e., no creation of innovation fund).
Some co-working spaces and traditional incubation spaces are available.	The ICT innovation sector is under-developed and did not benefit from the ICT revolution happening in other countries.

Summary

Lesotho has missed the ICT revolution that happened in the last decade across the continent. The main reason is likely due to the lack of resources and infrastructure to support ICT innovation. There is no innovation hub and no dedicated ICT incubators. There is also no innovation funding or innovation incentives provided by the Government of Lesotho. The innovation support activities set out in the Science and Technology Policy 2006–2011 have not been implemented. In the same way, NSDP II makes an accurate diagnosis and proposes a series of activities that should help to address gaps, but these activities have yet to be initiated. Some specific activities such as the Girl Coding Academy and the Vodacom Innovation Park are still active but work at a very small scale. These initiatives plus few standalone service examples show that the potential exists but needs to be leveraged. The main player in the domain is NUL. It has in place a strategy support innovation. However, NUL does not have yet a specific ICT focus, and does not have the objective to structure the community.

3.7 Data Offer & Demand

Strengths/Opportunities	Challenges
Offer: • a number of essential databases and registers are in place with promising potential: NICR, e-register, dhis2, NISSA, soil (Lesis), farmers (LIAMIS), land coverage database, land ownership database, education (EMIS).	Each information system is developed with limited attention to interoperability and connections with other systems. At government level: • there is little demand for data and limited use in any core function; • where there is demand, there is very little data available; • available data is usually of low quality; • surveys and availability of data often depend on donor funding.
Demand: • an embryonic open data community exists and includes government representatives; • an embryonic investigative journalist community exists and is interested in getting more data and information for reporting. • a number of NGOs work in transparency and accountability, and others exist in specific sectors such as health and water. • The academic sector demands more data.	On non-governmental side: • data is hard to obtain from government agencies; • data is of low quality; • in some cases, NGOs run parallel data systems (e.g., dhis2) because accessing government data can be difficult and time-consuming.

Summary

Data offer and demand is blocked at the national level. MDAs do not sufficiently use data for governance or policymaking. At the same time, should they want to use data, they would find it difficult to access reliable and relevant data. The low demand for data is nurtured by insufficient supply and vice-versa. A number of critical information systems are in place and store critical data. Those sources of data have strong potential to inform program design and measurement, and to provide new services. This is particularly visible in health with dhis2 and the e-register, even if the latter would benefit from being interfaced with the civil registry. It is also visible in agriculture with the ongoing work on the design and deployment of LIAMIS (Lesotho Integrated Agriculture Management Information System) that holds promise for all actors from the agriculture sector, even if this system should be interfaced with the civil registry and with the land database. In this sector, other key databases are also available.

If data is hard to secure within the government, it is even harder for non-governmental actors to access. Access requires formal, written requests accompanied by detailed justifications for access, and permission is only granted by the highest level (e.g., BoS Director, PS level etc.). This is reinforced by the limited legal routes to access data. However, there is an interesting variety of actors, even if at an embryonic stage, that demand of data and that could generate success stories and impact if data offer is aligned with demand.

3.8 Gender Data Assessment

Gender data—that is, statistics that represent and can be disaggregated by sex—plays an important part in equitable development policymaking. Yet there are numerous reasons that gender data is insufficient, ignored, or not collected across different sectors, leading to decision making and investments that do not best serve women and girls.

This assessment has identified key challenges, power-dynamics, and dis-incentives, established through both cultural and institutional structures, that drive the inefficient collection and use of data to address gender issues in Lesotho.

Strengths/Opportunities	Challenges
An active environment of CSOs and NGOs have strong awareness of the gender issues that exist and collect data to reflect those issues.	Government laws and policies do not recognize specific gender-related issues like domestic violence and child marriage as gender-based violence.
Government ministries are aware that their gender-data practices are falling short of international standards and need significant improvements	Government officials have limited commitment to invest in consistent data collection and use practices
	Government officials at the national level have limited capacities to use data effectively to inform decisions
	Data management is inconsistent between ministries working on similar issues and formats are not easily accessible for machine readable disaggregation.
	Citizens have limited trust in government support services for sensitive issues like GBV or sexual and reproductive health.
	National offices do not consult district and local issues when developing support services packages for victims and patients.

Summary

Strong disincentives and complex power dynamics between government officials and agencies, healthcare workers and citizens exist which challenge the productive collection and use of gender data on health issues.

The public is wary of sharing data on sensitive topics like Gender Based Violence (GBV) and HIV/Aids because of limited trust and confidentiality in reporting systems and survivor services, as well as cultural stigmas associated with engaging in sensitive conversations with a person of the opposite sex.

Government officials have limited interest and commitment to fund data-related improvement or seek out independent research because they do not see its immediate benefit to decision-making processes. Ultimately, health data collected by most government actors is not informative or actionable to address gender issues, but meaningful improvements can be made. Lesotho is early in the development of its approach to address gender-based inequities, and stronger gender data practices can help navigate the challenging dynamics identified in this report.

Note that the analysis of the gender gaps has been developed through the development of a Gender Political and Economic Analysis (PEA). The full content of the Gender PEA is available in a separate project report.

3.9 Monitoring and Evaluation

Strengths/Opportunities	Challenges
GoL has received significant assistance from development partners in building M&E capacity	Assistance has been tied to specific activities and M&E work has been difficult to sustain after activity closeout. Line ministries do not have M&E personnel to track performance within the ministry.
NSDP progressing including alignment with SDG I and II indicators. National M&E Policy to be finalized in 2021.	Implementation challenges: GoL incentives to meet targets are low because ministries are not accountable for meeting development targets. DM&E can only analyze data to monitor progress and relies on GoL units to collect data. But ministries do not have staff to collect. Capacity constraints at the subnational levels in conducting M&E work.

Summary

Overall capacity with the GoL to conduct M&E remains limited due to structural constraints. Even with the finalization of the National M&E Policy, NSDP, and other M&E initiatives, challenges to the implementation of activities may remain. The DM&E (and the MDP) has limited has limited capacity to analyze data to track progress towards stated goals (e.g., the SDG II targets). The Department only receives data and has to rely on the line ministries to conduct data collection. But line ministries do not have the manpower nor the budget to hire M&E personnel. Ministries have limited incentives to build M&E capabilities since they are not accountable for meeting NSDP goals.

While the National M&E Policy will give the DM&E the legal foundation to implement the policy, its success will rely significantly on the commitment of other ministries to fulfill their responsibilities in that policy. Ministries have access to support for this. Along with the policy, UNICEF and the Center for Learning and Evaluation Results (CLEAR-AA) will develop an implementation strategy with the policy. MDAs also have access to numerous M&E capacity building initiatives, including training courses, workshops, and conferences. In terms of programming, MDAs have to recognize that M&E can be integrated into their core functions.

3.10 Subnational Data Flows

The study of the subnational level was conducted through two components: (1) a study of the data flows of two specific datasets: health budget data and maternal mortality data; (2) a more global assessment, the subnational Data Compass. The synthesis below merges the two component's main outputs.

Strengths/Opportunities	Challenges
Many datasets on health that provide a rich source of data for analysis and planning purposes.	Data flows are driven primarily by performance monitoring at the national level and the need to report upwards for this purpose. Limited evidence of data use for strategic decision-making, particularly at facility level.
Investment in both digital data systems and system integration at subnational level within MoH (e.g. dhis2 and e-register).	Health budget data not disaggregated and accessible at facility level. Limited integration with other government agencies' data systems where integration could improve data quality and introduce efficiency gains Investment contingent on partners.
VHW program provides a mechanism for connecting the national level to the hyperlocal level. Provides ability to capture data at the community level, to deliver out-of-facility services, and to identify community needs.	Limited integration of VHW data with dhis2 and other systems. Risk of overwhelming VHW as partners and programs compete to make use VHWs for service delivery and data collection.
ICT infrastructure adequate at the health facility level, with typical challenges.	Paper-based reporting at VHW level remains in place and the physical submission of reports faces logistical challenges (such as transport costs and availability; inclement weather and flooded rivers; competing priorities particularly during harvest season). Mixed response at VHW level regarding digitization of data collection and reporting to health facilities.
Functioning forums for the exchange of health information (e.g., meetings between health workers and other stakeholders at district and facility levels). Evidence of informal information sharing (e.g., between health facilities and between VHWs using WhatsApp groups).	Exchange of health information is not matched by access to and exchange of health data (e.g., access to dhis2 by Community Councils and NGOs) Limitedack of trust in VHWs by communities provide blockages to capturing health data. Culture of secrecy around pregnancies introduces blockages in capturing of health data.

Summary

Investments in ICT infrastructure and health data systems, primarily supported by partners of the Government of Lesotho, are impacting positively on the collection of health data at the subnational level. The Village Health Worker (VHW) program provides a mechanism for capturing health data at the community level in support of the data collection done by health facilities. However, there remains a need to better integrate the data collected by the VHWs with the existing and evolving data systems under the curatorship of the Ministry of Health. There is also a need to explore, design and implement the integration of MoH data systems with those of other ministries to improve data flows.

While the technical dimension of the ecosystem as a key enabler of the data ecosystem at the subnational level is relatively well-developed, there is a need to take cognizance of some of the social dimensions. These include levels of trust between VHWs and the communities they serve, secrecy around health-related issues due to cultural mores, and institutionalized practices that incentivize reporting at the expense of decentralized decision-making. These social issues in one way or another contribute to blockages in the flow of health data as the subnational level.

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