Data Use and Statistical Capacity in Lesotho

Assessment prepared for Millennium Challenge Corporation (MCC) and Lesotho Millennium Development Agency (LMDA)

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ABOUT THIS REPORT

This report is the complete 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:

- **The complete study (this report)**: In its first part, this report presents in detail, the diagnostic of the data ecosystem along the 9 dimensions of the methodology (see Annex 1 for the full methodology). The second part of the report introduces the set of recommendations to address challenges identified in the diagnostic and leverage strengths of the Lesotho ecosystem.
- **The synthesis report** that highlights only the main findings of the study and presents the recommendations.
- **An applied political economy assessment on gender data and health** that investigates how gender data is collected and used in Lesotho's health sector.
- **A subnational data flows assessment using IREX's data compass tool,** a qualitative based approach to help public serving institutions (in our case in the health sector) plan for effective, data-informed decision making.

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LIST OF ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
BEDCO	Basotho Enterprises Development Corporation
BoS	Bureau of Statistics
CBL	Central Bank of Lesotho
CHAL	Christian Health Association of Lesotho
CIJ	Centre for Investigative Journalism
CSO	Civil Society Organizations
DCEO	Directorate on Corruption and Economic Offences
DE4A	World Bank Digital Economy Diagnostic
DM&E	Ministry of Development Planning's Department of Monitoring and Evaluation
ERMS	Electronic Records Management System
GDDS	General Data Dissemination System (IMF)
GDPR	General Data Protection Regulation (EU regulation of personal data protection)
GoL	Government of Lesotho
IFMIS	Integrated Financial Management Information System
IMF	International Monetary Fund
LCA	Lesotho Communications Authority
LGDN	Lesotho Government Data Network
LODI	Lesotho Open Data Initiative
M&E	Monitoring and Evaluation
MCC	Millennium Challenge Corporation
MCST	Ministry of Communication, Science and Technology
MDA	Ministries, Departments, Agencies
MDP	Ministry of Development Planning
MEL	Monitoring, Evaluation and Learning
MGYSR	Ministry of Gender and Youth, Sports and Recreation
MISA	Media Institute of Southern Africa
MLGCA	Ministry of Local Government and Chieftainship Affairs
MNO	Mobile Network Operators
MoAFS	Ministry of Agriculture and Food Security
MoE	Ministry of Education and Training

MoF	Ministry of Finance
MoH	Ministry of Health
MoHA	Ministry of Home Affairs
MoSD	Ministry of Social Development
NACSAP	National Anti-Corruption Strategy and Action Plan
NICR	National Identity and Civil Registry
NPAB	National Planning Advisory Board
NRA	National Reforms Authority
NSDP	National Strategic Development Plan
NSDS	National Strategy for Development of Statistics
NSS	National Statistical System
NUL	National University of Lesotho
NULIF	National University of Lesotho Innovation Fund
OGP	Open Government Partnership
OSM	Open Street Map
PEA	Political and Economic Assessment
PFMR	Public Financial Management Reforms
PM	Prime Minister
PMO	Prime Minister Office
PPP	Public-Private Partnership
RBM	Result-Based Management
SADC	Southern African Development Community
SDG	Sustainable Development Goals
SNA	Social Network Analysis
SSA	Sub-Saharan Africa Average
ToR	Terms of Reference
UNDSDP	UN Data for Sustainable Development project
USF	Universal Service Fund
WB	World Bank

INTRODUCTION

Since 2008, the Millennium Challenge Corporation (MCC) has been assisting the Kingdom of Lesotho in its development. This assistance was organized in the form of an MCC Compact[1], a five-year agreement (2008-2013) to fund specific programs targeted at reducing poverty and stimulating economic growth. MCC and the Government of Lesotho (GoL) have now engaged in the design of a second Compact. The process for designing a second Compact[2] includes the execution of a series of studies on different topics. This report is one of these studies offering a deeper understanding of statistical capacity, data use, and the data ecosystem in priority sectors relevant to the Compact.

A functioning or ideal data ecosystem in a country includes Ministries, departments and agencies (MDAs) putting data at the core of their action. This ranges from: collecting, storing, protecting, managing (maintaining, correcting, improving) and using data for policy making and for public policies evaluations. Sharing data with other MDAs, with local government authorities (LGA) and publishing it for other stakeholders (media, researchers, innovators, etc.) generates value and engages citizens in public matters. However, the emergence of such an ecosystem requires the alignment of different elements that includes 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-grain 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 opportunities of core productive sectors. Based on the diagnosis, the study identifies operational actions that may help resolve the challenges and identifies champions from national government, LGA and non-governmental stakeholders that could lead and support the change. In summary, this deliverable aims at:

- Making Lesotho Millennium Development Agency (LMDA) and MCC teams aware of the strengths and weaknesses of Lesotho's data ecosystem in its broad sense, including components such as the innovation ecosystem, education, and gender data in order to inform Compact data ecosystem investments in agriculture and health.
- Equipping LMDA and MCC with methodologies and an action plan (including estimated costs), validated by relevant stakeholders, to address identified weaknesses and leverage strengths.
- Identifying and mobilizing a series of governmental and non-governmental actors who would be allies to LMDA, MCC and the Government of Lesotho in implementing the action plan.

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[1] https://www.mcc.gov/how-we-work/program/compact
[2] https://www.mcc.gov/resources/story/story-cbj-fy2019-compact-development-process-oversight

- Identifying champions in different areas (health, agriculture, gender…) who are potential catalysts of change within the Government and the country at large at national and subnational levels, and who will be important players with which LMDA could engage in the implementation phase.

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

- **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. This component will cover 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 study will cover main MDAs with a deeper dive on the Bureau of Statistics, the Ministry of Health (MoH), the Ministry of Water (MoW) and the Ministry of Agriculture and Food Security (MoAFS).
- **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 exploration of these two dimensions allows us to provide a qualitative view on the data landscape in Lesotho.

The study is conducted in collaboration and with the support of the Lesotho Bureau of Statistics.

This deliverable is structured in two main sections: a diagnostic and an action plan to address identified challenges and leverage strengths and champions identified. The diagnostic is structured in 9 sub-sections that explore different dimensions of the assessment: leadership, legal framework, technical, capacity, data demand & offer, the innovation ecosystem, monitoring, evaluation and learning framework (MEL), gender, and subnational data flows. The annex includes the detailed methodology used for the development of the study.

PART I - DIAGNOSTIC

The diagram below presents an overview of the diagnostic based on SBC4D methodology used in this study (see Annex 1). The evaluation of each dimension is color-coded: Green (G) means there is clear evidence of readiness, and no particular intervention are required to support the data ecosystem[3], Yellow (Y) means that some obstacles exist but the existence of favorable conditions would make short-term limited interventions impactful, Red (R) means there is evidence for significant obstacles that would require wider interventions with measurable impacts on longer-term.
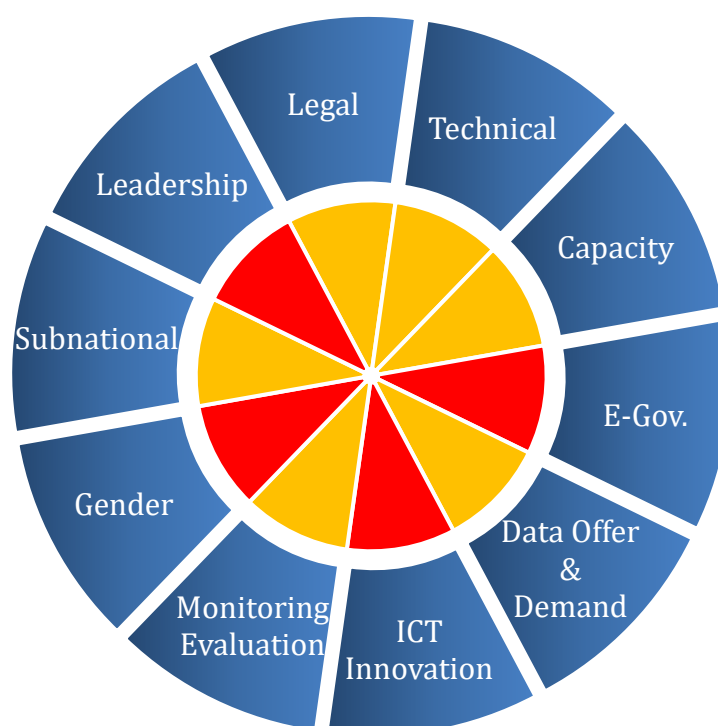
In the next 9 sections, each dimension is presented in detail with the evidence that led to the evaluation above. The last section is the proposed action plan that leverages strengths and ongoing initiatives identified and addresses the challenges and weaknesses.

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[3] Note that we describe the green colour meaning for illustrative purpose, but no dimensions are green on this assessment.

1. LEADERSHIP

As a responsive government, the implementation of robust data management processes and the use of data for decision making requires change management. From a data perspective, this includes legal, institutional, technological, and cultural changes - both inside and outside government. Focused, reliable, sustained, political leadership is therefore critical for a government to overcome resistance and inertia and incentivize actors to make the necessary changes in a timely and effective manner.

This chapter explores different elements of leadership. These range from political leadership and vision to development strategies and declarations by the leadership spanning the core dimension of digital transformation, such as data for decision-making, open governance, open data, e-government, and transparency. This chapter has three sections: the first presents the core research questions that drive the evaluation of leadership; the second section is the analysis of identified evidence from which we draw the overall picture and identify gaps that need to be filled during the field visit; The last one lists evidence we collected that has been used to conduct the analysis[4].

ANALYSIS

POLITICAL LEADERSHIP

OPEN GOVERNANCE

For Open Governance[5], core principles are yet to be implemented. The study did not identify any public declaration on this subject, and no active plan to join existing global initiatives such as the Open Government Partnership. Though there was a bill drafted in 2000[6], but the access to information legislation is yet to be passed. However, there is clear evidence that the landscape is evolving. For example, the setup of a multi-stakeholder approach (Multi-stakeholder National Dialogue) and the establishment of the National Reform Authority (NRA) which has a mandate to pass an Access and Receipt of Information Bill looks promising. The Bill has been workshopped on 20 May 2021. Most of the stakeholders interviewed, public and

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[4] The list of resources used for the study is available in Annex 3. The list of Key Informant Interviews is available in Annex 2

[5] Open governance is based on the principles of transparency, integrity, accountability, and stakeholder participation. The implementation of these principles includes elements such as access to information legislation. Such legislation provides the legal and administrative framework for citizens to access information held by public agencies. As part of this study, it is critical to explore these dimensions to evaluate the ability of citizens to access and use government data for decision making.

[6] https://osall.org.za/docs/2011/03/Lesotho-Access-and-Receipt-of-Information-Bill-2000.pdf

non-governmental actors, acknowledged this new approach and the launch of the NRA as a new way to define priorities for the country and mobilize all forces to implement them.

That said, the main issue the study identified is the limited implementation of key strategies. For example, the National Strategic Development Plan II (NSDP II) is a strong document that establishes a robust diagnostic of key challenges Lesotho is facing and identify actions to address them. However, this strategy is yet to be implemented and it does not structure the GoL or MDAs agenda. Instead, a separate process through NRA has been established which is a short-term temporary mandate for now.

DATA FOR DECISION MAKING

On data for decision making, a homogeneous picture emerges. There is no declaration or evidence in policies and development plans that show that such approaches are part of the strategy and priority[7]. All interviewees underlined the low value attached to data, and limited use of data by administration leaders for policy making or governance across all MDAs. MDAs consider data and statistics as a publication duty and not as an internal tool for governance.

Despite the importance of data, statistics and monitoring and evaluation set in NSDP II, none of the activities planned are engaged. At the same time, entities such as the BoS or the Department of Monitoring and Evaluation (DM&E) of the Ministry of Development Planning (MDP) are experiencing the strongest budget cut due to the pandemic. Planning offices within MDAs face the same challenge. Some key donor initiatives such as UNDP "Lesotho Data for Sustainable Development Project" or UNICEF National M&E policy project are trying to support BoS and DM&E. However, their interventions focus mainly on policy and technical level, without trying to address the leadership challenge. This is partly due to the instability of Government and administration leaders. The recurrent change of Government, that almost always include the change of Permanent Secretaries at all the MDAs make data literacy programs for leaders void as the targets for these efforts change regularly.

Finally, part of the issue with DM&E and BoS comes from their relatively weak political power. BoS, as a government department, does not have the flexibility required to achieve its mission. DM&E with the disappearance of the National Planning Advisory Board (NPAB), lost a coordination body for all M&E activities at MDAs level. NPAB was an entity which had the mandate to measure country development progress and all M&E officers within MDAs were under the authority of the NPAB and were focused on their M&E tasks. With the stoppage of the NPAB, M&E officers were moved under the authority of MDAs where they have been largely assigned to other tasks. Re-establishing the NPAB is on the roadmap of NRA but there is no evidence that this will be implemented anytime soon.

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[7] This point appears in NSDP II but as mentioned above, the strategy does not structure GoI activities and funding priorities.

DIGITAL TRANSFORMATION, DIGITAL ECONOMY, ICT & INNOVATION

On digital transformation, ICT and innovation[8], the study was not able to identify any public declaration related to the importance of developing the ICT sector or boost innovation. Lesotho lags behind many countries on the continent regarding supporting the innovation sector. The 2005 ICT policy is now outdated and does include any specific intervention to support ICT. Many studies (see e.g. UNICEF Lesotho Diagnostic) also underlined the weakness of the legal context and the lack of core legislation, such as cybercrimes or electronic commerce. The Electronic Transactions and E-Commerce Bill, 2021 (drafting stage) and Computer Crime and Cybersecurity Bill,2021 (Parliament) are also under the authority of the NRA. The use of ICT within GoL, based on the analysis of existing web sites, is noticeably lower than most African countries. It is rare in the information age to see ministries without any web presence and publishing so few documents, information, and data online. The Lesotho Science and Technology Policy 2006-2011 actively promotes innovation through the setup of an innovation fund (Lesotho Innovation Trust Fund LITF) managed by Lesotho Advisory Commission on Science and Technology (LACST), and through the structure of financial incentives but none of the proposed actions have been implemented. Despite the fact that GoL has supported several studies, such as the World Bank Digital Economy diagnosis, UNCTAD eTrade Readiness Assessment, to explore how to develop its ICT sector, no recommendations have been implemented. In the same way, ICT appears as a critical topic in the NSDP II in key priority 1 "Enhancing Inclusive and Sustainable Economic Growth and Private Sector-Led Job Creation" and in key priority 3 "Building an Enabling Infrastructure." It is also mentioned in key priority 4, "Strengthening Governance and Accountability Systems" ("Adopt Information Technology for Better Service Delivery"), but none of the recommendations and activities have been initiated.

E-GOVERNMENT

Concerning e-Government[9], a similar picture emerged. While NSDP II includes the development of e-government as a priority, there is no framework, policy, strategy, or action plan in place to coordinate the development of e-Government services. As a result, Lesotho is

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[8] ICT is an integral element of a data ecosystem for two main reasons: 1) A data ecosystem requires that the government has infrastructure, systems, policies in place to collect, store, and protect data in digital format. 2) The development of ICT and innovation has been key in the recent year to deliver digital services to citizens who cannot access them via existing channels. At the same time, innovators and innovative services need data this has a strong influence on data offer and demand between government and non-governmental actors. It is therefore essential to evaluate this sector in this study, and whether ICT innovation is an influential government agenda.

[9] the development of an e-government framework has an impact on two main areas: 1) The setup of e-government services requires reliable IT infrastructure from network to data centers. 2) The design and deployment of citizen-centric or business-centric e-government services usually require the integration of different data sources from different MDAs. Exploring the state of development of the e-government framework, provides critical evidence on challenges related to data sharing as well as possible approaches to overcome them.

at the bottom of the UN E-Government Development Index 2018 (168 over 193 countries evaluated). The Ministry of Communication, Science and Technology (MCST) seems to be the natural leader and coordinator of E-Government, but there is limited evidence of interventions, activities, or leadership in this area. Projects funded by the African Development Bank focused mostly on infrastructure and not on content and frameworks. It seems that each ministry is working independently in developing its own services. MCST provides only an integration portal (also known as Lesotho eGovernment Portal) but each service is developed independently by each Ministry. As of today, the vast majority of services on the portal are out of order.

Lesotho is significantly advanced in terms of Digital ID and is a pioneer in this sector. The National Identity and Civil Registry (NICR) seems to have made major progress in scaling-up the digital ID at the country level. However, while this is an essential asset for the development of e-government services, the study could not identify any service that leverages the civil registry and integrates it despite the fact that the MoHA vision behind the civil registry and the technical design are in place for such integration. The fact that some private sector organizations like banks or mobile money service providers are already using the civil registry and integrate it in their operation demonstrates the value of this service as well as its abilities to be integrated into other services.

OPEN DATA

On Open Data[10], there seems to be limited evidence of activity at the government level[11]. The isolated evidence is the launch in 2019 of a civil society initiative called LODI (Lesotho Open Data Initiative) and an action plan designed in April 2019. The interview with a LODI member highlights the difficulties to get access to government data and limited understanding of the potential of open data and the opportunities such approach could bring in terms of social and economic impact. The limited access to government data is e.g., underlined in the Open Data Watch's Open Data Inventory that put Lesotho at the rank 151 of 187 countries evaluated in terms of open data coverage[12].

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[10] Open data is a policy under which specific government-held data are made publicly available, with very few restrictions on access, in formats that both people and software can easily read and use for any purpose. This concept, born a decade ago, is at the intersection of data for decision making and innovation. Leveraging internal capacities on data management, ease data sharing, and data publication has the potential to unlock social and economic innovation and greater collaboration between governments, citizens, and corporations. An Open Data initiative can mobilize both governments and non-governmental actors and has the potential to impact various domains ranging from ICT enabled innovation, public service efficiency, increased transparency, and strengthen anti-corruption initiatives.

[11] Note that this section focuses only on Open Data. There are a number of activities related to transparency that includes the publication of a number of government documents. This includes e.g., budget documents published by the Ministry of Finance.

[12] https://odin.opendatawatch.com/Report/countryProfileUpdated/LSO?year=2020

POLITICAL STRUCTURE[13]

At the policy level, a number of horizontal coordination mechanisms exists with BoS coordinating the production of national statistics and DM&E overseeing monitoring of the NSDP II and SDG indicators. However, in practice BoS and DM&E have limited political leverage and MDA planning offices are under-resourced to execute routine data collection tasks. As a result, BoS and DM&E are not in a position to fulfil their mission, access the data they need and perform their duties.

The situation is slightly worse in terms of ICT and E-government services coordination where the study was not able to identify any existing coordination mechanism. However, the IT staff at MDAs are extremely limited and therefore almost all MDAs coordinate with MCST for all IT initiatives, particularly at the network/connectivity level, and hosting level within the national data center.

CHAMPIONS AMONG MDAS

The Ministry of Development Planning (MDP) seems to be a natural champion as it hosts the Bureau of Statistics and the Department of M&E in charge of NSDP II and SDG M&E. Several interviewees also underlined that the new MDP Minister is a strong supporter of data approaches and monitoring and evaluation (M&E)[14].

BoS and DM&E are also clear champions and have a clear vision about their mission and the way to execute it. However, their political leverage, due to their position as Government departments, currently do not enable them yet to access appropriate budget, perform their tasks and engage MDAs effectively.

The Ministry of Home Affairs (MoHA) and its agency NICR has a clear vision on the role and potential of digital ID and civil registry. This is an area where Lesotho is highlighted internationally and is clearly ahead of most African countries. The civil registry is an important asset, and the vision of MoHA creates the conditions for greater impact at the national level[15].

The NRA and its multi-stakeholder nature appears to be a steadfast entity that has the mandate and the power to design and engage relevant MDAs to pass key legislations.

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[13] Understanding how GoL works is a critical element for accurately estimating the future scope of data-enabled change management. As one of the essential outputs of the study is to propose an action plan, it is vital to understand the most appropriate ways to structure activities and to identify governance structures that are more likely robust and impactful in a data-enabled ecosystem

[14] It is important to note that that success in Lesotho government MDAs seems to be driven by individual personalities rather than bureaucracies, creating a risk that initiatives stop when the person moves out. This risk has been underlined by several interviewees about MDP, particularly given the instability of governments in Lesotho in the recent years

[15] According to a McKinsey study (2019 https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/digital-identification-a-key-to-inclusive-growth) "extending full digital ID coverage could unlock economic value equivalent to 3 to 13 percent of GDP in 2030"

However, the absence of mandate to oversee implementation of these legislations is a risk that should be addressed.

Finally, MoH, the Ministry of Agriculture and Food Security (MoAFS) and the Ministry of Finance (MoF) seem to be the early movers in terms of data and information systems. They all have a number of key systems and data collection processes in place that provide a reliable base for implementing data approaches, but this data is kept in silos for now and are not used outside existing internal dashboards.

CONCLUSION

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 Permanent Secretary (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. However, while data leadership is inadequate government-wide, several champions are emerging at the MDA level. These champions have the potential to drive change.

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 and are involved in the NRA process.

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.

2. LEGAL FRAMEWORK

The efficiency of a data ecosystem and its ability to support public and non-governmental actors depends significantly on the national policy and legal framework. An enabling policy and legal framework are a critical support pillar for any data initiative both within the government and for users outside. Such users may range from non-governmental organizations, academics, entrepreneurs, the private sector, etc. While there is no single holistic law that facilitates the data ecosystem, in practice it requires a range of policies and legal issues to be addressed. For example, this includes legislation that covers licensing and reuse of data, ensuring privacy and data protection, and anonymizing personal and personally identifiable data.

While planning a data initiative, it is important to identify and analyze the existing policies, laws, and regulations and to identify actual or perceived obstacles so that policy or legal change can be initiated early if essential. In this chapter, we explore the existence of legislation (or related provisions in the Constitution) that have an impact on the data ecosystem in Lesotho, and related activities such as advocacy by CSOs, the presence of coalitions of actors, workshops and conferences, national and international studies and reports linked to topics such as open governance, open data, and the legal ecosystem in Lesotho.

ANALYSIS

LEGISLATION RELATED TO ACCESS AND REUSE OF PUBLIC SECTOR INFORMATION[16]

ACCESS TO INFORMATION

The Constitution of Lesotho has broadly defined the right of freedom of expression under Section one as "Every person shall be entitled to, (except with his/her consent) shall not be hindered in his enjoyment of, freedom of expression, including the freedom to hold opinions without interference, freedom to receive ideas and information without interference, freedom to communicate ideas and information without interference (whether the communication is to the public generally or to any person or class of persons) and freedom from interference with his correspondence." However, the constitutional provision has not been translated into legislation. There is no real Freedom of Information / Right to Information / Access to Information (FoI) Law in Lesotho. While an attempt to address this was made in

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[16] The study includes evaluation of Laws, constitutional rights, regulations, and policies that provide a legal framework for citizens to access government information and government data, and for government agencies to proactively publish or share information. This evaluation is critical to support more data use within the society and to leverage interaction and data-informed discussions between government and non-governmental actors.

2000 when the Access and Receipt of Information Bill of 2000[17] was drafted[18] by the Law Reform Commission, till date the bill has not been passed into an act of the Parliament despite campaigns by the civil society. The draft bill is sufficiently detailed on the mechanism and the safeguards of requesting information including:

1. Right of access to records of governmental bodies
2. Criminal or civil discovery
3. Right of discovery of record
4. Access to records under any other law
5. Forms and formats of access
6. Preservations of records
7. Fee structure for requests
8. Payment for the information requested
9. The decision on the information requested and notice
10. Deemed refusal of the request.

Though the bill has been pending in the draft stage, there is existing advocacy linked to the demand for FoI by a few actors from civil society. This includes The Media Institute of Southern Africa – Lesotho (MISA)[19] that has been campaigning for enacting the Access and Receipt of Information Bill. MISA conducted a study that explored the way eight government agencies (including the Office of the Prime Minister) proactively publish information and respond to information request[20]. The scores of most agencies were very low in this context.

On a positive note, Lesotho has signed a few international conventions and protocols related to access to information and media freedom including the African Union Declaration of Principles on Freedom of Expression and Access to Information[21] and the SADC Protocol on Information, Sports and Culture[22] which asks all member states for a commitment to the right of access to information and participation in cultural and sporting activities by all citizens. None of these international treaties has been translated into any action or national legislation as yet.

This landscape seems to be evolving recently. Access to Information has emerged as a critical component in the multi-stakeholder consultations that took place in 2017 and led to the creation of the NRA. Passing a FoI law is very high in the NRA priorities, and it is expected that

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[17] https://osall.org.za/docs/2011/03/Lesotho-Access-and-Receipt-of-Information-Bill-2000.pdf
[18] https://www.nyulawglobal.org/globalex/Lesotho1.html
[19] https://misa.org/
[20] https://crm.misa.org/upload/web/most-open-and-secretive-government-institutions-in-lesotho-2014.pdf
[21]
https://www.achpr.org/public/Document/file/English/draft_declaration_of_principles_on_freedom_of_expression_in_africa_eng.pdf
[22] https://crm.misa.org/upload/web/sadc_protocol_on_culture_information_1.pdf

such a law will be enacted by mid-2022. Furthermore, it is critical that besides enacting the bill, a structure is put in place to ensure its implementation.

Lesotho has made efforts to boost transparency and prevent the misuse of criminal defamation. To achieve this, the amendment of Prevention of Corruption and Economic Offences Act of 2006[23] mandates that public officials must disclose their assets. To implement this, on February 5, 2016, the government issued regulations to initiate implementation of the financial disclosure laws for public officials.[24] Furthermore, The Constitutional Court of Lesotho (Constitutional Court) has declared the offence of criminal defamation inconsistent with the right to freedom of expression contained in section 14 of the Constitution of Lesotho, and therefore invalid[25] with retrospective effect. Lesotho had also ratified the United Nations Convention against Corruption in 2005.[26]

However, more efforts are required to sustain the same from a policy perspective. Globally Lesotho is lagging on some key conventions such as the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions[27] to which Lesotho is not a signatory. Furthermore, according to the *Freedom in the World (2019) — Lesotho Country Report*[28] published by Freedom House, responses to information requests are not guaranteed, and the management of public finances is not transparent and not accessible to non-governmental actors. Government procurement decisions and tenders generally cannot be accessed online. Though high-level government and elected officials are required to disclose their assets and business interests, these declarations are not made public, and enforcement of the rules are limited by resource constraints. However, based on interviews, the Directorate on Corruption and Economic Offences is facing major challenges in the implementation of its mission and the management of the asset disclosure registry. For that reason, the NRA roadmap includes the redesign of the Directorate, its organizational structure, and its mission.

There are also several examples of restrictions to transparency, such as in instances where it is in the interests of defense, public safety, public order, public morality or public health or other exceptions tabulated in the Constitution, including confidentiality in legal proceedings. Furthermore, there are several laws that restrict freedom of expression.

As per the African Media Barometer 2015[29] analysis, some of these include:

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[23] https://lesotholii.org/ls/legislation/act/2006/8/prevention_of_corruption_and_economic_offences_amendment_act_2006.pdf

[24] http://lestimes.com/public-servants-to-declare-assets/

[25] https://altadvisory.africa/2018/05/23/criminal-defamation-declared-unconstitutional-in-lesotho/

[26] https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XVIII-14&chapter=18

[27] http://www.oecd.org/corruption/oecdantibriberyconvention.htm

[28] https://freedomhouse.org/country/lesotho/freedom-world/2019

[29] https://library.fes.de/pdf-files/bueros/africa-media/12464.pdf

- The Official Secrets Act of 1967[30] (section 4), which makes it an offence for anyone to communicate information regarding prohibited places or prohibited information.
- The Code of Conduct for the Public Service made under the Public Service Act of 2005[31], (in section 3(2) (i) prohibits civil servants from "directly or indirectly revealing or using for private purposes, any information coming to his knowledge or acquired by him or her either in the course of his or her duties or in his or her capacity as a public officer, otherwise than the improper discharge of his or her duties or as authorized by law or competent authority."
- The Sedition Proclamation[32], which makes it an offence to publish seditious material.
- The Obscene Publications Act of 1912
- The Internal Security Act of 1984[33]
- The Penal Code[34]

STATISTICS ACT

The Lesotho Bureau of Statistics Act 2001 was enacted to establish the Lesotho Bureau of Statistics. Such an entity was required to set up a system for official national statistics on economic, social, demographic, including human resources, and environmental areas concerning the development needs of Lesotho, and official statistics for purposes of economic and social planning, research, public information and international cooperation, and related matters. The BoS National Statistical System includes all agencies in Lesotho whether governmental, non-governmental for gathering statistical data directly through surveys or administrative action. The mandate of BoS as stipulated in the Act includes the creation of a regularly updated data bank.

The Statistics Act has two components that provide significant exemptions powers (see section 19 "entry and inspection" and section 20 "confidentiality"). The Director of BoS can override some of the elements of the Data Protection Act (see below for details about this act). It does provide some safeguards too such as the obligation to get approval from people or entities before disclosing their data to anyone outside BoS (with the exception of researchers see below).

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[30] https://www.justice.gov/sites/default/files/pages/attachments/2016/01/08/fh-freedom-of-press_2014_lesotho.pdf

[31] https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/81644/94933/F655666573/LSO81644%20III.pdf

[32] https://www.kas.de/c/document_library/get_file?uuid=1ea79a4e-81ae-54f4-accb-ffd6c9e217b6&groupId=285576

[33]

http://www.vertic.org/media/National%20Legislation/Lesotho/LS_Internal_Security_Arms_Ammunition_Act.pdf

[34] https://acjr.org.za/resource-centre/lesotho-penal-code-act-2010/view

To support academics and researchers, the Director is allowed to release anonymized digital records to be used for legitimate research purposes. In that case, the Director must obtain from the recipient of the records a written undertaking that the records shall not be released to any other person without the written consent of the Director.

The current Statistics Act is evidently outdated and misaligned with a number of pieces of legislation such as the Data Protection Act. In order to address some of holes and misalignments, BoS has driven the development of a Data Dissemination Policy, adopted in December 2020, that provides a stronger background for data publication and personal data protection. However, the act could benefit from a complete revision. It is also important to note that Lesotho is a signatory to United Nations Fundamental Principles of Official Statistic, African Charter on Statistics and Strategy for the Harmonization of Statistics in Africa (SHASA).

LICENSING[35]

There is no legislation defining licensing. None of the published data identified has an open license. Interestingly, most of the published data do not even have copyright. The recent Data Dissemination Policy, adopted in December 2020, does not provide any instruction on that licensing, and does not cover reuse of published data.

DATA CLASSIFICATION

The study was not able to find any legislation or policy related to data classification. In the absence of access to information legislation, the classification of data and information does not seem to have an impact on data sharing and publication. The recent Data Dissemination Policy, passed in December 2020, provides a background for data sharing and publication, and addresses some of the misalignments between the Statistical Act 2001 and more recent legislation such as the Data Protection Act 2011. However, note that the policy is not implemented yet and its content does not cover some key elements such as data licensing and data reuse.

PERSONAL DATA PROTECTION[36]

The Constitution of the Kingdom of Lesotho recognizes the right to privacy, and this is protected under Section 11.[37] To safeguard the same, this right has resulted in framing the Data Protection Act, known as ACT N° 5 0F 2012. However, the Act has not been fully

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[35] It is critical to explore whether exists a legal framework around the ability for MDAs to release data under an open license.

[36] The study evaluates Laws, constitutional rights, regulations, and policies that protect citizen privacy and provide guidelines for governmental agencies on information they can and/or cannot share or publish because it is an essential pillar that together with access to information provide a secure environment for government data sharing.

[37] https://www.constituteproject.org/constitution/Lesotho_1998.pdf

implemented yet. The data protection commission has not been established, and no advocacy campaign organized. Despite its existence in the legal framework of Lesotho, the Act has no impact and its weak implementation does not provide the required background for safe and protective data collection and it does not provide required rules/safeguards for anonymizing personal information before publication.

Up front, the Act defines personal data about an identifiable individual in any form including information relating to the race, national or ethnic origin, religion, age or marital status of the individual, education or the medical, criminal or employment history of the individual or information relating to financial transactions in which the individual has been involved. It further goes into elements that have the potential of identifying other identity markers assigned to the individual such as address, fingerprints, the name of the individual where it appears with additional personal information, and instances where the disclosure of the name itself would reveal information about the individual.

Analysis of the Act demonstrates that appropriate guarantees have been put in place in law to protect the data subject's privacy. Under the law it is ensured that any processing is carried out with the consent of the data subject and no such information is to be deliberately made public unless the same has already been done so by the data subject. The Act explicitly provides the freedom or choice of consent, whereby it makes it mandatory to capture explicit consent of the data subject (individuals) to the processing of personal data. This includes:

- The information being collected including the name and address of the data controller
- The purpose for which the information is being collected
- Whether or not the supply of the information by the data subject is mandatory
- The consequences of failure to provide the information
- Any law authorizing or requiring the collection of the information
- Any further information which is necessary having regard to the specific circumstances, such as the recipient or category of recipients of the information; nature or category of the information and existence of the right of access to and the right to rectify the information collected'.

The Act also defines the scope of sensitive personal information including genetic data, data related to children, data related to offences, criminal sentences or security measure, biometric data as well as what such data reveals, personal information revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, affiliation, trade-union membership, gender, and data concerning health or sex life. The Act also identifies any personal information otherwise considered by law as presenting a major risk to the rights and interests of the data subject, unlawful or arbitrary discrimination. The Act has made provisions

(under Section 29) to prohibit a data controller[38] from processing sensitive personal information. Therefore, it safeguards individual data privacy in somewhat clearly defined terms even if there is no clear guidance on how to anonymize this data.

The Act provides for the Right to Forget, where the legislation also authorizes any person to request his/her personal information collected and managed by any organization, and to request update or destruction of his/her record(s). There are strong controls in place when it comes to sharing / transferring data outside Lesotho. For example, Section 64 of the Data Protection Act imposes control measures to non-SADC member countries or SADC countries that have not adopted the SADC data protection requirements, which are in line with best practices under GDPR.

One of the key elements of Part II of the Data Protection Act deals with the establishment of the Data Protection Commission. As per the Act, the Commission is the designated custodian to monitor and enforce compliance with the provisions of the Act by public and private bodies. The Commission is tasked with several activities such as undertaking research and monitoring developments in information processing and computer technology to ensure that any adverse effects of such developments on protection of personal information of data subjects are minimized. It is further tasked with reporting to the Minister the results of such research-based monitoring and examine any proposed policy or legislation which may affect the protection of personal information of data subjects.

However, it is important to note that this Act has several exemptions. Some examples of exceptions include:

- Part IV of the Act (under Section 30 to 38) provides an extensive list of exemptions that allows the processing of sensitive information in a series of cases. For example, the Data Protection Commission has been granted authority (Section 37) for processing personal data in the public interest.
- In case of a data breach, there are clear guidelines in the Act regarding the power of the data controller who can under Section 23 of the Act notify both the Data Protection Commission and the individual concerned where there are reasonable grounds to believe that the personal information of a data subject has been accessed or acquired by an unauthorized person. There are options to communicate such a breach via post, email, on a website, published in news media, or as directed by the Data Protection Commission. The content of the notification is mandated to include enough information to allow the data subject to take protective measures against the potential consequences of the breach.[39] However, there is no prescribed content for the breach

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[38] Under the Data Protection Act a data controller is a public or private body or any other person who alone or together with others, determines the purpose of and means for processing personal information, regardless of whether or not such data is processed by that party or by an agent on its behalf.

[39] See: https://platform.dataguidance.com/opinion/lesotho-data-protection-act-2011

notification to the Data Protection Commission, and there are provisions in the Act that allows for a delay of informing the data subject of breaches in some situations. This renders the data subject virtually powerless to seek immediate relief. The downside is also that the Commission has never been constituted.

- Other legislation provides some exemptions over and above the Data Protection Act. For example, the Prevention of Corruption and Economic Offences Act[40] states that, in the course of investigation into an offense, the Director of the Directorate on Corruption and Economic Offences is authorized to request any person to furnish information relating to any property held by him inside or outside Lesotho, and to require "any person to furnish, notwithstanding any law to the contrary, all information in his possession relating to the affairs of any other person."

The Government of Lesotho is a signatory of a few regional and global treaties on cybersecurity and personal data protection. These include the African Union Convention on Cyber Security and Personal Data Protection.[41] Though the Data Protection Act commits to be in synchronization with international regimes such as the GDPR, an analysis by CIPESA[42] highlights the fact that a few areas need improvement. Section 15 (2) and 17 (1) (b) of the Act provides for explicit consent and collection to data processing respectively yet under section 25 there are arbitrary circumstances where the data controller may not comply with consent provisions in respect of personal data.

Despite these elements that could be improved and made compliant to GDPR, the Act would provide a solid framework for personal data protection. However, the lack of full implementation of the Act[43] does not provide required rules/safeguards for anonymizing personal information before publication.

DATA SECURITY [44]

While there is a mention of The Computer Crime and Cybersecurity Bill drafted a few years back (2010), at the time of this report the bill has not been passed. However, it has passed the drafting stage, and it is currently in Parliament. When this Bill will be implemented, it will provide a framework for cybersecurity. However, the study did not identify any other legislation, policies or directives related to data security, data archiving and digital preservation (backups etc.). The insufficient legislation, policies, and implementation is extremely problematic, as the vast majority of GoL information systems are hosted at the

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[40] https://lesotholii.org/ls/legislation/act/2006/8/prevention_of_corruption_and_economic_offences_amendment_act_2006.pdf

[41] https://au.int/en/treaties/african-union-convention-cyber-security-and-personal-data-protection

[42] https://cipesa.org/?wpfb_dl=272

[43] The data protection commission has not been established, and no advocacy campaign organized

[44] In order to leverage data use within the government, that includes a greater collection and storage of data in digital format, it is critical to evaluate the legal environment in place to protect digital data assets.

MCST National Data center which currently represents a single point of failure. In the absence of policy and implemented procedures, MCST has not designed or tested a disaster recovery procedure, creating a big risk for key information systems reliability in case of problems.

DATA OWNERSHIP[45]

There is no legislation or policy defining ownership of government data. The Public-Private Partnerships Policy (2017)[46] does not mention or cover data ownership and use for data generated via PPP neither the Public Procurement Regulation (2007)[47] including the Public Procurement (Amendment) Regulation (2018)[48] do not mention or cover data ownership for data generated by public contracts.

OTHER DATA-RELATED LEGISLATIONS AND POLICIES [49]

ICT RELATED LEGISLATIONS

The ICT policy is outdated (enacted in 2005[50]) and does not provide a holistic approach to the digital transformation of government, citizen, and society at large. It does not mention the potential of public sector data reuse to support innovation. On the e-government services front, there is no policy or strategy dedicated to service deployment, except a very limited mention in the ICT Policy document. There is an unclear roadmap or scale-up strategy for new services to be developed.

A vibrant ICT enabled data ecosystem needs robust legislative and policy support to facilitate payment and transactions. Lesotho took some concrete steps in this regard by drafting the Electronic Transactions and Electronic Commerce Bill in 2019. However, it has still not been enacted into law. To date, the Bill unfortunately remains with the Office of Parliamentary Counsel (drafters) since 2019.

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[45] Government Data ownership is an essential element to ensure that MDAs can safely share and attach an open licence to the data assets they manage.

[46]

http://www.finance.gov.ls/documents/laws%20and%20regulations/FINAL%20PPP%20Policy%20August%20Webversion.pdf

[47]

http://www.finance.gov.ls/documents/laws%20and%20regulations/PUBLIC_PROCUREMENT_REGULATIONS_2007.pdf

[48]

http://www.finance.gov.ls/documents/laws%20and%20regulations/Public%20Procurement%20Amendment%20Regulations,%202018.pdf

[49] The study explores Laws, regulations, and policies that would leverage or limit the impact of public government data. This includes a wide variety of dimensions from an enabling legal environment to create start-ups, ICT innovation strategies, protection of intellectual property up to the freedom of the press. These elements are essential to ensure that data published can be easily exploited and generate social and economic impact.

[50] https://www.gov.ls/wp-content/uploads/2018/04/Lesotho_ICT_Policy_Final.pdf

Promoting entrepreneurship and encouraging young entrepreneurs requires incentives as well as supporting legislation and policies, especially if they must navigate the landscape of using government data in their business and early-stage startups. No legislation or policy specific to startups or student startups exists. However, NRA has on its roadmap a start-ups and infant enterprises legislation to be passed in the coming months. With regards to supporting innovations and incentives, the Lesotho Science and Technology Policy 2006-2011 strongly promotes innovation through the setup of an innovation fund (Lesotho Innovation Trust Fund - LITF) managed by Lesotho Advisory Commission on Science and Technology (LACST), and through the setup of fiscal incentives. However, none of the proposed actions (such as the creation of LITF and LACST) have been implemented.

The ease of doing business is an important indicator of the state of legislation in a country. Based on the World Bank ease of doing business index Lesotho is ranked low (122).[51] However, in the context of starting a new business, the indicator paints a better picture in terms of ranking as below

Figure - Starting a Business in Lesotho - Score

Procedures	Time	Cost	Paid-in min. capital
70.6	85.4	97.0	100.0

Figure - Starting a Business in Lesotho and comparator economies - Ranking and Score

DB 2020 Starting a Business Score

88.2: Lesotho (Rank: 84)
81.2: South Africa (Rank: 139)
80.1: Regional Average (Sub-Saharan Africa)
79.4: Angola (Rank: 146)
76.2: Botswana (Rank: 159)
72.2: Namibia (Rank: 165)

This paints a better picture for early-stage ICT startups and gives the confidence to entrepreneurs that the policy environment is conducive to new businesses.

INTELLECTUAL PROPERTY RELATED LEGISLATIONS

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[51] https://www.doingbusiness.org/en/data/exploreeconomies/lesotho

Lesotho is a signatory to several global conventions, standards, and protocols when it comes to safeguarding Intellectual Property (IP). Some of the significant ones include -

1. WTO/TRIPS Agreement:[52] The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) is an international legal agreement between all member nations of the World Trade Organization (WTO). It sets down minimum standards for the regulation by national governments of many forms of intellectual property (IP) as applied to nationals of other WTO member nations. Lesotho is a signatory.

2. The Paris Convention:[53] The Paris Convention for the Protection of Industrial Property, signed in Paris, France, on 20 March 1883, was one of the first intellectual property treaties. It established a Union for the protection of industrial property. The Convention is currently still in force. The substantive provisions of the Convention fall into three main categories: national treatment, priority right and common rules.

3. The ARIPO (Banjul Protocol):[54] ARIPO is an intergovernmental organization that grants and administers Intellectual Property (IP) titles on behalf of its member states and provides IP information to its clientele in the form of search services, publications, and awareness creation. The Banjul Protocol provides for a centralized trademark registration procedure. Applications for trademark registrations may be submitted either to the ARIPO Office or to the Industrial Property Office of a member state and must designate the member state(s) where registration is sought

4. Madrid Agreement and Madrid Protocol of WIPO:[55] The Madrid System for the International Registration of Marks is governed by the Madrid Agreement, concluded in 1891, and the Protocol relating to that Agreement, concluded in 1989. The system makes it possible to protect a mark in a large number of countries by obtaining an international registration that has effect in each of the designated Contracting Parties.

5. The Industrial Property Amendment Act, 1997[56] amending the 1989 Act. This act defines the application process and the procedure for grant of patents, utility model certificates and marks along with the fees that the registrar's office can charge for such services. It is the overarching framework that provides a national framework for most of the international conventions and agreements signed by Lesotho.

6. The Berne Convention (with a focus on copyrights):[57] The law confers copyright protection on authors of original literary, artistic, and scientific works.

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[52] https://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm
[53] https://www.wipo.int/treaties/en/ip/paris/ **Erreur ! Référence de lien hypertexte non valide.**
[54] https://ladas.com/education-center/aripo-banjul-protocol-trade-marks/
[55] https://www.wipo.int/treaties/en/registration/madrid_protocol/
[56] https://wipolex.wipo.int/en/legislation/details/5875
[57] https://www.wto.org/english/tratop_e/trips_e/trips_notif6_bernerome_e.htm

Some of the other notable supporting acts and laws are The Companies Act of 2011[58] and The Copyright Act of 1989[59]. Some of the operational aspects based on the above are as below:

- Since Lesotho is a member of the Paris Convention, it is possible to claim priority on the basis of an earlier application in a convention country.
- The Banjul Protocol of ARIPO, The Madrid Agreement and Madrid Protocol of WIPO treaties have not yet been implemented in the national trademark laws of Lesotho, therefore, it is not clear whether valid trademark protection can be obtained in Lesotho via an ARIPO application or a Madrid application designating Lesotho.[60]
- When it comes to patents, protection is available via a national filing or an ARIPO application designating Lesotho. Lesotho has implemented the Harare Protocol (which regulates patent and design filings in ARIPO) in its national laws, thereby giving valid patent protection to applicants seeking to obtain a patent via an ARIPO application. The same applies for any type of design-based innovation requiring protection.
- The Industrial Property Amendment Act, 1997 amended the Industrial Property Act,1989 (principal legislation) by giving effect to PCT applications in Lesotho, but regulations to implement the PCT provisions have not yet been promulgated. However, the existing legislation does contain a provision which states that any international treaties in respect of which Lesotho is a signatory shall apply in Lesotho and, in the event of a conflict between the national law and the international treaty, the provisions of the international treaty will apply. This means that international PCT applications, in which Lesotho is designated, may form the basis of national phase applications in Lesotho. Furthermore, foreign applicants must be represented by an agent in Lesotho.
- Lesotho's NSDP, 2012 mentions IPR as one of the strategic objectives and defines specific actions that need to be undertaken in this area, specifically, i) the placing of information on trademarks and other intellectual property rights in the public domain; ii) a review of IPR legislation to protect innovation for SMEs; and iii) the development of an IPR database to develop robust dissemination mechanisms.

It was not possible to evaluate if the above IPR safeguards promote or hinder the ICT and innovation ecosystem in practice given the nascent development of the innovation sector. However, this aspect was not underlined as challenging by innovation actors we met.

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[58] https://www.aripo.org/wp-content/uploads/2018/12/companiesact2011.pdf
[59] https://www.aripo.org/wp-content/uploads/2018/12/Lesotho-Copyright-Act.pdf
[60] Source: https://www.adams.africa/works/lesotho/

MEDIA FREEDOM

As per the National Vision Document 2020,[61] the Media in Lesotho is free from direct government interference. This is supported by the pluralist nature of the media in all its forms, which reflects diverse opinions of people from all walks of life. Despite the proliferation of media houses, media diffusion with all its components, namely, print, and electronic, is predominantly in urban areas. The national radio station (Radio Lesotho) is the only one that has nation-wide coverage. Plans are underway for increasing television coverage. The challenges here include the consolidation of the currently scattered pieces of legislation regulating the media, teaching media professionalism and independence, and increasing media coverage to the rural areas of the country.

According to Reporters Without Borders[62] (RSF) "Lesotho joined the still small club of countries that have declared the criminalization of defamation to be unconstitutional." However, the same report states that "the authorities have continued to step up pressure on the media and journalists.' According to its 2019 World Press Freedom Index, Lesotho ranks 78 and has gone down ten places compared to 2018. Media professionals often censor themselves. Newspapers and radio stations – the public's main source of news because of the low literacy rate and newspaper distribution costs – have become less outspoken and depend on state advertising. Online news coverage is still relatively unrestricted, but Internet access is limited particularly in rural area.

CONCLUSION

Lesotho is a policy rich and implementation poor country. As 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. In such a context, new policies (data dissemination) have limited potential.

The root causes of such implementation failure are difficult to identify. It is likely due to organizational factors as well as inadequate political power of agencies and departments that have cross-governmental mandates (e.g., BoS, DM&E). One potential way to address this issue would be to have a strong body with an oversight role. It is hard to name such a body. It could be NRA if its role is expanded to include oversight and implementation and if it becomes a permanent structure. It could also be the PNAB if it is resuscitated as planned in NRA and MDP roadmaps. The PNAB is defined in the Constitution and in the National Planning Board act and will be best placed for such a role.

Other issues 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

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[61] https://www.gov.ls/wp-content/uploads/2018/04/National_Vision_Document_Final.pdf
[62] https://rsf.org/en/lesotho

consequence, all public and governmental institutions we talked to have a large number of vacant positions, in some cases up to 60% of staff.

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

3. TECHNICAL PILLAR

A dynamic data ecosystem requires that the government ICT infrastructure be available and robust to cater to the ICT demands of the government and its agencies as well as the non-governmental actors. This infrastructure encompasses the national backbone, availability of adequate internet infrastructure along with data centers and universal mobile phone coverage along with data connectivity. It is also important to understand if the national ICT infrastructure is reliable and affordable across the spectrum of users and there is a technical framework in place (such as interoperability and defined data standards) based on which data is produced and consumed.

In the context of Lesotho, this chapter explores the availability of government ICT infrastructure and the regulatory framework, along with the availability and affordability of the Internet. It also explores the ongoing or planned initiatives that may have a positive impact on a national data initiative.

ANALYSIS

GOVERNMENT INFRASTRUCTURE

Based on the World Bank Lesotho Digital Economy Diagnostic (DE4A) report,[63] Lesotho's digital platforms landscape is highly fragmented and not designed to support interoperability. Several platforms (e.g., DHIS2 or E-register at MoH, LIAMIS at MoAFS) are installed at individual MDAs and developed mostly without utilizing standardization protocols or considering linkages with existing internal or external platforms. As per the UN E-Government Development Index (EDGI)[64], Lesotho ranks 154th of 193 countries, which is lowest among the countries in Southern Africa.

Government agencies have little online presence. Of 25 ministries, 11 (including the Ministry of Communications, Science and Technology) do not have websites. Even if websites are available, they are not updated regularly and often provide limited information.[65] This confirms a previous study made by MISA in 2014.[66] As per the World Bank DE4A report, Lesotho has not reached the point where MDAs are using social media to support information-sharing. It is clear from interviews that the use of social media by government officials for governance/policies/public communication is very limited.

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[63] Yet to be publicly available. Draft made available as part of this desk research.
[64] https://publicadministration.un.org/Portals/1/Images/E-Government%20Survey%202018_FINAL%20for%20web.pdf
[65] http://documents.worldbank.org/curated/en/832751537465818570/Unlocking-the-potential-of-Lesotho-s-private-sector-a-focus-on-apparel-horticulture-and-ICT
[66] https://crm.misa.org/upload/web/most-open-and-secretive-government-institutions-in-lesotho-2014.pdf

The Ministry of Communications Science and Technology (MCST) owns and maintains the Lesotho Government Data Network (LGDN)[67] that was supported by the funding received from the African Development Bank (AfDB). LGDN connects most ministry offices in Maseru and most government offices in other districts. One data center is available, and an additional data center is being built approximately 120 kilometers from the capital city (2018). It appears from interviews that most MDAs host their data and data systems at the MCST-operated data center. According to the World Bank review, the data center is not designed to ensure data security, data archiving and digital preservation. This was confirmed through interviews that underlined the limited policies on data security, and the lack of a disaster recovery procedure for the data center that put at risk all data and systems hosted there.

There is no global architecture and almost no citizen-focused e-government services riding on top of this national backbone, and very few ministries provide such services via their portals. The eGovernment Portal launched in 2018 hosts services that are now mostly out-of-order. The NSDP II recognized the ICT supported services gap and aimed at focusing on improving the access and use of such services but no activities have been engaged so far.

Some ministries perform better in terms of global platforms and information systems. This includes:

- MoHA and the NICR civil registry: NICR implements a fully biometric National Identification Document (e-ID) and has been rolled out to 85% of the eligible population (1.1 of 1.2 million). The National Digital ID and Civil Registry platform is an integrated system based on civil registration data, which includes birth, marriage and death registration, biometric details (photo, fingerprints) for Basotho over the age of 16 and passport data. The NICR registration form is put in annex 6 for further information. MoHA officers at district level are all connected to the central database, and access is being rolled-out at the community council level (4 community councils connected at the time of the interview with MoHA).

- MoF and the Integrated Financial Management System (IFMIS)[68] that expands up to the district level. This initiative aims to provide an integrated computerized financial package to the effectiveness and transparency of public resource management by computerizing the budget management and accounting system for government.

- MoH and District Health Information Software 2 (DHIS2) that is available in all health facilities. MoH is also currently deploying an Electronic Medical Record (EMR) system called E-register, with the support of PEPFAR, implemented by ICAP. E-register has now been deployed in all facilities and is starting to replace paper reporting. A robust migration procedure from paper reporting to paperless reporting has been designed

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[67] WB report *Unlocking the potential of Lesotho's private sector: a focus on apparel, horticulture, and ICT 2018* http://documents.worldbank.org/curated/en/832751537465818570/Unlocking-the-potential-of-Lesotho-s-private-sector-a-focus-on-apparel-horticulture-and-ICT
[68] http://www.finance.gov.ls/projects.php?id=current_projects

and is being rolled out. At the time of this report about 50 health facilities have fully transitioned to paperless reporting. E-register has been interfaced with DHIS2 to automate HIV/TB reporting. However, it does not link with NICR civil registry.

- MoAFS is in the process of rolling-out LIAMIS (Lesotho Integrated Agriculture Management Information System) to include a national farmer registry. By the 2021, the pilot phase in two districts (Berea and Mafeteng) should be completed. This information system is not currently linked to NICR.

- Ministry of Social Development and the National Information System for Social Assistance (NISSA) that reference people, their vulnerability level, and the social programs they have access to. This information system is not currently linked to NICR.

As part of UN Data for Sustainable Development Project (UNDSDP), GoL has launched a national data portal.[69]The national data portal is not hosted in Lesotho and not managed by any MDA of GoL but by AfDB. AfDB provided training to BoS staff leading to the publication of some datasets. However, since the first publication the data offer has not increased, and datasets are not updated (likely because of limited leadership related to the importance of the data).

Digital payments platforms are underdeveloped with few public and private sector services being enabled for online payments. Only a handful of government agencies offer digital payment options, such as for land tax and construction permit payments. Therefore, Lesotho does not have any electronic procurement systems, and limited information on tender notices and contract awards is published on the government portal. Most of the documents are offline and need to be purchased via the agencies. There was an initiative in 2012 to develop a Public Procurement Management Information System, but this does not seem to have been achieved.

At a more micro level, connectivity, in terms of availability, stability, bandwidth or costs, did not emerge as a main issue in any of the interviews at the national or subnational level. A few people mentioned that electricity is more challenging. In terms of computers, software and tools, there are clear needs. Almost none of the MDAs we interviewed have access to or use digital data collection tools or statistical software. The absence of central data portals besides existing information systems challenges a greater use of data. Finally, the absence of automated publication processes and platforms at e.g., BoS level delays the availability of reports.

GOVERNMENT STANDARDS

When it comes to producing and sharing information and data, interoperability, data standards, government website guidelines and related standards, as adopted by GoL, present a complex picture. As per the World Bank DE4A report, there is low interoperability between

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[69] https://lesotho.opendataforafrica.org/

MDAs. MCST has attempted to set guidelines to facilitate interoperability among public sector platforms and with private sector platforms. MCST has also developed protocols for interfacing with different platforms which were reported to have been used for the IFMIS platform and the Ministry of Trade and Industry (MTI)'s Business Registry. However, these efforts have resulted in limited success, and most MDAs interviewed by the Bank were unaware of these standards. As per the Data Gap Analysis Report by UNDP[70] and corroborated by the Diagnostic Report[71], there is no evidence of a government-wide adopted reference data including geonames, postcodes, boundaries etc.

As per the World Bank report,[72] the development of online public services is severely constrained by the limited interoperability between government platforms. Most government systems are not linked to the digital ID platform. There are few examples of interoperability between the information systems of different government platforms. Such interoperability issues exist between ministries and even within individual MDAs. For example, there is no linkages between NICR civil registry and MoH E-register, or between NICR and LIAMIS. Within MoH there is no linkages between DISA Lab, the proprietary lab management system, and E-register.

However, it is interesting to see that some government systems are interfaced with a number of private sector organizations. For example, NICR civil registry is used by some Lesotho Banks and mobile money service providers.

At the sectoral level, some initiatives are taking place within the Ministry of Health (MoH). The National Health Strategic Plan (2017-2022)[73] calls for standardizing ICT hardware and software, including interoperability with existing systems but there is no evidence that such standardization process is currently being implemented[74].

STATE OF ICT IN LESOTHO

Internet international bandwidth: Overall, Lesotho is well connected through hard infrastructures[75], such as submarine cables coming into South Africa. One of the primary reasons is due to the role of the Universal Service Fund (USF). It is considered one of the only

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[70] https://info.undp.org/docs/pdc/Documents/LSO/Final%20Annual%20Report_%20Lesotho%20Data%202017.pdf

[71] Retrieved from https://www.ls.undp.org/content/lesotho/en/home/projects/lesotho-data-for-sustainable-development-project.html

[72] http://documents.worldbank.org/curated/en/832751537465818570/Unlocking-the-potential-of-Lesotho-s-private-sector-a-focus-on-apparel-horticulture-and-ICT

[73] http://www.childrenandaids.org/sites/default/files/2018-05/Lesotho_Nat%20Health%20Strat%20Plan_2017-2022.pdf

[74] See RTI ICT assessment for more details.

[75] Source: Lesotho Rapid eTrade Readiness Assessment
https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2483

successful cases in Africa, having supported the deployment of 46 base stations to remote areas and the connection of 40 schools to the Internet. Telecommunications infrastructure has developed considerably, with three international gateways offering access through South Africa to the Eastern Africa Submarine Cable System (EASSy), Seacom, and West Africa Cable System (WACS) submarine cables.
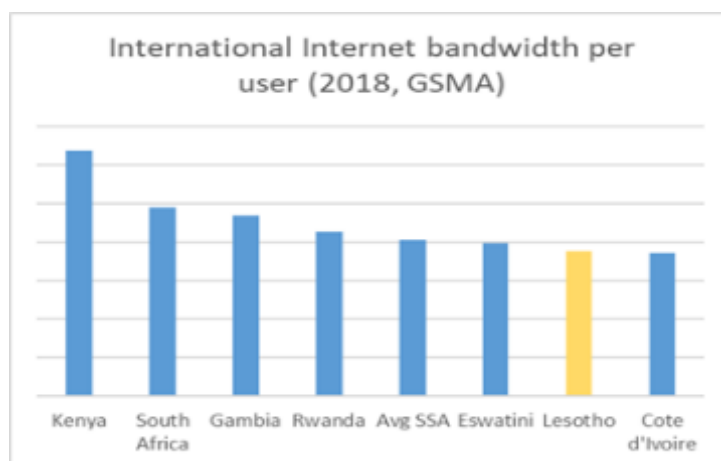
However, a survey commissioned by LCA in 2017 [76] established that high costs and slow speeds are the two main factors limiting Internet use among individuals with access to the Internet. That said, connectivity costs or coverage were not mentioned as limiting factors in any of the interviews.

Mobile & Internet penetration rate: Figures from GSMA shows that the penetration rate of different mobile technologies (2G, 3G, 4G) is better in Lesotho compared to many other countries and Sub-Saharan Africa Average (SSA). Lesotho was also one of the very first countries in the world in August 2018 to deploy a 5G commercial service.[77]

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[76] State of ICT in Lesotho 2017, https://researchictafrica.net/2018/01/12/state-of-ict-in-lesotho/
[77] https://www.itweb.co.za/content/Pero3MZgjnKqQb6m

Mobile technologies and Population Coverage (2018, GSMA)
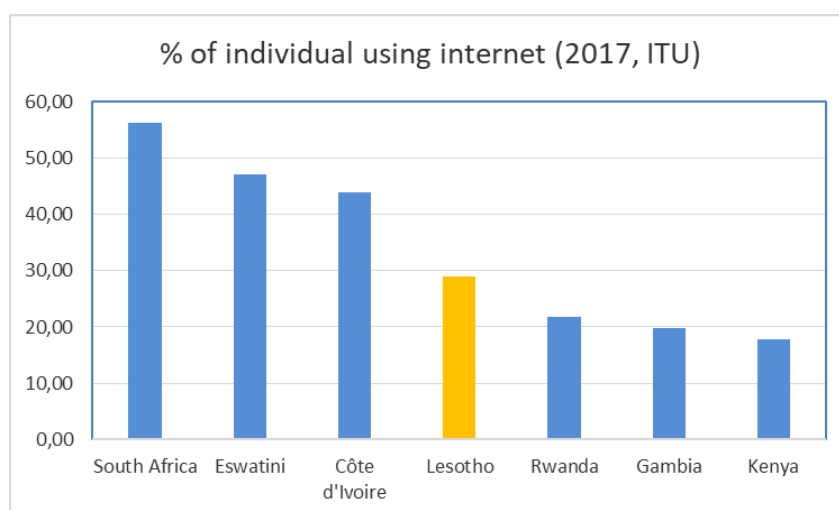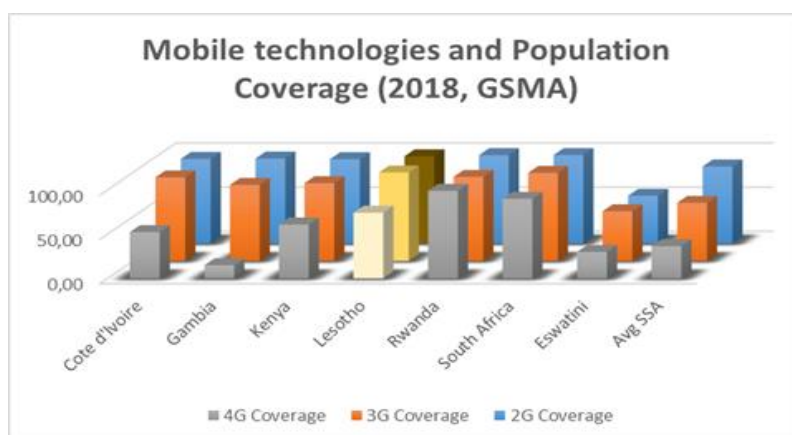
There is a duopoly in the ICT market in which the two main players, Vodacom and Econet, have effectively divided up the addressable market. Weak competition is reflected in low product innovation and limited standardized low-cost, high value bundled services, which are currently available in other African countries. The government has an equity stake in several companies offering telecommunications services, which may potentially result in a conflict of interest.

Mobile Ownership: Mobile ownership stands at more than 60% which makes Lesotho one of the best-equipped countries in Sub-Saharan Africa (SSA).

Mobile ownership (2018, Mobile Connectivity Index, Dimension Score, GSMA)
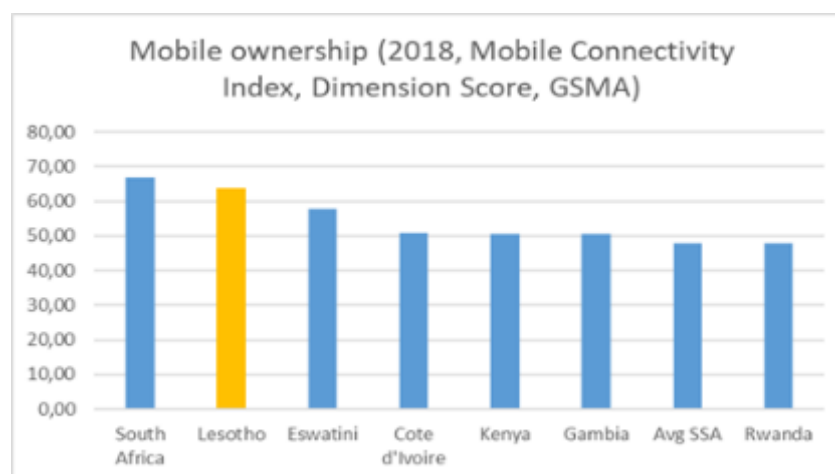
Affordability: The cost of connectivity (small and large internet bundle) and devices are close to the average of compared to other SSA countries, but still high compared to the average income. The device and connectivity costs seem more due to the duopoly of mobile operators, as in terms of taxation, Lesotho is ranked as one of the best countries in the continent for both device and connectivity.
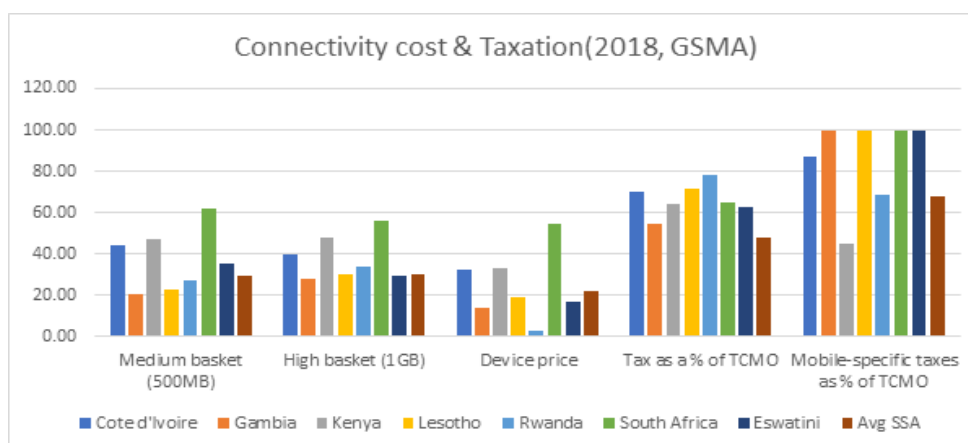
Connectivity: A detailed analysis of the GSMA connectivity index shows that overall , Lesotho performs slightly better than the SSA average. A deeper analysis of the four index pillars demonstrates that the main challenge of Lesotho's ICT sector is related to content and services

Internet Content, Dimension Score (2018, Mobile Connectivity Index, GSMA)
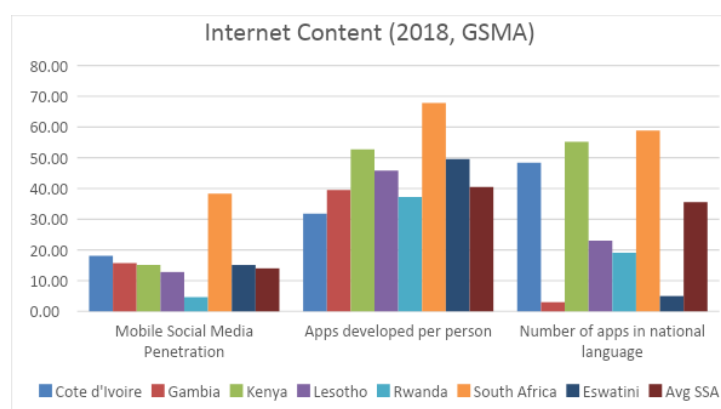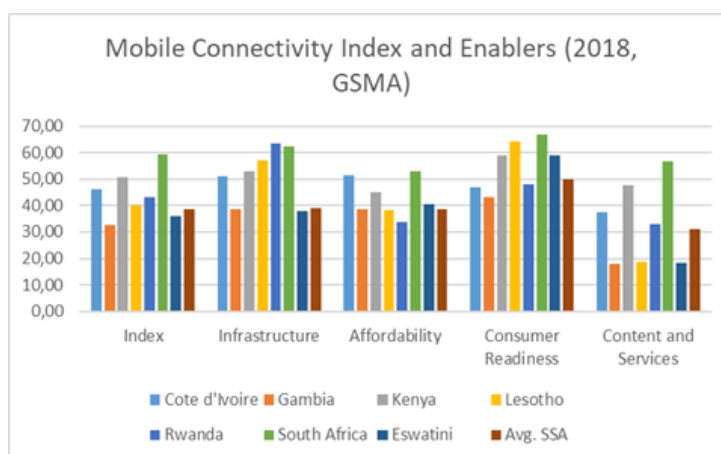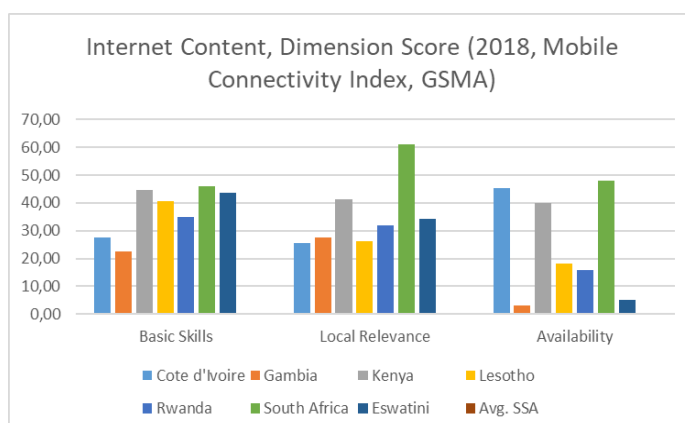
E-commerce: E-commerce activities are limited in Lesotho compared to other countries. Social media channels, such as Facebook, have become the main platforms for trading online, indicating that there is an increasing buyer-seller interface through online means. Facebook is mainly used for Consumer-to-Consumer (C2C) or Business-to-Consumer (B2C) transactions. Currently several buy/sell groups with 50,000 plus members use the platform for advertising, negotiating, and selling a wide range of products, such as cars and houses. The key advantage is the fast turnaround and the ability for new actors to leverage this new opportunity and launch businesses. While the bulk of the products are second-hand goods, there is also some retail activity. However, as per the World Bank DE4A, Lesotho has not reached the point where businesses are levering social media to support marketing.

Internet shoppers (2019,B2C E-commerce index, UNCTAD)

Views from the private sector (15 responses)
What type of e-commerce platforms do you use?

Source: UNCTAD
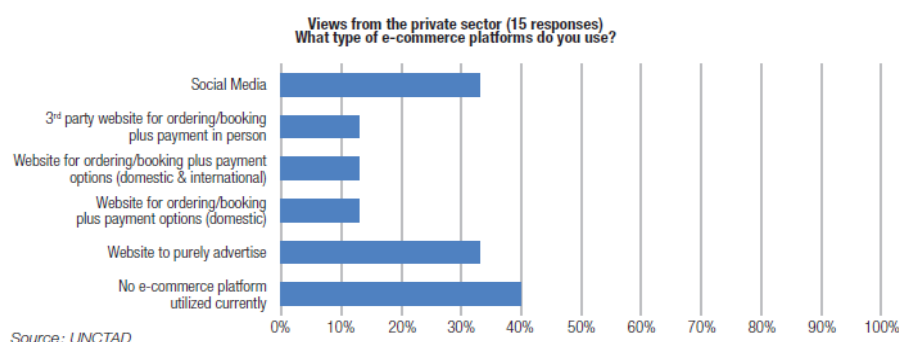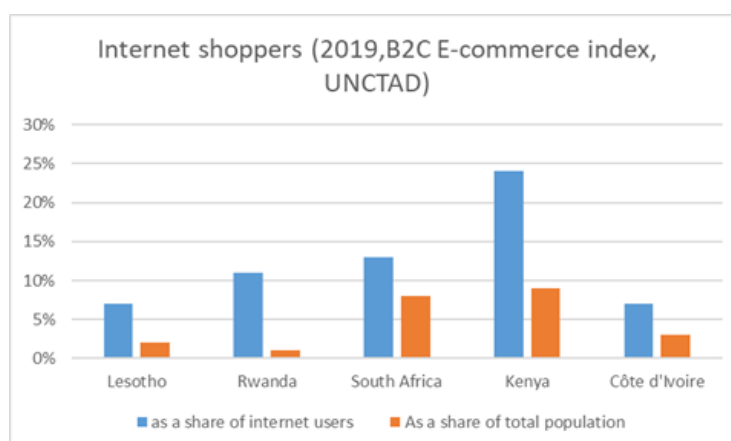
Financial Services: Mobile money services are available and are widely utilized, but other e-payment systems (cash transfer, credit cards, online banking…) are not well developed. Currently, Lesotho has three e-money products: Vodacom's M-Pesa, Econet's EcoCash, and FNB's eWallet. Both Mobile Network Operators (MNOs) have a significant combined network of approximately 8,000 agents to handle cash-in and cash-out transactions. However, the two systems are not fully interoperable: while an Econet customer can send EcoCash to a Vodacom client, a Vodacom client cannot currently send MPesa to an Econet user. Although the usage of mobile money is increasing in Lesotho, the country has not yet seen the "snowball effect" observed for mobile money in many African countries[78]. Outside these mobile money services, few services exist such as an instant money transfer by Standard Lesotho Bank or mobile banking applications from Nedbank Lesotho.

Other e-payment systems, such as online payments and online banking, are not widely used in Lesotho. For most customers, the agent is their primary interface with the mobile money system. By the end of 2017, the MNOs had approximately 550,000 combined active mobile money accounts. According to the Central Bank of Lesotho (CBL)'s statistics, these two systems collectively processed a total of 29.7 million transactions, worth about US$ 284 million, representing a 77% and 116% growth in terms of transaction volumes and values compared to 2015, when a total of 16.76 million transactions valued at US$ 135 million took place. Between 2013 and 2016, transaction volumes experienced a 388% growth, while transaction values grew by 647% during the prior period. Despite the increase in mobile payment transactions, the Basotho still rely mainly on cash-on-delivery to carry out their e-commerce transactions.

Financial inclusion & digital payments (2017, Global Findex database, WB)
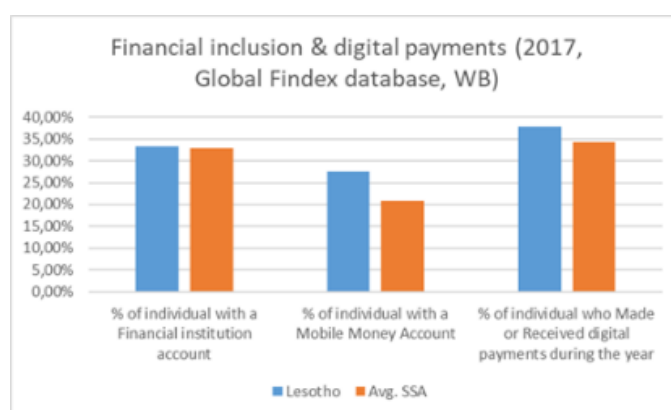
ICT In Business: The use of ICT in the private sector is low and far less developed compared to the SSA average.

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[78] The low mobile money take-off is likely due to several factors such as the absence of providers accepting mobile money payments, insufficient services on mobile money (e.g., credit, saving etc.) or the lack of a strong advocacy campaign.
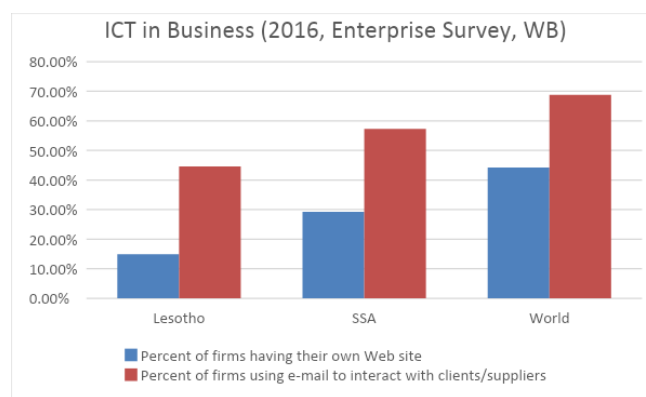
Lesotho was among the earliest of the countries in SADC to reform its ICT market in the 1990s, adopting technologically neutral licenses. The sector is regulated by the independent Lesotho Communications Authority (LCA). Despite the above, Lesotho has a small IT industry. Based on the Business Registry data, there are only ten firms that provide computer programming, IT consultancy, and related services.[79] A limited number of ICT start-ups have emerged. Examples include online business training platform, featuring a virtual chat with international mentors; an Uber-like platform linking local drivers to patients travelling to clinics; a digital app to improve school management; a web-based app to support clinics in the stock management of drug supplies; and the use of drones to provide photo-mapping services for different purposes, from the monitoring of construction projects to disaster management programs. It is important to note that the sector is currently unstructured and there is no formal ICT association in place to support the development of the ICT industry.

CONCLUSION

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 is well implemented. MCST data center may have space limitations, but this seems to be easily addressed when needs emerge. At a more micro level, MDAs, including BoS, require better tools and a stronger infrastructure in terms of digital tools, software, and data platforms to perform their duties more efficiently in terms of data collection and data dissemination. However, this does not seem to be a major barrier.

Finally, the state of the ICT sector in Lesotho is also on par with what is observable in other countries. Coverage, technologies, and affordability are not the main barriers for ICT use. The main issue is largely related to the lack of locally made content (applications…) that usually drive usage and adoption. This lack of content is due to the weak ICT innovation ecosystem (see section 6) that does not offer appropriate infrastructure (community place, tech hub…) and incentives to attract young innovators and support

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[79] Source WB report on "Unlocking the potential of Lesotho's Private Sector: A focus on Apparel, Horticulture & ICT", 2018

them in creating new innovative services. In the same way, in absence of young innovators designing innovative business services, in absence of supportive policies, the ICT sector at business level is largely underdeveloped.

4. CAPACITY PILLAR

For successful data use across the government, ministries and agencies must have the capacity to manage their data assets. To effectively carry out these activities, agencies should have (or develop) an innovative capacity building plan to enable staff with adequate ICT skills and technical understanding of data (e.g., formats, metadata, APIs, databases etc.). Engagement among agencies and at all levels of government to set common standards can only happen if there is a clear training plan that is robustly implemented across all agencies and therefore required policy, technical and budgetary support.

In the same way, similar capacities are needed within the society at large so that actors such as researchers, private sectors, civil society organizations or media can take advantage of governmental and non-governmental data to conduct their activities more efficiently and more rigorously. In this section, we explore existing capacities within the government and within Lesotho society, and existing curriculum (formal and professional training) and institutions to develop those capacities.

ANALYSIS

SKILLS WITHIN GOVERNMENT

As per the Data Requirement Analysis and Data Mapping, UNICEF, Lesotho Report,[80] in 2019, human, technical, and skill-based capacities vary across ministries and departments. One component of the project was to estimate interest in data sensitization training across national and sub-national levels, as well as across staff roles, including topics of interest. According to the final report on the Public Service Reforms 2019,[81] government service delivery agents are not taking full advantage of opportunities offered by advances in ICT to better serve citizen needs. This is largely due to the fact that staff training on such matter has been generally overlooked. Data specialist, information system management, and program management roles are siloed within ministries, with negative repercussions for data dissemination and M&E. Strengthening the capacities and mandates of all GoL roles should include a basic awareness of data uses, system functionalities, and programmatic needs.

As per the Lesotho Data for Sustainable Development, Data Gap Analysis Report[82], there still exist significant data gaps at the national level that are directly linked to inadequate human

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[80] Data Requirement Analysis and Data Mapping UNICEF Lesotho:
https://www.developmentgateway.org/sites/default/files/2019-02/UNICEF_Lesotho_Diagnostic.pdf
[81] https://www.gov.ls/wp-content/uploads/2019/11/Final-Report-on-the-Public-Service-Reform.pdf
[82]

https://info.undp.org/docs/pdc/Documents/LSO/Final%20Annual%20Report_%20Lesotho%20Data%202017.pdf

capacity. The data gaps linked to monitoring the SDGs are a result of several drivers, including the inadequacy of statistical products/statistical methods and institutional/individual capacity challenges concerning analytical work performance. The report further identifies the need to develop and implement a costed plan for continuous training of personnel performing statistical functions for statisticians at MDAs who act as liaison officers between their respective entities and BoS.

The Lesotho Data for Sustainable Development Project conducted training sessions and provided funding for deploying Assistant Statisticians across line agencies, to support the NSDP II and SDG monitoring and reporting process. The training programs supported the establishment of mechanisms to promote and maintain consistency in the production of statistics by training key statistics officials in the Bureau of Statistics and line ministries on key statistical concepts, tools, and standards. Based on the capacity building plan, specific training programs, study tours, and engagement of thematic experts were supported to enhance the job-learning and exposure to identified areas. However, this is clearly not sustained.

Globally, the interviews highlighted that basic ICT skills are not problematic and are not a blocking factor among government staff. Advanced ICT skills, such as software developer are not present. MCST has network specialists and system administrators but no software development profile has been identified in any MDA.

The situation on data skills is quite different. The staff of most MDAs have insufficient data skills; from data collection to data validation, up to data mashup, visualization, and data analytics. Digital data collection is relatively new and need both skills and tools in almost all MDAs. Challenges appear at almost every stage of the data pipelines. Data collectors receive limited training, and the lack of implementation of the Data Protection Act does not provide a trusted environment for them or for the citizens about which the data is collected. Later, people who are expected to conduct quality checks and validate data have neither tools nor skills to perform the task accurately. Finally at higher level, inadequate skills on new technologies such as big data and data science limit analysis and exploitation. Almost all MDAs and donors interviewed underlined this growing need for skills in data science.

It is important to note that, except for data science skills, BoS has more skills than other MDAs. It is also implementing a decentralization program and is building data collection skills at the district level to increase data quality. However, this program does not cover other skills, in particular data skills to support district council in data use.

The study did not identify initiatives that are looking at developing data skills in a holistic approach. Instead, MDAs organize specific training on specific information systems in a siloed approach that reflect the same approach for information system design. In such an approach people are trained to enter data in systems but without understanding the rationale and devoid of incentives.

Finally, besides skills, a recurrent issue that emerged from interview is the staff resource. In almost all interviews, it appears that MDA planning offices have a significant number of vacant positions in terms of chief statisticians, statisticians or assistant statisticians, results of budget cuts and non-replacement of people leaving these positions.

SKILLS IN SOCIETY

According to the World Bank report on the State of ICT in Lesotho[83], the Universal Service Fund (USF) administered by LCA had allocated 40% of its 2014–18 budget to broadband and ICT development for the education sector. As per the State of ICT in Lesotho report released by LCA,[84] broadband and ICT development for the education sector is given high priority with a special focus on unserved rural areas and underserved urban areas. The USF works with the Ministry of Education and Training (MOET) to ensure that schools have access to ICT services and tools for learning. According to the World Bank report on the State of ICT in Lesotho, out of all mobile phone owners in 2016, 44.5% owned an internet-enabled device, and 32.45% of the whole population used smartphones to access the Internet, demonstrating some level of basic digital literacy. These figures suggest that a significant proportion of the population does not have basic digital skills and that the skills gap can be estimated to be at around 2/3 of the population.

In 2016/17, USF supported the connection of 40 schools to the Internet (over around 1500 primary schools in the country), the provision of mobile labs in 10 schools, and teachers training.[85] However, it is not known if the agency's goal to connect all schools by 2020 is likely to be achieved. According to a study conducted by Research ICT Africa[86] in 2017, low ICT skills among the general population constrains the development of the digital economy. Limited digital literacy is one of the key constraints to Internet use by the population. There are a relatively low university enrolment rate and poor access to even basic digital skills training at the university level.

As per the DE4A study, out of the existing entrepreneurship support programs, there are a limited number of institutions that provide targeted business support services to digital entrepreneurs. These include Vodacom's Innovation Park, located in Maseru, and the Innovation Hub at the National University of Lesotho (NUL). NUL's Innovation Hub primarily supports hardware prototyping in more traditional sectors such as concrete production, agriculture, food production, and other light manufacturing services. Limkokwing University, a private undergraduate institution, runs the Limkokwing Entrepreneurship Acceleration

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[83] http://documents.worldbank.org/curated/en/832751537465818570/Unlocking-the-potential-of-Lesotho-s-private-sector-a-focus-on-apparel-horticulture-and-ICT
[84] https://www.academia.edu/10636066/The_State_of_ICT_in_Lesotho
[85] https://researchictafrica.net/2018/01/12/state-of-ict-in-lesotho/
[86] https://researchictafrica.net/2018/01/12/state-of-ict-in-lesotho/

Platform (LEAP) that provides a year-long entrepreneurship training to final year students; however, like for NUL, very few project teams are focused on ICT.

As per the Lesotho Voluntary National Review on the Implementation of the Agenda 2030 (VNR) Report, 2019,[87] the country adopted a Youth Policy in 2017, which provides a framework for empowerment of youth. It aims at enabling youth to develop social, economic, cultural, and political skills to enhance their participation in the development process. The policy also provides a framework for the creation of employment for youth. Besides, the Ministry of Gender, Youth, Sports, and Recreation has been implementing Youth Employment Promotion since 2012. This program conducts entrepreneurial training for young potential and existing youth entrepreneurs in the ten districts and has since trained more than 2,000 youth and women. The program also links youth to technical training, markets, and information on opportunities available for youth entrepreneurs.

Although unemployment among ICT graduates tends to be low, few students major in ICT-related fields. Of approximately 1,800 students enrolling in NUL each year, fewer than 40 choose to pursue ICT-related careers. Some gender-disaggregated data is available.

Enrolment trends per field of study, 2012/2013 (number of students)
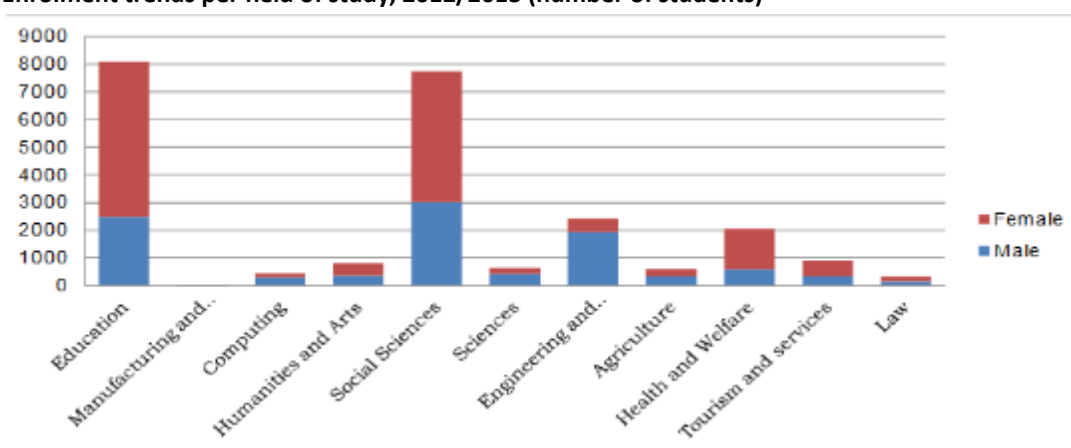
Source: BoS, 2015

Note: Although more females than males are enrolled in university education in Lesotho, very few females enroll in ICT-related programs.

Based on our investigations, it appears that the level of technical skills if ICT graduates match employers' expectations and needs. Still, local opportunities for professional development are limited (source World Bank report on Unlocking the potential of Lesotho's private sector: a focus on apparel, horticulture, and ICT[88]). Ministries and government agencies, Vodacom Group, Econet, and Standard Lesotho Bank are the four major employers for ICT graduates. The employers in the ICT and non-ICT sectors do not face difficulties in filling ICT vacancies and are satisfied with the technical skills of the hired graduates. This could reflect the

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[87] https://sustainabledevelopment.un.org/content/documents/23777Lesotho_VNR_Report_2019_Final.pdf
[88] http://documents.worldbank.org/curated/en/832751537465818570/Unlocking-the-potential-of-Lesotho-s-private-sector-a-focus-on-apparel-horticulture-and-ICT

relevance of university curricula for Lesotho's job market needs and possibly that the local private sector does not require advanced ICT qualifications. In neighboring South Africa, employers struggle to find ICT professionals, and the availability and quality of ICT skills are considered a constraint for the development of the private sector in general and the ICT industry.

According to the World Bank study referenced above, based on LinkedIn data, 9 of the top 10 skills highest demand in South Africa are in ICT related fields. Many of Lesotho's ICT graduates end up being absorbed by the South African labor market as it offers more competitive wages and a more sophisticated and developed digital sector. This demonstrates the quality of the ICT training in Lesotho. However, this brain drain to South Africa in the ICT sector is a challenge for the Lesotho ecosystem.

Data journalism is still emerging in Lesotho, and The Centre for Investigative Journalism (CIJ)[89]is an active organization to promote transparency and investigative journalism. CIJ seems to use budget data to build stories and show potential corruption cases; however, there is no evidence of data journalism activities outside CIJ and part of the challenges that CIJ is experiencing is linked to the availability and access to more government data to support their activities.

Similar to the situation at the government level, it clearly appears that data science skills are lacking and in demand within the society.

CAPACITY BUILDING WITHIN GOVERNMENT

While the budget allocation within various ministries and MDAs for training activities have been fragmented, over the last two decades, several strategic government documents have been developed, indicating a commitment to developing digital skills. Some of these include the ICT Policy for Lesotho, 2005,[90] which laid the foundation for enhancing ICT capacity across the government and society. According to the DE4A study conducted by the World Bank,[91] Lesotho is a signatory to the African Union digital economy agenda 2030.[92] As part of this, digital skills are recognized as a critical component of the digital economy. NSDP I[93] was developed as a poverty reduction strategy that guides policy decision making and resource allocation. It recognized the need for a well-developed human resource base to produce world-class skills and expand access to ICT. Furthermore, the NSDP II[94] emphasizes the importance of digital skills development to facilitate economic development. In line with this,

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[89] https://lescij.org/about-us/

[90] https://www.gov.ls/documents/lesotho-ict-policy/

[91] Draft made available as part of this study.

[92] https://www.uneca.org/publications/au-%E2%80%93-un-framework-implementation-agenda-2063-and-agenda-2030

[93] https://www.centralbank.org.ls/images/Financial_Stability/Financial_Inclusion/NSDP_Final_-_28.06.12.pdf

[94] https://www.undp.org/content/dam/lesotho/docs/Reports/NSDP%20II%202019-2023.pdf

the objectives related to the development of ICT infrastructure and use include demand-side measures such as the promotion of ICT literacy. However, none of the activities included in NSDP II have been implemented.

The Curriculum and Assessment Policy of 2008[95] references ICT as a contributing subject to creativity and entrepreneurial skills and advocates the development of a knowledge-based society and competition at the global level in areas including technological development. The AfDB led e-government infrastructure project[96] (2nd phase draft proposal) has committed a budget towards training and capacity building, specifically providing support to Lerotholi Polytechnic by renovating the training labs and providing computer lab equipment, networking, software, and furniture. This was achieved in 2020, but covers only very basic skills such as email, office software or web surfing.

The UNDP Lesotho Data for Sustainable Development (UNDSDP) Project[97] was a well-developed intervention that had results framework with indicators, baselines, targets, sources, and means of verification for most results; however, the project did not have the budget and time to address the ecosystem issues including capacity building and data issues (availability, access, and analysis) comprehensively. However, as part of several capacity building activities, the project has produced various manuals and knowledge products (e.g., Result Based management -RBM-, Administrative Data, Basic Statistics, Excel Training, etc.). Additionally, the assessment reports such as SDG baseline, diagnostic, and data gap analysis provides good reference document for the BoS and future projects. Also, the project developed a Capacity Building Plan as part of its work on assessing national needs and capacity for monitoring SDGs and NSDP.

The UNDSDP evaluation report[98] states that the capacity building plan detailed above does not realistically reflect the capacity building required to bridge the gap for effective monitoring and reporting of SDGs, Agenda 2063 and the NSDP in creating an ecosystem. The costing provided in the capacity development plan largely pertained to study tours, hiring assistant statisticians, and training. Further, the project largely targeted mid-level officials for training and capacity building with no significant sensitization at the senior level in creating an enabling environment to collect data and use it for decision making for policies. Further, the training undertaken under the Lesotho Data Project primarily targeted mid-level officials and did not train or capture feedback from the senior level as that required a considerable amount of advocacy.

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[95] https://www.semanticscholar.org/paper/The-Lesotho-curriculum-and-assessment-policy%3A-and-Raselimo-Mahao/703355f8d9851084572281e42e17fdc72da6b6bc

[96] Draft made available for the purpose of this study.

[97] https://info.undp.org/docs/pdc/Documents/LSO/Final%20Annual%20Report_%20Lesotho%20Data%202017.pdf

[98] https://erc.undp.org/evaluation/documents/download/15512

As per the Health Management Information System Strategic Plan 2013 - 2017[99], MoH has a statistics unit whose role includes the training of health workers in health statistics to enhance the use of data in management, planning, and research. Further, MoH set in 2012 a Continuous Education Implementation Plan (CEIP) that is the master capacity building plan. It includes[100] development of training materials, data Management training manual for Data Clerks, use of Information for Management Manual for Health Managers, Electronic Medical Record Systems Manual for EMR Users and a basic Computer Literacy Manual and Online Course. This has not been implemented to date.

CAPACITY BUILDING WITHIN THE SOCIETY

As per the DE4A study conducted by the World Bank,[101] basic digital skills are developed mainly through the formal education system and to a lesser extent through employer-led training, private training companies, and others. Challenges such as unreliable electricity supply, unavailability of ICT equipment, and inadequacy of teachers' ICT skills impact implementation. Secondary schooling offers some entry-level digital skills development,[102] and higher education institutions teach basic digital literacy. The secondary education enrolment rate of 53.8% and higher education institutions enrolment rate of 9.8% suggest that a high percentage of the population might not have basic digital skills.

According to the study conducted by Research ICT Africa, few university students major in ICT related fields. Few tertiary institutions, such as the National University of Lesotho (NUL), the Lesotho College of Education, Lerotholi Polytechnic, Limkokwing University, and Botho University, offer specialized courses and degrees in ICT, although only at the undergraduate level. According to the World Bank DE4A report, these universities offer degree programs in Computer Science, Engineering in Computer Systems and Networks, Information Systems, Business Information Technology, Mobile Computing, and others. To enhance its digital skills offering NUL provides students preparatory programs for professional certifications such as CISCO networking.

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https://extranet.who.int/countryplanningcycles/sites/default/files/country_docs/Lesotho/hmis_strategic_plan_2013-2017_final_-_01042013.pdf

[100] Source: HMIS Strategic Plan

[101] Draft made available as part of this study.

[102] The Ministry of Education and Training (MET) is piloting a new approach of teaching and learning mathematics and science through technology in 17 public junior secondary schools. The approach called *Progressive Mathematics Initiative and Progressive Science Initiative* (PMI-PSI) uses open-source materials aligned with the national curriculum.

ICT courses at Lesotho's tertiary institutions			
Institution	Courses offered	Length of program	Profile of graduates
Botho University – Lesotho	BSc Honors in Computing	4 years	• Health Information Systems Managers • Telecommunications Trades Workers • Media Equipment Operators • ICT Sales Professionals • ICT Business and Systems Analysts
	BSc Honors in Health Information Management	4 years	
	BSc Honors in Mobile Computing	4 years	

Lesotho does not currently have a National Research and Education Network (NREN), which would allow research and education institutions better access to fast internet bandwidth, educational resources and support international cooperation. The tables below[103] provide a snapshot of the courses offered.

ICT courses at Lesotho's tertiary institutions			
Institution	Courses offered	Length of program	Profile of graduates
National University of Lesotho	BSc Computer Science	4 years	• Computer Networks Professionals • Analyst Programmers • Web Developers • ICT Trainers • Database Systems Administrators • ICT Security • ICT Managers • Library Technicians
	Bachelor of Engineering in Computer Systems and Networks	4 years	
	Bachelor of Science and Information Systems	4 years	
Lesotho College of Education	ICT for Primary School Teachers Diploma at 1st and 3rd year	Semester Courses	• ICT Teacher Trainers • ICT Support Technicians
	Computer Awareness and Skills Diploma at 1st and 3rd Year	Semester Course	
	Computer Awareness and Skills Certificate at 1st year	Semester Course	
Lerotholi Polytechnic	Computer Systems Engineering Diploma at 2nd and 3rd year	Year course	• ICT Business and Systems Analysts • Software and Application Programmers • ICT Support • Telecommunications Technical Specialists
Limkokwing University of Creative Technology	Associate Degree in Business Information Technology	3 years	• Chief information Officers • ICT Sales Professionals • ICT Support Technicians • Systems Administrators • Sales Assistants • ICT Test Engineers • Multimedia specialists and Web Developers • Network Professionals • Telemarketers • Gallery, Library and Museum Technicians
	Associate Degree in Multimedia and Software Engineering	3 years	
	Associate Degree in Information Technology	3 years	
	BSc Honors in Information Technology	4 years	
	BSc Honors in Software Engineering with Multimedia	4 Years	
	BSc Honors in Business Information Technology	4 years	

One notable absence is that there are no degree courses on topics such as mobile application development. This can hinder the emergence of digital entrepreneurs.

As per the 2017 survey, perceptions about the quality of courses offered vary depending on the educational institution. For example, the NUL degrees got the best reviews from focus group participants. As per the World Bank DE4A study, the Medium-Term Education Sector Plan for 2016–2026 commits to supporting the development of bridging programs for school leavers to ensure that they attain the desired level of skills in mathematics, science, ICT, and

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[103] Source: WB report "*Unlocking the potential of Lesotho's private sector : a focus on apparel, horticulture, and ICT*" http://documents.worldbank.org/curated/en/832751537465818570/Unlocking-the-potential-of-Lesotho-s-private-sector-a-focus-on-apparel-horticulture-and-ICT

English language. Currently, a National ICT in Education Policy is being drafted and is envisaged to provide specific clarity and strategic direction in terms of digital skills.

Few ICT training companies operate in Lesotho and offer courses such as Microsoft Office, electronic communications, accounting software, and similar software packages. There are few skills development hubs; for example, the Hub in Morija[104] is a creative technology laboratory that provides affordable Internet access, online resources, and digital skills workshops to the local community. Training provided includes basic digital literacy, film, photography, animation, video editing, and writing.

Other avenues through which basic ICT skills developed include community skills development hubs such as Basali Tech[105] and Girl Coding Academy[106], and initiatives such as Africa Code Week, which teaches digital literacy and coding skills to teachers and school-age children. These initiatives are not sustained[107] and have a very little footprint. The lack of sustainability of these initiatives is likely related to the relatively low demand from the different sectors. There is no evidence of data journalism-related training, and CIJ members have received training outside the country, and they do not organize courses themselves. There are a few journalism courses and schools such as NUL Bachelor of Arts (BA) in Journalism and Media Studies,[108] Limkokwing University Bachelor of Arts (Hons) in Broadcasting & Journalism[109] and Thabure School of Journalism.[110] None of them have a module on data journalism.

In terms of data skills, NUL, through its statistics department offers only under-graduate programs:

- **BA in Statistics & Demography** (Faculty of social sciences) for 40 to 50 students. Given the very specific focus on demography, employability is low, even if they are trained on statistical analysis, and statistical software like STATA.
- **BSc. in Statistics** (Faculty of Science and Technology): this program has a lower capacity in terms of student but a very high demand on the market. They are all hired immediately. Their dual skills on computer science, programming and statistical analysis are noteworthy. The program includes training on R programming and STATA.
- **Certificate in statistics** (Faculty of Social Science): this certificate is being transformed in degree.

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[104] https://thehubatmorija.co.ls/
[105] https://mobile.facebook.com/basalitech/?ref=opera_speed_dial
[106] https://www.facebook.com/GirlsCodingAcademy/
[107] Most of the initiatives identified disappear or dramatically reduce their activities after the end of the original funding.
[108] https://www.gov.ls/nul-introduces-journalism-and-media-studies/
[109] https://www.limkokwing.net/lesotho/academic/courses_details/bachelor-of-arts-hons-in-broadcasting-journalism/
[110] https://www.facebook.com/lescass522/posts/thabure-school-of-journalismjournalism-trainingbasic-news-gathering-and-reportin/1412361182110911/

NUL statistics department faces two main challenges:

- **Recruitment**: They are able to manage under-graduate program only because it is hard to retain PhD candidates who go abroad in SA but also in north America (Canada, USA). Recruiting professor-level faculty is also a challenge. The department has had a professor position since some time without candidates due to salary and opportunities.
- **Split between two faculties**: Having a department split between two faculties (science and technology and social science) is problematic and creates challenges in terms of image and profile of people. There are ongoing discussions to host the whole department under the faculty of science and technology.

However, the level of students coming out of the department does not seem to be a problem for their employability, including in GoL positions. However, besides traditional statistics, there is no course, no degree or no modules on data science or related topics (big data, AI…).

CONCLUSION

Basic ICT skills are globally not a problem at both Government level and society level. Advanced skills in e.g., mobile application development is not well developed but this is likely due to the underdevelopment of the ICT innovation sector. At the moment, there is limited demand for such skills as there are very few employment opportunities.

The situation is more problematic on the data skills front. Most MDAs are missing data skills at all levels from data collection up to data exploitation and use, and data publication. Skills on data science and advanced technologies are nowhere found within the Government and this gap is underlined as a constraint by almost all donors interviewed.

In terms of capacity building opportunities, the biggest cap is on advanced technologies such as data science. While NUL offers qualifications in statistics, there is no formal or professional training initiatives building capacities on data science. This explains in part why such capacities are also absent at the GoL level.

5. DATA OFFER & DEMAND

This chapter investigates the data flows at the national level between MDAs, and between MDAs and non-governmental actors. This section is complemented by the section on subnational data flows that explores data flows between actors at the subnational level and between national and subnational levels.

NB: In Annex 3, we list public data sources that were identified as part of the study and that are publicly available.

ANALYSIS

DATA INVENTORY[111]

The study has identified a series of portals that reference different types of datasets. In particular the national open data portal was set up with AfDB and contains 93 datasets:

- 19 from BoS
- 2 from CBL
- 1 from MoF
- 1 from Lesotho Tourism Development Corporation
- The rest from international organizations

The data portal also hosts the International Monetary Fund (IMF) General Data Dissemination System (GDDS) Data[112] and the Lesotho SDG data[113]. The site is under the authority of BoS. The data seems relatively old on this portal. For example, the census data is from 2006 only. The publications on this site appear to be not the result of an active process with regular updates, but instead a one-shot exercise.

BoS has its own "portal"[114] with a list of links to all their publications. The publication list is manually maintained and contains mostly .pdf files. The rationale for publishing data in .pdf files is due to the nature of the content (a report instead of data). During interviews, it appears that BoS understands the value of publishing the data used in the report in a machine-readable format but did not put in the extra effort in absence of demand for such data.

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[111] The government must have a clear view of all its data assets to leverage data use within its different MDAS, leverage synergies between MDAs, to inform all stakeholders of the availability of these assets and their levels of classification, and to ensure that there is no duplication of data collection effort. The study, therefore, explores to which extent each MDA has developed and maintained an exhaustive data inventory. It also explores in which format data are held (paper, files, information systems)

[112] http://cb.lesotho.opendataforafrica.org/dmbrohg/national-summary-data-page-nsdp

[113] https://lesotho.opendataforafrica.org/bibelid

[114] http://www.bos.gov.ls/Publications.htm

Except for these two examples, the investigations and interviews show that most MDAs do not have a clear view of their data assets. This is underlined in UNDSDP November 2019 final evaluation report[115] that states "The training on administrative data to 157 officials across BoS, DM&E, and 10 pilot MDAs "opened eyes" on data the ministries had at their disposal and how they could be used for decision-making".

However, it is important to note that several MDAs have rolled-out major information systems. A detailed list is provided in Section 3 – Technical Pillar, sub-section Government Infrastructure. These information systems seem well managed and maintained. However, it appears clearly that each of these systems have been designed in silos without interoperability and interconnection considerations, limiting their potential and the opportunity to mash-up data from different systems.

From a data user perspective, the UNDSDP July 2017 Statistics User Report that assessed the statistics user's satisfaction shows that, by far, BoS is the core agency that users engage in getting statistics. At a lower level, MDAs and the Central Bank of Lesotho (CBL) are other sources.

In terms of the use or reuse of data, none of the data published has an open license. In most cases, there is no license and often not even a copyright. Investigations show that this is mainly due to a lack of awareness of the importance of data licenses.

In summary, there is evidence that the government is not sufficiently aware of its data assets, and MDAs do not maintain an active inventory.

DATA QUALITY[116]

Data quality is a composite indicator that includes different dimensions:
- **Accessibility**: are data easily searchable?
- **Timeliness**: How often are data updated with the data collection periodicity?
- **Relevance**: How does the data collected match users' needs for analysis?
- **Reliability**: How reliable is the data provided?

Investigations identified several issues with regards to quality:

1. **The biggest issue is on Timeliness**: BoS does not have sufficient budget to conduct all the surveys it has in its mission. Surveys are executed mainly when donor funding is available. Even when surveys are executed, the time between data collection and

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[115] https://erc.undp.org/evaluation/documents/download/15512
[116] The quality of data collected in terms of relevance, timeliness, disaggregation, accuracy must be adequate with well-defined usage parameters (such as research, awareness-raising, advocacy, and policy, etc.). The study explores the following different dimensions:1) The data quality processes that are in place to detect and correct issues; 2) The perception of data quality by governmental and non-governmental actors.

publication is long, mostly because BoS staff spend as much time as possible in the field and less time in office to prepare the data. This is mainly due to low salaries and stipends available for field work. Issues related to timeliness are also underlined in the UNICEF Lesotho Data Diagnostic that mentions the existence of "a lag between when data are collected, when data are scheduled to be published and when publication occurs. Such delays are particularly common in the NSS". The situation is worse at MDAs level. Given the limited demand for data from leaders, no budget is allocated for data collection, and very limited activities are happening, mostly driven by donors.

2. Concerning **accessibility**, despite the UNDSDP July 2017 Statistics User Report showing that almost 50% of the users find data easily accessible (only 19% find it difficult to access), investigations and interviews of various non-governmental actors show that access to data from BoS or MDA is extremely challenging and unpredictable. In the absence of access to information legislation, there is no legal background to make a request or for public agencies to answer to these requests, and therefore responses are heterogeneous and largely depend on the rationale provided and the decision of the Director or the Permanent Secretary (PS). In that regard, field investigations are aligned with OKFN Global Open Data Index (latest version 2016) that gives a 0% openness score[117] , and Open Data Watch's Open Data Inventory (ODIN – latest version 2018) that places Lesotho at rank 130 out of 178 with a score of 34/100[118]. Both indexes underline the inadequate access to common datasets. Indexes perspective is also aligned with the investigations that shows an extremely limited number of datasets available (see data inventory section). It is also aligned with findings of the UNICEF Lesotho Data Diagnostic published in September 2018[119] that states that "All interviewees cited access to government data as a challenge. BoS – head of the National Statistical System – does not have a standard policy or protocol for sharing microdata."

3. Concerning **relevance**, interviews show that data is usually not available in disaggregated format that a user demands. This is also underlined in the UNICEF Lesotho Data Diagnostic that states that "the lack of a legal or policy framework to facilitate data sharing often means data are not available in the format, disaggregation, or timeframe users demand."

4. In terms of **reliability**, BoS has the capacity and gives attention to data reliability. In that regard, the setup of BoS offices in each district and the training of BoS district head office on data collection principles is a good way to ensure that data collection best practices are implemented and support data quality increase. This aspect is

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[117] https://index.okfn.org/place/ls/

[118] https://odin.opendatawatch.com/ReportCreator/ExportCountryReport/LSO/2018

[119] https://www.developmentgateway.org/sites/default/files/2019-02/UNICEF_Lesotho_Diagnostic.pdf

therefore not much of a concern at BoS level. However, the situation is quite different at MDAs where people doing data collection or data entry receive minimal training and do not understand the objectives or the use of data and therefore the importance of their tasks. In the same way, people doing validation at different level does not have capacities and tools to support data quality checks, making the data poorly reliable.

More generally, it is important to note that evaluating the quality of data is extremely difficult and reliability issues emerge only from use and analysis. The weak data culture and the low demand from leaders at all level leads to low usage of existing data, and therefore low quality. This was also underlined in the UNICEF report that mentions that there is "a significant disconnect between data available at the national/central level, and data available at the district level. Reasons for these cited discrepancies include separate data repositories; the limited ability of national systems to "communicate back" data collected to local level actors; and infrastructure barriers".

DATA USE

The desk research that was conducted before interviews had identified several initiatives from different MDAs related to the use of data for decision making:

- MoH has been developing since 2018[120] with support from UNAIDS an HIV and Health Situation Room that "shows in real-time service delivery data, producing a comprehensive picture and understanding of the country's HIV epidemic".
- The UNICEF/MLGCA/Limkokwing University project "Child Development Indicators" aims to create dashboards of child development indicators for the district, urban, and community councils.
- The Open Data portal on AfDB site hosts numerous dashboards.[121]

Unfortunately, the field investigations demonstrated that either these initiatives are not launched or, in the case of the Open Data Portal dashboards, developed as a proof-of-concept and are not used for policymaking or governance.

The field investigations show that there is a weak data culture, and frequently leaders do not see value in data, do not ask for data, and do not use data. Data collection is among the first activities that experience budget cut. For example, BoS was the department that had the largest budget cut due to the Covid-19 pandemic within MDP. In the same way, there are a huge number of vacant positions in MDAs' planning offices for chief statisticians or statisticians, preventing these offices from fulfilling their tasks.

It is important to note that for most MDAs, data and statistics are for external consumption and not a tool for governance, and not a useful asset for the MDA.

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[120] https://lesotho.un.org/en/20116-launch-hiv-and-health-situation-room-lesotho
[121] https://lesotho.opendataforafrica.org/apps/gallery

Our findings are aligned with other studies such as the July 2017 UNDSDP diagnostic report that underlines that "There is lack of use of data among some MDAs mainly because of the following: i) lack of relevance of data for stakeholder needs; ii) untimeliness of the data; ii) statistical illiteracy; iii) inaccessibility of data; iv) bureaucratic red tape that users have to observe and follow to access data; v) and inadequate dissemination of data".

Part of the UNDP Data for Sustainable Development Project objectives was to address this issue. While one of the major outputs of the project is the recruitment and placement of 6 assistant statisticians in 6 MDAs to develop internal data solutions; in the absence of a focus on leaders, the results in terms of data use are limited. It is important to note that the project focused mainly on the technical level without targeting and engaging high-level management with change management training. Part of the rationale is due to the high instability of government in the recent years. The appointment of a new government, an event happening very often in the last few years, usually leads to the change of head of administration (PS) in MDAs making data literacy programs for managers less useful.

DATA FLOWS BETWEEN GOVERNMENTAL ACTORS

BoS, mandated by the Statistical Act 2001, is the coordinator of the National Statistical System (NSS) and gathers data from MDAs data to generate national statistics. However, until recently, BoS had no coordination unit whose job is to gather data from MDAs. The unit has now been created and staffed with one person, as part of the UNDSDP project. In the same way, UNDSDP project has recruited and placed 6 assistant statisticians in 6 MDAs, whose role is to collect MDA data and statistics and coordinate with BoS. However, this new setup does not seem to have had a major impact on the production of statistics. Most MDAs believes that the production of statistics is a BoS job, and while the assistant statisticians have been largely absorbed by MDAs, they are not necessarily dedicated to statistics production. The main issues are mainly the low political power of BoS, in part due to its status as a government department; and the inadequate funding at BoS and MDA planning offices, a result of the insufficient interest in statistics by MDA leaders.

More generally, there is little evidence of data sharing between MDAs. Instead, the UNDSDP evaluation report and the UNICEF Lesotho Data Diagnostic underlines the limitations in the legal and regulatory framework to ease the sharing, and the lack of technical standards to share data in a format that eases reuse. For instance, the UNICEF Lesotho Data Diagnostic states that "While key ministries do share data, many do so through PDF or Word document reports – not machine-readable formats. Accessing data beyond what is released via reports must be done upon request. Data requesters must send an official request in writing to the custodian ministry, stating which types of data are needed, how the data will be used, and what product will be generated. The custodian ministry may also reserve the right to review the final product before it can be published." The situation may evolve in the future with the rise of the new dissemination policy that was passed in December 2020. This new policy, while

limited in scope and incomplete (e.g., no mention of format or data licenses), provides a data sharing and publication framework. Whether this policy will be implemented by MDAs and will solve some of the data sharing challenges remains to be demonstrated.

Concerning e-government services, there is almost no evidence that these services are implemented across MDAs. On the contrary, it seems that each service is developed in a silo by a specific MDA. Core elements that are usually part of the foundational blocks, such as the digital ID service are not used by existing e-government services and information systems. While Lesotho and NICR are ahead of most African countries with regard to digital ID, this opportunity does not seem to be exploited well and this is clearly a missed opportunity. The vision of MoHA behind NICR, the design and the implementation seem to offer a solid ground for such integration. However, it appears that political dynamics and limited understanding of the power of such e-ID platform prevent a larger exploitation by all MDAs while such integration is happening with private sector organizations such as banks or mobile money service providers.

Finally, there is no evidence that data selling is occurring between MDAs or if any MDA is buying or selling data to the private sector. The only fee we identified is for the use of NICR by non-governmental actors (the platform is free for public actors).

DATA FLOWS BETWEEN PUBLIC ADMINISTRATION AND NON-GOVERNMENTAL ACTORS

The study did not identify evidence of organized regular data flows between public administration and non-governmental actors. All non-governmental actors we met from academic, media, innovation, civil society, or private sector underlined the difficulties to access government data. Some actors are even duplicating some information systems like DHIS2 in order to store and use the data they collect and share with government to ensure easier access to their own data. Such access challenge is confirmed by the UNDSDP July 2017 Statistics User Report which identified the main non-governmental statistics users as development partners and academia, but notes that non-governmental actors' use of statistics is far lower than governmental actors. No other type of statistics users was identified (media, CSOs, private sectors) in this report but the demand from these actors exists.

Data flow is clearly hindered by bureaucratic procedures. The UNICEF Lesotho Data Diagnostic underlines that "access to raw data or other more specific information must be done via written request." This applies to BoS but also other MDAs that have robust information systems such as MoH, MoE or the Ministry of Social Development (MoSD). Moreover, the report notes that "Due to varying GoL data management and staff availability, there can be a significant delay from when a request is sent, and when a response is received." It appears that in the absence of an Access to Information legislation, there is no formal way for MDAs to manage information or data request, and no obligation to do so, leading to an extremely low success rate, and a very long response rate.

Some counterexamples at individual MDA level exist. For instance, in health, there is an MoU between GoL and Christian Health Association of Lesotho (CHAL) where facilities managed by CHAL conduct routine reporting and use the standardized data collection tools developed by MoH to provide data to MoH. In the same way some NGOs work hand-in-hand with the Government and MoH to collect data in the field and share these data with MoH for inclusion in the information system (DHIS2).

Finally, as mentioned in the data inventory section, data directly available online is extremely limited compared to most African countries. This was underlined by MISA who conducted a survey in 2014[122] that reviewed the way 8 agencies, including the Office of the PM, proactively publish information and answer to information request. Most agencies have a low score. Some of the causes include the absence of a central data portal, the manual publication mechanism that creates delay in availability of reports and data, and insufficient funding. In a more general way, it seems that there is a negative dynamic where only little data of poor quality is available leading to limited demand, which in return lowers the value of the data and does not create an incentive for further publication.

CONCLUSION

The data offer and demand is clearly 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 the insufficient supply and vice-versa. At the same time, several 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, DISA and 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 exciting promises 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 such as the soil database and the land coverage database. While detailed investigations in other sectors were not conducted, a similar picture emerges with e.g., the Ministry of Social Development and the National Information System for Social Assistance (NISSA) or the Ministry of Finance and the Integrated Financial Management Information System (IFMIS) or the Central Budget Management System (CBMS). The main issue with all these information systems relies on their design conducted in siloes and without integration with others or with key building blocks such as the NICR civil registry.

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[122] https://crm.misa.org/upload/web/most-open-and-secretive-government-institutions-in-lesotho-2014.pdf

Finally, 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 (access to information) to access data. However, there is an interesting variety of actors, even if at an embryonic stage, that are in demand of data and that could generate interesting success stories and impact if data offer is aligned with their demand.

6. ICT INNOVATION

Globally for more than a decade, the ICT sector has become a critical component, especially for developing countries. In a rapidly evolving digital society, ICT is a major agent of change in the way governments work and support citizens and businesses. It impacts how citizens live, ways in which the private sector grows and conducts business:

- Start-ups and entrepreneurs across Africa are designing new products that boost social and economic development. This has major direct benefits such as access to improved health services, education, and financial inclusion for citizens who were excluded before. At the same time, jobs and wealth are created, boosting the overall social-economic landscape of a country.

- Innovations in ICT and data science provide new pathways and an incredible opportunity for governments in resolving the challenges associated with public administration that has been hindering development for decades.

- Finally, data-driven innovations, coupled with citizen engagement, enable the governments to be more accessible to citizens and allow the citizens to hold governments accountable.

ANALYSIS

INNOVATION INFRASTRUCTURE

The study shows that innovation infrastructure in Lesotho is weak. The latest report by Afrilabs and Briter Bridges in October 2019[123] did not identify any functional tech hub in the country. This is in line with previous studies from GSMA[124] and the World Bank[125], and confirmed by actors interviewed. There is also no visible fab lab[126] in Lesotho listed on the Fab Lab network[127] and no specific initiative by GoL to support innovation and tech businesses such as technology/science parks. The study identified only two entities that are focusing on innovation:

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[123]

https://static1.squarespace.com/static/5ab2a4d655b02c29746fc58c/t/5db6ec5fc494f4106d713e26/1572269613096/4.0_AFRILABS_REPORT+FINAL-compressed.pdf

[124] https://www.gsma.com/mobilefordevelopment/blog/618-active-tech-hubs-the-backbone-of-africas-tech-ecosystem/

[125] http://wbgfiles.worldbank.org/documents/dec/Tech-Hubs-in-Africa.html

[126] A fab lab (fabrication laboratory) is a small-scale workshop offering (personal) digital fabrication (https://en.wikipedia.org/wiki/Fab_lab)

[127] https://www.fablabs.io/labs/map

- The Innovation Hub hosted at the National University of Lesotho (NUL), launched in November 2018[128]
- The Hub in Morija, an independent entity that defines itself as "a creative technology lab" for young (10-35 age group) Basotho people.

Neither of these two entities focuses on ICT innovation.

The study also identified two programs to support entrepreneurs:

- Vodacom Foundation has a set up an incubation and acceleration program, Vodacom Innovation Park[129], that enrolls a limited number of people per year to develop their ideas and startups.
- The Girl Coding Academy[130] which is an organization whose aim is to bridge science, technology, engineering, and gender gaps. It is "dedicated to educating, mentoring, innovating, and equipping young women and girls with technological skills through club program, campus program and summer immersion."

None of these initiatives/organizations operates a community space and they have an extremely limited footprint.

Finally, only one business incubator was identified, The Basotho Enterprises Development Corporation (BEDCO)[131] whose aim is to support enterprise development without any specific sectoral focus. There are also a few co-working spaces where entrepreneurs and start-ups can rent offices and places.

In summary, compared to other countries in Africa, Lesotho has extremely limited infrastructure to support innovation, and there is no evidence that the Tech Hub revolution happening in other African countries has taken root. There are limited initiatives, but no place where young innovators can meet and innovate. While the NSDP II established a detailed and accurate diagnosis of this, none of the planned activities that would effectively support the sector have been engaged.

INNOVATION SUPPORT

The study has identified a limited number of funding opportunities for innovation. This includes:

- The NUL Innovation Fund (NULIF)[132] set up by NUL. NULIF is an arm of the NUL innovation hub that supports projects of the innovation hub. The money comes from donations (individual, foundations, companies…), and shares of the incubated

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[128] https://www.maserumetro.com/news/news/nul-launches-innovation-hub/
[129] https://www.innovationpark.co.ls/about
[130] https://girlscodingacademy.com/about-us/ see also
http://www.lionessesofafrica.com/blog/2018/9/9/startup-story-of-girls-coding-academy
[131] http://www.bedco.org.ls/index.php/about
[132] https://www.nulif.org.ls/

companies. However, NULIF supports a small number of ICT start-ups. The field visit will have to explore with NULIF whether they plan to expand to ICT and how.

- The Vodacom Innovation Park program includes linkages with investors for enrolled participants. However, the program does not have any internal funds to support entrepreneurs directly and onboard only a few people in each cohort.

Some initiatives existed in the past like the HookUp dinner, a South-African organization that organizes events for entrepreneurs to pitch their idea and access investors, but they all have stopped.

Apart from these initiatives, it seems that Lesotho is largely excluded from investor activity. While international investment in African tech start-ups is exploding since 2015, setting a record of 2020M USD in 2019[133], Lesotho is not benefiting from this opportunity as shown in the diagrams below.

Total funding - 2015 to 2019 (in US$ M)
Partech Analysis 2020

Total funding per country - 2019 (in US$ M)
Partech Analysis 2020
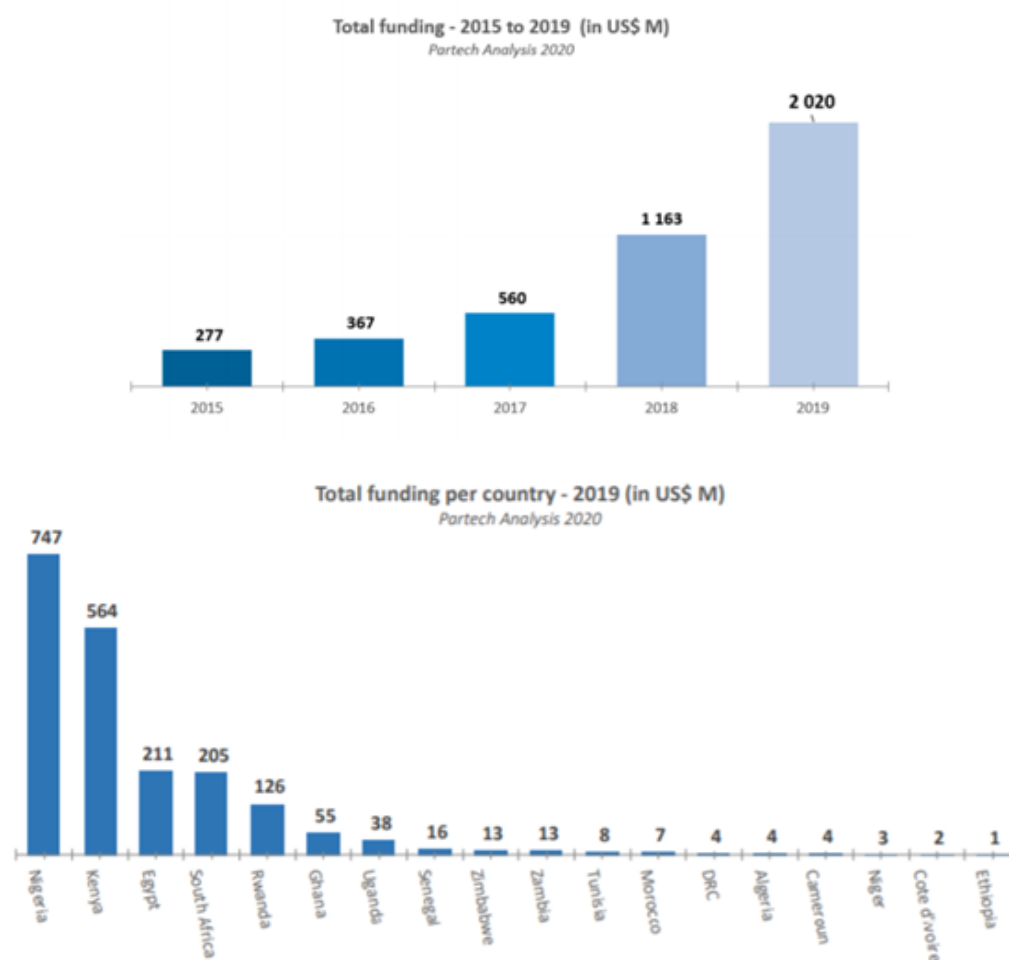
In summary, funding for ICT innovation is significantly small in Lesotho. The lack of tech hubs leads to Lesotho not being linked to the international innovation community. It prevents the

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[133] https://partechpartners.com/2020-africa-tech-venture-capital-report/

country from benefiting from massive funding injected in innovation ecosystems across the continent. Planned government investment in the ICT innovation ecosystem as part of the Science and Technology Policy 2006-2011 was not implemented. The funding weakness is identified and accurately diagnosed in NSDP II, which adopts a strategic objective to put in place "cost-effective and incentive-based mechanisms" to "promote scientific research, development of technology-based solutions". Unfortunately, while the diagnostic is accurate and the proposed actions potentially impactful, they have not been launched.

INNOVATION ACTIVITIES

The study only identified limited activities in the innovation space:
- The Girls Coding Academy has organized various events such as hackathons[134] but none since December 2018.
- NUL organizes an innovation conference every other year, NULISTICE[135] that includes a hackathon but without an ICT innovation focus.
- A couple of other hackathons have been identified such as
  - A mapathon in 2014 organized by the OSM group and Action Ireland Trust[136] (first step of the MapLesotho project)
  - A financial inclusion hackathon in 2018 organized by FinMark Trust, Lesotho Ministry of Finance and UNDP Lesotho[137].

Except for these events, no other activities, such as government-led annual ICT competitions – which exist in many other countries – have been identified. In the same way, the study did not identify any innovative use of ICT and data by CSOs or media for advocacy or to engage with citizens on topics such as democracy (e.g., election monitoring) or budget.

It is also worth mentioning that during the first Open Data Day in Maseru (March 2019), participants agreed to the setup of a new organization, the Lesotho Open Data Initiative (LODI)[138], and agreed on an action plan that included a series of datathons and mapathons. However, LODI activities are limited as Government officials are not receptive to the concept, and it is extremely hard to access government data.

In terms of government activities, the only major innovation project identified during the study is the MapLesotho Project[139] funded by Ireland Action Trust and implemented from 2013 till July 2019 by the Open Street Map (OSM) community together with the Ministry of Local Government and Chieftainship Affairs (MLGCA). This was subsequently transferred to

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[134] https://girlscodingacademy.com/our-events/ for example a hackathon: https://www.facebook.com/events/girls-coding-academy/hackathon-code-like-a-girl/2080596958881439/
[135] https://www.nulistice.org.ls/
[136] https://wiki.openstreetmap.org/wiki/Lesotho_Mapathon_2014
[137] http://finmark.org.za/wp-content/uploads/2018/11/2018-Lesotho-SIMM-Hackathon-Report-0518.pdf
[138] https://blog.okfn.org/2019/03/19/open-data-day-2019-a-joint-report-by-iwatch-africa-and-lesotho-open-data-initiative/
[139] https://maplesotho.wordpress.com/ https://www.maplesotho.com/

the government.[140] This project led to the complete mapping of Lesotho[141] and availability of maps through OSM. Apart from for this case, the study did not identify any innovation event focusing on public administration challenges as take place in some other countries such as South Africa.[142]

CONCLUSION

In terms of leadership, the NSDP II offers a fully accurate diagnosis, both on the challenges and the weaknesses of Lesotho when it comes to digital transformation, and digital entrepreneurship but none of the proposed actions have yet been implemented.

In the legal context, the study did not identify specific challenges, such as the launching of new businesses. However, a series of pending bills, such as the Electronic Transactions and Electronic Commerce Bill and the Computer Crime and Cybercrime Bill are missing components. Similarly, a revamped new ICT policy will help in giving a more integrated vision for all actors. It is important to note that NRA does have on its roadmap the development of a legislation to support start-ups and early-stage enterprises.

From a technical perspective, a detailed analysis of the ICT infrastructure does not reveal major challenges compared to other African countries in terms of coverage, technologies, and affordability.

However, as international indexes such as the GSMA Mobile Connectivity Index show (see infrastructure section), the main challenge is related to content and the fact that compared to other countries on the continent, the ICT innovation revolution has not yet impacted Lesotho. The low level of content and usage comes from the absence of a vibrant innovation community that has no physical place (tech hub) for entrepreneurs to come together, collaborate and grow their business. It also comes from the near absence of incentives (activities, funding, etc.) and technical inputs, such as public sector data.

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[140] https://www.maplesotho.com/blog/2019/07/02/maplesotho-the-end-game-comes-into-sight/
[141] https://wiki.openstreetmap.org/wiki/WikiProject_Lesotho
[142] https://www.itweb.co.za/content/JN1gPvO1gPgMjL6m

7. MONITORING, EVALUATION & LEARNING (MEL)

Government M&E plays a critical role in enabling the Government of Lesotho to track and evaluate progress toward its strategic goals. Improving available statistics, while important, is not the same as developing and implementing an M&E framework. The question is *how are official statistics and other data intentionally used to evaluate progress toward existing development goals and to identify new areas of concern*? This section reviews the GoL's capacity to collect and analyze data needed for monitoring progress toward Lesotho's development goals, and to evaluate how much and what kind of progress has been made.

ANALYSIS

GENERAL M&E CAPABILITY ACROSS THE GoL

CAPABILITY OF THE NATIONAL DATA ECOSYSTEM FOR EVALUATION-FOCUSED MONITORING AND ANALYSIS

The quality, availability, and use of socio-economic data to inform policy, ensure tracking of development programs as well as facilitate resource planning, prioritization, allocation, and accountability, has been a major challenge in Lesotho.

Prior to the anticipated implementation of the National M&E Policy in 2021, Lesotho's monitoring, evaluation, and learning efforts remain fragmented across MDAs and heavily reliant on donors. The Department of Monitoring and Evaluation (DM&E) in the Ministry of Development Planning (MDP) is the designated GoL agency to coordinate M&E. DM&E collects government statistics from MDAs, including the Bureau of Statistics (BOS), Central Bank of Lesotho (CBL), Ministry of Finance (MOF), National University of Lesotho (NUL), in addition to development partners. There is an absence of institutional alignment between MDAs, which leads to poor reporting compliance from MDAs, duplication of efforts, as well as contradictory information and data, hampering the access to and comparative use of data, including MEL data. In addition, Lesotho's weak capacities in terms of human and technical resources within MDAs limit the development and use of statistical evidence in national development processes.

Ideally, the demand for quality data would result from the cycle of (i) evidence-based planning, (ii) implementing programs according to plans, (iii) evaluating progress toward goals, (iv) gaining insights about what has and has not been accomplished, and (v) making decisions to adjust plans or programs. However, due to limited compliance with government policies and perverse leadership incentives, this cycle has not been achieved by the GoL. The extent to which plans are implemented and monitored (iii), and the extent to which data are analyzed (iv), varies across GoL actors. Some sectors, such as health, education, and social development, are considered to have robust data systems and collection methods but may

lack key information around equity or quality considerations in some areas. Other sectors are considered "data poor" and in need of significant investment and assistance. Key barriers to conducting evaluation and using evaluation results to guide decision-making include policy compliance and leadership, which impact the demand for monitoring and evaluation. Policies that would generate priority data – including the National M&E Policy, and NSDP II – are underway, but the under-resourcing of ministerial M&E/Statistical Units, as well as a whole-of-government prioritization of PFM reform[143], further complicate policy implementation. In addition, political turnover, perverse decision-making incentives, and the limited ability of MDP to enforce its mandate create leadership obstacles to demand for evaluation findings. Until these challenges can be addressed, demand for and use of M&E data will remain uneven.

The 2017 Lesotho Country Analysis recommendations for the framework of 2030 Agenda and for achieving SDGs included strengthening evidence-based planning, monitoring, and evaluation. The key areas to be addressed were: 1) building human capacity focusing on equipping personnel with skills and knowledge, and changing the culture of statistical work to address M&E and other research needs; and 2) strengthening partnership and coordination where all key players from all constituencies (government, development partners, CSO, community-based organizations) play a critical role, advocate for a statistical system to secure a place in the priority list, and mobilize required resources for evidence generation, analysis, and evaluation.

To mitigate the issue, UNDP Lesotho supported the GoL in the implementation of the Lesotho Data for Sustainable Development (UNDSDP) Project between November 2016 and June 2019. The evaluation for this project is an important source of information on what the project was and was not able to accomplish, along with recommendations for additional improvements following the completion of the project. Following the evaluation, the second National Strategic Development Plan (NSDP II, 2018/19-2022/23) was completed with support from the World Bank. The World Bank also supported GoL in developing the National M&E Framework. The NSDP II calls for monitoring and evaluation of policy implementation and programs to improve which will create essential feedback for review of strategies in order to achieve the required results more efficiently. As of this assessment, the GoL was in the final stages of aligning indicators from both NDSP I and II.

In support of building the national M&E Framework, UNDSDP developed critical foundational elements for Lesotho, such as the SDG customization, SDG 2016 baseline report, and the Voluntary National Review (VNR) 2019 reporting. Furthermore, UNDSDP built capacities of 76 participants on Results-Based Monitoring (RBM) (5-day training) and 22 participants as trainers (3-day training). Additionally, eight officials were supported to attend training on

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[143] It appears that most MDAs are focused on implementing the PFM reform with a lower current investment/focus on measuring policy output and exploring results

public sector/outcome-based M&E in South Africa. Capacity development activities such as study tours and various trainings (RBM, Excel, SPSS, Basic Statistics, and Administrative Data) led to improved methodologies and processes in data collection and/data analysis. The training on statistical software packages (to 150 officials) aided trainees to help their respective MDAs in creation of databases (from paper reports received from districts) and presenting data. In addition, 450 officials were trained on using charts and tables, performing analysis using statistical packages, and improving their work efficiency. While several of these tasks were new to some MDAs and not others, improvements occurred in all MDAs. Although the training on RBM equipped individual participants with understanding of monitoring, this was not put into practice, due to the delay in the development of the M&E framework, as well as the lack of refresher training when it was put in place. However, a few MDAs reported on using these skills to develop indicators for the sectoral M&E framework. Specific attention to conducting evaluation of progress beyond developing monitoring indicators is not addressed in available sources.

As part of the NSDP II, a national strategy for development of statistics was outlined, including for M&E. Implementation of this strategy will contribute to improvements in efficiency of data collection; functioning of quality assurance procedures; relevance, accuracy, credibility, comparability, timeliness of publications and accessibility. In addition, monitoring and evaluation of policy implementation and programs are to be improved, which will create essential feedback for review of strategies in order to achieve the required results more efficiently. Public awareness and education of the available statistics and their interpretation also need to be improved.

In July 2019, the Lesotho Directorate of Regional Integration (DRI), in the Lesotho Ministry of Finance, in collaboration with the SADC Strengthening National Regional Linkages (SNRL) Program facilitated a Training of Trainers (TOT) on the use of the SADC online monitoring and evaluation system in an effort to enhance progress tracking in the implementation of SADC (national, regional, and sectoral) policies and programs in Lesotho. The TOT was aimed at enhancing progress tracking in the implementation of SADC (national, regional, and sectoral) policies and programs in Lesotho. The training for other ministry staff was an effort to improve Lesotho's capacity to manage and monitor the implementation of SADC strategies and priority protocols in order to support alignment of national and regional plans at the national level. While MDAs have access to national and regional M&E training courses, sustainability will remain a challenge for trainees if the commitment from leadership within their department remains low and M&E is not integrated in project management, policy making, and other core responsibilities. Recent efforts from the Ministry of Development Planning (MDP), UNICEF, and the Center for Learning on Evaluation and Results (CLEAR AA) aim to address these challenges. Along with the development of the National M&E Policy, they are developing a core set of M&E training courses for staff of the various ministries. In addition to technical content focusing on key M&E concepts and approaches, additional courses

include identifying the place of M&E in the policy cycle and the effective use of M&E in decision-making.

Most available reports do not focus on monitoring, evaluation, and learning but rather statistical capacity more generally. For example, the UNDSDP placed statisticians in different MDAs to focus on statistics, but not on MEL. The assistant statisticians have made key contributions in the ministries, including collecting, and using administrative data to report on SDGs, creating databases, modelling energy demand for up to 2055, helping develop gender-based violence data collection tool, in addition to being the go-to people for data solutions. However, some MDAs no longer retain statisticians in their planning offices due to budget limitations and insufficient support on the production and use of statistics. For example, the Ministry of Public Works and Transport currently does not have a statistics department and therefore cannot accurately plan for future infrastructure investments because of limited new traffic data. Most MDAs also do not have M&E departments, and some retain just one M&E officer.

The UNDSDP also did not sufficiently sensitize senior officials on data and the need to support MEL activities. The project did produce manuals and toolkits to conduct various trainings, which were shared and made available for future reference and training. Additionally, the assessment reports refer to further work in the near future on strengthening the ecosystem for M&E. The UNDSDP advocated disaggregated data to enable gender analysis and developed a capacity building plan as part of its work on assessing national needs and capacity for monitoring SDGs and NSDP. However, the plan did not realistically reflect the capacity building required to bridge the gap between effective monitoring of SDGs against the goals set forth in Agenda 2063 and the NSDP. The costing provided in the capacity development plan largely pertained to study tours, assistant statisticians, and training, none of which was directly related to M&E. The capacity development plan developed by UNDSDP for monitoring and monitoring SDGs has been inadequate relative to the issues and needs highlighted in the assessment reports.

The UNDSDP ecosystem study (in 2018) highlighted and re-emphasized the need for enhancing the capacity of ministries to exploit the improved environment for better statistics and M&E systems. The study also formed the basis for some of the training organized by the project in addition to highlighting what is required to have an effective ecosystem for statistics and M&E. Overall, the evaluation found that the UNDSDP's work on strengthening the ecosystem for statistics and M&E in Lesotho made a good start but may require several years of continued and harmonized handholding from development partners.

The UNDSDP evaluation study recommended a national data warehouse be created to act as a back-up of databases from MDAs in addition to ensuring wider accessibility based on security protocols as deemed essential. Currently, databases and analyzed data are in desktops and laptops of officials with backups only on USB keys (jump drives). This does not enable even

officials in the ministry to access data. Surveys collect data, and not all data is analyzed and published; however, data not published may be useful for other program/project design and/or other decision-making. In the current situation, this data is not available/accessible, as many are not aware of its location. The National M&E Policy will highlight the need for a common data platform to serve multiple MDAs and improve the ecosystem for M&E and data systems. UNICEF has provided the GoL with a global overview on the importance of data in their programs and in the benefits of consolidating different data sources into an interoperable platform for all ministries.

MINISTRY OF HEALTH CAPACITY FOR M&E

Following the development of a new Lesotho National HIV & AIDS Strategic Plan (NSP) 2018/19 – 2022/23, the Government of Lesotho in collaboration with stakeholders and partners commissioned the development of a new National HIV/ AIDS Monitoring and Evaluation (M&E) Plan for the same programming period. The M&E plan was developed to, among other purposes, serve as the main guiding framework for measuring the performance of the national response through tracking and measurement of results (Outputs, Outcomes, and Impacts) and as well as the trends, patterns, and effects of the HIV epidemic in Lesotho. The M&E Plans' Strategic Information Outcome is "Increased availability and utilization of strategic information for policy formulation, planning, management and performance measurement of the national HIV epidemic and response."

The M&E plan includes a flowchart that illustrates the planned flow of data and information, data quality assurance and feedback links, and coordination of M&E within the HIV and AIDS response at national, district and community levels. Over the previous NSP, the country introduced an advanced version of the web-based District Health Information System (DHIS2) to capture and manage mainly the data generated at the health facilities across the whole country. DHIS2 has been rolled out centrally and now covers all 333 health facilities throughout Lesotho. It stores over 40 million records on key health areas including HIV care and treatment, HIV testing and counseling, voluntary medical male circumcision, TB, and maternal and child health.

Overall, the organizational structures responsible for HIV M&E are in place and functional with varying efficiencies and effectiveness. This is especially so within key lead coordinating and implementing partners with varying effectiveness and efficiencies. The National AIDS Commission, Ministry of Health, a few key government ministries, international CSOs, National CSOs; CSO, FBO and PLHIV networks as self-regulating/ coordinating entities (SCEs) and the development partners have M&E units or desks. All stakeholders consulted highly valued such structures. The most notable multi-sectoral M&E organizational structures developed or strengthened over the past M&E Plan include: the re-establishment of the National AIDS commission with units/desks responsible for Strategic Information (SI), M&E

plan, IT, research and communication and knowledge management. Each of the MoH facilities has units responsible for health information capture, verification, and analysis. This has been possible with support of PEPFAR and GFATM through ICAP and PMU, respectively.

The health sector, so far, is the one with most established HIV M&E structures, led by the MOH. The MOH has a department of Health Planning and Statistics with units for Health Planning, HMIS, M&E, Surveillance, and ICT. At the district, hospitals, and health centers, the MOH has Health Information Officers, data, and records clerks. The department's functions include health, including HIV leadership for programming inclusive of M&E in regard to collection of relevant and reliable statistical data on health service delivery, health status, utilization of health services and distribution of health resources, timely production and dissemination of health statistics reports, promotion of collaboration among producers of health information (for production and use), and training of health workers in health statistics to enhance use of data in management, planning, and research. However, the demands on the re-established National AIDS Commission (NAC) are still far above its capacity in its current lean form. NAC still has no decentralized structures to coordinate M&E, leading to disjointed M&E actions at national and district levels from a multi-sectoral perspective with the more significant effect being on the non-health facility-based HIV interventions.

The other multi-sectoral M&E enabling structures through the self-coordinating entities (SCEs) of CSOs are the Lesotho Council of Non-governmental organizations (LCN) and the Lesotho Network of AIDS Support Organizations (LENASO); public sector ministerial HIV focal units and the secretariat of an inter-ministerial committee (IMC); the Inter religious Council (IRAC) and the Lesotho Network for Persons living with HIV (LENEPWA). These coordinating entities have M&E functions which are however not as vibrant as they ought to be due to limited strategic guidance, patronization, and logistical support. LENASO has office presence at both national and in all districts with staffed M&E structures that foster M&E development, coordination, and reporting among CSOs. LENASO too has on-going partnerships with health facilities that among other functions enhances general HIV related and treatment adherence counseling, PLHIV networking and client follow up at community level. LENAPWA too has both national and district level structures in a number of districts, a strategic plan with specific goals and performance indicators, data management guides/ manuals, projects supporting client follow up and adherence with elaborate M&E plans and performance frameworks.

The health sector has also led in the development of a national strategy, the National Health Strategic Plan (NHSP) 2017-2022, to provide the guidance and vision in terms of prioritization, service delivery, programming, management, M&E, and data and statistics. The NHSP is supported by other guidance documents including the Health Sector M&E Plan to track progress on key health projects, a Health Information Systems (HIS) Policy, and an HIS Strategic Plan.

CONCLUSION

The implementation of the National M&E Policy is arguably the most significant opportunity to strengthen M&E capacity across the GoL and improve the national data ecosystem. The policy will serve as a general framework to give coherence to an M&E system across ministries. The following are specific steps MDAs can take for the effective implementation of the policy:

a) **MDA support to policy implementation**. The 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.

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 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, an 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) **Expand the mission of the DM&E**. DM&E's 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 campaigns and capacity 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**. 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.

For M&E in health systems strengthening, the assessment identified the following areas for support:

a) **Improvement of current systems and data flows**: The Lesotho public health system integrates several 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 Workers could be strengthened and provide better health outcomes with appropriate data flows and associated capacities between the different levels.

b) **Increase of actionable health system indicators**: 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 the only indicators considered are those derived from the national DHIS2 dashboard. The use of more granular data from a greater number of sources (e-register, DISA, etc.) with advanced data science capabilities could provide more detailed insights and contribute to the uncovering of specific trends that need to be addressed, or that would inform MoH actions and policies. In the same way, the setup of an integrated M&E system, would help MoH to identify gaps in implementation or policy outcome and to take corrective measures.

c) **Improvement of health services by non-governmental health actors**[144]: There are a number of actors in Lesotho who could contribute effectively to strengthening the public health system and to improving the overall health outcomes in the country. These actors, in order to complement public health interventions and plan efficiently their activities, need to be supported and require more ready access to health data.

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[144] "Non-governmental health actors" in this context covers all actors that contribute to health services outside the public health system. It does not include non-governmental health actors that are already included in the public health service delivery (e.g., CHAL health centers).

8. GENDER

As part of this study, the team assessed the practices and barriers that exist regarding gender-data with a particular focus on the health sector. Gender data are statistics that can be disaggregated by sex to reveal salient differences in the lived experiences of males and females and statistics that illustrate important gender issues that are often missing from national data collection efforts. When gender data is insufficient, ignored, or not collected across different sectors, the result is decision making and investments that do not best serve women, girls, and gender non-conforming individuals.

The approach of this assessment was an applied political economy analysis (PEA) consisting of desk research and key informant interviews (KIIs) that highlight the incentives and constraints impacting the behavior of actors in a relevant system. This PEA is focused on gender-based power dynamics, roles, and expectations as they impact the existence, quality, access, and use of gender data in the health sector. It aimed to articulate not just "how" but also "why" gender data is collected, used and/or shared (or not) by key players within the data ecosystem identified in the larger research study.

In this section, we present an overview of the PEA assessment. The full version is available as a separate document.

Early findings from desk research highlighted critical gender-issues in Lesotho and refined the purpose of this assessment to apply it directly to gender-data in the health sector, particularly towards GBV. The World Health Organization (WHO) estimates that globally 1 in 3 women have experienced physical or sexual violence during their lifetime, and the most common form is intimate partner violence (IPV)[145]. A baseline study from 2015 conducted by South-Africa-based CSO Gender Links found that 62% of women in Lesotho experienced, while 37% of men perpetrated, IPV[146]. Global research underscores that survivors of GBV experience acute injuries, chronic pain, gynecological problems, depression, psychological trauma, substance abuse, lower self-esteem, and reduced productivity at work. Sexual violence also increases women's morbidity and mortality, unwanted pregnancy and unsafe abortion, sexually transmitted infections and HIV, and social stigma and exclusion[147]. Not only is GBV a well-documented health issue, but it has also been described by UN Women as a "shadow pandemic" as public health restrictions on mobility and economic activity exacerbate conditions for those who cohabit with their abusers, and many countries around the world have reported surges in calls to hotlines and other survivor support services[148].

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[145] https://www.who.int/news/item/09-03-2021-devastatingly-pervasive-1-in-3-women-globally-experience-violence

[146] https://genderlinks.org.za/programme-web-menu/publications/gender-based-violence-indicators-study-lesotho-2015-02-27/

[147] www.equilo.org

[148] https://www.cgdev.org/publication/covid-19-and-violence-against-women-and-children-third-research-round-16-days-activism

To adapt to virtual interviews, the IREX team applied Purposive and Convenience sampling approaches to the KIIs. Purposive sampling focuses on respondents who have an awareness of gender issues and are actively using gender-data so their feedback would be insightful to the field, and Convenience sampling limited the potential respondents to actors the IREX and SBC4D teams could reach via email and had access to reliable internet. In total, 14 interviewees, representing 12 different national actors who actively engage with gender data, provided valuable insights.

All KIIs were conducted virtually via zoom calls between January and April 2021. Between January and February, the IREX team coordinated with SBC4D to collaborate on interviews with seven national actors that work with gender-data (Bureau of Statistics, United Nations Development Program, etc.). These interviews helped validate desk research and inform the high-level incentives and challenges that existed towards addressing gender issues in Lesotho. Building off the high-level insights that these interviews provided, the IREX team conducted five interviews between March and April with an additional targeted group of national actors that focus more directly on gender issues (Ministry of Gender, NUL Department of Health Sciences, Etc.). These five actors provided robust context that informed the unique power-dynamics, incentives, opportunities and challenges that Lesotho institutions and citizens face when collecting and using gender-data. All interviewees were local representatives from GoL MDAs, local CSOs, International NGOs, educators, and multilateral donors.

The findings of this assessment are presented using USAID's applied PEA framework which consist of four unique areas of analysis – Foundational Factors, Rules of the Game, the Here and Now, and Dynamics.

Foundational Factors that exist which are significant obstacles toward the collection and use of gender-data to address priority health issues include the following:

- **Legal framework for women's rights:** While laws exist that set clear penalties for child marriage and rape, many forms of IPV including sexual or reproductive violence are not directly defined or criminalized, causing inconsistent data collection practices within the health sector (e.g. injuries are recorded as "trauma" with no reference to GBV) and very little required data collection within the justice sector.[149] The limited scope of the laws and policies that address GBV and sexual and reproductive health (particularly instances of IPV) highlight them as the biggest areas of inequality in Lesotho based on Equilo analysis of open source information[150].

- **Access to health services:** Approximately 71.4% of the total population lives in rural areas, where agriculture is a primary or supplementary source of income for over half of the rural population[151] and access to health facilities is constrained. Because of this

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[149] World Bank. 2019. Women, Business, and the Law: Does the legislation establish clear criminal penalties for domestic violence? https://wbl.worldbank.org/en/wbl-data
[150] Reference Annex III about Equilo tool and analysis
[151] World Bank. 2019. World Bank Open Data: Rural population (% of total population). https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=LS

difficult access to health facilities many people consult traditional healers rather than the formal health care system, thus falling outside most GoL data collection systems.

- **Gender disparities and HIV/AIDS**: Lesotho has the second highest HIV prevalence rate in the world, with 28.8% of women and 18.5% of men living with HIV[152]. While health coverage of people living with HIV is steadily increasing, discrimination increases risk among specific populations, including women, sex workers, transgender persons and men who have sex with men.[153] This health epidemic also disproportionately affects women as caregivers: a study in 2011 found that both male and female respondents "cast women as 'natural' family caregivers with inherent traits of nurturance, altruism, sympathy, patience, and self-sacrifice that extended into voluntary community care. Additionally, it found that HIV/AIDS caregiving is understood to include undesirable and low-status tasks associated with women's labour." [154]

Rules of the Game are the key norms that exist which influence the collection and use of gender-data to address priority health issues and include the following:

- **Knowledge management for systematic gender data collection:** There is no centralized coordination or curation mechanism for gender data. While the Ministry of Health hosts a quarterly research forum as part of an ethics committee where new research is presented and discussed, MoH officials were reported to be unengaged compared its other members, notably the non-governmental members. Some CSO KIIs shared that there is little demand from other organizations including the MoGYSR for the gender data they have collected and offer to share. At the same time, awareness of available gender data revealed the potential for improvements to knowledge management systems. Respondents tended to use research terms loosely, such as a CSO that mentioned its plans to conduct a nationwide GBV baseline survey in collaboration with Gender Links and Women in Law in Southern Africa. The Gender Links website has a link to a nationwide GBV baseline survey it conducted in cooperation with MoGYSR in 2015.
- **Access to and control over resources:** Some key informants made a distinction in the motivations of politicians versus technocrats. The former fund initiatives that promote themselves, and since data-based decision making is not seen as visible enough to impress their constituents, data collection is often subject to budget cuts, regardless of sector. Technocrats, on the other hand, see the value of data to support GoL activities, but struggle to work without adequate budgets and thus resort to planning and implementing services without adequate data. Insufficient funding was cited as a main reason that some MDAs only provide data every 5 years (the minimum required in many instances). At the micro level, health facilities don't have control over resources, as all budgeting, buying and other financial decisions sit with either district and/or the Lesotho Catholics Bishops Conference (LCBC). It was unclear whether

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[152] World Bank. n.d. World Bank Open Data: Prevalence of HIV, total (% of population ages 15-49). https://data.worldbank.org/indicator/SH.DYN.AIDS.ZS?most_recent_value_desc=true

[153] UNAIDS. 2020. Fact sheet, https://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf

[154] Occupational segregation, gender essentialism and male primacy as major barriers to equity in HIV/AIDS caregiving: Findings from Lesotho https://www.intrahealth.org/resources/occupational-segregation-gender-essentialism-and-male-primacy-major-barriers-equity

related decisions were also made at the district level, such as who is nominated to attend data literacy trainings or who is given access to the hardware and connectivity needed for digitizing health data received in hard copy formats. It would be useful to cross-check the control over resource allocations with sex-disaggregated data for the health care workforce at each level to determine if gender dynamics in leadership are also at play.

- **Roles of civil society in data collection:** The Lesotho Council of Non-Government Organizations (LCN) is an umbrella body created in 1990 with 108 members ranging from NGOs to cooperatives to CBOs[155]. In addition to holding quarterly meetings of its membership, the Council includes a Women and Children's Commission and a Health and Social Development Commission (HSDC). Among each Commission's tasks is the promotion of partnerships between member NGOs and strategic partners to inform national policy development. LCN members use data for public policy engagement, advocacy, activity planning, and monitoring & evaluation. In the past, the LCN itself engaged in data collection on some social or gender indicators to complement missing GoL data. This activity was discontinued due to funding limitations, but KIIs noted that the need for CSOs to supplement GoL data still exists. For example, data from the BoS are often inadequate: old; incomplete; not disaggregated down to the community council level; missing; or extremely difficult and time consuming to access. Obtaining data from the MoH requires such a long and cumbersome process that people opt to leverage their personal connections. Even NGO staff who feed data from their field activities via district offices into the MoH's national DHIS2 averred that their access to DHIS2 data is limited to the topic and geography in which they work.

Here and now are the current issues that are influencing the progress of gender-data to address priority health issues and include the following:

- **Response to COVID-19:** The pandemic is exerting an enormous strain on health care systems while revealing fault lines linked to existing inequities, including gender-based disparities in terms of who provides care and who receives it. The public health restrictions designed to contain the spread of infection have had unintended negative consequences on economies, households, and individuals. For survivors of IPV, this has included increased risk of abuse during lockdowns and quarantines. The crisis has also exposed weakness in the data collection and use, such as the lack of a centralized repository of health research in the country. Many of the data ecosystem stakeholders mentioned in the preceding section are prioritizing improvements in data collection and use related to COVID-19 prevention and response.

- **The Countering Domestic Violence Bill**: Lesotho's current parliament is in the process of passing the Countering Domestic Violence Bill. This law will acknowledge and criminalize specific categories of gender-based violence, expanding the current definition and provide protection rights to survivors and prevention efforts to related matters. This bill would significantly address the current challenges of laws and policies

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[155]http://www.cfa-international.org/NGO%20directory/DFA-503.htm#:~:text=The%20Lesotho%20Council%20of%20Non,services%20to%20the%20NGO%20Community.

identified in the foundational factors section by incorporating the expanded definitions into reporting processes and more accurately track instances.

Dynamics assess the interplay that exists among key actors across each of the previous components and are influencing the progress of gender-data to address health issues in the following ways:

- **Citizens lack trust in sharing data** on sensitive topics like GBV and HIV/AIDS because of poor reporting systems and the risk of feeling re-traumatized. This broadly results in under or inaccurate reporting on respective epidemics.
- **Government administrators face immediate concerns** and have clear priority areas to address major issues, dis-incentivizing them to want to invest in data collection processes. The broad practice of this fosters weak commitment among government officials to seek out and incorporate data in their decisions.

Key Recommendations

In general, the Government of Lesotho (GoL) and many other national actors are early in the process of developing efficient gender-data practices, both in personnel and institutional capacity. Based on the analysis of the four areas above, the IREX team has identified the following key recommendations to focus Compact activities to address gender-data and health issues in Lesotho:

- Foster commitment among government officials to **invest in data-informed practices**.
  - o Train government officials on the value of incorporating data into policy development for good governance and sustainable public services. There is a strong perception among politicians and government officials that citizens do not understand data as catalysts for policy developments, dampening incentives to invest in the development of data collection systems. Conversely, many officials also indicated limitations of their own leadership's capacity to effectively incorporate data into their decision-making process.
- **Provide technical support** to MDAs to assess and improve their gender-data practices.
  - o Provide technical support and funding to conduct a gender audit for the Ministry of Health in collaboration with the MoGYSR. The MoGYSR is currently trying to conduct gender audits across 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

in a systematic way can help ensure there is continued engagement and continuity between activities[156].

- o Launch a Social Network Analysis (SNA) survey among key national actors in Lesotho to reveal how they share (or don't) gender data on health issues. An SNA is a powerful analysis tool that can deepen understanding of the vibrancy of the potential flow of gender data on health issues that exists between actors in Lesotho. With the weak data-sharing culture that Lesotho currently identifies as having, the simple survey can track how the network evolves over-time after investments or interventions.

- Incorporate awareness in **cultural stigmas and dis-incentives of survivors** into procedures for managing sensitive issues like GBV and sexual and reproductive health.
  - o 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 retraumatizing survivors.
  - o Increase promotion of males becoming VHW volunteers 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.

- **Foster collaboration** and data sharing on common issues between the Ministry of Health (MoH) and other MDAs and external stakeholders.
  - o Support activities that foster collaboration between the MoH and other MDAs including technical activities on using data to inform decision making and identifying bias in data collection processes[157]. The MoH, as well as many other MDAs operates in a data-sharing silo without much support or resources for active data collection. These activities are intended to improve overall capacity of the healthcare system by fostering

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[156] https://www.irex.org/sites/default/files/Gender%20Audit%20Manual%20(EN).pdf
[157] https://www.irex.org/data-skills-leaders

the soft skills associated with collaborating with other agencies and stakeholders, identifying how they can support each other on common issues and building the importance of collecting gender-data to identify issues.

o Convene a working group of MDAs across sectors to share insights and best practices to standardize gender-data collection and use practices. Gender-data can identify cross-sector issues and fostering consistent collection and sharing practices off 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. SUBNATIONAL DATA FLOWS

This chapter explores the flow of data between the national and subnational levels (vertical data flows) as well as between actors at the subnational level (horizontal data flows). The purpose of conducting the data flows mapping and analysis is to identify enablers and blockages in the flow of data. The identification of such blockages, combined with context-specific knowledge about the data needs of subnational actors, will allow the project to make informed recommendations to make possible the use of data for decision-making at the subnational level.

APPROACH

Data alone is not enough to drive development; equally important are the actors and technologies that catalyze the flow of data, in so doing connecting data to the policy and decision-makers is instrumental in the allocation and distribution of resources in pursuit of equitable human development. While it is widely acknowledged that data timeliness, availability, quality, and relevance are all contributing factors to data use for decision-making, and that decision-making processes and data flows are equally important,[158] based on a review of the literature, comparatively little attention has been given to understanding the flows of data.

In the case of Lesotho, data flows that connect both government and non-government stakeholders at all administrative levels, are fundamental for shifting government away from patronage-based decision-making.[159] They also offer perspectives into the capabilities of subnational constituencies to take up their growing responsibilities per devolution and decentralization processes in the governance of Lesotho.

Data flows are best understood with reference to the movement and exchange of raw and processed data between humans and machines located in complex socio-technical systems. This approach is consistent with others in its attempt to illuminate 'the concrete ways in which evolving socio-cultural values and material factors cohere over time to create the socio-

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[158] Harrison, T. & Nutley, T. (2010). *A Review of Constraints to Using Data for Decision Making: Recommendations to Inform the Design of Interventions*. Chapel Hill, NC: MEASURE Evaluation, Carolina Population Center; Nutley, T. & Reynolds, H. W. (2013). Improving the use of health data for health system strengthening. *Global Health Action* 6: 20001. http://dx.doi.org/10.3402/gha.v6i0.20001

[159] Berliner, D. & Dupuy, K. (2018). The promise and perils of data for anti-corruption efforts in international development work. U4 Anti-Corruption Resource Centre, Chr. Michelsen Institute (U4 Brief 2018:7). https://www.u4.no/publications/the-promise-and-perils-of-data-for-anti-corruption-efforts-in-international-development-work; Florez, J. & Tonn, J. (2019) Open data, accountability and anti-Corruption. In T. Davies, S. Walker, M. Rubinstein, & F. Perini (Eds.), *The State of Open Data: Histories and Horizons*. Cape Town and Ottawa: African Minds and International Development Research Centre. DOI: 10.5281/zenodo.2677862; Santiso, C. (2018). How data is changing the fight against corruption. *The Forum Network*. https://www.oecd-forum.org/posts/30136-how-data-is-changing-the-fight-against-corruption

material conditions that frame activities of data production, processing and distribution and resultantly influence the form and use of data' (Bates et al. 2016).[160]

In mapping data flows, we seek to cover the full spectrum of possible data users in a national data ecosystem, starting at the 'top' – the national level – with decision-makers in government and extending all the way to the 'bottom' – the hyperlocal level – where local communities seek and use data to improve their livelihoods. The hyperlocal level implies any level of governance that is more granular than the typically delineated 'subnational' levels of governance such as the regional level (for example, provinces, states, or counties) or the metropolitan level (for example, cities, towns, or communes). In the case of Lesotho, it is assumed that districts constitute the subnational administrative level, and that Community Councils and village communities constitute the hyperlocal level. It is at the hyperlocal level that data is collected and reported to the subnational level (e.g., district) and/or are captured directly into national management information systems. It is also at the hyperlocal level that the same data can be most usefully applied to solve problems faced by communities, and where the problems themselves are most salient. But this is also the level that is the furthest removed from ongoing national and supranational efforts to govern the collection and use of data for the purposes of development.

There is a gap in our understanding when it comes to the flow of data in the Lesotho data ecosystem, particularly as it relates to the hyperlocal level. It is against this backdrop that MCC commissioned research on the data ecosystem in Lesotho and which includes a component on subnational data flows. Understanding at the hyperlocal level data flows will inform interventions that can increase the availability and use of data to enhance LMDA/MCC program outcomes and, ultimately, create healthier communities and inclusive economic growth.

The decision was taken to focus on health data as a better understanding of the flows of health data would directly inform MCC's investments in Lesotho. Lesotho has also benefited from several investments and donor initiatives to develop and support the delivery of health care in the country. On this basis, it was safe to assume a well-developed health data system in Lesotho.

It was also decided to focus on two types of health data: maternal mortality rate (MMR) and health budget data. Such a narrow focus results in data flow mapping that is more simplified, but it also produces flow maps that are more informative and actionable. Focusing on these two datasets also aligns with both MCC priorities, with health priorities articulated by the Government of Lesotho, and with the SDGs.

As a first step in the project, desk research was undertaken to develop a better understanding of data flows in Lesotho. The purpose of the desk review was three-fold: (1) to establish the

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[160] Bates, J., Lin, Y.-W. & Goodalde, P. (2016). Data journeys: Capturing the socio-material constitution of data objects and flows. *Big Data & Society* July-December: 1-12.

current state of affairs in Lesotho as it relates to the flow and use of data at the subnational level; (2) to identify gaps in the extant literature as they relate to the questions posed by this study, and (3) to inform the collection of data during the follow-up interviews conducted with key informants. The desk research resulted in a report which circulated and discussed with key stakeholders. Following the discussions, a team of local researchers conducted interviews with national, district and facility health staff to confirm and elaborated on the desk research. Interviews were conducted predominantly in Leribe District and included six health facilities.[161] (Mapholaneng Health Facility, outside of Leribe, was also included because it had participated in a pilot project which tested the use of digital devices for health data collection by village health workers.)

To better understand the flow of data in the Lesotho data ecosystem, particularly as it relates to the hyperlocal level, the following overarching question is posed:

How does health data flow between the hyperlocal level and other levels of governance in Lesotho?

Answers to the following sub-questions will provide additional insight required to answer the overarching question:

1. How does health data flow between village health workers and other actors at the local level?
2. How does health budgeting data flow between hyperlocal health facilities and other levels of governance at the Community Council, district, and national levels in Lesotho?
3. What are the most obvious blockages in the flows of data in the health sector in Lesotho?
4. What interventions are possible to improve the flow, use and impact of data in the health sector in Lesotho?

BACKGROUND

GOVERNANCE AND STRUCTURE OF THE HEALTH SYSTEM IN LESOTHO

The governance of the health system in Lesotho is the responsibility of the Ministry of Health which has the legal mandate to ensure equity in access to health care services. Health governance includes the formulation of national health policy and of strategic plans; exerting influence through regulation and advocacy; gathering and using information and accountability for achieving health outcomes. The MoH provides direction through the National Health Policy (NHP) and National Health Strategic Plan (NHSP) to ensure a functional, accountable, transparent, and equitable health system.

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[161] We acknowledge that focusing on a single District may limit the generalisability of the findings to other districts.

In 1997, Lesotho enacted the Local Government Act which outlined a new local government system and created 10 district and 128 Community Councils. The overall objectives of the act, which applies to every sector, were to (1) provide for good governance, ownership, and accountability in matters of public policy; (2) facilitate democratic control over the development process; (3) shift decision making, resource allocation, and local development planning into the hands of the people; (4) provide for equitable distribution of resources across the country; (5) enhance the effectiveness of development activities; (6) facilitate sustainability through matching development activities; (7) facilitate greater speed and flexibility; and (8) facilitate mobilization and maximization of local resources, technologies, and skills. These changes are also set out in the Local Government (Transfer of Functions) Regulations of 2015, and the Decentralisation Bill of 2021 which, at the time of writing, was before Parliament for second reading.

According to the law, many roles that were previously held by the national government were to be transferred to the districts and rolled out over a three-step, 12-year process, starting in 2004. Functions being devolved to local governments include limited decision-making authority over budgets, project implementation, limited revenue generation through taxes, rates, fees, human resources management, and data collection and analysis.

Line ministries, including the MoH, are shifting their roles away from activity implementation towards policymaking, capacity building, and quality assurance. Similar to other sectors, health services are being decentralized in Lesotho to place decision-making authority at the district level. There has been considerable engagement with the Ministry of Local Government and Chieftaincy on the structures and functions for decentralized health units at the district level. Selected functions to be decentralized have been gazetted. The District Health Management Teams (DHMTs) have been formed and are operational in all districts, although they remain reliant on the national MoH in the execution of their tasks. Health services are being delivered through 10 district structures (MoH 2020). Service coverage has increased with the use of village health workers (VHW) and the Health Centre Committees; more health services are accessible and closer to the community.

Under the decentralized system, districts are meant to be increasingly responsible for budgeting, planning, implementing projects, managing health centers and tracking resources, while MoH retains management of referral hospitals. The MoH is also responsible for overall policy formulation, resource mobilization, advocacy and partner coordination, provision of a regulatory framework for all providers, and monitoring and evaluation (M&E).

However, it should be noted that the decentralization process has not made any significant progress due mainly to reluctance from the top combined with weak capacities at the bottom.[162]

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[162] World Bank (2017). Lesotho: Public Expenditure Tracking Survey and Service Delivery in the Health Sector 2017.

In terms of the structure of the health system in Lesotho, there are three levels: (1) the community or primary care level (including health centers which are the first point of care.); (2) the district or secondary care level; and (3) the tertiary or referral level (for specialized care).

In December 2016, the MoH[163] reported that there were 372 health facilities in Lesotho consisting of 1 referral hospital, 2 specialized hospitals, 18 district hospitals, 4 filter clinics, 188 health centers, 48 private surgeries, 66 nurse clinics and 46 pharmacies (MoH 2016). According to UNICEF,[164] in 2017, there were 286 health facilities in Lesotho comprising 265 primary health care centers, 20 general district hospitals and 1 referral hospital. In 2020, the MoH reported the existence of 1 referral hospital, 2 regional hospitals, 16 general hospitals and 175 health centers.[165] These inconsistencies may be the result of an initial absence of a centralized health management system used by all public health facilities; a situation which has now been resolved with the use of the DHIS2 reporting system by all health facilities.

Based on the figures published by the MoH in 2016,[166] the ownership of Lesotho's health facilities as follows:

- Government: 42% of the health centers and 58% of the hospitals[167]
- Christian Health Association of Lesotho (CHAL): 38% of the health centers and 38% of the hospitals
- Private: 20% of the health centers and 4% of the hospitals

For the purposes of reporting on health statistics, the Bureau of Statistics refers to 19 Health Service Areas (HSAs) which correspond with the 19 hospitals in Lesotho (see, for example, Statistical Report no. 22: 2017-2018 Health Statistics[168]). The following 10 HSAs fall under the government: Botha Bothe, Berea, Machabeng, Mafeteng, Mokhotlong, Motebang, Ntšekhe, Queen Elizabeth II, Makoanyane and Quthing. The 9 HSAs that fall under CHAL: Maluti, Mamohau, Paray, Scott, Seboche, St James ACL Mantsonyane, St Joseph's, Tebellong and Semonkong.

Non-governmental organizations (NGOs) also provide health services and these include Lesotho Planned Parenthood Association (9 clinics located in urban centers); Lesotho Red Cross Society (LRCS) (4 clinics); Population Services International (PSI) (5 voluntary counseling and testing centers); Lesotho Flying Doctors; Irish Aid; and Mission Aviation Fellowship.

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[163] Ministry of Health (Lesotho) (2016, December). National Health Strategic Plan (NHSP) 2017-2022. Maseru: Ministry of Health.

[164] UNICEF (2017). Lesotho Health Budget Brief: 1 November 2017. Maseru: UNICEF.

[165] Ministry of Health (Lesotho) (2020, January). The Village Health Program Policy. Maseru: Ministry of Health.

[166] Ministry of Health (Lesotho) (2016, December). National Health Strategic Plan (NHSP) 2017-2022. Maseru: Ministry of Health.

[167] According to a Unicef report (2017) report, in 2017, 40% of primary health centers and 55% of hospitals were operated by the Government of Lesotho (WHO 2017).

[168] http://www.bos.gov.ls/Publications.htm

The Ministry of Health, through a public-private collaboration arrangement, has a memorandum of understanding with CHAL and the Lesotho Red Cross Society (LRCS) for the provision of a defined Essential Health Service Package (EHP) to the population through their network of health centers and hospitals. In 2016, CHAL operated 74 primary health care centers and 8 secondary hospitals in Lesotho).[169]

The Ministry of Health also has an availability public-private partnership (PPP) arrangement with a private consortium for the Design, Build, Finance, Own and Transfer (DBFOT) of the national referral hospital and three filter clinics financed by the Development Bank of South Africa. The Ministry of Health works together with Development Partners (Donors) (Irish Aid, Global Fund, the United State Government, CDC/PEPFAR, Millennium Challenge Corporation, European Union, Gates Foundation, Gavi Vaccine Alliance, UNDP, UNAIDS, UNFPA, UNICEF, World Health Organization, World Bank and World Food Program) in the design, financing, and delivery of health care services.

In terms of available staff, the government has secured 36 Cuban doctors to be engaged in hospitals and clinics around the country to work alongside the 35 Basotho doctors and 252 nurses employed by the state.[170]

The primary level of health care includes health centers, health posts and all community-level initiatives and staff working at this level.

In 2016, there was a network of more than 6,000 village health workers (VHWs) working at the health posts.[171] According to the MoH, a VHW serves about 40 households; a World Bank report notes that there are on average 48 active VHWs per health facility in Lesotho.[172] VHWs are volunteers and receive an incentive from the government. They mainly provide promotive, preventive, and rehabilitative care. VHWs also organize health education gatherings and immunization efforts within the communities they serve. VHWs refer cases to health centers but links between community and health centers have remained informal.

The MoH published a new policy on VHWs in February 2020.[173] According to the new policy on VHWs, the 'reoriented' VHWs will focus on four major areas that are targeted at the attainment of the SDGs: child health (including neonates), maternal mortality reduction, HIV and TB.[174] The policy introduces a new structure for VHWs consisting of village health workers and village health worker supervisors based at health posts and village health work

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[169] World Bank (2017). Lesotho: Public Expenditure Tracking Survey and Service Delivery in the Health Sector 2017.

[170] Ministry of Finance (2019). Citizen's Guide to the 2019/20 Budget. Maseru: Ministry of Finance.

[171] Ministry of Health (Lesotho) (2016, December). National Health Strategic Plan (NHSP) 2017-2022. Maseru: Ministry of Health.

[172] World Bank (2017). Lesotho: Public Expenditure Tracking Survey and Service Delivery in the Health Sector 2017.

[173] Ministry of Health (Lesotho) (2020, January). The Village Health Program Policy. Maseru: Ministry of Health.

[174] Ibid., page 5.

coordinators, nursing assistants and a nurse in charge based at a health center in each of Lesotho's local Councils. Village health workers are expected to be able to 'basic mathematical calculations and report writing'[175] and will be provided with notebooks, pens, pencils, and adequate copies of forms for reporting'[176] whereas village health worker supervisors are expected to have additional 'computing skills'[177] and perform a variety of data compilation and reporting tasks.[178] The policy makes no mention of the equipment that will be provided to village health worker supervisors.

There are two districts (Mokhotlong and Quthing districts) in which VHWs have started to collect data electronically focusing only on COVID-19 data as part of a UNDP-supported pilot project.

Four multi-stakeholder committees provide oversight at the village, health post, health center and district levels respectively.

In addition to VHWs, there are other community-based workers who deliver health-related services to village communities. These include traditional birth attendants, community-based condom distribution agents and water minders.[179] There is also a network of private surgeries, nursing clinics and pharmacies providing health care services and access to medicines.

Health centers are the first point of professional care. Nurses at health centers supervise and train VHWs. Health centers offer curative and preventative services, including immunizations, family planning, HIV/AIDS and TB treatment and deliveries. There is a health center committee made up of representatives from the communities they serve (including chiefs and opinion leaders) with the head of the health center being a member. Each of the Local Community Councils has a Social Services' Committee.

District hospitals are expected to provide access to appropriately qualified staff and the equipment needed to deliver health services. District hospitals are the referral facilities for all health centers in the district. There is a district hospital in each of the districts, with the exception of Maseru. In Maseru there is no district hospital and the National Referral Hospital serves as the district hospital. Three district hospitals (in Mokhotlong, Berea and Qacha's Nek) have been rehabilitated and upgraded.

Clients who go to the district hospitals to access services pay user fees. All the district hospitals, instead of offering specialized services, offer primary health care services which are supposed to be offered by health centers and health posts. This is partly because people living

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[175] Ibid., page 24.
[176] Ibid., page 40.
[177] Ibid., page 24.
[178] Ibid., pages 41-42.
[179] The water minders work closely with the Water Committee in villages to regularly check the yield of the springs, operations of the system, buy parts and carry out minor repairs as required.

in towns do not have access to free primary-level health services. District hospitals refer cases to the National Referral Hospital for further management.

At the district level, the Local Government (Transfer of Functions) Regulations of 2015 requires partial devolution of services, with the MoH as one of the initial pilot ministries. Working with the Ministry of Local Government and Chieftaincy, the MoH is approaching the devolution in phases.

According to the interim arrangement, the District Health Management Teams (DHMTs) will work under the offices of the District Administrators to provide district level services. The DHMTs will continue supporting the health centers and provide services as specified in the gazette.[180] District hospitals are not part of the decentralized structures in the proposed first phase being piloted in four districts. Health centers deliver services in the community through the health posts. Health posts are established in hard-to-reach areas where the populations are very sparse.

At tertiary level there is only one National Referral Hospital, namely Queen Mamohato Memorial Hospital, and one specialized hospital, namely Mohlomi Mental Hospital. Patients are also referred to South Africa for quaternary care through the national tertiary referral hospital. There are other specialized health care facilities such as Senkatana for HIV and AIDS Management, Botšabelo for MDR TB, and Baylor's Pediatric Centre of Excellence.

FINDINGS

HEALTH DATA FLOWS: GENERAL OVERVIEW

Data management involves the recording, collation, processing and use of data within the health sector. According to the MoH, "the objectives of the HMIS as well as Monitoring and Evaluation (M&E) are to ensure: availability of timely health information; management of information through better analysis and interpretation of data; availability of relevant, ethical and timely research evidence; use of evidence by policy-makers and decision-makers; improvement of dissemination and sharing, evidence and knowledge; access to global health information and; the use of information and communication technology."[181]

Four key functions of health information systems are identified by MoH: (1) data generation, (2) compilation, (3) synthesis and analysis, and (4) communication and use. Quarterly reviews

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[180] *Government Gazette*, Vol. 60, No. 71 referred to in the National Health Strategic Plan (NHSP) 2017-2022, p. 11.
[181] Ministry of Health (Lesotho) (2016, December). National Health Strategic Plan (NHSP) 2017-2022. Maseru: Ministry of Health.

are conducted at the district level to ensure continuous accountability and reporting of performance.[182]

At the hyperlocal level, several key actors can be identified in the health data ecosystem:

1. Communities
2. Village Health Workers (VHWs)
3. Community Councils
4. NGOs
5. Health facilities
6. District Health Management Teams (DHMTs)

Community level (including village health workers): Health services are delivered at the community level by village health workers (VHW), program staff and civil society organizations (including NGOs) and are supervised by health center staff. Village health workers collect service utilization data from both public and private providers.

The flow of data between VHWs and health facilities involves the VHWs sharing monthly reports with their supervisors. The VHWs are required to produce their monthly reports using a standardized, pre-printed form to monitor the tasks associated with each assigned patient. The VHW reports contain mainly performance data:

Active case finding:

- Number of homes visited for HIV/TB, under 5, and/or Maternal Mortality Reduction active case finding.
- Number of children weighed in the community.

Facility Accompaniment:

- Number and age of patients accompanied to the facility for HIV, TB, or pregnancy testing.
- Number of under five children vaccinated, referred for growth monitoring, or acute care.
- Number of patients accompanied to the facility for follow-up appointments or extra visits.
- Number and age of pregnant women accompanied to the facility for ANC and PNC.
- Number and age of pregnant women accompanied to the maternity waiting home.

Community Accompaniment:

- Number of patients being provided with DOT.
- Number of patients or pregnant women who missed appointments, and those tracked and found, lost or dead.
- List of public gatherings, topics, and number of attendees

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[182] Ministry of Health (Lesotho) (2016, December). National Health Strategic Plan (NHSP) 2017-2022. Maseru: Ministry of Health. p. 30.

A health facility nurse assumes the responsibility of the VHW supervisor. The VHW Supervisor is required to submit a monthly VHW Coordinator Report to the VHW Coordinator. The report includes the following:

General:

- Number of VHWs that have submitted their reports (active VHWs)
- Number of income-generating projects initiated to support VHP

Active Case Finding:

- Number of homes visited for active case finding.
- Number of children weighed in the community.

Facility Accompaniment:

- Number of patients accompanied to the facility for HIV, TB, or pregnancy testing.
- Number of patients accompanied to the facility for follow-up appointments or extra visits.
- Number of pregnant women accompanied to ANC and PNC.
- Number of pregnant women accompanied to maternity waiting home.
- Number of children accompanied for vaccines, growth monitoring, or acute care.

Community Accompaniment:

- Number of patients supported by VHWs.

VHW Coordinators review and share the reports with the health center manager who, in turn, approves the reports to the next level, which is DHMT. Some data from the VHW reports is captured in the relevant health facility registers. At present, VHW data capturing and reporting up to the DHMT level is paper-based.

Data is shared with all stakeholders (VHWs, facility staff, community council representatives, NGOs) on a monthly basis via a meeting convened by the health facility. During monthly health facility meetings, VHWs discuss their work with the facility manager and other VHWs. At the monthly meetings, the VHWs also share challenges they encounter in their day-to-day work and discuss possible solutions. They receive monthly training whenever necessary. Interviews with VHWs confirmed that VHWs regard the monthly meetings as very useful.

While most of the information is shared during the monthly meetings, some VHWs interviewed indicated that they also hold informal meetings in the communities to discuss work-related issues. In addition to this, at some health facilities (specifically Little Flower), WhatsApp groups are used to communicate with one another.

Community Councils: The Councilor has the highest level of access to health data. The Councilor is the member of the health center committee and automatically becomes the chairperson of that committee by virtue of being the Community Council's representative. The Councilor represents the Community Council in the health center committee monthly

meetings and is expected to report back to the Community Council. However, the reporting is not consistent and the Councilor reports back to the Community Council on an ad hoc basis or when there is a specific need. During the monthly meetings, the health facility representative presents progress and challenges encountered by the health facility during service provision. Regularity of attendance at health facility monthly meetings appears to vary from Council to Council.

Neither the Council representative (Councilor), nor any of the Council staff, have direct access to DHIS2. A Community Council Secretary (CCS) interviewed was not aware of the DHIS2: "Madam, can you please explain what DHIS2 is and what do you mean by the dashboards?" This means Community Councilors can only access data via meeting minutes, or any information distributed during the meeting (e.g., brochures, pamphlets, etc.).

The Community Council collects data on non-clinical services provided by community-based organizations using the Lesotho Output Monitoring System for HIV and AIDS (LOMSHA) system coordinated by National AIDS Commission (NAC). The drawback of LOMSHA is that community-based organizations are not consistent in their reporting resulting in data gaps. The Council has full access to this system and its data.

The Council uses health data such as the number of patients who visited the health facility for different health services. The data is used in developing Council's project proposals such as those related to the provision of clean drinking water or the construction/maintenance of access roads to health facilities. When there are food parcels or donations from the Community Councils for vulnerable populations such as TB patients, HIV+ and malnourished children, etc. data is received from the health facilities to identify these groups. During the Covid-19 pandemic the Community Councils have been working in collaboration with health facilities to collect data on covid-19 positive clients and this data is used for planning at higher levels (District Council and NACOSEC).

NGOs: Service delivery data collected includes program data and data generated from services delivered by CSOs. Data at this level is collated monthly using established data collection methods and tools (forms and registers) approved by the Ministry of Health (MoH). Data is collated, aggregated, and submitted to the health center. This data is transferred to DHIS2 at the health facility level. NGOs also capture their own data in MS Excel from MoH register forms after community visits. The MS Excel data is then sent to the NGO's head office and captured digitally in the NGO's own system (e.g., in their own DHIS2 instance). There are therefore often parallel instances per project or health initiative. The reasons given for the parallel data systems are three-fold: (1) different user needs; (2) different reporting requirements; (3) and limited access to government's DHIS2 system (access is typically limited to relevant projects or the regions where the projects are active). At quarterly review meetings with MoH, NGO staff may compare and resolve discrepancies between their own system and the national DHIS2 system. NGOs access data held by other government ministries via personal contacts

and connections. Data is usually supplied in MS-Excel (often exported from the respective ministry's electronic data management system).

Health facilities: Health center reporting covers all stakeholders who own and manage health centers. At the health center level, data is generated from the delivery of services to clients. The health center also generates health service management and administration data as well as from routine surveys that are conducted at the health center (such as client and provider satisfaction surveys).

Health service management and administration reports submitted by health centers in Lesotho include logistics management, supervision, management meetings, staff, clinical investigations and imaging, budget, and expenditure. There are weekly reports for specific data sets such as IDSR. Most of the reports are collated on a monthly basis before the 7th of each month. There are also reports which are collated on quarterly basis such as TB reports. Monthly and other reports are submitted in paper format to the DHMT.

Reporting is further supported by capturing data at the facility level using DHIS2 which is a web-based data management platform used by MoH. Data are reported to the district level in aggregated form as extracted from the facility registers (and other sources). Data are captured electronically to calculate health performance indicators which are grouped according to health programs. There are over 40 programs and more than 100 indicators in the system.

Data collected by village health workers are combined with the health center data by recording the data into the relevant register. In other words, no data collected by VHWs is captured directly into DHIS2 (or any other system).

Other electronic data management systems include the Human Resource Information System (iHRIS), Laboratory Information System (LIS) and the Logistics Management Information System (LMIS). These systems are being introduced at health facilities through a systematic improvement in the infrastructure and strengthening of staff capacity.

The Lesotho Output Monitoring System for HIV and AIDS (LOMSHA) has been introduced to enhance coordination of non-clinical data generated by all stakeholders providing HIV and TB services as per the Lesotho Essential Package of HIV services (ESP). The ESP describes HIV interventions to be delivered at different levels (community, health center, hospital, and district) irrespective of the type of an organization. LOMSHA makes use of the DHIS2 platform for data management, but it is a separate instance from the national DHIS2 system.

The main tools for data collection at the health facilities are paper forms and registers. MoH is, however, in the process of implementing an e-register which is a patient-level data collection system. It is being piloted for the collection of TB, HIV and PMTCT data. In the health facilities which have implemented the system during the pilot phase, the reports are automated directly to DHIS2. By January 2021, 50 out of 178 health facilities had transitioned successfully to the e-register system.

Data is captured in the relevant system by a data clerk or records assistant. These positions are not permanent. Data clerks are supported by Global Fund grant and records assistants by PEPFAR, and these positions are facility-based positions.

The health center is responsible for the quality of data submitted by the village health workers and for the data generated by the health center. Reports compiled by data officers are verified by the health facility manager or direct supervisor before submission. While this is supposed to happen every month, it is not happening in practice according to those interviewed. Most reports are captured without verification by health center managers. There are also data validation checks within the DHIS2 system which notifies users if there are any data quality issues in a specific report. This allows data officers to correct the report before it is submitted to the next level.

The Health Management Information System (HMIS) Unit at central MoH is responsible for sending annual population figures to each health center at the beginning of each year to be used in the calculation of indicators.

In terms of data use at the health facility level, data is used to monitor medicine stock levels for drugs such as ARVs, to help improve facility services where gaps are identified, and to determine the number of staff required based on the number of patients seen in the facility.

Health centers can access the DHIS2 dashboards of other health facilities in the same district but cannot access the underlying aggregated data for other health facilities in the district. Health facilities in one district do not have access to data on health facilities in other districts.

In terms of data sharing by health centers, data is shared with major stakeholders, including the DHMTs, development partners, community counselors and facility staff. Data is exchanged between health facilities and the Local Community Councils or between Local Community Councils and the District Health Office through monthly Primary Health Care meetings and District Quarterly Review meetings. At these meetings data is shared through presentations, reports or sometimes via dashboards developed in DHIS2 on specific health facility indicators. Data typically shared at these meetings include progress on indicators which are of concern to public health such HIV and AIDS, maternal mortality, TB, COVID, etc. Interviews also revealed that data personnel in the district have a WhatsApp group. They use this platform to discuss, compare or clarify some of the data that may be required by their managers.

Data is also available from the health facility on request. Other than the monthly meetings, there is no schedule for regular sharing of data with community counsellors. Data is not shared with surgeries, pharmacies, or private health service providers.

District Health Office: Health system reporting at the district level covers both district hospitals (owned by government and other stakeholders) and the District Health Office within the Local Government. The district is the focal point for collating, validating, and reporting comprehensively all core health indicators used in assessing health sector performance and

the health of the local population. Data captured at the district level include health service utilization, human resource, supply chain, clinical investigations and imaging, and budget and expenditure data.

The District Health Management Team (DHMT) in the District Health Office uses DHIS2 as the main data reporting tool for the districts. Currently, DHIS2 is used to aggregate all service utilization data and to report on all the service delivery indicators. In the long term, DHIS2 will be updated to incorporate aggregated data from all other health service management and administration units (human resource, financial, logistics and procurement, investigations, and imaging).

HMIS Officers are permanent government staff based at DHMTs. They oversee both M&E and HMIS activities and they supervise data clerks. In most cases, health facilities capture data directly into DHIS2 and there is no need for data capturing at the district level. However, in some cases, particularly in the case of non-government health facilities, data is received in paper format and must be entered into DHIS2 by DHMT staff.

Data from health centers and district hospitals is validated against the manual reports submitted to DHMT on a monthly basis. Validation takes place in two forms: (1) routine supervision and monitoring visits are conducted quarterly by the DHMT to health centers to systematically review the monthly reported data; (2) quarterly review meetings are organized by each district for all health centers and village health workers to review the data for the quarter. During this review, village health workers and health centers meet with the DHMT to review manual records in the registers and reports, validate the figures and discuss performance and challenges. During the review process, 16 indicators are reported by the district, 68 by hospitals and 34 by health centers. These are a set of standardized indicators to assess performance and the delivery of health services.

In terms of how data is used at the district level, the two officers at the Leribe district office interviewed indicated that as the DHMT, they collect different datasets for different interventions implemented by the MOH at the district and health facility levels. For example, under patient data they collect OPD, TB, HIV, PMTCT, ANC, dental, mental, optometric, delivery, under five data, etc. They also collect data on stock status. A dataset such as OPD helps the DHMT to allocate appropriate staff to the health centers because it shows the patient load per health facility. Some of the data is used to quantify and order the drugs required from NDSO (e.g., ordering ARVs for the patient ART receiving treatment in the health facilities).

Furthermore, during the planning and budgeting exercise, the DHMT uses data to set the targets for the next financial year. For example, the data on immunization helps DHMT evaluate how many children were immunized per facility and therefore it is able to determine how many children need to be immunized to align with national coverage. Moreover, during

the district quarterly review meetings, DHMT also uses the data to check the progress made towards achieving the district targets for different interventions.

One of the participants interviewed articulated the use of data as follows at DMHT level: "To identify what diseases are prevailing, where are mostly occurring and when are they occurring. To assess district performance against targets. To compare performance of organizational units (health facilities in the district). To measure performance overtime".

Different programs have access to the data at the district level as approved by the HMIS Office (DMO, AIDS Officer, child health officer, SRH mentor, TB Coordinator etc.). Most of the program managers have access to DHIS2 and have been trained on how to run different reports using the system. Implementing partners who are placed at DHMT also have access to the DHIS22 system. Other stakeholders such as MOH Implementing partners or other line ministries are required to submit a request to access the data. If the request is successful, data is provided via email, flash drives or printed copies.

Interviews indicated that the District Health Office has not shared any health data with the Community Councils. However, during the district review meetings where the data and other issues are shared and discussed, the Community Councils and District Council representatives are invited, including the District Administrator (DA), DCS and Counsellor.

DATA COMPASS ASSESSMENT OF SUBNATIONAL DATA FLOWS

The Data Compass Tool was selected to complement the sub-national data flows assessment. Like the rest of the assessment method, Data Compass is also a qualitative based approach to help public serving institutions (in our case in the health sector) plan for effective, data-informed decision making, by:

- Developing a holistic understanding of the various dimensions involved in effective and efficient use of data.
- Subsequently developing an action plan to improve their use of data to inform decisions.
- Visualizing the flows of data between actors and teams to identify strengths and weaknesses.
- Building lasting skills to critically reflect on and improve their capacity to use data for decisions.

As part of the Lesotho Data Compass implementation, the IREX team with the support from SBC4D local team, concentrated its interview efforts in Two Community Councils (Hlotse and Tsoili-Tsoili), District Level (Leribe) and Three Health Facilities (Motebang; hospital facility, Little Flower; CHAL facility, and Maqokho; Government facility). A total of 11 interviews were conducted, using Data Compass key informant interviews template. This was then complemented by interview notes of SBC4D consultants focusing no subnational data flow. Outlined below is summary of dimension level key findings organized by the three-point scale system used to measure the different data use conditions. The full Data Compass is available in a separate document which summary is presented below.

1 – Evidence of Significant Obstacles

Data value perception: While DHIS2 has contributed to increasing levels of data value perception, in the majority of cases the value is still very low for the majority of staff, and is happening in silos, often as a result of donor interest, and occasionally DHMT. Community Councils use zero data to engage with communities, and do not feel empowered to do so, plus when they reported upwards (e.g., budget) they received no response. At the facility, they see value in disaggregation and some efficiencies by using DHIS2, but leadership still consider use of this system as a 'nice to have', and do not go beyond reporting. Data champions are not being encouraged to do more. Village Health Workers do not receive any feedback on the data they report, nor do they work with the tools that would help them appreciate more the value of data. "Data is seeing as numbers, not people" this probably summarizes why this dimension is red.

Leadership and Strategy: This is probably the weakest dimension of all, and a real bottleneck for future improvements with regards to fostering and actually implementing a culture of

evidence-based decision making and data use in general that will lead to value both at the operational efficiency level, but also at the service performance and community level. The issues are various, but ultimately there is insufficient prioritization for using data other than reporting it into the system. Leadership issues however start at MoH which despite the decentralization efforts, do not focus on building certain capacities among district-level managers like the use of data for decision making, planning, budgeting, service delivery, feedback loops, etc. Donors prioritizing certain resources does not help leadership doing more with what they have in terms of resources, and ultimately people end up working in silos with no collaboration, that could be enabled by the use of data in more strategic ways. Despite all these, unlocking the potential of this dimension could be achieve with some quick wins, focus on leadership training, prioritization and collaboration that will include the donor community to stop silos data work.

2 – Unfavorable conditions, but no evidence of Significant Obstacles

Data user community: The health sector in Lesotho at the sub-national level has a vibrant data user community, that is connected upwards thanks to the introduction of systems like DHIS2, but with a lot of improvement for more horizontal interactions and engagements, in particular between donors and district level staff. At facility level as long as donor has resources funded within the facility there is engagement. Community Councils do not seem to have an activity level of engagement with health facility, certainly not one that is based on data or information sharing, they do however interact at the district level. No feedback loops have been established, and no citizen generated data initiatives either. Establishing feedback loops will go a long way to strengthen community engagement. Improvements in connectivity and social media penetration enabling the use of WhatsApp groups used between VHW, something with potential for further analysis and potential uses at community level.

Data Policies: This dimension is border line red (indicating evidence of significant obstacles). Only some donors have shared best practices around data management and responsible data, but in all cases, there is insufficient interest regarding the use of standard operational procedures (SOPs), or data policies that would help staff to make more effective and efficient use of data and systems they are operating. In fact, none of the facilities interviewed could confirm even the existence of DHIS2 operational guidelines, despite the fact some exist at least in NAC website. Data security is a big issue, reflected in responses like this: "Data is stored securely and is locked in cupboards".

Decision Making Literacy: There is very little evidence-based decision making, this is mostly as a result of the disconnect between existing data profiles and leadership at various sub-national levels, and the result of a culture of reporting upwards without an interest to interpret data insights and make decisions. Donor related programs are doing better than government ones, this is partially due to practices like M&E more established in donor funded programs. At the hospital level, there seems to be more interest in using data for decision

making, in particular around budgeting. At district level, the claims are different depending on who you ask, some data is used for district level performance management, but in most cases is just used to produce indicator reporting for MoH. Having said all the above, DHIS2 has made a big difference in decision making, as well as the application of basic rules for data disaggregation. The room for improvement, however, is very big, and it mostly has to do with establishing a data culture, leadership, and empowerment. This is also an area where Community Councils, if empowered and trained, could play a very important role to support strengthening community engagement and increasing demand for data via feedback loops.

3 – Favorable Conditions

Datasets: Availability of data sets is very high, and while there are improvements to quality and content, there are a number of manual checks and system level checks to ensure quality of data and reporting. The level of disaggregation is minimal: sex and age; but it has proven valuable and provided more insights once entered in the system. Data and corresponding reporting are prioritized according to donor programs and the corresponding resources working on those programs, with AID/HIV and TB data having a much bigger priority than others. Budget related data seems to be more relevant in the case of CHAL managed facilities than government, in that CHAL facilities get feedback based on reported budgets. Similarly, donor programs seem to be more active in providing feedback on reported data than DHMT staff. In general, there are favorable conditions to do more with data, providing certain processes and tools are implemented (e.g., use of data biographies) , continues training on existing systems and maximizing existing functionality, data security and other responsible data policies are in place, and a culture of feedback loops is established that fosters data demand.

Infrastructure: There is consistency in the use of systems like DHIS2 and e-register and there is consensus across facilities of the value these systems have brought to the management of data flows. Electricity and Connectivity do not seem to be major concerns; however, the way internet access is provided has a lot of room for improvement. A) it is donor sponsored, B) it seems to be based on mobile data bundles used with tablets sponsored by donors (no fixed , Wi-Fi or wireless broadband available) C) it is only available in certain devices. Device availability is a concern in all facilities. Positive signs from recent COVID-19 mobile case management pilots with VHWs, need to give continuity to this, provide sustainability and scalability pathway to support other community level health services and ensure seamless data flow from community to facility.

Data Literacy: There are plenty of data-related resources integrated across health facility and district levels, with some identified as potential champions or data stewards (e.g., Data Collector Hospital, Information Officer District, Data Clerk at Health Facility) in a potential future data literacy program that could be implemented to foster a data culture beyond functional data literacy skills. As a matter of fact, some of these resources claim their data

skills are undervalued and not being used. Basic trainings have happened sporadically by either donor (e.g., ICAP) or DHMT staff. More consistency is needed to train and upskill the data champions, to maximize DHIS2 functionality and connect with other communities both within Lesotho and outside for continues improvement. A focus on soft data skills (e.g., data for leaders) and some key functional data visualization, data analytics and interpretation will see further improvements, however the key is to focus on other dimensions like Leadership, Data Value, and decision-making literacy.

Overview of Data Compass results for Leribe District health data

HORIZONTAL DATA FLOWS: MMR DATA

The figure below illustrates the flow of MMR data as extrapolated from the desk review and confirmed by the interviews conducted.

While the flow of MMR data is broadly similar to other types of health data, key differences emerge at this more granular level of analysis. These include:

1. The emergence of **new actors** and data systems. The village chief is responsible for obtaining death certificates for the relatives of the deceased, and this would include maternal deaths. Should a member of a village community require a death certificate, they approach the village chief who furnishes them with the necessary forms issued by the Ministry of Home Affairs. The completed forms are submitted by the village chief to the Ministry of Home Affairs District Office who assume responsibility for issuing death certificates. A new system emerges in the flow of MMR data when deaths are recorded in the National Identity and Civil Registry (NICR).

2. The relevance and importance of the **place of maternal death in determining how the data flows:**
   a. *Maternal death in the community*: If there is a maternal mortality in the community, the VHW reports the death to the health facility, and the health facility manager reports the incident to the DHMT for investigation. If the deceased were a TB or ART patient, or a patient with a chronic disease, the death would also be reported by the VHW. Any other death of a community member is not reported by the VHW, and the recording of such deaths depends on community members reporting the death to the village chief. It is assumed that relatives would report maternal deaths to the village chief for the purposes of obtaining a death certificate from the Ministry of Home Affairs district office.
   b. *Maternal at a health facility*: If there is a maternal mortality in a health facility, the data will be captured in the relevant registry book. The data from the registries will, in turn, be captured in DHIS2.

3. The **emergence of a new database**. DHMT reports maternal deaths to the central level (MoH) where the Maternal Mortality Review Committee investigates the cause of death. The committee is composed of both MoH and DHMT personnel. The DHMT is also required to visit the community as part of the investigation process. The maternal death indicators captured in the DHIS2 – INDDEL-03 Total maternal death that occurred and INDPBF-HCQA-06 Maternal Health Percentage Score – are only for maternal deaths that occurred at health facilities (see figure below). An MMR database (MAMMAS) at central level captures and consolidates both health facility and home-based deaths.

Screen shot of MMR indicators in DHIS2

What the mapping of the flows of MMR data reveals is that there are at least three potential points at which the capturing of maternal mortality data originate (indicated as numbers 1 to 3 in the figure below) depending on where the death occurs; that the data flows from these originating points differ in terms of format, granularity and actors; and that there is consolidation only at the national Ministry of Health between maternal deaths at health facilities and those reported by VHWs, but that the same deaths may be recorded by the Ministry of Home Affairs (unless relatives decide not to report the death for the purposes of obtaining a death certificate).

The likely outcome is two-fold: (1) difficulties in accessing disaggregated maternal mortality data, as confirmed by those interviewed at the Leribe District Health Office as well as community councils in the district; (2) duplicated data or mismatches in the Lesotho population mortality data in the systems of the Ministry of Health and the Ministry of Home Affairs.

Flow of maternal mortality data in the health system at the local level

LEGEND:

X	Place of maternal death
③	3 originating points for the flow of MMR data
[Data]	Data
[Information]	Information

--→ Data flows

---→ Information exchange

BUDGET DATA: GENERAL OVERVIEW

The following description of the budgeting process was extracted primarily from Wiggins and colleagues[183] and reflects the status quo as of August 2012.

Lesotho is a Parliamentary constitutional monarchy. The Parliament consists of a 120 seat National Assembly, with 80 members elected in single member constituencies and 40 by proportional representation. There are two Parliamentary Committees dealing with financial matters, a Portfolio Committee (Economic and Development Cluster) which examines Budget proposals and a Public Accounts Committee which can look into any aspect of government financial management, drawing on reports by the Auditor-General. Government supporters constitute the majority of members of the Public Accounts Committee, but the Chairman by convention is from the opposition.

The Cabinet of Ministers consists of the Prime Minister and other Ministers and are collectively responsible to Parliament. In accordance with the Westminster model, the initiative rests with the Executive, and the National Assembly is not in a position to initiate significant financial proposals against the wishes of Ministers.

In addition to the Ministries, there are 10 Offices carrying out government functions and wholly financed through the Budget. There are also a number of public bodies (e.g., the Road Fund and the Petroleum Fund which receive tax revenue but are outside the Budget). At sub-national level there are 10 districts, Maseru City and 128 Community Councils.

The Ministry of Finance is responsible for all aspects of fiscal policy, including medium-term fiscal planning and the planning of investment. The Budget Department within the Ministry of Finance assumes responsibility for the budget process. Its functions as reported on its website[184] are as follows:

- Responsible for preparation, implementation, monitoring, and evaluation of the national budget.
- Analyses and discusses ministerial budget submissions and other internal or external operations which impact on the Government of Lesotho budget.
- Recommends resource allocation and performance targets consistent with the agreed policy objectives and financial constraints.
- Facilitates the efficient and effective implementation of the approved ministerial programs/activities through timely issuance of spending authorities (warrants).
- Manages the government budget through production of realistic budget estimates and budget performance reports in order to apprise the Executive, the Legislature, and the

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[183] Wiggins, J., Morachiello, E. & Shand, D. (2012). Public Expenditure and Financial Accountability (PEFA): Lesotho. Final Report. European Union and ACE International Consultants.
[184] http://www.finance.gov.ls/departments.php?id=budget&heading=functions

public at large of the nature and scope of government programs and how such programs are financed.

- Takes measures to ensure that government expenditures incurred are consistent with the laws and regulations governing the use of government finances.
- Undertakes medium-term budget reviews in order to improve on budgetary management and performance.
- Undertakes physical monitoring of development programs.
- Assists in the presentation of the Government of Lesotho consolidated budget for discussion and approval by the Executive (Cabinet) and Legislature (Parliament).

The Treasury, also within the Ministry of Finance, is responsible for the execution of payments, for the management of the government's cash and for financial reporting; debt management is part of the Private Sector Development and Financial Affairs Department, which also covers procurement and a monitoring function in relation to public enterprises.

At the Ministry level, responsibility, and accountability for public funds rests with the Principal Secretary who is the Chief Accounting Officer (CAO). In each Ministry there is a Finance Director/Financial Controller who is an officer of MoF, reporting to the Accountant-General.

Local Councils prepare their budgets as part of the budget preparation of the Ministry of Local Government and Chieftainship Affairs (MLG). Following receipt of the MoF circular in August each year about the preparation of Budget Framework Papers, MLG sends its own circular to the Maseru, urban and district Councils requesting them to submit details of their proposed budget expenditure allocations. In preparing their budgets Councils have reasonable certainty about likely recurrent funding based on expenditure norms and capital funding based on the allocation formula. The proposed budget allocations form part of the budget submission and budget estimates of MLG. According to a 2012 report,[185] Councils are also free to pursue donor funding for capital projects outside the allocation from the Capital Fund. It is currently unclear whether this is in fact happening because grants and loans are the purview of MoF in terms of the PFMAA Act of 2011 and the Loans and Guarantees Act and this may account for the failure for Councils to collect their own revenue. Revenue is credited to the Consolidated Fund. Where MLGCA laws conflict with MoF on fiscal issues, MoF laws take precedence.[186]

MLGs report that they are advised of their allocation as soon as the budget is passed, before the commencement of the financial year.[187] In practice they know the details as soon as the Budget is put before the National Assembly, which does not significantly alter the government's proposals. This is normally done about two months before the beginning of the following financial year. Maseru and the other urban Councils are thus able to adjust their

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[185] Wiggins, J., Morachiello, E. & Shand, D. (2012). Public Expenditure and Financial Accountability (PEFA): Lesotho. Final Report. European Union and ACE International Consultants.
[186] Personal correspondence, LMDA, 27 May 2021.
[187] Wiggins, J., Morachiello, E. & Shand, D. (2012). Public Expenditure and Financial Accountability (PEFA): Lesotho. Final Report. European Union and ACE International Consultants.

budgets in good time, while for district Councils and Community Councils the issue does not arise given that all funds are from the central government budget.

Lesotho's Decentralization Policy (2014) states that: "Financial management in Local Council is manual, making it difficult to create a credible PFM system. The treasury considers the current budgeting process in local Councils as below the required threshold for public expenditure. Without a credible budgeting and public expenditure and accounting system, it is difficult to entrust local Councils with public funds".[188]

'Nyane describes in detail the functioning of Councils in 2015 with regard to budgeting and fiscal management.[189] Fiscal decentralization in Lesotho was in 2015 still in its infancy and still appears to be lagging administrative and political decentralization. However, the Local Government Act (1997) empowers every Council to collect revenue within its jurisdiction. The revenue collection powers of Councils are broad enough to include fines and penalties; intergovernmental transfers; and rates and taxes. Community and urban Councils collect revenues while Maseru City Council collects property rates. Only Maseru City Council retains revenues; all other revenues are transferred to the district Councils and subsequently to the central government. Devolution usually entails devolved entities retaining all or part of their own revenues to finance their activities and to set the priorities of these activities. The restriction on the use of autonomous revenues to only one of the many local authorities is unusual. It has also been reported that while on paper the decentralization process appears to have been implemented, in reality many of the administrative structures in place for budgeting and fiscal management are still controlled by central government.[190]

Under the Deepening Decentralization Program, a five-year (2013–17) project of the Ministry of Local Government, Councils are assessed annually on compliance with certain minimum conditions as the qualification criteria for receiving local development grants. In 2015, six minimum conditions and six performance measures were covered. Councils were required to meet the following minimum conditions: (1) a District Annual Development Plan for the current financial year (2015/16) approved by Council; (2) a district Council in place with a schedule of monthly meetings during the previous financial year (2014/15); (3) complete final accounts for the previous financial year produced and submitted to the Ministry of Local Government within three months after the end of the financial year; (4) unqualified reports on audited accounts for previous financial years; (5) full-time key district staff with written job descriptions; and (6) an established cash book for the local development grant.

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[188] Government of Lesotho (2014), p. 5, in 'Nyane, H. (2016). Assignment of functions to local authorities in Lesotho. *Commonwealth Journal of Local Governance* 19. pp. 58–74. http://dx.doi.org/10.5130/cjlg.v0i19.5449.
[189] 'Nyane, H. (2016). Assignment of functions to local authorities in Lesotho. *Commonwealth Journal of Local Governance* 19. pp. 58–74. http://dx.doi.org/10.5130/cjlg.v0i19.5449.
[190] Personal correspondence, LMDA, 27 May 2021.

In 2015, none of the Councils, including MCC, had met the requirement of having "unqualified audited accounts".[191] This is indicative of the weak financial management at local level.

The IMF reports that Lesotho's spending on health is both high and inefficient.[192] According to a Unicef report, budget credibility for the recurrent health budget in Lesotho has remained high in recent years.[193] In Lesotho, the recurrent health budget is dominated by wages and travel outlays for staff. The budget is thus delivered as approved because there is little variance in these inputs during the year. The performance of the development budget, by contrast, is characterized by chronic underspending across all government ministries including health.

The development budget for health is managed by the MoH Project Accounting Unit. It is project-based and primarily includes government funding with additional projects, dependent on counterpart funds from donors, for budget execution. Grant funding for projects funded under this category has seriously declined over the last five years, owing to donors executing their projects off-budget. Because the development budget is project-based, its execution varies heavily from year to year. Notwithstanding, there appears to be very little credibility of this project-based category, which ultimately demonstrates that linkages between planning and budgeting in the health sector need to be urgently strengthened.[194]

In terms of data availability, the Ministry of Finance publishes annually the Budget Book along with occasional budget strategy papers and sector briefings.[195] Budget Framework Papers are used to budget ceilings for line Ministries.

In terms of budget oversight, the Internal Budget Partnership (IBP) notes that neither the legislature nor the supreme audit institution provides adequate oversight during the budget cycle.[196] The budget speech delivered to parliament is televised on national television and the Ministry of Finance publishes a citizen's guide to the budget on its website. This suggests that data and information flows between the highest national levels and citizens are top-down with no evidence of exchange in the form of return or iterative data flows. Members of parliament (MPs) may play a facilitating role in the exchange of information between their constituencies and parliament.

In terms of software to support the budget process, Wiggins and colleagues report that the installation of the Integrated Financial Management Information System (IFMIS) in April 2009

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[191] Government of Lesotho (2014), p. 5, in 'Nyane, H. (2016). Assignment of functions to local authorities in Lesotho. *Commonwealth Journal of Local Governance* 19. pp. 58–74. http://dx.doi.org/10.5130/cjlg.v0i19.5449.
[192] IMF (2019, April). *Lesotho: IMF Country Report no. 19/113*. Washington DC: IMF.
[193] UNICEF (2017). *Lesotho Health Budget Brief: 1 November 2017*. Maseru: UNICEF.
[194] Ibid.
[195] http://www.finance.gov.ls/official_documents.php?id=budget_documents&div=budget_book
[196] IBP (International Budget Partnership (IBP) (2017). *Open Budget Survey 2017: Lesotho*. IBP.

represented a significant change in the operation of financial administration in Lesotho.[197] The system provided controls over both commitments and payments, and was intended to facilitate links between different databases, making it possible to monitor closely and flexibly the execution of each year's budget. There was no piloting or parallel running of the new system and the previous system which might have made it possible to avoid the difficulties subsequently encountered when the configuration of the new system resulted in inconsistent and unstable data and facilitated operations which should not have been possible. In addition to problems in obtaining the performance specified in the procurement contractual arrangements in terms of both hardware and software, there have been continuing difficulties in training and retaining sufficient staff at both MoF and the spending Ministries to operate the system successfully.[198] The IMF reports planned upgrades to the IFMIS April 2019 which would offer potential for more rigorous and comprehensive financial management.[199] At the time of writing, the upgrade to Epicore version 10 had taken place.[200]

In addition to IFMIS is the recently installed Central Budget Management System (CBMS). The CBMS has been introduced to streamline the budgeting process. For example, prior to 2018/2019, Budget Framework Papers were compiled by Ministries using spreadsheets that would need to be consolidated by MoF. The CBMS allows for Ministries to prepare and submit their BFPs via the system.

Reports suggest that when a new financial year starts, the transfer of the approved budget from CBMS to the financial system of record (IFMIS), is extremely slow and prone to error. It is not clear that CBMS is reconciled with IFMIS after the initial budget information is entered at the beginning of the fiscal year. Line items in the budget are very detailed and it is unclear how funds are realigned internally throughout the year.

Despite the positive aspects of CBMS, it remains possible to spend outside of CBMS. In such cases Project Accounting Unit (PAU) accounts for spending. PAU manages all donor on-budget funded projects from partners. It is therefore possible for there to be expenditure against a zero budget because donor funding is not necessarily accounted for in CBMS.

VERTICAL DATA FLOWS: HEALTH BUDGET DATA

Lesotho's budgetary process is based on the medium-term expenditure framework (MTEF) introduced in the mid-2000s. The framework is often described as a 'top down, bottom up' approach in view of the consultation process that occurs between the MOF and line ministries. MTEFs typically have a three-year time horizon on a rolling basis.

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[197] Wiggins, J., Morachiello, E. & Shand, D. (2012). Public Expenditure and Financial Accountability (PEFA): Lesotho. Final Report. European Union and ACE International Consultants.
[198] Ibid.
[199] IMF (2019, April). *Lesotho: IMF Country Report no. 19/113*. Washington DC: IMF.
[200] Personal correspondence, LMDA, 27 May 2021.

Given that Lesotho's fiscal year runs from 1 April to 31 March, the budgetary process starts in April/May with Cabinet's approval of the budget calendar for the next budget and a review of the MTEF. This is followed by the MOF and the Ministry of Development Planning preparing the Budget Strategy Paper (BSP). The BSP is a key document which sets out the country's policy goals and strategic priorities for the forthcoming fiscal year. It includes an up-to-date assessment of recent macroeconomic and fiscal performances as well as the macroeconomic outlook for the coming years. The BSP requires Cabinet approval, which is usually obtained around June/July.

In the Budget Strategic Paper, the MOF uses economic data collected by the Bureau of Statistics to draft a budget framework. Once this is done, MOF issues a call circular for Budget Framework Papers (BFPs). The BFP as an instrument that facilitates the alignment of identified national priorities to resource allocations.

The call circular contains ceilings for each ministry, and the ceilings are divided into two categories: (1) recurrent budget (comprising personal emoluments; transport and travel; transfers; and operating costs), and (2) capital budget. Once the BFP call circular has been issued, the Ministry of Health (MOH) engages in a nationwide exercise of developing operational plans and budgets based on costed future activities. MOH uses both top-down and bottom-up approaches to produce its annual operational plans and budgets.

The top-down approach involves central programs developing their priorities for the financial year and setting the targets for the districts. The central programs develop operational plans which will inform the programs in the districts. Priority and target-setting is informed by the action points which are developed from different assessments and from the Annual Joint Review (AJR).

Once MOH is done with central programs, it engages the districts. This is where the bottom-up approach is followed. The districts (DHMT, hospitals and health centers) develop their own Annual Operation Plans (an activity-based approach). The activities in the operational plans are developed in line with MOH priorities and are costed. The operational plans are submitted to the MOH for consolidation into the MOH budget.

A discussion with MOF follows in which MOH will state its needs, especially when its budget exceeds the MOF budget ceiling for MOH as published in the circular. The figures below show the proposed ceilings in the circular and the actual or approved budget allocations for the MoH over the past four years. The graphs show that in the case of the recurrent budget, the approved budget may be either less or more than the budget ceiling set by MOF. It also shows that the approved budget for MOH has been locked in the LSL 2.0-2.5 billion range over the past four years.

Recurrent Budget
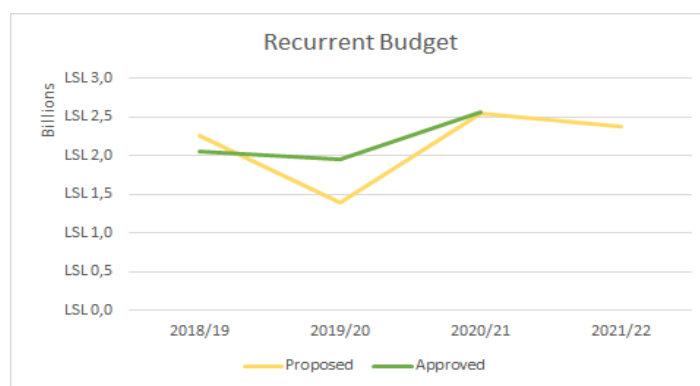
The approved capital budget for MOH, by contrast, has been declining over the past four years, despite an increase in the proposed ceiling in 2020/21.

Capital Budget
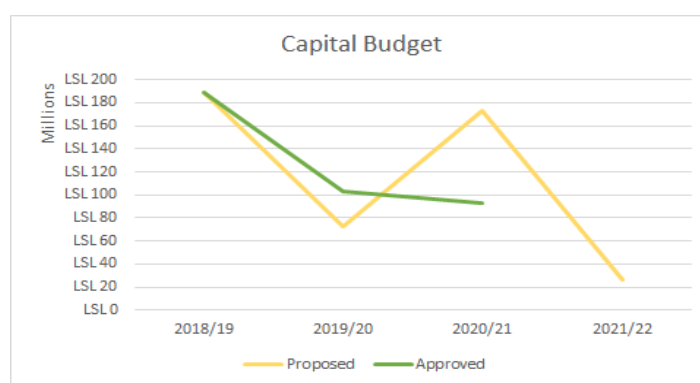
The next step is for MoF to submit the budget to the Cabinet Budget Committee. After the decisions of the Committee, budget estimates are presented to the full Cabinet before a Budget call circular is issued with the final budget ceilings.

The Appropriation Act showing the budget presentation is tabled before Parliament after the National Budget speech is delivered by the Ministry of Finance. Following approval of the Appropriation Bill by Parliament, the Bill is assented to His Majesty King Letsie III and is declared an Act of Parliament.

Upon the approval of the budget, and the allocation of funds to MOH by MOF, MOH distributes the finances to the different levels of implementation. The primary recipients are: MOH Central programs, DHMTs, hospitals (GOL) and collaborating institutions in the delivery of health care services. The current formula for budget allocation to the district level takes into consideration District population, distance from Maseru (weighted towards more resources for further Districts), and disease burden (using HIV as a proxy). DHMTs receive funds from MOH on a quarterly basis. The non-governmental institutions are provided a share of approved MOH budget (referred to as a 'subvention'). These include: CHAL, Tsepong, Lesotho Red Cross Society (LRCS), Baylor, Riders for Health.

Donor funders: Ministers have the authority to accept grants from foreign governments or donors (p. 279), but the Public Finance Management and Accountability Act of 2011 clearly states that "all grants … shall be paid into and form part of the Consolidated Fund." While this

happens to a certain extent for on-budget support, much of the support the MOH receives is "off-budget" or directly donor financed. These contributions are not always recognized in the MOH budget. Most of the "off-budget" contributions are not recognized in the Central Budget Management System (CBMS) and are therefore not accounted for in the national accounting system, IFMIS. The absence of partnership frameworks to manage MOH's relationships with stakeholders (e.g., development partners, NGOs, and the private sector) was recognized as a key issue in the 2016 National Health Strategic Plan (NHSP).

Community Councils: Community Councils have access to and are aware of the health budget allocation to the Leribe DHMT. The Community Council through its membership of the Health Facility Committee has a say on behalf of the Community Council on the budget priority areas for the facility during the preparation of the Annual Operational Plans.

Flow of health budget data between the national and local levels
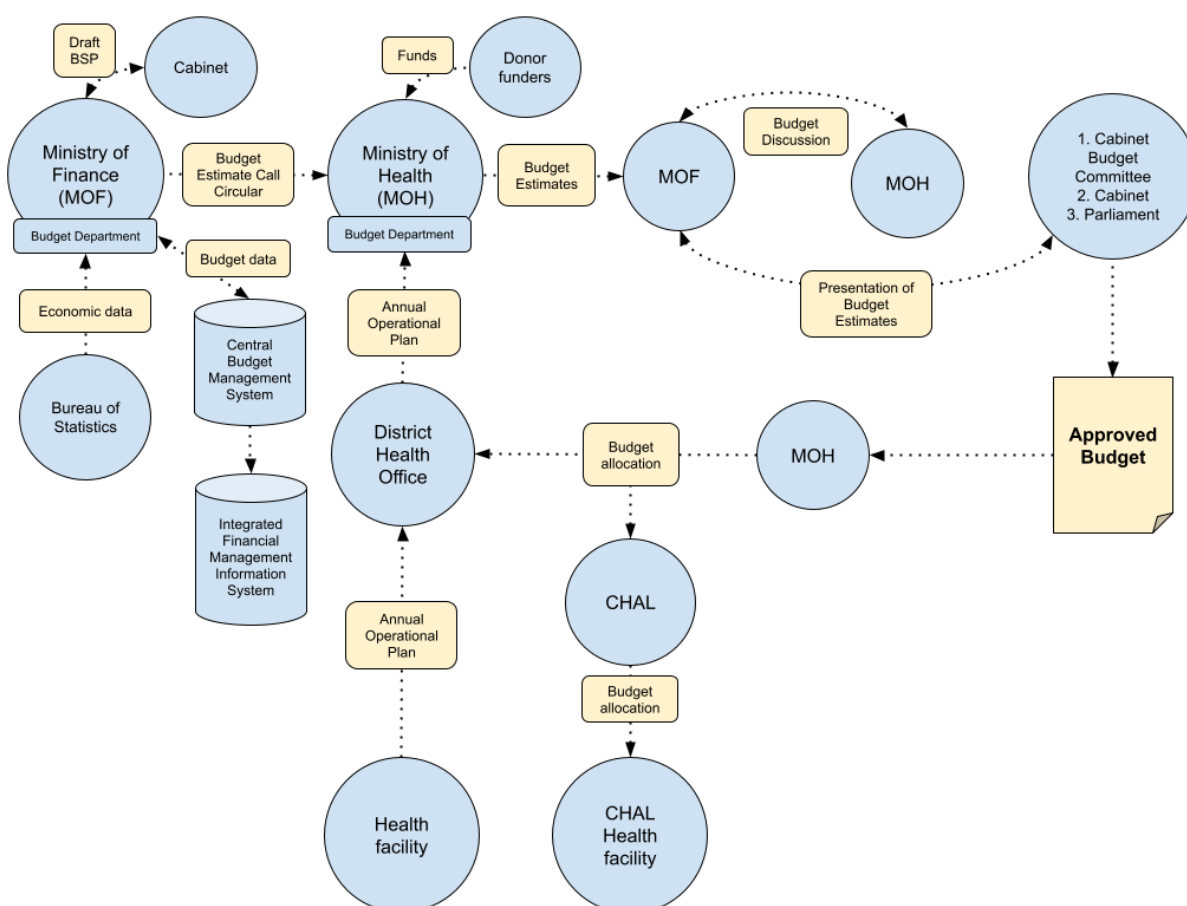
ENABLING CONDITIONS

Overall, the country is well connected through ICT infrastructure. Despite the fact that almost 70% of the population has a phone, only approximately 30% has mobile Internet access, mainly due to the high cost of the service. The Universal Service Fund (USF) is considered one

of the few successful cases in Africa, having supported the deployment of 46 base stations to remote areas and the connection of 40 schools to the Internet.[201]

A distinction can be drawn between the social and the technical components as the enable (or constrain) data flows. This research on subnational data flows will focus predominantly on the social component, that is, the actors involved in the exchange and use of data in the health and horticulture sectors. The research currently being conducted by RTI on the ICT sector in Lesotho will focus predominantly on the technical component and will provide valuable and detailed information on the current state of the sector as providing important enabling infrastructure, systems, and capacities for the flow of data between actors in health and horticulture. The findings from the research will therefore make an important contribution to the research on subnational data flows.

In 2014, the European Space Agency assessed the health systems and their potential for e-health in 48 sub-Saharan African countries. ESA's assessment included considerations of the prevailing political and social situations to produce an e-health priority ranking. Lesotho was ranked 6th behind Uganda, Tanzania, Rwanda, Namibia, and Kenya.[202]

Lesotho has a functioning DHIS2 health information management system and has partially deployed the e-Register system at selected health facilities. A module was developed for DHIS2 ('Informed Push') for supply chain management in the health sector.

A 2010 report described Lesotho's health information system (HIS) as follows: "Lesotho has a hybrid HIS, with a mix of integrated and stand-alone data systems. The integrated data system covers outpatient, inpatient, delivery, maternal health, ANC, and oral health data. Conversely, the major disease control programs (HIV, TB), as well as notifiable diseases, immunization, and social welfare and human resources, have separate, vertical data systems. Lesotho currently has no systems for tracking financial data, managing human resources for health, or managing logistics (i.e., distribution and management of drugs and essential supplies)".[203] In 2016, there were still no standardized set of indicators for management and administrative functions at health facilities that could be used to assess their performance.[204] There has been an effort to integrate data from various sources into the DHIS2 platform.

On a more positive note, the same report concludes that "Despite having a hybrid information system, Lesotho made great strides in improving its monitoring capacity, as evidenced by the

[201] United Nations Conference on Trade and Development (UNCTAD) (2019). *Lesotho: Rapid eTrade Readiness Assessment*. Geneva: UNCTAD.
[202] BMZ (German Federal Ministry for Economic Cooperation and Development) (2018). *Digital Health Ecosystem for African Countries: A Guide for Public and Private Actors for Establishing Holistic Digital Health Ecosystems in Africa*. Bonn: BMZ
[203] Mwase, T., Kariisa, E., Doherty, J., Hoohlo-Khotle, N., Kiwanuka-Mukiibi, P. & Williamson, T (2010). Lesotho Health Systems Assessment 2010. Health Systems 20/20. Bethesda, MD: Abt Associates. p. 95.
[204] Ministry of Health (Lesotho) (2016, December). National Health Strategic Plan (NHSP) 2017-2022. Maseru: Ministry of Health.

limited number of indicators measured quarterly in the M&E reports, which form the basis of the AJR. The decentralization policy will require that a similar approach be rolled out to the district level (district scorecard) to monitor the implementation of decentralization and district performance".[205]

BLOCKAGES IN DATA FLOWS

In its National Decentralization Policy of 2014, the government notes that:

> The Government appreciates that data and records management at sub-national level is underdeveloped, a situation that constrains evidence-based planning, performance monitoring and sound decision-making. The Government will develop the data and statistical capacity of local government authorities to ensure that all districts and municipal authorities are able to regularly collect, store, analyze, report, and share reliable data on all domains in their territories.[206]

According to a recent UNDP report, Lesotho's data ecosystem benefits from sound statistical and administrative data collection systems. However, the absence of legislative and policy frameworks for data sharing results in data not being available in the formats, level of disaggregation or timeframes required by users. Some data can only be accessed upon request and delays occur due to varying levels of government data management procedures and staff availability. The report also notes limited data availability in some sectors. Data quality is also of some concern, particularly related to discrepancies between national and sub-national data. Underpinning much of these needs on the supply side is the inability of BoS to enforce its mandate accompanied by limitations in BoS's human and technical capacity.

The MoH noted the following issues in the health sector in 2016:
- Timeliness, completeness, and quality of health data reported.
- The use of health research for evidence-based decision-making.
- Weak national health system structures.
- Capacity for routine analysis and use of health information for decision-making at all levels.
- Low funding for research and eHealth.

The MoH reported in 2016 that its health performance management system was not as functional as expected. The proportion of health centers with costed annual operational plans was 16% in 2013, 55% in 2014 and 46% in 2015. The percentage of health centers which knew

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[205] Mwase, T., Kariisa, E., Doherty, J., Hoohlo-Khotle, N., Kiwanuka-Mukiibi, P. & Williamson, T (2010). Lesotho Health Systems Assessment 2010. Health Systems 20/20. Bethesda, MD: Abt Associates. p. 97.

[206] Ministry of Local Government, Chieftainship and Parliamentary Affairs (Lesotho) (2014, February). National Decentralisation Policy. Maseru: Ministry of Local Government, Chieftainship and Parliamentary Affairs. p. 22

their budget remained at 46% from 2013 to 2015.[207] The proportion of VHWs who submitted their reports on a monthly basis to the health centers declined from 59% in 2015 to 38% in 2016.[208] One contributing factor is the high rate of attrition among VHWs.[209]

Health center committee meetings improved from 60% to 69% between 2013 and 2014 and fell to 58% in 2015. The percentage of health centers with at least 80% of planned monthly meetings fell from 21% to 20% between 2014 and 2015.[210]

In the last four years, the percentage of districts conducting at least two quarterly reviews annually has reduced from 90% in 2012 to about 20% in 2015. These meetings are currently still not taking place regularly. The percentage of planned Strategic Information Technical Working Group (SI-TWG) meetings held at central level also reduced from 50% to 25% between 2012 and 2015. In the period 2012 to 2015, no SI-TWG meetings were held in any of the districts. None of the ten districts conducted more than two quality assessment visits in the same period.[211]

Health data: From the interviews conducted by this project, the following challenges were reported:

- Low capacity to use data collection tools and reporting caused by high attrition rate. Every newly appointed data clerk needs to be trained to use the data collection tools and indicators for all the health programs. There are instances when newly recruited data clerks are placed at a health facility without adequate training.
- Too many paper-based tools collecting the same information.
- In more remote areas, transport, internet connectivity and power cuts remain a major issue.

All VHWs interviewed declared that they face challenges in providing services to their communities. These include the following:

- People in the rural areas are very secretive about their health so they are often hesitant to talk whenever they need medical attention.
- In Basotho culture, pregnancy is kept a secret until a certain period. As a consequence, most pregnant women go to the clinics very late in their pregnancies or they do not go at all. Hidden pregnancies are especially common in young, unmarried girls.
- HIV stigma still exists in some communities. HIV positive members of the community normally keep their HIV status a secret and this makes it difficult to support them.

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[207] Ministry of Health (Lesotho) (2016, December). National Health Strategic Plan (NHSP) 2017-2022. Maseru: Ministry of Health.
[208] Ibid.
[209] World Bank (2017). Lesotho: Public Expenditure Tracking Survey and Service Delivery in the Health Sector 2017. Washington DC: World Bank.
[210] Ministry of Health (Lesotho) (2016, December). National Health Strategic Plan (NHSP) 2017-2022. Maseru: Ministry of Health.
[211] Ibid.

- Some villagers do not trust VHWs and hide their medical conditions from the VHWs. They suspect that VHWs spread their confidential information around the village.
- The stipend that VHWs get is small based on the work they do. A VHW Coordinator salary is LSL 2,000 (approximately USD 139) per month, a VHW supervisor's stipend is LSL 500 (approximately USD 35) per month, and a VHW receives a stipend of LSL 400 (approximately USD 28) per month. The stipend is paid on a quarterly basis.
- Most of the VHWs complained about the shortage of supplies such as gloves, masks and this sometimes put them at risk.

VHWs indicated that the biggest challenges faced in terms of reporting to the health facility, included delays in the payment of their quarterly stipends which prevents them from submitting monthly reports because they cannot pay for transport to the health facility. Inclement weather also affects the timely submission reports to the health facilities. Some VHWs mentioned that no or insufficient training on reporting compromises the quality of their reports.

When asked if it would make their jobs easier or more challenging to collect data and report data in digital format (e.g., using a tablet or a phone), VHWs expressed mixed feelings. Some mentioned that digital formats would make their job easier and neater, could reduce frequent travelling to the health facilities resulting in more timely submission of reports, and standardize reporting. Others highlighted that using digital formats would be difficult if not impossible because of the following challenges:

- Some of the VHWs stay in remote areas where there is no mobile signal making reporting through digital platforms difficult.
- In some of the areas there is no electricity and charging phones using solar power is difficult especially during poor weather.
- Some of the VHWs are not proficient in using cell phones and using sophisticated data collection tools would be difficult for them. Some VHWs are old and using technological devices is a challenge, especially smartphones.

It was suggested by those interviewed that some of the challenges such as electricity supply could be overcome by the provision of solar panels. They also highlighted a need for continuous supportive supervision and mentorship.

When asked if there is any specific data or information that would help VHWs to do their jobs more effectively, most indicated that they would benefit from:

- more support from health facility staff in the form of community outreach, e.g., they would provide education on comprehensive health services and also provide services to the hard-to-reach communities.
- more training on new and emerging health issues (e.g., knowledge on Covid-19 would help to answer technical questions asked by community members).
- training on other services provided such as testing clients in the communities.

The challenges reported by health facilities in Leribe related to data collection and sharing echo those of the VHWs. The transportation of the hard copies of monthly reports from the health facility to the DHMT is often a challenge because of lack of transport. In Thaba Phatsoa, the health facility staff interviewed indicated that the electricity supply is not stable and that this can cause delays in the submission of reports. They also indicated that sometimes they run out of data also resulting in delays in capturing data in DHIS2. The main challenge that the district hospital faced during data collection and reporting is the unreliability of the IT network which means that some departments such as ANC are behind in terms of e-register implementation.

Facilities indicated that they enjoy support from NGOs, but that this support is usually temporary. Whenever the NGOs leave, a huge gap is left behind. Facilities also highlighted that some of the diseases that patients present at health facilities do not appear in the inpatients or OPD summary registers, and that this limits the capturing of important data that can be useful to the facility. During supportive supervision, health facilities have the opportunity to communicate with either MOH or DHMTs teams any gaps or challenges encountered when using the registers. Sometimes they communicate with the DHMTs by telephone or WhatsApp groups on more urgent matters.

The district office reported that while in general the data collected is sufficient, access to additional data would allow it to better execute its mandate. These relate to specific datasets not yet integrated into the DHIS2 system, including data on human resources, blood transfusions, deaths births which occur outside the facilities, physiotherapy, population projections and targets, and stock levels (which is only accessible to supply chain managers and pharmacies):

> If I want to know how many people were trained and how many need trainings on specific guidelines in the district, it is difficult to access such information because other trainings are conducted at health facility level by MOH partners and reports on the number of staff trained are sometimes not shared. If HR is integrated in the DHIS2, such information will be captured just like routine reports hence easy to access them.

District health officials also reported that additional training on data use would help them to execute our mandate more effectively.

The Community Councils interviewed indicated that they could better execute their mandates if the Council staff could be trained and have access to health facility data management systems (DHIS2) as this would improve the utility of health data by the Council. The Council indicated that while it is always provided with data whenever there is need, it would benefit from direct access to the data management system (DHIS2).

Health budget data: Public sector budgeting reforms such as performance-based budgeting (PBB) are intended to improve good governance by increasing transparency and accountability

for resource allocation decisions. Budget reforms urged by donors and led by the Ministry of Finance have been adapted for the health sector. A framework for measuring reform activities in the health sector was developed and tested in four Lesotho hospitals but achieved little progress in budget reform.[212] The reform's failure was attributed to a complex design which was not adapted to institutional constraints and insufficient capacity in the sector, as well as ineffective leadership and professional boundaries between clinical and accounts staff. The complexity and labor intensity of public sector budgeting reforms such as PBB suggest that policymakers and advisors may not fully appreciate the human resource realities of many developing countries.

The Open Budget Survey 2017[213] awarded Lesotho a score of 0 out of 100, indicating that the government provides no opportunities for the public to engage in the budget process. (The global average score is 12 out of 100.)

According to the IMF, budgeting practices in Lesotho are often delayed, leaving little time to ensure that the proposed budget aligns with desired policy measures.[214] More timely and reliable macroeconomic data and projections would strengthen fiscal analysis and budget projections. The IMF goes on to report that the available data are broadly adequate for surveillance, but there remains room to enhance data transparency and reliability. The government response to this observation was agreement on the importance of institutionalizing data sharing arrangements.

The allocation of financial resources is not transparent at the district level nor is budgeting based on local needs. In other words, budget development is not based on need or planning but is assigned based on available funds and historic spending. A World Bank study found worrying variance in funding to Districts and facilities that was inequitable and recommended using evidence-based or population-based measures to reallocate funding.[215] Reports have revealed that payments from the Ministry of Health to Districts are often delayed and that there are issues with liquidity at the Central Bank resulting in large payments being delayed for extended periods. This affects the delivery of health services at the local level. Cost centers (individual facility accounts) for the GOL health centers have not been created. As one interviewee put it: "The District budget covers all health facilities, [there is] no separate budget for health centers". Government health facilities must make requests to the DHMTs for any expenditure. Accessing the funds from the DHMTs to finance the planned activities in their respective Annual Operation Plans remains a challenge. The situation is different at

[212] Vian, T. & Bicknell, W.J. (2014). Good Governance and Budget Reform in Lesotho Public Hospitals: Performance, Root Causes, and Reality. *Health Policy & Planning* 29(6):673-84. doi: 10.10933/heapol/czs121

[213] IBP (International Budget Partnership (IBP) (2017). *Open Budget Survey 2017: Lesotho*. IBP.

[214] IMF (2019, April). *Lesotho: IMF Country Report no. 19/113*. Washington DC: IMF. p. 12.

[215] World Bank (2017). *Lesotho: Public Expenditure Tracking Survey and Service Delivery in the Health Sector 2017*. Washington DC: World Bank. See also IMF (International Monetary Fund) (2019, April). *Lesotho: IMF Country Report no. 19/113*. Washington DC: IMF.

CHAL-managed health facilities where each facility is provided with finances from the CHAL subvention. These funds are managed and spent at the facility level.

Evidence in the Annual Joint Review (AJR) report (2014/15), 2019 Data Quality Assessment (QDA) Report for EPI, Leribe District Bi-annual Performance Review report (2016/17) and Mokhotlong District Annual Performance Review report (2016/17) reveal that nearly all GOL health centers are not aware of the percentage of budget approved for execution of their Annual Operational Plans. The NHSP 2018/19-2022/23 further shows that the proportion of health centers with costed annual operational plans was 16% in 2013, 55% in 2014 and 46% in 2015, and these were the facilities under management of CHAL. Budget ceilings are not routinely communicated to the districts in advance of the budgeting process and Districts are encouraged to budget as per their needs. When cuts are made at the MOH level, they are not communicated back to the districts nor is the rationale for the cuts communicated. If the MOF cuts the MOH budget further, the resultant cuts to District budgets are also not well communicated. Unknown budget allocations by health centers have been the main barrier towards informed priority-setting and fulfilment of service delivery promises in their catchment areas and the Community Councils they serve.

DISCUSSION, RECOMMENDATIONS AND CONCLUSION

In the introduction to this report, we posed several questions, the answers to which inform our overarching interest in how data flows in the Lesotho data ecosystem, with a particular interest in flows at the hyperlocal level.

Following the above analysis of data flows in the health sector, with specific focus on MMR and health budget data, we asked what the most obvious blockages are in the flows of data in the health sector in Lesotho. The following strengths and weakness were identified:

Strengths	Weaknesses/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 requirement 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 ● Poor 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	● Poor integration of VHW data with DHIS2 and other systems.

ability to capture data at the community level, to deliver out-of-facility services, and to identify community needs.	● 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) ● Lack of trust in VHWs by communities provide blockages to capturing health data ● Culture of secrecy around pregnancies introduces blockages in capturing of health data

In terms of systems and data flows, we propose several potential areas of intervention:

Integration

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

a. **E-register**: The e-register is a first step towards a national EMR system. For now, it is focused only on TB & HIV, and the inclusion of other diseases could make it a central tool for the health system. However, the lack of integration with the civil registry (NICR) is a missed opportunity. The integration of the civil registry, as a service and not as a database, could improve significantly patient care, and patient tracking when people move from district to district. It will help identifying duplicate entries and help to design appropriate patient treatment based on their medical history. The civil registry could also benefit from such integration, providing quicker updates of information on events such as births or deaths. Note that we recommend focusing on the integration of NICR into e-register before doing the scale-up to ensure that staff will get trained on one single way to register people.

b. **DISA LIS**: In the same way and for the same reason, DISA (Lesotho's proprietary Lab Management Information System) would benefit from integrating and relying on the civil registry for patient identification.

c. **Integration of DISA & the E-register**: The integration of the civil registry in both systems will also enable interoperability and integration of DISA and E-register so that lab analysis becomes part of the patient record. This connection does not exist at present.

d. **Build on existing gains:** Gains have been made in integrating additional modules into DHIS2, and in connecting DHIS2 with the e-register. The process of expansion and integration must continue in order to provide health officials at the lower administrative levels access to more comprehensive data and reliable data. This would include, for example, a more streamlined synchronization of data on births and deaths in Lesotho.

Village Health Workers

Village health workers are a critical interface between communities and health facilities. They connect two actors at the hyperlocal level and provide the opportunity to collect patient data at the community level and to improve the delivery of health services at community level through access to and the use of existing health data and information. The following recommendations are made in relation to the role of village health workers in the flow of health data in Lesotho:

1. To address the current fragmentation and insufficient coordination in engaging village health workers in data collection initiatives, design of a global framework and policy to define VHW data collection tasks and how external parties should integrate the collection of new data captured by village health workers into existing data systems.

2. Downward data flows could help VHWs provide better health service. Currently VHWs are seen only as data collectors, but access to data such as patient records could help them deliver better health services. Alternatively, should VHWs lack the skills and capabilities to interpret health data, a data intermediary could be introduced to provide VHWs with the health information they require to improve service delivery. For example, a data officer at the District Health Office could be 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.

The recommendations above are proposed to address challenges that were created by the implementation of different initiatives supported by different donors acting in siloes. For example, the UNDP funding to support Covid-19 data collection by VHW was done independently of any other patient data collections such as the Global Fund data collection application for VHW, with new systems set up and new tools introduced creating new data

flows. Such an approach is not sustainable and creates major interoperability issues and additional work for all the actors from VHWs up to MoH staff. It also places limits on the potential for more widespread data use.

The recommendation above related to a framework for village health workers in terms of their data collection tasks should be generalized at a higher administrative level, ensuring that any new intervention makes use of existing data systems and data collection/reporting procedures or, at the very least, connects with existing data systems and processes. It would therefore be important to design a 'Health Systems Data Management Master Plan' which will define how new data collection initiatives should be integrated into routine VHW work and tools, or how new MoH information systems should be interfaced or integrated into other existing systems. The role of the master plan is to provide a coordination framework for MoH, the donor community and other stakeholders.

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 (e.g., mobile apps) 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 interconnection between systems is essential to integrate the various components, prevent duplication of collection and limit coherency challenges between systems.

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 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 and patient data collected at health facilities 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 note 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 privacy concerns, and institutionalized practices that incentivize reporting at the expense of decentralized decision-making based on reliable and relevant data. These social issues in one way or another contribute to blockages in the flow of health data at the subnational level.

PART II - RECOMMENDATIONS

This section presents the proposed recommendations to address challenges that have emerged from the diagnostic. The strengthening of the Lesotho data ecosystem requires actions at two levels:

1. **Global actions to support the national data ecosystem**: The emergence of a robust data ecosystem requires a number of specific actions at the national level, across the different dimensions explored in the study. The aim of these actions is to put in place the leadership, legal, technical and capacities foundations to support greater data use across sectors, by governmental and non-governmental actors.

2. **Sector-specific strategies and action plans** : the proposed national data ecosystem action plan has the objective to put in place core elements that will support the emergence of a data culture in all sectors. While these global actions are required and critical, they have to be complemented in each sector by a sector-specific plan. While, as the name suggests, those plans are likely going to differ from one sector to another, they also have commonalities in the structure and the topics. We present in the sub-section below a generic sector plan with core elements. In Annex 7, this generic plan is instantiated in health and agriculture & water to align with MCC Compact main components : Health System Strengthening (HSS) and Improving Capital Investment (ICI).

RECOMMENDATIONS FOR IMPROVING THE NATIONAL DATA ECOSYSTEM

We have identified the following areas of intervention to support the emergence of a robust data ecosystem :

1) **Strengthening of 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. It is recommended to:

        i. **support the transition of BoS as an autonomous agency**: BoS should become an independent autonomous agency on the model of e.g., the Lesotho Revenue Authority or the CBL, where it can generate its own revenue, and have the opportunity to offer services to non-governmental stakeholders for the benefit of the whole statistical systems 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 makes it independent of potential ministerial interferences.

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

 b. <u>Legal context</u>: 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. <u>Infrastructure</u>: BoS needs a better infrastructure to support its activities and tasks. In particular, we recommend:

  i. equipping BoS with right set of tools (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[216] (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. <u>Skills</u>: 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.

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[216] 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.

The proposed investment will lead to a reduction of the survey costs[217] 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 & data innovation hub**: The lack of an ICT innovation centre 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 on the longer term the setup an operation of data analytics team that could be composed of a number of fellows that rotate as new cohort are trained.

   d. Development of a data science capacity building program

   e. Development of a M&E advanced program that focus on the use of data science and innovative approach to M&E.

   f. Development of an awareness raising program for government and non-governmental actors.

   g. Development of a consulting and research function to support governmental and non-governmental data projects and needs.

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[217] The use of digital tools reduces the costs of survey by eliminating paper costs, and paper digitization process

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 limited 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. supporting the development of staff capacity,
      ii. supporting the setup of systems and forms for declaration,
      iii. supporting 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 UN 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 multistakeholder 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. <u>Support the development of a National Action Plan that will integrate commitments on open data, horticulture, and health.</u>

5) **Development of 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 interconnection 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. The policy should clearly identify the respective roles of the different ministries, MoHA and MCST.

   c. **Development, integration and use of national data registers**: The e-government framework should go beyond only the integration of 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) **Improvement of 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 centre. However, given the critical importance of this data centre, 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:

   a. <u>Develop of a data security policy that will define rules and requirements for data security, including backup and security audits; and</u>

   b. <u>Develop, validate, and adopt a disaster recovery procedure for the data centre.</u>

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 practices. Gender-data can identify cross-sector issues and fostering 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.

SECTOR-SPECIFIC GENERIC STRATEGY

The implementation of the proposed national data ecosystem action plan will lead to the availability of a conducive environment from a legal, technical, capacity and innovation perspective. Then this environment will need to be exploited in the different sectors to lead to greater data use for decision making by all actors of these sectors. Each sector has therefore to develop its own strategy. However, these sector-specific strategies will have commonalities in terms of core group of activities and specific intervention. These commonalities are in 5 main areas:

1. **Increase information systems interoperability and data flows**: Different departments and different initiatives use different applications and information systems. When such information systems are working in siloes, it is extremely difficult to mash and reconcile information from different sources, lowering the potential of the data in all the systems. One of the first should therefore be focused on interconnecting and making interoperable information systems that are connected. In Lesotho, the

existence of the national ID database (NICR) is an asset that can resolve a number of such interoperability issues. The integration of NICR as a service into information systems that reference citizens is a key step.

Other steps in that area should include :

- o the evaluation and if needed strengthening of data security
- o the definition of a data master plan that identify core information systems and that force all future initiative to rely on the master plan to limit the data siloes
- o the identification of data access needs by different actors at different administrative layers (national, district, community…)

2. **Increase available data**: In most sectors, data required for in-depth analysis, or data demand from public and non-governmental actors don't map the offer and the available data. It is therefore essential to identify core datasets that are missing and plans to put in place a sustainable collection of these datasets. This includes at the very least sector statistics, M&E data, but usually covers other sector-specific datasets.

3. **Increase data use by public actors**: While the first two elements presented above focuses on the availability of interoperable data, it is also essential to seed use to generate impact. Leveraging data use includes:

- o <u>Advocacy for data use</u> : 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 elements such as the development of a portfolio of documented success stories at national, regional, and international levels, 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, or 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.
- o <u>Setup of a sustainable data inventory</u>: In order to ease interconnection of various data systems, identify potential synergies, and ease data management and use, it is critical to put in place a sustainable data inventory that reference and document all datasets of the different organizations.
- o <u>Implementation of a data capacity plan</u>: all staff involved in data management from collection till analysis and visualization must have appropriate skills to perform their tasks.
- o <u>Setup of a data analysis team</u>: The increase of availability and interoperability of data will create the conditions for greater data use. With an appropriately skilled team, these data resources can be transformed in actionable insights to improve sector outcomes.

4. **Increase data use by non-governmental actors**: While data and data use could be useful within the government, it can also have a transforming effect within the society. It is therefore essential to work on :
   o Making government data accessible to citizens (aka opening government data)
   o Seeding reuse of data by supporting the innovation community and the different actors that may benefit from exploiting data.
5. **Increase gender data practices**: The study demonstrates that gender data practice in Lesotho MDAs is low. Gender gaps are not accurately measured and therefore not addressed. A sector specific analysis has to be conducted in each sector, starting from a Gender Data Audit as the Ministry of Gender has started to implement with a few MDAs.

Each sector will focus on specific actors and will face specific challenges that need to be resolved. An in-depth analysis will be required. As part of this study, we have conducted such analysis for health and, to a lower extend (gender data practices and subnational data flows were not investigated), for agriculture & water. These sector plans are presented in Annex 7.

TIMELINE

Some of the recommendations proposed in the document could be implemented in a short time frame (24 months) and some will require longer time. In the same way, some of the recommendations could generate impact on short-term and some would require more time to have visible outputs. The table below summarizes these dimensions for each recommendation.

Recommendations	Implementation	Impact
BoS strengthening	Short-term	Medium-term
implementation of the Data Protection Act	Short-term	Medium-term
Membership to the Open Government Partnership	Short-term	Medium-term
e-government framework and related policies	Short-term	Medium-term
Data security	Short-term	Short-term
ICT & data innovation hub	Short-term	Medium-term
Formal data science curriculum and diploma at NUL	Medium-term	Medium-term
National M&E Policy implementation support	Short-term	Medium-term

ANNEX 1 - METHODOLOGY

This section presents SBC4D[218] and IREX's approach and methodology to tackle the different tasks of the assignment as described in the Terms of Reference (ToR). This section is divided into 4 components: the first one offering an overview of our methodology, the second and third presenting in detail our approach for data ecosystem and data flows assessment, and the last one presenting the research team.

OVERALL APPROACH

The cornerstone of our approach to this assignment is to explore two main dimensions:

- 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. This component will cover 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 data flows: This assessment will investigate 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 exploration of these 2 dimensions allows us to provide a qualitative view on the data landscape in Lesotho. This global landscape includes a series of components that maps the elements of the ToR such as the innovation ecosystem landscape or strategies for government monitoring and evaluation.

BREADTH VS DEPTH

It is important to note that this assessment balances the focus on specific sectors, versus capturing a global picture on the dynamics occurring across government and across sectors. The overall data assessment focused on the data ecosystem, including the Bureau of Statistics (BoS) and the way it works with other ministries, particularly those that manage massive volumes of data such as the Ministry of Finance, the Ministry of Health, or the Ministry of Development Planning.

The assessment of BoS also included understanding how different ministries perceive and are responding (or not) to the national statistics legislation, directives, and policies.

To understand the government's monitoring, evaluation, and learning (MEL) capabilities, we have developed two broad research questions. These research questions served the dual purpose of A) identifying existing systems, capacity, and culture that are(n't) working at a

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[218] SBC4D and IREX are not acronyms but real names of the companies executing the assignment.

general and high level; and B) understanding how these characteristics impact MEL within a single ministry at a deeper level:

- What is the current capability (including variability or consistency) across government ministries for using MEL approaches, tools, and systems? (horizontal analysis)
- Within the health sector, what is the capability for linkages, coordination, and implementation of monitoring, learning and evaluation among national, sub-national, and hyperlocal levels? (vertical analysis)

Although the deep-dive focus on the Ministry of Health precludes another deep-dive on the agricultural sector, the Ministry of Agriculture and Food Security was included in the investigation to answer the first research question (cross-government MEL capabilities).

The subnational component was also scoped and focused on health and agriculture (horticulture) and on specific sub-sectors such as health budget/financial planning data, which is a priority of the Compact.

The data inventory focused primarily on data available in the Ministry of Health as well as at the BoS but also included other datasets identified during the study (see Annex with the list of datasets identified).

The investigation of the state of data literacy and strategies for improvement spanned across different components:

- The review of the higher education institutions delivering formal and/or professional training provides an overview of technical curriculum that are offered related to data science, data analytics and data literacy capacities.
- The assessment of the innovation sector provides input on the capacities of these actors and ongoing activities around the use and exploitation of data for different purposes such as the creation of innovative services or for advocacy.
- The assessment of BoS and other ministries provides an overview of capacities within the national government.
- The work at the subnational level provides information about capacities at the local government level, as well as the capacities within actors in the health sector.

The investigation on the state of e-government primarily focused on the Ministry of Communication, Science and Technology (MCST), in charge of e-government implementation. The role, capacities and impact of non-governmental actors were investigated as part of the innovation sector assessment and included hacktivists and organizations focused on civic technologies.

The assessment of the innovation landscape is sector-agnostic and investigates the innovation actors, their capacities, and structures (tech hubs, incubators) and the public support that are available to support them. This assessment identified the areas and sectors that are more targeted by innovation-related initiatives.

DATA COLLECTION

One of the core activities of the assessment is to collect as much information as possible in order to establish an informed diagnostic and a sound action plan that will complement existing initiatives, and resolve the gaps and challenges identified. Whether investigating the data ecosystem or data flows, the information will be collected through three main means:

- Desk research: Part of the activities included collecting and reviewing existing and draft laws, existing studies, existing strategies and national plans and any other relevant documents such as current and future projects.
- Interviews: A complementary and critical source of information is through extensive face-to-face or phone interviews with relevant actors (governmental actors, donors, civil society, private sector, etc.).
- Specific investigations: Finally, we will use innovative tools that provide insights on specific topics. Those tools are presented in corresponding sections below.

THE DATA ECOSYSTEM IN LESOTHO

The approach we implement to analyze the data ecosystem in Lesotho is based on SBC4D's and IREX's vast experience in conducting country data ecosystem assessments, fostering evidence-based governance, and supporting institutional capacity. It is a mix of three main methodologies:

- The World Bank Open Data Readiness Assessment[219] (ODRA), developed in 2011, focuses primarily on government data publication and reuse by different stakeholders (innovation actors, media, research community, private sector, civil society organizations, etc.). The World Bank and others have executed this methodology in about 30 countries, 13 of them in countries such as Ethiopia, Côte d'Ivoire, Kosovo, Palestine, Ghana, Mauritania, and Tunisia were conducted by SBC4D.
- The World Bank Digital Government Readiness Assessment[220] (DGRA) which is a more recent (2018) methodology developed by the World Bank which focuses on new ways of designing and implementing digital government strategy, taking into account new approaches and technologies such as cloud computing, mobile services, etc. Although the DGRA is a relatively new tool, SBC4D has already participated in one in Vietnam[221].
- IREX Data Compass is a new methodology developed by IREX that is wider than government and applicable to any organization or ecosystem[222]. In addition to

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[219] http://opendatatoolkit.worldbank.org/en/odra.html

[220] https://olc.worldbank.org/content/digital-government-assessments-recent-approaches-and-methodologies

[221] http://documents.worldbank.org/curated/en/311651553511049630/pdf/Digital-Government-and-Open-Data-Readiness-Assessment.pdf

[222] IREX's Data Compass is still under development and no public-facing reference is available, but details and examples have been shared with MCC DCLI team as part of a separate project that aims to deploy the tool in Côte d'Ivoire.

introducing new dimensions, such as perceptions and value of data or data-informed decision-making capacity, to other readiness assessments, the Data Compass includes a remote survey to identify and visualize the data flows within or between actors. This methodology capitalizes on experience acquired by IREX and SBC4D during the execution of Data Zetu[223], a project in Tanzania funded by the partnership of PEPFAR and MCC, Data Collaboratives for Local Impact (DCLI), as well as on real-world tests of the new methodology with four local governments in Moldova.

Our approach to understanding the data ecosystem examines 5 pillars[224] that explore not only technical but also social, political, and other aspects that inform statistical capacity and data use:

- Leadership
- Legal
- Technical
- Capacities
- Data offer and demand

LEADERSHIP PILLAR

In this pillar, we will investigate the global leadership at the Government level and in individual agencies at the national and subnational level related to the role of data in governance. This includes the general vision expressed by main political leaders such as the Prime Minister, Ministers, agencies' Directors General, or Ministry permanent secretaries. It also includes the review of national strategies and development plans that may or may not promote the use of data in governance. Finally, this pillar includes the perception of these different elements by intermediary administration. The exploration of this pillar allows the capture of specific barriers, but also the identification of incentives and champions.

LEGAL PILLAR

In this pillar we review all current and future (draft) legislation that are related to data and information sharing. This includes for instance legislation related to statistics, data sharing, data classification, state secrets. It also includes access to information law, personal data protection law, ICT, and information related legislation (cybersecurity, online transactions…), anti-corruption and related legislations (e.g., whistleblower). Finally, it also includes legislation related to freedom of the press.

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[223] https://www.irex.org/insight/getting-more-value-data-what-weve-learned-piloting-new-tool-local-governments

[224] Note that the methodologies cited in introduction have more pillars that are overlapping but not matching directly. For example, the ODRA methodology separate data offer and data demand in different pillars but have only one dimension for IT infrastructure while DGRA splits the IT dimensions in different pillars. Our approach in 5 pillars provides a high-level view that covers all the dimensions of the 3 methodologies.

In this pillar, we also include national strategies (ICT, e-government, open data, etc.), and national development plan(s). Finally, we not only will investigate legislation, but also the state of implementation, how they are applied and used in practice, and the roles of individual or organizational stewards of these policies. This includes capturing citizens' experiences and civil servants' perspectives on the legislation and their implementation.

TECHNICAL PILLAR

This pillar is dedicated to IT infrastructure. That includes both the infrastructure level (network) and the application level (information systems, online government services, digital data collection tools). In this pillar, we cover public and private infrastructure (e.g., mobile network) and government-related and general IT infrastructure. We also cover the state of development of online activities (e.g., e-commerce, mobile money, etc.), the penetration rate of different technologies within society (3G, 4G, smartphones, etc.) and the affordability of ICT. Finally, we also look at the mandate of different agencies for standards and for procurements of IT material across the government.

NB: In parallel to this assessment, MCC commissioned another study "of ICT resources, status, needs, and options for improving Health Care and Government services in Lesotho" implemented by RTI International[225]. RTI's study ran on a similar timeline and complements this study but might in specific areas like the technical pillar overlap with it. We will coordinate with RTI to ensure that there is little duplication of effort and that we investigate complementary dimensions. The coordination was wider than just this pillar and included other elements such as the selection of subnational sites.

CAPACITIES PILLAR

The aim of the capacity pillar is to identify the data management and statistical capacities within the public sector as well as within the society at large and among actors such as private sector or civil society or hacktivist and innovation actors. This pillar is mainly focused on data capacities of data managers and analysts but also considers capacities pertaining to other ICT dimensions (topics such as e-government, open data, or data for SDG). This pillar also includes an investigation of the education sector to identify curriculum and training available in the country related to these capacities, such as data science courses offered by educational institutions. It also includes the identification of elements such as tech hubs or incubators that support the emergence of innovative services and innovative use of data.

DATA OFFER AND DEMAND PILLAR

The pillar explores mainly the availability, the sharing and the use and the demand for different types of datasets. It covers both the horizontal dimension (between ministries), the

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[225] http://www.rti.org

vertical dimension (between national and subnational level) and between public and non-governmental actors. This consists of mainly a data inventory, a data flow mapping and the identification of gaps and unmet demands. The pillar also covers multilateral agreements, and demand and offer related to developmental initiatives. It also includes other factors such as barriers to access data (unwillingness, culture of secret, delays, bureaucracy...) or trust and data quality. Note that data offer and demand is the result of the overall assessment as it is impacted by other pillars such as legislation, technical elements, capacities, etc. However, it is interesting to see whether there is an existing demand or offer for some categories of data, or if there are barriers not captured in other pillars.

The 5 pillars approach helps structuring the output of the assessment but also serves as the methodology to analyze individual agencies and organizations that are covered by the assessment. The study explored these 5 pillars across different ministries and agencies, with a deeper dive on the Bureau of Statistics, the Ministry of Health, and the Ministry of Agriculture as the main areas of focus of the Compact.

Within these pillars, we explore not only the way different entities work internally but we also explore the political power and the official mandates of various agencies on these different topics, and the champions and early movers (individuals and ministries/agencies/ organizations) that may emerge from these investigations.

ADDITIONAL INVESTIGATIONS

Finally, in order to capture specific insights, as part of the data ecosystem, we conducted two additional investigations:

- A Social Network Analysis (SNA)
- A Gender Political and Economic Assessment (PEA)

SOCIAL NETWORK ANALYSIS

Using a remote survey delivered to key actors in Lesotho's national data ecosystem, a social network analysis (SNA) reveals how those actors connect (or do not) with each other. Metrics like centrality can be inferred from this analysis to help us understand and propose key stakeholders that LMDA, MCC and the Government could engage or leverage in the implementation of the Compact (in support of the fourth bullet in the Introduction of this work plan). The SNA offers the LMDA and MCC teams and government counterparts both a unique perspective into the vibrancy of the data sharing ecosystem but also a potential baseline against which future Compact interventions could be compared to understand impact.

The SNA works by sending a remote, online survey to known actors identified during field visit. Their responses are visualized and analyzed using a network visualization tool, resulting not

only in visual representations of a system, but also social analytics that indicate the relative centrality (among other statistics) of certain actors.

This SNA complements the broader efforts of this engagement and specifically helps to advance objectives highlighted in the Introduction, such as identifying champions and stewards or highlighting strengths and weaknesses. The SNA leaves behind for the LDMA and Compact partners a simple survey that could be re-issued in the future, to the same or more actors, to see how the network (as it pertains to the specific SNA research question) has evolved after investments or interventions.

GENDER DATA PEA

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. These reasons are often the result of long-embedded cultural, political, or social norms. A political economy assessment can help to understand these norms, in order to identify areas for improvement or for more tailored actions.

A PEA is a targeted research effort, comprising desk research, key informant interviews (conducted during a field visit), and analysis leading to recommendations. The PEA draws on similar skills to those required for this overall assessment, but it targets its analysis on gender-based power dynamics, roles, and expectations as they impact the existence, quality, access, and use of gender data (see an example of a PEA of Myanmar's gender digital divide[226]). During the field visit, we incorporated into our interviews with stakeholders' questions that help us understand these dynamics, with the result being a gender data PEA - that is, a written analysis - whose findings are integrated in this report. The results can be utilized not only to inform the forthcoming Compact, but also as a first-of-its-kind template for MCC to replicate elsewhere.

DATA FLOWS

Subnational data flows were mapped following a review of existing sources including reports, academic literature, and websites. Sources were reviewed with the objective of answering each of the questions as fully and comprehensively as possible. The review was conducted in March and April 2020 by three researchers, two of whom are active in Lesotho's health sector. Sources were identified by running search queries in Google and in Google Scholar; searching the official websites of the Government of Lesotho and its ministries; consulting a central

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[226] https://www.irex.org/resource/ending-gender-digital-divide-myanmar-problem-driven-political-economy-assessment

document bank created by the project team prior to the commencement of the desk research; and by following relevant links and citations to other sources referenced.

It is necessary to focus on only the most relevant data in case of the subnational data flows to make the analysis clear and informative. Relevance in this case refers to the extent to which the data align with MCC Lesotho Compact priority areas and are either the same or close to indicators developed for monitoring progress in the implementation of the Sustainable Development Goals. Data for mapping is therefore purposively selected and drawn from the health sector. Within the health sector, further refinement is required as discussed below. In each case, data flows are differentiated, that is, flows between national and subnational administrative levels are differentiated from flows between administrative levels at the subnational level. The reason for the differentiation is to provide more nuanced and fine-grained analysis at the subnational level.

The subnational data flow mapping differs from the overview of Lesotho's single, national ecosystem because the subnational analysis must contend with multiple levels (district and community) and instances (councils) of administrative governance in the country. Given limitations of time and other resources, the subnational data flows component of the study will select from the available subnational administrative levels, one district and three community councils. These will be the study sites for the subnational data flow mapping.

In the following sub-sections, the processes for selecting specific data as the focus of the study and for selecting an appropriate geographical site to conduct the study are presented.

3.1 ESTABLISHING A DATA FOCUS FOR THE STUDY

3.1.1 HEALTH DATA

A. BUDGET DATA BETWEEN NATIONAL LEVEL AND SUB-NATIONAL LEVEL

The decentralization of administrative powers to the subnational districts in Lesotho has presented several challenges, not least of which are evident in the country's budgeting processes and allocations which make district-level autonomy a reality.

The findings of a recent study (Motloli-Litjobo & Makhele 2019) reveal that District Administration departments are faced with multiple challenges, including low budgetary allocations resulting from budget cuts, delays in the release of funds, failure to spend funds in accordance with procurement plans, insufficient commitment during budget preparation, as well as a lack of proper monitoring and evaluation of budget performance at District Administration departments. The study recommended that for District Administration departments to address the present challenges during budget implementation, greater autonomy of the departments and decentralization of the budgeting process are necessary.

B. MATERNAL MORTALITY RATIO (MMR) AT THE LOCAL LEVEL

Local level means horizontal health data flows between the district and community councils, health facilities, village health workers and other organizations active in an area demarcated by the electoral divisions (community council). Flows will concentrate on data required to calculate Lesotho's maternal mortality ratio (MMR).

Rationale for focus on maternal mortality ratio (MMR): In 2015, the World Health Organization (WHO) and partners released a consensus statement and full strategy paper on ending preventable maternal mortality (EPMM). The EPMM target for reducing the global maternal mortality ratio (MMR) by 2030 was adopted as SDG target 3.1, to reduce global MMR to less than 70 per 100 000 live births by 2030.

Monitoring maternal health is widely seen as one of the most complicated health indicators within global frameworks. Significant unfinished business and challenges remain with estimating MMR; primarily due to the availability and usability of population-based data on maternal death.

Lesotho's maternal mortality ratio is among the highest in Africa and is currently on the increase (MoH 2020). In 2015 the maternal mortality ratio was 1,024 deaths per 100,000 live births against a national 2020 target of less than 500 (MoH 2020), and a global target of less than 70 by 2030 (WHO). According to WHO and UNICEF, 58.9% of maternal deaths in the country are due to HIV, and an estimated 46% of women deliver at home and only 34% attend postnatal care (MoH 2020).

Definitions: According to the WHO, "the maternal mortality ratio (MMR) is defined as the number of maternal deaths during a given time period per 100,000 live births during the same time period. It depicts the risk of maternal death relative to the number of live births and essentially captures the risk of death in a single pregnancy or a single live birth. Maternal deaths: The annual number of female deaths from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, expressed per 100,000 live births, for a specified time period. Live birth: The complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. International reporting of maternal mortality: For the purpose of international reporting of maternal mortality, only those maternal deaths occurring before the end of the 42-day reference period should be included in the calculation of the various ratios and rates. The recording of later deaths is encouraged to inform national, regional, and global understanding of these events."

Method of measurement: The maternal mortality ratio is calculated by dividing recorded (or estimated) maternal deaths by total recorded (or estimated) live births in the same period and multiplying by 100,000. Maternal mortality ratio = (Number of maternal deaths / Number of live births) X 100,000. Measurement requires information on pregnancy status, timing of death (during pregnancy, childbirth, or within 42 days of termination of pregnancy), and cause of death. The maternal mortality ratio can be calculated directly from data collected through vital registration systems, household surveys or other sources. However, there are often data quality problems, particularly related to the underreporting and misclassification of maternal deaths.

3.2 ESTABLISHING A GEOGRAPHIC FOCUS FOR THE STUDY

Two steps were followed in the selection of the study sites. The first was to select Districts as they constitute the highest order of sub-national administrative zones in the Kingdom of Lesotho. Each District is headed by a District Administrator and has its own capital. Districts are further subdivided into 80 electoral constituencies, which consist of 129 local Community Councils. Community Councils constitute the lowest order of administrative governance. The second step was to identify and select Community Councils within the selected Districts in order to operationalize the study.

In both steps, the following selection criteria are applied: (1) mix of health facilities and horticulture to tie in with sector focus; (2) overlap with other projects active in the health sector; and (3) accessibility of the area.

3.2.1 SELECTION OF A DISTRICT

Lesotho comprises 10 districts. The selection of a single district is preferred in this study as this will provide a simpler and more informative data flow map per sector.

Districts in Lesotho

District	Capital	Population (2016 census)	Area (km²)	Electoral constituencies
Berea	Teyateyaneng	262,616	2,222	11
Butha-Buthe	Butha-Buthe	118,242	1,767	5
Leribe	Hlotse	337,521	2,828	13
Mafeteng	Mafeteng	178,222	2,119	8
Maseru	Maseru	519,186	4,279	18
Mohale's Hoek	Mohale's Hoek	165,590	3,530	8
Mokhotlong	Mokhotlong	100,442	4,075	4
Qacha's Nek	Qacha's Nek	74,566	2,349	3
Quthing	Quthing	115,469	2,916	5
Thaba-Tseka	Thaba-Tseka	135,347	4,270	5

Map of Lesotho showing the 10 administrative districts

A. OVERLAP WITH OTHER RELEVANT PROJECTS

RTI's ICT Services in Lesotho project has the following objective: "Assess the current state of information and communications technology (ICT) connectivity, services, equipment, and applications in health care facilities, district administration (DAS) offices, district council secretary (DCS) offices, and district agriculture extension offices". RTI proposed to conduct site visits and interviews at 66 health facilities in Lesotho. The breakdown of this sample by district in the lowlands of Lesotho (see map) is as follows: Berea 6, Leribe 6, Maseru 11, Mafeteng 6, Moehale's Hoek 7.

B. HEALTH

Health: According to the Health Facility List 2017 published by the Health Planning and Statistics Department (Table 13: Grand Summary of Health Facilities), there are 293 health facilities in Lesotho. These are comprised of 21 general hospitals, 4 primary hospitals, 261 health facilities, and 4 filter clinics.[227]

Health facilities are spread across all 10 districts. Each district consists of a mix of urban, semi-urban, and rural communities where different health facilities are located. Maseru, being the capital city of Lesotho, boasts the largest number of health facilities, followed by Leribe and Mafeteng.

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[227] Note that reported data are not always consistent. The more recent Village Health Program Policy of 2020, for example, reports that "There are 16 general hospitals, 2 regional hospitals and 1 tertiary referral hospital. There are about 175 health centers and a network of health posts serving populations within a given electoral division of a local government council." No reference is given in policy for the source of the data.

C. ACCESSIBILITY

As the seat of the capital city, Maseru district is the most accessible and the most urbanized district. The most accessible districts by road would be those located close to the city of Maseru, i.e., Berea, Leribe and Mafeteng.

Leribe District is selected as the district-level geographic focus of this study based on its accessibility and intersections with other relevant projects.

3.2.2 SELECTION OF COMMUNITY COUNCILS IN LERIBE DISTRICT

Leribe District comprises the following community councils: Fenyane, Hleoheng, Khomokhoana, Limamarela, Linare, Litjotjela, Maisa-Phoka, Malaoaneng, Manka, Matlameng, Menkhoaneng, Motati, Mphorosane, Pitseng, Ramapepe, Sephokong, Serupane, Seshote, Tsoili-Tsoili (GeoWikia; Genderlinks).

A. OVERLAP WITH OTHER PROJECTS

RTI has proposed conducting its assessment of health-sector ICT infrastructure and capacity in the communities of Lithipeng, Manka, and Tsuili-Tsuili, where the Millennium Challenge Corporation (MCC) anticipates undertaking specific serviced land activities of the second compact. Lithipeng Community Council is in Mohale's Hoek District, while the Manka and the Tsuili-Tsuili Community Councils are both in the Leribe District.

LMDA has recommended the selection of Litjotjela and Ramapepe Community Councils since these will not be covered by RTI and both are potential sites in MCC/LMDA's serviced land project. Litjotjela and Ramapepe are both located in Leribe District.

B. HEALTH AND HORTICULTURE

Health: There are 34 health facilities in Leribe District which constitutes 14% of the total number of facilities in Lesotho. Only Maseru has more facilities at 31% (74) of the total. Health facilities by type in Leribe District are as follows:

Referral hospital	0
Specialized hospital	0
General hospital	0
Primary hospital	1
Filter clinic	1
Health centers	30
Total	32

According to in-country health NGO, Jhpiego, all health facilities in Leribe District use the eRegister for data collection, and data collection and quality is good. The exceptions to both cases are the private health centers, Teba and the Lesotho Correctional Services in the District.

c. ACCESSIBILITY

Community Councils located in the lowlands and bordering South Africa are serviced by the A1 from Maseru making Litjotjela, Manka and Tsoili-Tsoili accessible by road. Ramapepe is accessible via the A25 that connects Hlotse and Pitseng. Some health centers may only be accessible by gravel road and may require a four-wheel drive vehicle. It is assumed, however, that at least one health facility in each Community Council in Leribe District is easily accessible.

Based on the LMDA's recommendations and the planned data collection activities of RTI, the following community councils and respective health facilities in Leribe District are included in this study:

Facility name	Urban/ rural	Ownership	Facility type	Council
Motebang	Urban	Gov	General hospital	Hlotse
Thaba Phatsoa	Rural	Gov	Health center	Ramapepe
Peka	Urban	Gov	Health center	Manka
Little Flower	Rural	Non-gov (CHAL)	Health center	Tsoili-Tsoili

Note that the selection of District and Community Councils is based on a desk review as well as consultation with the MCC/LMDA team and SBC4D's in-country researcher. Confirmation of the study site remains subject to further input from team members on the ground and, if possible, by the project's contact(s) in government. Confirmation is to be based on the following additional criteria:

1. the representativity of the proposed district to other districts that fulfil the preliminary selection criteria; and
2. the likelihood of local government units and public facilities located in the study site cooperating with the research team.

3.3 STAKEHOLDER ANALYSIS

To inform the data flow mapping in terms of relevant actors in the exchange and use of data at the local level, the research team conducted a stakeholder analysis for each of the health and horticulture sectors, focusing on the districts and community councils selected. The analysis used an approach developed by MEASURE (MEASURE Evaluation 2011). The stakeholder analysis was in the first instance informed by the in-country knowledge of the research team and the resultant stakeholder matrix was subsequently revised and expanded as the literature review progressed. The stakeholder matrix will be revised on an ongoing basis as the project progresses.

Given that the stakeholder matrices are living documents and that they consist of large tables which make them difficult to include in this format of the desk review, each stakeholder matrix can be viewed online:

1. Stakeholder matrix for the health sector
2. Stakeholder matrix for the horticulture sector

ANNEX 2 – LIST OF INTERVIEWS

The table below presents the list of meetings that were organized at national level. Then, the next tables present meetings at subnational level.

NATIONAL LEVEL

Organization
Bureau of Statistics
Ministry of Communication, Science and Technology (MCST) - ICT
Ministry of Development Planning (MDP)
M&E Department - Ministry of Development Planning
Ministry of Agriculture
Ministry of Water
Ministry of Gender, Youth, Sport and Recreation
Ministry of Health
Ministry of Home Affairs - National Identity and Civil Registry (NICR)
Ministry of Finance
National Reform Authority
UNDP
AfDB
World Bank - poverty reduction team
UNICEF
UN Resident Coordinator
Lesotho Council of NGO
Center for Investigative Journalism
National University of Lesotho (NUL) - ICT department
NUL -- statistics department
NUL - Development Planning Office
NUL - Department of Health Sciences

LODI (Lesotho Open Data Initiative)
ICAP
JHPIEGO
Media Institute of Southern Africa – Lesotho (MISA)
FIDA (Federation of women lawyers)
Lesotho Girls Guide Association
Lesotho Millennium Development Agency
Equilo (gender equity and social inclusion tool)
MCC – Land Expert

DISTRICT COUNCIL

District	Office
Leribe	DHIS Office
Leribe	District AIDS Offices
Leribe	District Medical Office
Leribe	Public Health Nurse Office

COMMUNITY COUNCILS

Council	Office
Hlotse	Community Council Secretariat
Ramapepe	Community Council Secretariat
Manka	Community Council Secretariat
Tsoili-Tsoili	Community Council Secretariat

HEALTH FACILITIES

Facility name
Motebang General Hospital
Thaba Phatsoa Health center

Peka Health Center
Little Flower Health Center
Maqokho Health Center
Mapholaneng Health Center

ANNEX 3 - REFERENCES

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ANNEX 4 – DHIS2 INDICATORS IMPLEMENTED IN LESOTHO

2016 INDICATOR LIST SUMMARY

#		IMPACT INDICATORS		
	Indicator Name	**Numerator**	**Denominator**	**Frequency**
1.	Life Expectancy at birth	The total # of years that a given birth cohort can be expected to live if these mortality rates continue to apply	The # of children in the cohort	5 years
2.	Neonatal Mortality rate	# deaths of infants under 28 days of age	Total Live births	5 years
3.	Infant Mortality	# deaths to children under 1	Total Live births	5 years
4.	Under 5 Mortality rate	# deaths to under 5 children	Total Live births	5 years
5.	Maternal Mortality Ratio	# maternal deaths in a given year due to pregnancy related causes during pregnancy or within 42 days of childbirth	Total # of live births	5 years
6.	Crude Death Rate	Total # deaths	Total population	5 years
7.	Total Fertility Rate	Total # children that would be born to a group of women if all lived to the end of their childbearing years and bore children according to a given set of age-specific fertility rates	# women in group	5 years

#		INDICATORS BY PROGRAM AREA			
		HIV/AIDS			
	Indicator Name	**Numerator**	**Denominator**	**Type**	**Frequency**
8.	HIV Prevalence among 15–24-year-old Pregnant women	Number of antenatal clinic attendees (aged 15–24) tested whose HIV test results are positive	Number of antenatal clinic attendees (15–24) tested for their HIV infection status	Impact	2&5 years
9.	HIV Prevalence in general population	# of HIV cases	15-49 aged population surveyed	Impact	5 years
10.	Percentage of people living with HIV who have been diagnosed	Number of people living with HIV who have been diagnosed	Estimated number of people living with HIV	Output	Annual
11.	Percentage of adults and children currently receiving antiretroviral therapy among all adults and children living with HIV	Number of adults and children currently receiving antiretroviral therapy in accordance with MOH treatment protocol at the end of the reporting period	Estimated number of adults and children living with HIV	Output	Annual

12.	Percentage of people on ART who are virologically suppressed (viral load level ≤ 1000 copies/mL)	Number of adults and children living with HIV and on ART who have a suppressed viral load (<1000 copies/mL),	Total number of adults on ART in the past 12 months	Outcome	Annual
13.	Percentage of adults and children with HIV known to be on treatment 12 months after initiation of antiretroviral therapy.	Number of adults and children who are still alive and on antiretroviral therapy at 12 months after initiating treatment	Total number of adults and children who initiated antiretroviral therapy who were expected to achieve 12-month outcomes within the reporting period.	Outcome	Annual
14.	Percentage of health facilities offering the following services: ART, Paediatrics ART,HTC,DOTS,PMTCT, Delivery/BEmONC	Number of health facilities reporting availability of specific service(ART, Paediatrics ART,HTC,DOTS,PMTCT, Delivery/BEmONC).	Total number of health facilities in the country(Updated National facility list in HMIS)	Output	Annual
15.	Percentage of HIV infected pregnant women receiving ART to prevent MTCT	Number of HIV-infected pregnant women who received antiretroviral medicines to reduce the risk of mother-to-child transmission in the last 12 months	Estimated number of HIV-infected pregnant women in the last 12 months	Output	Quarter
16.	Estimated percentage of child HIV infections from HIV-positive women delivering in the past 12 months	Number of infants born to HIV-infected mothers who are HIV-infected	Total estimated number of HIV-infected pregnant women	Impact	Annual
17.	Percentage of infants born to HIV-positive women receiving ARV prophylaxis within 2 months of birth	Number of infants born to HIV-positive women receiving ARV prophylaxis within 2 months of birth	Estimated number of HIV-infected pregnant women deliveries in the last 12 months?		Quarter
18.	Percentage of infants born to HIV-positive women receiving a virological test for HIV within 2 months of birth	Number of infants born to HIV-infected mothers who received virological test for HIV within 2 months of birth	Estimated number of HIV-infected pregnant women deliveries in the last 12 months?	Output	Quarter
19.	Percentage of people living with HIV who have been diagnosed	Number of people living with HIV who have been diagnosed	Estimated number of people living with HIV	output	Annual
20.	Percentage of women and men aged 15–49 who received an HIV test in the last 12 months and who know the results.	# of Women and men aged 15-49 who tested for HIV and received result.	Total population aged 15-49 years	output	Quarter
21.	Percentage of most-at-risk populations who are HIV infected	Number of members of the most-at-risk population who test positive for HIV	Number of members of the most-at-risk population tested for HIV	Impact	5 years
22.	Percentage of CSW and MSM reporting use of a condom with their most recent partner	Number of respondents who reported that a condom was used with their last client	Number of respondents who reported having commercial sex in the last 12 months	Outcome	5 years

	Indicator Name	Numerator	Denominator	Type	Frequency
23.	Per Capita free condoms distributed to sexually active individuals.	# free condoms distributed to sexually active individuals	Estimated # sexually active individuals in population.	Output	Quarter
24.	Percent of population who both correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions.	Number of respondents who gave the correct answers to all five questions on sexual transmission	Total number of people in the sample	Outcome	5 years
25.	HIV Prevalence among TB patients	Total number of newly registered TB patients (registered over a given period of time) who are HIV positive	Total number of newly registered TB patients (registered over the same given time period) who were tested for HIV and included in the surveillance system	Impact	Annual
26.	Percentage of (estimated) HIV positive incident TB cases that received treatment for both TB and HIV	Number of adults with HIV infection who received antiretroviral combination therapy and TB treatment within the reporting year	Estimated number of incident TB cases in people living with HIV	Output	Q,A
27.	Percentage of Health workers trained in HIV/AIDS management.	Number of Health workers trained in HIV/AIDS management.	Total number of Health workers currently employed in public facilities.	Output	Q
28.	Percentage of men 15-49 who report having been circumcised	Number of male respondents aged 15-49 years who report that they are circumcised.	Number of all male respondents aged 15–49 years	Outcome	5 years
29.	Percentage of Health facilities providing VMMC according to National guidelines	Number of Health facilities providing VMMC according to National guidelines	Number of health facilities registered	Output	Annual
30.	Percentage of adults and children with HIV known to be on treatment 12 months after initiation of antiretroviral therapy.	Number of adults and children who are still alive and on antiretroviral therapy at 12 months after initiating treatment	Total number of adults and children who initiated antiretroviral therapy who were expected to achieve 12-month outcomes within the reporting period, including those who have died since starting antiretroviral therapy., those who have stopped antiretroviral therapy, and those recorded as lost to follow-up at month 12	Outcome	M
	MATERNAL HEALTH				
	Indicator Name	**Numerator**	**Denominator**	**Type**	**Frequency**
31.	Obstetric case fatality rate	# of women dying of direct obstetric complications in the facility in this month	# emergency obstetric complications cases admitted in the facility in this month	Outcome	M, Q & Annual

32.	Peri-natal mortality rate	Sum of fetal deaths after 28 weeks of gestation and 7 days of delivery	Total number of live and still births	Outcome	5 years
33.	Caesarean Section Rate	# Caesarean Sections done	Total number of all births	Outcome	M, Q & Annual
34.	Percentage of women receiving Emergency obstetric care at EmONC facilities.	# women with direct obstetric complications treated in EmONC facilities	# expected complications (Std 15% of expected pregnancies)	Outcome	Q & Annual
35.	Proportion of births that result in a very early neonatal death or an intrapartum death (fresh stillbirth) in an EmONC facility	Sum of intrapartum and very early neonatal deaths within the first 24 hours of life occurring in the facility during a specific period	Total number of all births in the facility during the same period	Outcome	Quarterly
36.	Percentage of women 15-49 using modern contraceptive methods	Total # users using modern family planning methods at a point of time	Total woman of childbearing age in the catchment population (mid-year)	Outcome	Annual and 5 years
37.	Unmet need for family planning	Women who are married or in a consensual union who have an unmet need for family planning	Total number of women of reproductive age (15-49 years) who are married or in consensual union) x 100	Outcome	Annual
38.	Proportion of non-pregnant women of 15-49 years with BMI less than 18.5	# non-pregnant women of 15-49 years with BMI less than 18.5	Total # non-pregnant women of 15-49 years measured	Outcome	5 years
39.	Percentage of women receiving adequate iron and folic acid tablets(180)	# pregnant women who received adequate Iron tablets (180)	Total number of institutional deliveries	Output	M, Q & Annual
40.	Percent of Postpartum women who received 1 vitamin A capsule within 6 weeks of delivery	Number of postpartum women who received 1 vitamin A capsule within 6 weeks of delivery	Expected # of post-partum women	Output	M, Q & Annual
41.	Percentage of Pregnant women receiving at least 2 doses of TT	Total # pregnant women receiving adequate TT doses in a given period	Total # expected pregnant women in the same period	Output	M, Q & Annual
42.	Percentage of pregnant women receiving at least 4 ANC visits.	# of pregnant women who received at least 4 antenatal care visits	Total # expected pregnant women in the same period	Output	Annual,5years
	CHILD HEALTH				
43.	ARI Incidence rate in Under 5yrs	# of all ARI cases among <5's	# children under 5 yrs of age	Outcome	5 years
44.	Prevalence of Underweight children under 5yrs	# children under 5 underweight	# children under 5 weighed	Outcome	5 years
45.	Percentage of children Under 5yrs with Wasting	# of children under 5yrs with weight for height < -2 Z score	# of children under 5yrs measured for weight for height.	Outcome	5 years

46.	Percentage of children Under 5yrs with Stunting	Number of children under 5yrs of age whose length-for-age or height-for age is below minus two standard deviations from the median of the WHO Child Growth Standards	Number of children under 5yrs of age with a valid length or height measurement	Outcome	5 years
47.	Measles Coverage under 1 years	Total number of measles vaccinations given	Estimated population of 1 year old in same period	output	Annual and 5years
TB PROGRAM					
48.	TB Prevalence Rate	Number of all TB cases detect in a specific population	Population/sample size per 100k	Impact	Q& Annual
49.	Treatment Success rate	Number of new smear-positive pulmonary TB cases registered in a specified period that were cured plus the number that completed treatment	Total number of new smear-positive pulmonary TB cases registered in the same period	Outcome	Q& Annual
50.	TB Failure Rate	Number of new smear-positive pulmonary TB cases registered in a specified period that are smear positive 5 months or later after initiating treatment	Total number of new smear-positive pulmonary TB cases registered in the same period	Outcome	Q& Annual
51.	TB Death rate	Number of new smear-positive pulmonary TB cases registered in a specified period that died during treatment, irrespective of cause	Total number of new smear-positive pulmonary TB cases registered in the same period	Outcome	Q& Annual
52.	Percentage of TB patients lost to follow up or not evaluated	All new bacteriologically confirmed cases that were lost to follow-up or not evaluated	Total number of new smear-positive pulmonary TB cases registered in the same period	Outcome	Q& Annual
53.	TB Case Notification rate (all forms/100K)	Number of TB cases reported in the past year	Total National population	output	Q& Annual
54.	TB Case detection rate (all forms)	Number of new TB cases detected	Estimated number of new TB cases countrywide	output	Q& Annual
55.	TB Case Incidence rate(all forms/100K)	Case notification persons per year*100k	Estimated proportion of cases detected in the country	Output	Q& Annual
56.	Prevalence of MDR among new and retreatment	Number of confirmed MDR-TB cases by each risk category in the national policy during the period of assessment.	Number of TB cases in each respective risk category with DST result for both isoniazid and rifampicin during the period of assessment.	Outcome	Q& Annual

57.	Proportion of MDR-TB patients on 2nd Line TB treatment who have a negative smear conversion at end of 6 months of treatment	Number of MDR-TB patients on 2nd Line TB treatment who have a negative smear conversion at end of 6 months of treatment	Total number of MDR-TB patients on 2nd Line TB treatment who have completed 6 months of treatment	Outcome	Q& Annual
58.	Proportion of all eligible TB cases that have results for culture and DST	Number of eligible (MDR, High risk, retreatment)TB cases that have results for culture and DST	Total number of all eligible (MDR, High risk, retreatment)TB cases reported	Output	Q& Annual
59.	Proportion of TB patients reporting adverse drug reactions (ADR) to TB drugs	Number of TB patients reporting adverse drug reactions (ADR) to TB drugs in a specified period	Total number of TB patients started on TB treatment during this period.	Output	Q& Annual
60.	Proportion of HIV positive TB cases provided CPT/Dapsone	Number of HIV positive TB cases provided CPT/Dapsone	Total number of HIV positive TB cases reported	Output	Q& Annual
61.	Proportion of bacteriologically confirmed TB cases that had their contacts screened for signs and symptoms of TB	Number of bacteriologically confirmed TB cases that had their contacts screened for signs and symptoms of TB	Total number of bacteriologically confirmed TB cases reported.	Output	Q& Annual
62.	Proportion of health facilities that offer TB (DOT) Treatment.	Number of health facilities that offer TB (DOT) Treatment.	Number of health facilities registered	Output	Q& Annual
63.	Proportion of health workers screened for TB	Number of health workers screened for TB	Total number of Health workers currently employed in public (and private) health facilities.	Output	Q& Annual
64.	Proportion of U5 exposed to pulmonary TB with no TB disease provided with IPT	Number of U5 exposed to pulmonary TB with no TB disease provided with IPT	Total number of U5 exposed to pulmonary TB with no TB disease reported.	Output	Q& Annual
65.	Proportion of inmates screened for TB at entry into correctional facility	Number of inmates screened for TB at entry into correctional facility	Number of inmates newly admitted into correctional facilities during this period.	Output	Q& Annual
66.	Percentage of Microscopists trained to Perform smear microscopy	Number of Microscopists trained to Perform smear microscopy	Total number of Microscopists currently employed in public (and private) facilities?	Output	Q& Annual
67.	Proportion of Laboratory confirmed M/XDR-TB cases started on treatment	Number of Laboratory confirmed M/XDR-TB cases started on treatment	Total number of Laboratory confirmed M/XDR-TB cases reported	Output	Q& Annual
CLINICAL SERVICES-OPD AND IPD					
68.	Top ten causes of OPD attendance by sex and age	# OPD attendants by cause (top ten in rank)	Total OPD attendants	Outcome	M,Q &A
69.	OPD Utilisation rate	Total # OPD visits (new+ old)	Estimated total Catchment population	Output	M,Q &A

70.	Inpatient death rate by cause	# deaths of admitted patients at discharge by cause	Total IPD Admissions	Impact	Q and A
71.	Top ten causes of IPD admissions by sex and age 12 and >12	# admission by cause (top five in rank)	Total IPD Admissions	Outcome	Q and A
72.	Bed occupancy rate	Total inpatient days	Bed Capacity days	Output	Q and A
73.	Average Length of stay	Total inpatient days	Number of discharges and deaths	Output	Q and A
74.	Proportion of Referrals completed	# of referrals which were completed	Total number of patients referred in same period	Output	Q and A
	CLINICAL SERVICES-INFECTIOUS DISEASES				
75.	Annual morbidity due to Infectious diseases	# of new cases reported to health facilities with infectious diseases in a given period			
76.	Annual mortality due to Infectious diseases	# deaths from infectious diseases in a given period of time			
	CLINICAL SERVICE-LABORATORY				
77.	Proportion of health facilities reporting stock out of Lab reagents for at least 14 days.	# of health facilities reporting stock out of lab reagents for at least 14 days	Total number of health facilities reporting	Outcome	Q and A
78.	Percentage of patients provided with routine lab test services.	# patient have had routine lab tests (blood, urine, stool)	Number of new OPD patients	Output	Q and A
79.	Proportion of health facilities with sample turnaround time meeting set national standard(Sputum,CD4 count, VDRL)	# of health facilities with sample turnaround time meeting set national standard	Total number of health facilities reporting Or surveyed	Output	Q and A
	CLINICAL SERVICE-MENTAL HEALTH				
80.	% of population Drinking excess Alcohol	# people drinking excess alcohol	Estimated adult population	Outcome	
81.	Reported incidence of Mental health problems (cases)disagrr by type.	# new mental health cases seen at health facility	Population at risk	Outcome	
82.	Reported incidence of substance abuse. disag by cause (alcohol, cocaine, dagga, others)	# new substance abuse cases seen at health facility	Population at risk	Outcome	
83.	Mental health patient readmission rate	# Patients with mental health readmitted	Total number of Mental health patients admitted in this period	Output	Q & Annual
	CLINICAL SERVICES-ORAL HEALTH				
84.	Reported incidence of Oral health problems disagg by type (cancer, carries etc.)	# new oral health cases seen at health facility	Population at risk	Outcome	M,Q & A

85.	Oral health surgical management rate disagg by diagnosis(	# of oral health cases managed by surgery	Total number of oral health cases reported	output	M,Q & A
	CLINICAL SERVICES-DRUG SUPPLIES AND LOGISTICTS				
86.	Proportion of health facilities reporting stock out of tracer drugs for more than 28 days (Cotrim, ARV, FP drug, TB drugs etc.)	Number of health facility reporting stock outs of tracer medicine for more than 28 days	Total number of health facilities reporting	outcome	Q &Annual
87.	Percentage of VEN drug availability	# VEN drugs in stock	# VEN drugs on standard list	Outcome	Q &Annual
88.	Consumption of drugs and consumable supplies as percentage of national standard	Total drugs and supplies consumed by key category	Estimate of required consumption by category	Output	Q &Annual
	CLINICAL SERVICES-IDSR				
89.	Percentage of outbreaks detected and responded to within 48 hrs.	# of outbreaks detected and responded to within 48 hours	# outbreaks	Output	M,Q & A
	CLINICAL SERVICES-NON COMMUNICABLE DISEASES				
90.	Annual morbidity due to NCDS disagr by cause(HTN, Asthma, DM,HD)	# new cases reported to health facilities with non-communicable diseases in a given period	Midyear population estimate	Outcome	Annual
91.	Annual mortality due to NCDS disagr by cause	# deaths from non-communicable diseases in a given period of time	Midyear population estimate	Outcome	Annual
92.	Prevalence of Tobacco use in adolescents (13-15 years)	# smokers	Total adolescents surveyed	Outcome	5 years
93.	Percentage of trauma and injury patients with favorable outcomes.(Disag refer, discharged, died)	#of trauma and injury patients with favorable outcomes.(Referred, discharged)	Total number of trauma and injury patients reported in the same period.	Outcome	M,Q,A
94.	Reported incidence of injuries and accidents. Disagr by cause	# new cases of injuries and accidents brought to the health facility	Total population	output	M,Q,A
95.	Proportion of women screened for cervical cancer	# of women screened for cervical cancer	# of women in target population	Output	M,Q,A
96.	Proportion of girls (9-13) vaccinated against human papilloma virus (HPV)	# new cases reported to health facilities with non-communicable diseases in a given period	Midyear population estimate	Output	M,Q,A
	HEALTH MANAGEMENT INFORMATION SYSTEMS AND RESEARCH				
97.	Reporting completeness by program	# reports received	Reports expected	Output	M
98.	Reporting Timeliness by program	# of reports submitted on or before set deadline to central level	# of reports expected	Output	M

99.	Percentage of essential National health research conducted	# of essential national health research conducted	Total # essential national health research planned	Output	Annual
100	Percentage of districts that conducted quarterly Routine Data Quality Assessment (RDQA)	# of districts that conducted quarterly Routine Data Quality Assessment (RDQA)	Total # of districts surveyed	output	Q, A
	ENVIRONMENTAL HEALTH				
101	Number of outbreaks of waterborne diseases	# of outbreaks of waterborne diseases reported in this period		Outcome	Annual
102	Percentage of households with improved sanitation facilities.	# of households with improved sanitation facilities.	Total number of households surveyed	output	Annual
103	Percentage of public premises that met required standards.	# of public premises that met required standards at inspection.	Total # of public premises inspected	Output	Annual
104	Percentage of health facilities that received scheduled medical waste collection.	# of health facilities that received scheduled medical waste collection.	Total number of health facilities surveyed	Output	Annual
	HEALTH HUMAN RESOURCES				
105	Health professionals to the population (1000) ratio by category	Total population	Number of health professionals by category of doctors, dentist, nurses, midwives, pharmacist at work in any sector in the country	Outcome	Annual
106	Staff satisfaction rate	# of staff expressing job satisfaction	Total number of staff surveyed	Outcome	Annual
107	Percentage of positions filled by category	Number of professionals of each category at work	Total number of available established health professional positions by category	Output	Annual
108	Annual attrition of health professionals by category	Total number of professionals by category who left public and NGO services over the year	Maximum number of professionals by category at work at a point in time in the in public and NGO sector.	Output	Annual
109	Annual output of health professionals training by category	Annual output of health professional training by category.	# vacant positions of professionals by category in public and NGO sector .	Output	Annual
110	Village health workers to rural population ratio	Number village health workers	Total catchment population	Outcome	Annual
	MANAGEMENT				
111	Client satisfaction rate	# clients categorized as fully satisfied with the services they received	# clients conducted exit interview using comprehensive client satisfaction survey checklist	Outcome	Annual

112	Percentage of Districts with own 5 year or Annual Health work plan	# districts having 5 year or Annual health work plan	Total number of Districts surveyed	Output	Annual
113	Percentage of health facilities with functioning management board/committee	# Health facilities having functional management board committee.	Total number of health facilities	Output	Annual
114	Percentage of health facilities with functioning means of communication.	# health facilities with functioning communication system	Total number of health facilities in the country(Updated National facility list)	Output	Annual
115	Percentage of health facilities supervised by DHMT.	# of health facilities supervised by DHMT members using integrated supervision checklist during specific period.	Total number of health facilities	Output	Annual
116	Percentage of health facilities that meet recommended equipment standards.	# health facilities meeting medical equipment standard as set for particular type of facility	# health facilities assessed for their equipment standard	Output	Annual
117	Percentage of health facilities that meet recommended physical standards. Disagg Water, electricity, waste disposal/incinerator	# health facilities meeting their physical standard	# health facilities assessed for their physical standard	Output	Annual
HEALTH FINANCE					
118	Percentage of Government budget allocated to health sector	GOL budget allocated to health sector	Total GOL budget allocated to all sectors including health	Input	Annual
119	External resources on health as a percentage of total expenditure on health	External resources spent on health	Total expenditure in health	Input	2 Years
120	Annual private expenditure on health as a percentage of total expenditure on health	Revenue generated through delivery of health services from private sector in a year	Total amount spent in health sector inclusive of public and private in the same year	Input	2Years
121	Health expenditure per capita	Sum of the public and private expenditure in health	Estimated mid-year population	Input	2Years
122	Percentage of annual allocation utilized	Amount spent in a year as planned	Total allocation for the year	Output	Annual

ANNEX 5 - ANALYSIS OF DATASETS AVAILABLE

This section describes the datasets identified during the study and their availability for publication on the data portal in the short term.

Dataset	Agency in Charge and content	Comments	Recommended action and quick wins[228] (
https://lesotho.opendataforafrica.org/	BoS Lesotho open data portal	+ Open data sets - No license - Old data	● Select a government-wide license ● Host on a government open data portal ● Put in place automatic update mechanism
http://www.bos.gov.ls/microdata/index.php/home	BoS Microdata Catalog	+ Anonymized micro data - Data not available online directly - No license	● Publish data as open data without authentication ● Use open license
http://www.bos.gov.ls/	BoS Data Catalog and Indicators catalog	- Sources in PDF - No license	● Publish data under open format ● Use open license

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[228] Datasets in the table that have the icon are those who could easily be published as open data

https://www.centralbank.org.ls/index.php/statistics	Central bank CBL statistics	+ Export in csv and excel - List of available datasets not available - User-oriented interface - No license	● Publish datasets on national open data portal ● Use open license
http://www.obfc.org.ls/registry/default.php	Ministry of Trade and Industry Company register	- User-oriented site with search engine - No export - no license	● Publish datasets on national open data portal ● Use open license
http://www.obfc.org.ls/companyInfo/default.php	Ministry of Trade and Industry Company information	- User-oriented site with search engine - No export - no license	● Publish datasets on national open data portal ● Use open license
http://www.finance.gov.ls/official_documents.php?id=budget_documents&div=budget_book	Ministry of Finance Budget data	- PDF files - no license	● Publish data in machine readable format ● Use open license
https://www.laa.org.ls/laa-statistics/	Land Administration Authority	- PDF files - no license	● Publish data in machine readable format ● Use open license

https://lesotholii.org/	TBD Lesotho Laws	- User-oriented site with search engine - No export in machine readable format - Images of text - No license	● Publish datasets of national open data portal ● Publish data in machine readable format ● Use open license
https://www.worldpop.org/geodata/country?iso3=LSO	WorldPop (NGO) Population data	+ Detailed geoJson file + Open data	NA
https://data.humdata.org/group/lso?q=&ext_page_size=100	Humanitarian Data Exchange	+ Open Data	NA
https://energydata.info/dataset/lesotho-district-boundary-2014	Lesotho District Boundaries	+ Shape file + Open data	NA
https://www.maplesotho.com/get-data/	Open Street Map Lesotho Map	+ Full Lesotho map + Open data	NA

ANNEX 6 – NICR REGISTRATION FORMS

FORM C / FORM F

KINGDOM of LESOTHO
MINISTRY OF HOME AFFAIRS

APPLICATION FOR REGISTRATION OF A BIRTH

NOTE
1. IN TERMS OF REGISTRATION OF BIRTHS AND DEATHS ACT OF 1973
2. THIS FORM, EXCEPT FOR SIGNATURES, MUST BE FILLED IN BLOCK LETTERS
3. ANY FALSE OR MISLEADING STATEMENT IN THIS FORM OR RELATING TO ANY DOCUMENT IN SUPPORT OF THIS APPLICATION MAY LEAD TO REFUSAL TO ISSUE OR REVOCATION OF A BIRTH CERTIFICATE
4. SHOULD BE MARKED X IN THE APPROPRIATE SQUARE

	CITIZEN BY BIRTH:	PERMIT REQUIRED FOR STILL-BORN:	TYPE OF REGISTRATION:
☐ LIVE BORN	☐ YES	☐ REMOVAL AND BURIAL	☐ CURRENT
☐ STILL BORN	☐ NO	☐ REMOVAL FROM LESOTHO	☐ LATE
		☐ BURIAL OF BODY	☐ RE-REGISTRATION

SECTION A

PARTICULARS OF CHILD

SURNAME	MIDDLE NAMES	FIRST NAME

GENDER ☐ MALE ☐ FEMALE	DATE OF BIRTH [D D M M Y Y Y Y]	PLACE OF BIRTH ☐ HOME ☐ HOSPITAL / CLINIC SPECIFY ....
COUNTRY OF BIRTH: ☐ LESOTHO ☐ OTHER	DISTRICT OF BIRTH	TOWN / VILLAGE OF BIRTH
RESULT OF DELIVERY: ☐ SINGLE ☐ MULTIPLE, STATE CHILD'S NUMBER [ ] OF [ ]		NATIONALITY: ☐ MOSOTHO ☐ OTHER ....
PRINCIPAL CHIEF	AREA CHIEF	HEADMAN

SECTION B

PARTICULARS OF MARRIAGE

ARE THE PARENTS MARRIED TO EACH OTHER? ☐ YES ☐ NO	TYPE OF MARRIGE: ☐ CIVIL ☐ CUSTOMARY	DATE OF MARRIAGE [D D M M Y Y Y Y]
DISTRICT OF MARRIAGE	PLACE OF MARRIAGE	MARRIAGE CERTIFICATE NUMBER

SECTION C

PARTICULARS OF MOTHER

ID NUMBER OR OTHER IDENTITY DOCUMENT [											]	SPECIFY, IF OTHER

SURNAME	MIDDLE NAMES	FIRST NAME
MAIDEN SURNAME	MAIDEN NAMES	

DATE OF BIRTH [D D M M Y Y Y Y]	PLACE OF BIRTH	COUNTRY OF BIRTH: ☐ LESOTHO ☐ OTHER ....
NATIONALITY: ☐ MOSOTHO ☐ OTHER	MARITAL STATUS: ☐ SINGLE ☐ MARRIED ☐ DIVORCED ☐ WIDOWED	NUMBER OF PREVIOUS BIRTHS [ ] LIVE-BORN [ ] STILL-BORN
OCCUPATION	IS MOTHER ALIVE? ☐ YES ☐ NO	IS MOTHER INFORMANT? ☐ YES ☐ NO

RESIDENTIAL ADDRESS OF MOTHER

COUNTRY: ☐ LESOTHO ☐ OTHER	DISTRICT ____ CONSTITUENCY ____	TOWN / VILLAGE
RESIDENCE ____ ☐ OWNED ☐ RENTED	PRINCIPAL CHIEF / AREA CHIEF	CELL NUMBER ____ PHONE NUMBER ____
EMAIL ADDRESS		

POSTAL ADDRESS OF MOTHER

COUNTRY: ☐ LESOTHO ☐ OTHER	DISTRICT	TOWN / VILLAGE
POST OFFICE NAME & CODE NUMBER	P.O. BOX	STREET NAME & HOUSE NUMBER

SECTION D

PARTICULARS OF FATHER

ID NUMBER OR OTHER IDENTITY DOCUMENT	SPECIFY, IF OTHER	
SURNAME	MIDDLE NAMES	FIRST NAME
DATE OF BIRTH (D D M M Y Y Y Y)	PLACE OF BIRTH	COUNTRY OF BIRTH: ☐ LESOTHO ☐ OTHER ____
NATIONALITY: ☐ MOSOTHO ☐ OTHER ____	MARITAL STATUS: ☐ SINGLE ☐ MARRIED ☐ DIVORCED ☐ WIDOWED	OCCUPATION
IS FATHER ALIVE? ☐ YES ☐ NO	IS FATHER INFORMANT? ☐ YES ☐ NO	

RESIDENTIAL ADDRESS OF FATHER

COUNTRY: ☐ LESOTHO ☐ OTHER ____	DISTRICT ____ CONSTITUENCY ____	TOWN / VILLAGE
RESIDENCE ____ ☐ OWNED ☐ RENTED	PRINCIPAL CHIEF / AREA CHIEF	CELL NUMBER ____ PHONE NUMBER ____
EMAIL ADDRESS		

POSTAL ADDRESS OF FATHER

COUNTRY: ☐ LESOTHO ☐ OTHER ____	DISTRICT	TOWN / VILLAGE
POST OFFICE NAME & CODE NUMBER	P.O. BOX	STREET NAME & HOUSE NUMBER

SECTION E

PARTICULARS OF INFORMANT

ID NUMBER OR OTHER IDENTITY DOCUMENT	SPECIFY, IF OTHER	
SURNAME	MIDDLE NAMES	FIRST NAME
GENDER: ☐ MALE ☐ FEMALE	DATE OF BIRTH (D D M M Y Y Y Y)	PLACE OF BIRTH
OCCUPATION	RELATION TO A CHILD	

RESIDENTIAL ADDRESS OF INFORMANT

COUNTRY ☐ LESOTHO ☐ OTHER	DISTRICT .... CONSTITUENCY	TOWN / VILLAGE
RESIDENCE .... ☐ OWNED ☐ RENTED	PRINCIPAL CHIEF / AREA CHIEF	CELL NUMBER .... PHONE NUMBER ....
EMAIL ADDRESS		

POSTAL ADDRESS OF INFORMANT

COUNTRY ☐ LESOTHO ☐ OTHER	DISTRICT	TOWN / VILLAGE
POST OFFICE NAME & CODE NUMBER	P.O. BOX	STREET NAME & HOUSE NUMBER

STATE REASON WHY THIS BIRTH WAS NOT NOTIFIED WITHIN 12 MONTHS FROM THE DATE OF BIRTH (IF APPLICABLE):

I DECLARE THAT THE INFORMATION GIVEN HEREIN IS TO THE BEST OF MY KNOWLEDGE AND RECOLLECTION TRUE AND CORRECT

DATE OF DECLARATION

D D M M Y Y Y Y

SIGNATURE OF INFORMANT

X

FOR OFFICIAL USE ONLY

DISTRICT OF REGISTRATION	CIVIL REGISTRATION OFFICER	DATE OF NOTIFICATION D D M M Y Y Y Y
STAMP	REMARKS	SIGNATURE OF CIVIL REGISTRATION OFFICER
DISTRICT MANAGER	REMARKS	DATE OF REGISTRATION D D M M Y Y Y Y
		SIGNATURE OF DISTRICT MANAGER

PAGE 3 OF 3

KINGDOM OF LESOTHO
MINISTRY OF HOME AFFAIRS

APPLICATION FOR AN IDENTITY CARD

NOTE
1. THIS FORM, EXCEPT FOR SIGNATURES, MUST BE FILLED IN BLOCK LETTERS
2. SHOULD BE MARKED X IN THE APPROPRIATE SQUARE

☐ NEW IDENTITY CARD

☐ RENEWAL / REPLACEMENT OF IDENTITY CARD

CAUSE OF RENEWAL / REPLACEMENT: ☐ EXPIRED ☐ LOST ☐ STOLEN ☐ AGED ☐ DAMAGED ☐ CHANGED DETAILS

SECTION A

PARTICULARS OF APPLICANT

☐ ID NUMBER ☐ INDEFINITE RESIDENCE PERMIT NO. ☐ CERTIFICATE OF NATURALIZATION NO. ☐ CERTIFICATE OF REGISTRATION NO. ☐ REFUGEE NO.

☐ STUDY PERMIT NO.   EXPIRY DATE [D D M M Y Y Y Y]

☐ WORK PERMIT NO.   EXPIRY DATE [D D M M Y Y Y Y]

☐ RESIDENCE PERMIT NO.   EXPIRY DATE [D D M M Y Y Y Y]

ID / CERTIFICATE / PERMIT NO. [   ]

SURNAME	MIDDLE NAMES	FIRST NAME
MAIDEN SURNAME	MAIDEN NAMES	GENDER: ☐ MALE ☐ FEMALE
DATE OF BIRTH [D D M M Y Y Y Y]	PLACE OF BIRTH:	COUNTRY OF BIRTH
NATIONALITY: ☐ MOSOTHO ☐ OTHER	MARITAL STATUS: ☐ SINGLE ☐ MARRIED ☐ DIVORCED ☐ WIDOWED	BIRTH CERTIFICATE NUMBER
OCCUPATION	DRIVERS LICENSE NUMBER	PASSPORT NUMBER
COUNTRY OF ISSUE (PASSPORT)	WORK PLACE	ADDRESS OF WORK PLACE

RESIDENTIAL ADDRESS OF APPLICANT

COUNTRY ☐ LESOTHO ☐ OTHER	DISTRICT .... CONSTITUENCY	TOWN / VILLAGE
RESIDENCE .... ☐ OWNED ☐ RENTED	PRINCIPAL CHIEF / AREA CHIEF	
CELL NUMBER .... PHONE NUMBER	EMAIL	

POSTAL ADDRESS OF APPLICANT

COUNTRY ☐ LESOTHO ☐ OTHER	DISTRICT	TOWN / VILLAGE
POST OFFICE NAME & CODE NUMBER [ ]	P.O. BOX	STREET NAME & HOUSE NUMBER

SECTION B

PARTICULARS OF FATHER

ID NUMBER OR OTHER IDENTITY DOCUMENT

SPECIFY, IF OTHER

SURNAME

MIDDLE NAMES

FIRST NAME

DATE OF BIRTH — D D M M Y Y Y Y

PLACE OF BIRTH

NATIONALITY: ☐ MOSOTHO ☐ OTHER ....

MARITAL STATUS: ☐ SINGLE ☐ MARRIED ☐ DIVORCED ☐ WIDOWED

RESIDENTIAL ADDRESS OF FATHER

COUNTRY: ☐ LESOTHO ☐ OTHER ....

DISTRICT ....
CONSTITUENCY ....

TOWN / VILLAGE

RESIDENCE .... ☐ OWNED ☐ RENTED

PRINCIPAL CHIEF / AREA CHIEF

CELL NUMBER ....
PHONE NUMBER ....

SECTION C

PARTICULARS OF MOTHER

ID NUMBER OR OTHER IDENTITY DOCUMENT

SPECIFY, IF OTHER

SURNAME

MIDDLE NAMES

FIRST NAME

MAIDEN SURNAME

MAIDEN NAMES

DATE OF BIRTH — D D M M Y Y Y Y

NATIONALITY: ☐ MOSOTHO ☐ OTHER ....

PLACE OF BIRTH

MARITAL STATUS: ☐ SINGLE ☐ MARRIED ☐ DIVORCED ☐ WIDOWED

RESIDENTIAL ADDRESS OF MOTHER

COUNTRY: ☐ LESOTHO ☐ OTHER ....

DISTRICT ....
CONSTITUENCY ....

TOWN / VILLAGE

RESIDENCE .... ☐ OWNED ☐ RENTED

PRINCIPAL CHIEF / AREA CHIEF

CELL NUMBER ....
PHONE NUMBER ....

SECTION D

PARTICULARS OF NEXT OF KIN

ID NUMBER OR OTHER IDENTITY DOCUMENT

SPECIFY, IF OTHER

SURNAME

MIDDLE NAMES

FIRST NAME

RELATION TO THE APPLICANT

RESIDENTIAL ADDRESS OF NEXT OF KIN

COUNTRY: ☐ LESOTHO ☐ OTHER ....

DISTRICT ....
CONSTITUENCY ....

TOWN / VILLAGE

RESIDENCE .... ☐ OWNED ☐ RENTED

PRINCIPAL CHIEF / AREA CHIEF

CELL NUMBER ....
PHONE NUMBER ....

SECTION E

ADDITIONAL INFORMATION

WHETHER APPLICANT IS HEAD OF FAMILY?	☐ YES ☐ NO	DOES APPLICANT OWN ANY PROPERTY?	☐ YES ☐ NO

LIST OF LIVESTOCK

TATTOOING AND MARKINGS

IMMOVABLE PROPERTY (E.G. PLOT/LEASE NUMBER)

MOVABLE PROPERTY (REGISTRATION NUMBER)

SECTION F

PARTICULARS OF AREA CHIEF

SURNAME	MIDDLE NAMES	FIRST NAME

RESIDENTIAL ADDRESS OF AREA CHIEF

COUNTRY: ☐ LESOTHO ☐ OTHER	DISTRICT .... CONSTITUENCY.................	TOWN / VILLAGE
RESIDENCE .... ☐ OWNED ☐ RENTED	PRINCIPAL CHIEF	CELL NUMBER .... PHONE NUMBER ....

SECTION G

PARTICULARS OF PRINCIPAL CHIEF

SURNAME	MIDDLE NAMES	FIRST NAME

RESIDENTIAL ADDRESS OF PRINCIPAL CHIEF

COUNTRY: ☐ LESOTHO ☐ OTHER	DISTRICT .... CONSTITUENCY.................	TOWN / VILLAGE
RESIDENCE .... ☐ OWNED ☐ RENTED	CELL NUMBER	PHONE NUMBER

I DECLARE THAT THE INFORMATION GIVEN HEREIN IS TO THE BEST OF MY KNOWLEDGE AND RECOLLECTION TRUE AND CORRECT

DATE OF DECLARATION	SIGNATURE OF INFORMANT
D D M M Y Y Y Y	X

FOR OFFICIAL USE ONLY		
DISTRICT OF REGISTRATION	CIVIL REGISTRATION OFFICER	DATE OF APPLICATION
STAMP	REMARKS	SIGNATURE OF ID ENROLLMENT OFFICER
DISTRICT MANAGER	REMARKS	DATE OF REGISTRATION
		SIGNATURE OF DISTRICT MANAGER

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ANNEX 7 - HEALTH SYSTEM STRENGTHENING (HSS) AND IMPROVING CAPITAL INVESTMENT (ICI) ACTION PLANS

RECOMMENDATIONS FOR HEALTH SYSTEM STRENGTHENING (HSS)

The MCC Health System Strengthening 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 of Ministry of Health (MoH) expenditures. In addition, the project will reduce household medical and associated expenses, and increase labor productivity.

Key to the success of the above strategy in ameliorating the effects of the binding constraint on Lesotho's health system 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 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 outbreak, 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 underperforming 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 interventions that could support HSS. The five areas are summarized here and then explained in detail later in this synthesis report.

I. **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 between the different levels.

II. **Increase the availability of health 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 these analyses, it is important to expand the availability of such data.

Lesotho Statistical and Data Use assessment | Annex 7 - Health System Strengthening (HSS) and Improving Capital Investment (ICI) Action plans

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III. **Increase of health data use by MoH:** The availability and sustainability of data and information systems depends largely on their usefulness to GoL and for MoH in particular. It is therefore critical to see greater use of data for decision-making, policymaking, planning, and monitoring and evaluation.

IV. **Improve data access and use by health partners**: Health services in Lesotho are implemented by MoH but also by a number of health partners. This includes 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.

V. **Improvement of 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 RECOMMENDATION FOR AREA I: IMPROVEMENT OF 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 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[229]. Note that we recommend focusing on the interconnection between NICR and

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[229] Note that the subnational data flow study (see the last section of the Main Findings chapter) identified challenges with the reporting and capture of death and birth that question the reliability of the existing information in the civil register and in health facilities register. The connection of NICR and E-register and the scale-up of e-register to cover other services than just HIV/TB is a first step toward addressing this issue, but the overall data flow needs to be addressed. It is also important to note that the data flow study focused on very specific datasets (maternal mortality) that enabled us to detect this issue. It is likely that similar challenges exist for other datasets.

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 process 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 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, recommendation #6 related to improving data security.

3) **VHW program recommendations**:

a. Design of 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. For now, 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 collection and use of sensitive patient data, and the data privacy 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 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 siloes. For example, the UNDP funding to support Covid-19 data collection by VHW was done independently of any other patient data collections such as the Global Fund data collection Application for VHWs, with new systems setup, new tools, and new data flows. Such approach is unsustainable and creates major interoperability issues and extra work for all actors from VHWs to MoH staff. It also limits the potential 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.

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 does 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 duplication of collection 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 & dashboards**: 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 measure procedures of the indicators as part of existing processes (monthly and quarterly coordination meetings, DHMT health facilities supervision & visits). 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 outcome.

   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 of a data analysis team**: The improvement of existing information systems, the adoption and implementation 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 timeframe 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 only based on health data alone; decisions need to consider other sectors. It is therefore essential that 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).

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.

It is therefore critical to design and implement a capacity development master plan. This activity will consist of:
   - Mapping all the actors from VHW up to MoH office, as well as non-health actors such as village chiefs, community council or district council that are involved in health data management.
   - 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. E.g., for VHW this would include data collection using ICT tool, collection of sensitive health data, etc.
   - Finally 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 regard 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 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: 1) **Access to information legislation** to provide a legal basis and the requirement for MDA to publish data. Such legislation is being developed by the National Reform Authority (NRA) and should be passed in by mid-2022. However, given the history of weak implementation of existing legislations and policies, it would be important to support the setup 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 2011) 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 needs 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 comment 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 and become more transparent in terms of the quality-of-service delivery. Note that the Government of Lesotho together with the World Bank has just announced the piloting of a cross-governmental platforms for citizen feedback[230]. Health is one of the piloted 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.

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[230] https://www.thereporter.co.ls/2021/05/08/majoro-launches-citizen-feedback/

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 of 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 attractivity 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.

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):

- **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.

- **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.

- **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.

- **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

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of the success relies on their abilities to access, interpret and use key data for production and trade to make informed decisions.

DETAILED RECOMMENDATION 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)[231] 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

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[231] The database is administratively hosted and under the authority of MLGCA, but land information about lease is managed by LAA

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, investments 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) **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 Prices 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) **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 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 farmers data**: the availability and use of raw disaggregated data at farmer level, coming from LIAMIS is a gold mine to answer key policy or research questions, or to detect specific trend (new disease outbreak, production loss, underperformance 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) **Setup of a data analysis team**: The improvement of existing information systems, the adoption and implementation 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 timeframe 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[232]). The team will benefit from linking to and benefiting from a number of existing international initiatives such as Digital Earth Africa[233] or CGIAR big data in agriculture platform and its component on gender data in Agriculture[234]

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 system integration 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

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[232] http://www.ata.gov.et/analytics/
[233] https://www.digitalearthafrica.org/
[234] https://bigdata.cgiar.org/big-data-on-gender/

agriculture and water data inventory up to date. This task should be one of the duties of the proposed data analysis team.

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.

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 centre 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.

It is therefore critical to design and implement a capacity development master plan. This activity will consist of:

- 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…)
- 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 tool, etc.
- Finally identify tools that could support tasks (data portals, data quality checking tools, data playbook or operational manuals…).

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 LIAMIS data access 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 could 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 MDA to publish data. Such a legislation is being developed by the National Reform Authority (NRA) and should be passed in by mid-2022. However, given the history of weak implementation of existing legislations and policies, it would be important to support the setup 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 a legislation exists (Data Protection Act) but has been weakly 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 needs 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 comment, 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.

TIMELINE

Some of the recommendations proposed in the document could be implemented in a short time frame (24 months) and some will require longer time. In the same way, some of the recommendations could generate impact on short-term and some would require more time to have visible outputs. The table below summarizes these dimensions for each recommendation.

Recommendations	Implementation	Impact

HSS MoH Data systems integration	Short-term	Short-term
HSS GoL Data systems integration	Medium-term	Medium-term
HSS Data inventory	Short-term	Short-term
HSS capacity building	Short-term	Short-term
HSS VHW Support	Short-term	Medium-term
HSS Data management Master plan	Short-term	Short-term
HSS Advocacy for data approaches	Short-term	Short-term
HSS Production of health statistics	Short-term	Short-term
HSS integrated data-supported M&E system & dashboard	Short-term	Medium-term
HSS data analysis team	Short-term	Medium-term
HSS Open Data	Short-term	Short-term
HSS Innovation	Short-term	Short-term
HSS Citizen Feedback Loops	Medium-term	Medium-term
HSS Gender Audit	Short-term	Short-term
HSS GBV Reporting	Short-term	Medium-term
HSS VHW Male Recruitment	Medium-term	Medium-term
HSS VHW Sensitive Data Collection	Short-term	Short-term
HSS Child Protection Indicators	Medium-term	Medium-term
HSS MoH Non-GoL Gender Actors Coordination	Medium-term	Medium-term
ICI LIAMIS Improvement	Short-term	Short-term
ICI MoAFS & MoW Data inventory	Short-term	Short-term
ICI MoAFS & MoW capacity building	Short-term	Short-term
ICI new information systems	Medium-term	Medium-term
ICI Production of AR statistics (implementation of SPARS)	Short-term	Short-term
ICI Gender Audit	Short-term	Short-term
ICI Advocacy for data approaches	Short-term	Short-term
ICI integrated data-supported M&E system & dashboard	Short-term	Short-term

ICI data analysis team	Short-term	Medium-term
ICI Open Data	Short-term	Short-term
ICI Innovation	Short-term	Short-term
ICI Agri entrepreneurs' network	Short-term	Medium-term