Lesotho's National Digital Transformation Strategy: Agenda 2030

2024

Contents

Abbreviations

AfDB	African Development Bank
AI	Artificial Intelligence
API	Application Programming Interface
AU	African Union
CAO	Chief Accounting Officer
CBL	Central Bank of Lesotho
CDO	Chief Digital Officer
CSIRT	Computer Security Incident Response Team
DFS	Digital Financial Services
DPI	Digital Public Infrastructure
DPGs	Digital Public Goods
DT	Digital Transformation
EGDI	E-Government Development Index
EU	European Union
G2B	Government-to-Business
G2C	Government-to-Citizen
G2G	Government-to-Government
GCI	Global Cybersecurity Index
GDP	Gross Domestic Product
GoL	Government of Lesotho
ICT	Information and Communications Technology
IP	Intellectual Property
ITU	International Telecommunication Union
KPI	Key Performance Indicator
LCA	Lesotho Communications Authority
LEC	Lesotho Electricity Company
LECC	LEC Communications
LEWA	Lesotho Electricity and Water Authority
LHWP	Lesotho Highlands Water Project
LGDN	Lesotho Government Data Network
LIPAM	Lesotho Institute of Public Administration and Management

LNDC	Lesotho National Development Corporation
LPS	Lesotho's Postal Services
MICSTI	Ministry of Information, Communication, Science, Technology, and Innovation
MSME	Micro, Small and Medium Enterprise
MNO	Mobile Network Operator
MVNO	Mobile Virtual Network Operator
MW	Megawatt
NGO	Non-Governmental Organisation
NSDP	National Strategic Development Plan
NUL	National University of Lesotho
R&D	Research and Development
R&I	Research and Innovation
REU	Rural Electrification Unit
PPP	Public-private partnerships
TBD	To be decided
SACU	Southern Africa Customs Union
SADC	Southern Africa Development Community
SDGs	Sustainable Development Goals
SHS	Solar Home Systems (SHS)
STEAM	Science, Technology, Engineering, Art and Math
STI	Science, Technology, and Innovation
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USD	United States Dollar
USF	Universal Service Fund
VAT	Value-Added Tax
WB	World Bank
WGA	Whole-of-Government Approach
WIOCC	West Indian Ocean Cable Company
WSA	Whole-of-Society Approach

1. Introduction

Digital transformation has been recognized worldwide as a critical enabler for both economic growth and sustained development. The potential of digital technologies to address social challenges is far-reaching, from facilitating digital skills development and job creation across all economic sectors to modernizing governmental institutions, enhancing public service delivery, and positively impacting environmental sustainability. Transformative technologies such as High-Performance Computing, Big Data Analytics, Blockchain, and Artificial Intelligence have the potential to significantly enhance the achievement of policy goals by improving effectiveness and efficiency. Digital transformation is reshaping the global economy, impacting every aspect of our lives, offering the potential to enhance the quality of life, especially for previously excluded and hard-to-reach citizens.

Lesotho's National Strategic Development Plan (NSDP) II (2018/2019 - 2022/2023) and its extension (2023/2024 – 2027/2028) acknowledge the developmental challenges faced by the country and underscore the necessity of tapping into its existing potential for private sector-led job creation and inclusive economic growth. The country's small domestic market size and geographic isolation within South Africa significantly influence its economic activity. Lesotho's economic reliance on its neighbour is evident, with South Africa being its main source of export earnings (50.4% of the total export value in 2022[1]) and remittances from expatriate workers (25.7% of GDP[2]). South Africa also serves as the primary supplier of imported commodities, constituting 77.3% of the total value.

Several sectors are pivotal contributors to the country's economy, including construction, mining, and public administration. Agriculture and manufacturing, historically vital sectors, are currently underperforming, thereby undermining economic growth.[3] Economic activity has been predominantly sustained by public spending, which accounts for 49[4] percent of GDP, largely supported by transfers from the Southern Africa Customs Union (SACU). The private sector is at the nascent stage of development, largely informal and concentrated in low-productivity sectors. The formal sector is weakly diversified, with mining, textiles, and apparel industries accounting for two-thirds of exports. Household consumption is constrained by high levels of unemployment (22.5% of the population), poverty (32.4% of the population[5]), and inflation (7.2%[6]). Inequality remains a prevailing issue in the country.[7]

In the shift towards an inclusive and diversified economy, digital transformation is increasingly important as it has the potential to solve many of Lesotho's development challenges. Recognizing the pivotal role that technology plays in driving socio-economic development, the Government of Lesotho (GoL) has laid out its National Digital Transformation Strategy. From bolstering digital infrastructure to fostering digital literacy and entrepreneurship, the National Digital Transformation Strategy aims to empower individuals, businesses, and government institutions to thrive in the digital age.

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[1] https://www.bos.gov.ls/New%20Folder/Copy%20of%20Economics/Foreign_Trade_Statistics_Report_2022.pdf
[2] Personal remittances, received (% of GDP) - Lesotho, Sub-Saharan Africa (excluding high income) | Data (worldbank.org)
[3] Lesotho_Economic_Outlook_-_June_2023.pdf (centralbank.org.ls)
[4] Public Finances in Modern History - Government expenditure, percent of GDP (imf.org)
[5] Estimates for 2022 suggest that 32.4% of the population is still trapped under the USD 2.15 poverty line. Lesotho Overview: Development news, research, data | World Bank
[6] Bureau of Statistics (bos.gov.ls)
[7] With a Gini index standing at 44.9 (2019)

Aligned with the global 2030 Agenda for Sustainable Development (SDGs), the African Union's Digital Transformation Strategy for Africa (2020-2030), the NSDP II and informed by the draft Digital Transformation Strategy of the Southern African Development Community (SADC), Lesotho's digital agenda forms an integral part of a broader global and continental endeavor to harness the potential of digital technologies for economic growth, prosperity, and sustainable development. The National Digital Transformation Strategy embodies the country's endeavor to implement the National Digital Policy 2024.

2. Strategy Framework and Guiding Principles

2.1 Lesotho's Digital Transformation Ecosystem

Well-functioning ecosystems are one of the most important determinants of success for digital transformation. This is because digital transformation solutions require many different factors to create impact - clearly defined challenges, digitally savvy users, and fit-for-purpose solution providers, all supported by enabling digital infrastructure, skills, funding and a policy and regulatory environment that enables innovation. This strategy is focused on developing Lesotho's digital transformation ecosystem so that digital solutions generate impact.

As illustrated in Figure below, there are four key areas within Lesotho's digital transformation ecosystem which the strategy focuses on as priorities: Digital Government, Digital Infrastructure, Digital Population, and Digital Business. These areas are intended to function within a safe and trusted environment and be coordinated by strong leadership, collaboration, funding, empowerment and robust legislation, identified as the fifth element of the strategy, named the Enabling environment.

Figure: Lesotho's Digital Transformation Ecosystem and Guiding Principles
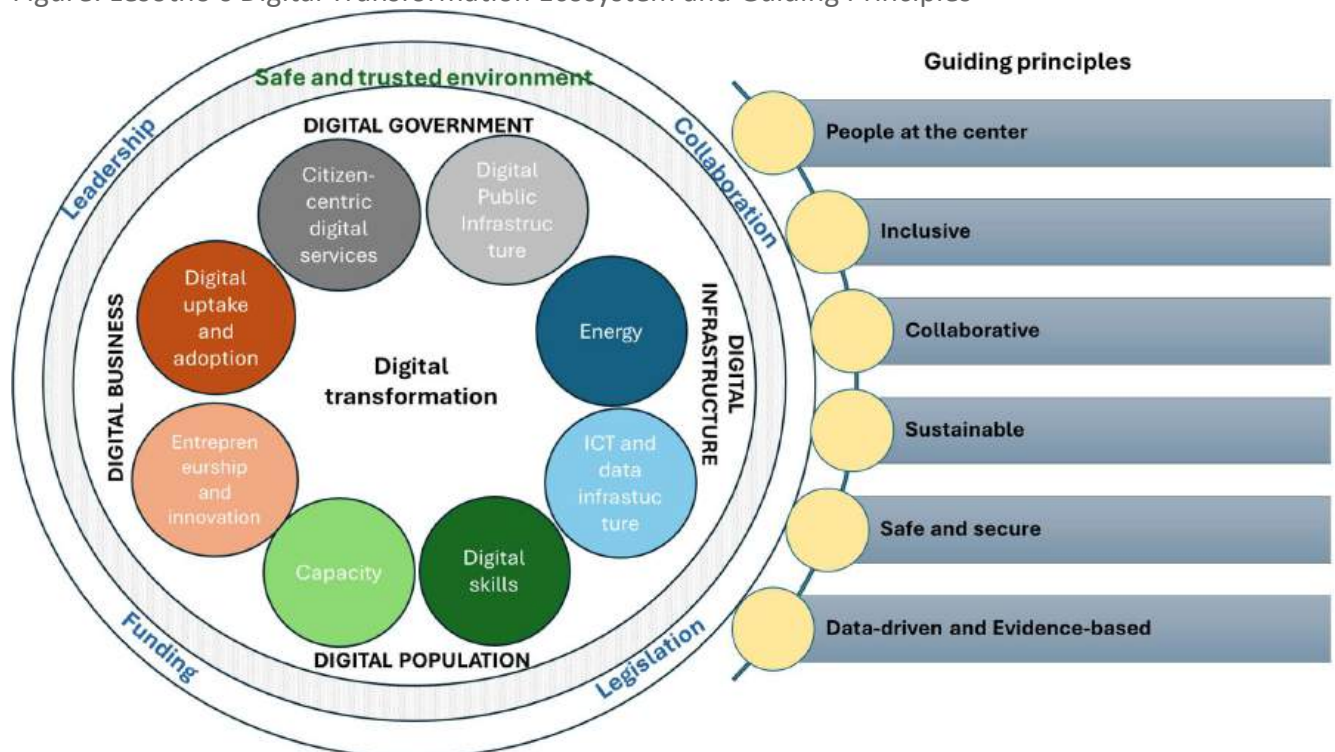
The Enabling Environment focuses on establishing empowered leadership, a clear institutional set-up, effective whole-of-society collaboration, and creating a robust digital-ready legislative framework as the key enablers for digital transformation in Lesotho.

Digital Government relates to the opportunities for improving government service delivery and accountability through the adoption of digital technologies. It also addresses the development of shared Digital Public Infrastructure (DPI)[8] and the use of Digital Public Goods (DPGs)[9], further facilitating digital development and fostering innovation (see Annex 3).

Digital Infrastructure is a foundational requirement for digital transformation and is a critical determinant of the inclusivity of a country's digital economy. This strategy aims to develop affordable and universal access to digital connectivity through improvements in energy and ICT networks and infrastructure. Energy is a basic enabler of the digital economy, and the strategy focuses on the potential to improve access to electricity. In terms of ICT infrastructure, the strategy prioritizes enhancing broadband connectivity in rural areas, along with improving affordability, resilience, quality, and impact of network connectivity, including data storage and processing. Demand side issues, leading to the lack of adoption, are also considered under this strategic area.

Digital Population considers the immense task of re- and up-skilling the population to be able to responsibly participate in digital transformation opportunities. This strategy considers both broad-based digital skills required by the population, and specific areas of technical capacity which are currently missing through the development of a digital skill framework across sectors.

Digital Business relates to the opportunity for Basotho to generate income, and access markets and services through digitally-enabled business models. The strategy addresses the creation of a conducive digital business environment, including the establishment of e-commerce foundations (e.g. national addressing system, digital payments, enhanced postal and logistics sectors using digital technologies). Additionally, it addresses the imperative of unlocking entrepreneurship and supporting innovation within the country to leverage digital technologies for driving economic growth, job creation, and sustainable development.

While the strategy deals with each of these ecosystem elements in part, they are interrelated - getting one element right is necessary for the development of another.

Digital Transformation Strategy is based on the following principles and values:

People at the center – digital transformation should benefit everyone, and drive growth and productivity for improved quality of life. Digital technologies should protect people's rights, ensure ethical conduct, safeguard privacy, while serving and empowering all, without compromising their security or fundamental rights.

Inclusive – digital transformation should leave no one behind. Everyone should have access to digital technology, digital skills, and digital services, regardless of their gender, age, social group, or location.

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[8] DPI - a set of shared digital systems which are secure and interoperable, built on open standards, and specifications to deliver and provide equitable access to public and/ or private services at a societal scale and are governed by enabling rules to drive development, inclusion, innovation, trust, and competition and respect human rights and fundamental freedoms. See: The DPI Approach: A Playbook | United Nations Development Programme (undp.org)

[9] DPGs refers to open-source software, open data, open AI models, open standards, and open content that adhere to privacy and other applicable laws and best practices, do no harm by design, and help attain the Sustainable Development Goals (SDGs). See: GovStack Definitions: DPI, DPG, BB (digitalpublicgoods.net)

Collaborative – full participation of all stakeholders and citizens to drive digital transformation.

Sustainable – digital transformation for environmental responsibility, equitable access, and long-term societal well-being.

**Safe and secure** – the digital environment should be safe and secure. All users should be empowered and protected.

Data-driven and evidence-based - quality information is available to all, enabling informed decision-making to drive growth and innovation.

2.2 Vision, Priorities and Strategic Objectives

The National Digital Policy 2024, which sets overarching goals, principles, and guidelines to guide the country's digital transformation efforts, envisions that "***By 2035, Lesotho will be a digitally empowered society that leverages secure technology to create a prosperous, inclusive, and sustainable future***".

The Digital Transformation Strategy translates the broad objectives and principles outlined in the policy into actionable plans, initiatives, and priorities. It sets the aligned overreaching goal (vision) for 2030 as ***"to establish a collaborative digital ecosystem where stakeholders and society members leverage safe, reliable and inclusive digital technologies for sustainable economic growth and social well-being***".

The National Digital Transformation Strategy for Lesotho is centered around a framework that seeks to establish Lesotho's digital transformation ecosystem for digital transformation to create impact. It focuses on five key strategic pillars: Enabling Environment, Digital Government, Digital Infrastructure, Digital Population, and Digital Business. For each of these pillars, specific objectives are set to advance the implementation of the vision.
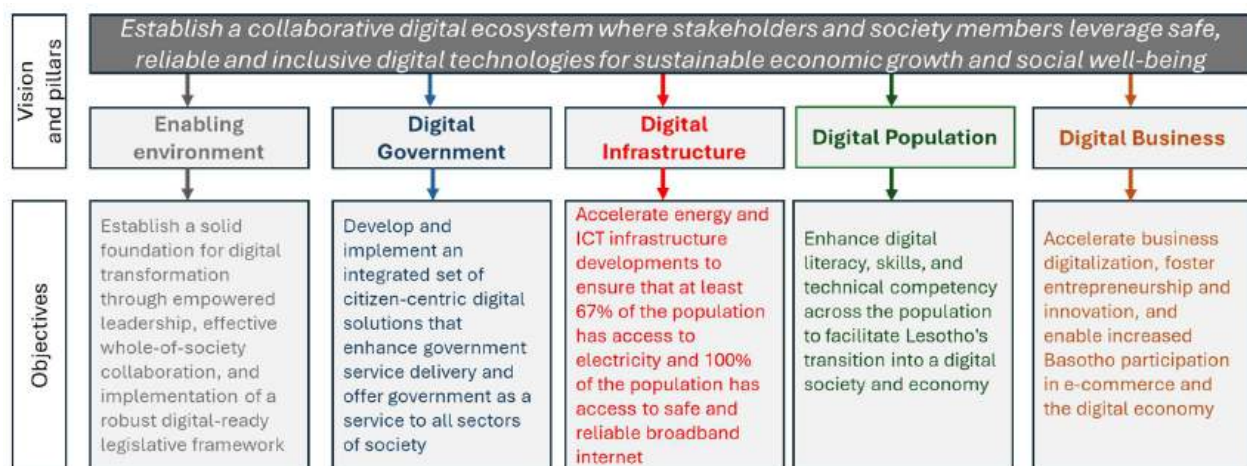
The strategy outlines the main initiatives and actions to achieve identified objectives. Strategic initiatives are categorized by priority: **very high** priority initiatives must begin implementation as soon as the strategy is operationalized (ideally within the next 12 months). **High** priority initiatives should start within 18-24 months, and **medium** priority initiatives are slated to commence within 3 to 5 years. The full-time horizon of this Strategy is approximately 5 years.

In the short term, efforts will focus on establishing national governance for digital transformation, fast-tracking critical pieces of legislation, and developing a national cybersecurity strategy. The government will also prioritize restructuring governmental ICTs on a whole-of-government approach (WGA) and creating detailed plans for advancing digitalization in the public sector and public services. Additionally, there will be a focus on optimizing the value of public entities and assets (e.g., LECC, WIOCC, data centers) to improve broadband and electricity accessibility, particularly in rural areas. Developing a national digital skills framework and implementing a national addressing solution relevant to the country are also considered highly important priorities.

Expected outcomes and strategic Key Performance Indicators (KPIs) are established for each pillar, outlining the desired status by 2030 and providing metrics to measure progress and success.

Conductive enabling environment	Government as a catalyst for DT	Digital infrastructure	Empowering citizens through digital skills	Harnessing the potential of digital business
✓ A functional whole-of-society governance mechanism ✓ Revised and modernized legal and regulatory framework ✓ Enhanced cybersecurity: Functional national CSIRT, Lesotho within the first half of countries of GCI globally (97th and higher)	✓ Building and expanding a DPI is the government's priority ✓ Key public services are digital end-to-end ✓ DG services are user-centric and are increasingly used ✓ 90% of public sector employees have basic digital skills ✓ EDGI and E-participation scores have improved to average world-level	✓ At least 67% of the population has access to electricity and 100% has access to safe and reliable broadband ✓ All key public service institutions have access to reliable electricity and broadband ✓ 75% of the population are Internet users	✓ 75% of the population have basic digital skills ✓ 80% of youth have basic digital skills ✓ Increased number of graduates in ICT and computer-related science ✓ All schools are connected ✓ Digital devices are available for 75% of students and 100% of teachers by 2030	✓ Increased online purchases ✓ A national addressing system is implemented ✓ Increased share of MSMEs with a basic level of digitalization ✓ Increased share of enterprises with online presence ✓ Growing number of supported entrepreneurs/ startups

3. Strategic pillars

3.1 Enabling Environment: Leadership, institutional governance, policies and legislation

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Objective: Establish a solid foundation for digital transformation through empowered leadership, effective whole-of-society collaboration, and implementation of a robust digital-ready legislative framework

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One of the foremost obstacles hindering digital transformation in Lesotho is the lack of effective leadership, coordination, whole-of-society collaboration and a conducive legislative framework.[10] During the strategy formulation process, almost all stakeholders identified insufficient coordination and collaboration between different stakeholders as a key barrier to successful digital transformation. Without strong leadership to drive initiatives forward, government departments, agencies and other stakeholders operate in silos, duplicating efforts or failing to align objectives. Additionally, inconsistent policies and regulations impede innovation and investment in digital technologies and the establishment of a trusted digital environment. A detailed list of identified challenges for the Enabling Environment is provided in Annex 2.

Strategic interventions:

1. **Establish a national governance framework to support digital transformation, ensure intra-governmental and inter-sectoral coordination and collaboration with clear processes, roles, and responsibilities of all involved parties.**

The long-term institutional setup for digital transformation governance is described in the National Digital Policy 2024 (illustrated Annex 4). Its implementation, however, will require drafting and enacting certain legal acts (e.g. enacting the Computer Crime and Cybersecurity Bill, 2023 implementing draft Research and Innovation Policy, 2023, and drafting a Digital Government Act). Therefore, short- to medium- term solutions are needed to ensure the progress of national digital transformation.

In the short to medium term, there is a need to:

1. Define the role and responsibilities of the Chief Digital Officer (CDO)[11] and establish the Chief Digital Office/Secretarial (within the MICSTI) with the following functions related to national digital transformation:

    1.1. Strategic planning, review, monitoring and evaluation, policy formulation, legislation initiation, change management, coordination across the government and society and fostering trust in the digital environment across the entire society.

    1.2. The Digital Government Implementation function (strengthening the current e-

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[10] This issue was raised by the majority of stakeholder during the strategy formulation/revision meetings in January 2024, as well as during the initial strategy formulation discussions hosted between September and October 2021.

[11] On May 2, 2023, the Cabinet of Ministers approved the designation of the Minister of Information, Communication, Science, Technology, and Innovation (MICSTI) as the Government of Lesotho Chief Digital Officer, as outlined in Memorandum C3(2023/11)69.

Government project) to ensure the effective implementation of Digital Government initiatives (detailed under the Digital Government section).

    1.3. The Cybersecurity function.

    1.4. The Innovation function (strengthening the current Science and Technology function).

Overall, in the short term, there is a need to review the organizational chart/ organigram for the MICSTI, delineating the essential roles and capacities that need to be filled.

2. Establish the Advisory Council, and define its role and responsibilities. To successfully play this role, the CDO and the Office/Secretariat will need the support from the Advisory Council, comprised of senior representatives from across the Lesotho Government, as well as from the private sector, academia, donor organizations and other stakeholders. The purpose of the Council is to provide broad oversight of the Strategy's implementation with meetings occurring once a quarter. The Council will rely on inputs from the Office/Secretariat to reflect on the day-to-day implementation progress and challenges and provide strategic guidance. The Council will also be tasked with strategically evaluating the impact of digital initiatives and providing insight for Strategy adjustments and/or reviews (see Monitoring and Evaluation section).

In the short term, the legislation of the above-indicated bodies and functions would be carried out through formal decisions of the Cabinet. However, the long-term legislation of the National Governance Framework will necessitate appropriate changes in national legislation.

Additionally, the establishment and empowerment of the Data Protection Commission (as per Data Protection Act, 2011) and the Competition Commission as per the Competition Bill, 2022 (currently, in the Parliament) shall be ensured.

The figure below represents institutional arrangements for a short- to medium-term.
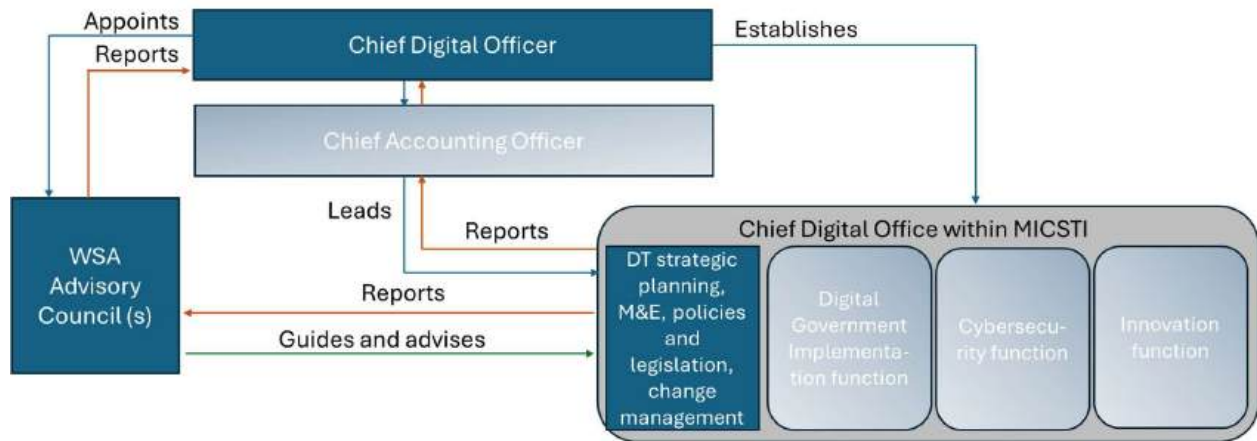
Note. The different colors of functions indicate that the Digital Government Implementation, Cybersecurity and Innovation functions could potentially be reorganized as autonomous or semi-autonomous entities in the mid-term to long-term (depending on the outcome of the feasibility study and availability of financial and human resources as well as the enactment of relevant legislation).

The **CDO**, supported by dedicated team(s) within the MICSTI, will ensure the effective implementation of the Digital Policy and Digital Transformation Strategy, initiate and conduct timely reviews of these documents, coordinate digital transformation initiatives with various stakeholders, including other ministries, departments, agencies, the private sector, civil society, and academia, and drive organizational

change management and cultural transformation to foster a digital-first mindset among the government and society.

The **Chief Digital Office/Secretariat**, established within the MICSTI under the CDO and CAO (Chief Accounting Officer) supervision will be accountable for the ongoing development of the Digital Transformation Strategy and its implementation plans, while each relevant ministries, agencies and non-governmental bodies will be responsible for implementing specific measures and reporting progress to the Office on a regular basis. The overall monitoring and evaluation of the Digital Policy and Digital Transformation Strategy shall be performed by the Office.

To ensure the effective implementation of Digital Government initiatives (detailed under the Digital Government section), strengthening of the **Digital Government Function/Team** is needed. This requires clarifying its roles, responsibilities and authority, its forms of cooperation, the results of its operation as well as ensuring the necessary resources. Additionally, as it is recommended for such a function to operate with a high level of independence (organizational and functional) vis-à-vis the actors involved in the ICT field in the government of the state in question[12], the cost and benefits of establishing a separate agency in a mid-term may be considered (as defined by the National Digital policy, 2024).

To safeguard Lesotho's digital infrastructure, data assets, and critical information systems from cyber threats and attacks, the **Cybersecurity Function/Team** is required. Among its responsibilities, it will drive the development and implementation of a National Cybersecurity Strategy, and serve as the foundation for the national Computer Security Incident Response Team (CSIRT). The responsibility to lead this team/unit could be designated to the Chief Information Security Officer, whose appointment was approved by Memorandum C3(2023/11)69 of the Cabinet of Ministers.

Lastly, to guide national research and innovation (R&I) initiatives in the short term (as defined by the draft Research and Innovation Policy, 2023), strengthening the innovation function within the MCSTI is required.

2. **Fast-track the adoption of eight critical pieces of legislation**.

There is a need for prioritization of review of the current legislation and enactment of new legislation. Without clear and enforceable legislation around online transactions, cyber security, data protection and consumer protection in the digital age, demand for digital services will remain weak due to poor consumer trust and a lack of recourse in the case of disputes. Additionally, the **Competition Bill** needs to be adopted.[13] Delays may have negative outcomes for consumers, especially in a small market like Lesotho where market concentration and lack of competition are prevalent. Given the importance of competition regulation in the digital economy, addressing such issues becomes crucial due to the high barriers to entry in ICT and the potential dominance of some digital platforms. Moreover, the adoption of **Digital Government legislation**, which governs the use of digital technologies and data in government operations, service delivery, and citizen interactions, and establishes the required institutional arrangements (legislating CDO, Chief Digital Office, Digital Government Implementing body), is necessary. Additionally, the Access and Receipt of Information Bill and the Lesostho Archives Act need revision, adoption, and enforcement.

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[12] https://publications.iadb.org/publications/english/viewer/Government-Digital-Transformation-Guide.pdf
[13] The Competition Act, 2022 was nullified by the Court of Appeal decision. https://archive.gazettes.africa/archive/ls/2022/ls-government-gazette-dated-2022-09-09-no-77.pdf

The Ministry of Law and Justice and the Parliament of Lesotho and relevant ministries are critical stakeholders to this process. Relevant ministries play a critical role in initiating and facilitating the drafting of legislation.

a. Computer Crime and Cybersecurity Bill,

b. Electronic Transactions and Electronic Commerce Bill,

c. Data Protection Act of 2011,

d. Consumer Protection Bill (in the Parliament),

e. Competition Bill (in the Parliament),

f. Digital Government legislation,

g. Access and Receipt of Information Bill,

h. Lesotho Archives Act.

3. **Review the scope of the Universal Service Fund (USF), the Communication Policy (2008) and the Communications Act (2012) to align with the requirements of a digital transformation.**

The Communication Policy, adopted in 2008, requires revision to address the fast-changing digital landscape (e.g. broadening the functions and capacities of the LCA to encompass digital services and platform regulation, fostering cross-sectoral collaborative regulation, etc). Similarly, reviewing the Communications Act 2012, which establishes the USF and the structures for managing, it important to reflect evolving needs and the changing landscape. Besides reviewing the scope of the USF (its focus, mandate, management, beneficiaries, eligible projects and etc.) and introducing other necessary updates, it is also important to consider incorporating and defining broadband within the scope of Universal Access and Service and to align with the objectives of universal and meaningful connectivity.

4. **Assess, review, amend and execute further modernization of the legal and regulatory framework**

A comprehensive review of the legal and regulatory framework is essential to support digital transformation. This review involves assessing current laws, regulations, and policies related to digitalization and identifying areas for improvement through a systematic review process. The report "Digital Rights in Lesotho: A Situational Analysis" (2024)[14], commissioned by the Centre for Human Rights, University of Pretoria, may serve as valuable background for such a review. It provides a comprehensive examination of the strategies and initiatives implemented in Lesotho by the government and relevant stakeholders to safeguard human rights in the digital age. Covering various aspects of digital human rights, including access to the internet, freedom of expression, cybersecurity, cybercrimes, data protection, and surveillance, the report offers a thorough assessment of the current digital rights landscape in Lesotho and presents an extensive list of recommendations for substantial improvements.

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[14] Digital Rights in Lesotho Report-A situational Analysis – Transformation Resource Center (trc.org.ls)

Additionally, aligning and enforcing existing and new legislation is critical. For example, the Data Protection Act of 2011 provides for establishing the Data Protection Commission. However, the Commission is yet to be established.

Other areas for improvement include legal and regulatory framework for intellectual property (IP), digital services regulation, digital ID, digital signature, Artificial Intelligence, national digital addressing system, and others. Additionally, sector-specific laws and regulations may need to be adjusted for a digital environment. Principles and structures of e-waste management should also be defined.

5. **Develop and implement a National Cybersecurity Strategy**

In addition to passing the Cybersecurity bill into law, immediate actions are crucial to secure Lesotho's cyber infrastructure. This entails establishing a national structure capable of promptly monitoring and responding to cyber threats, while ensuring proper coordination among various stakeholders. It is essential to ensure effective cybersecurity incident monitoring, an early warning system, information dissemination, cyber threat assessments and the provision of technical support where required. Furthermore, concerted efforts are needed to enhance national awareness, employ best international cybersecurity practices and build capacity in cybersecurity.

A national cybersecurity strategy is essential for protecting Critical Information Infrastructure (CII) and Critical Information (CI), defending against cyber threats, safeguarding sensitive data, preserving national security, and fostering international collaboration in cyberspace.

6. **Develop and implement a comprehensive long-term communication plan to efficiently publicize the Digital Transformation Strategy and deliver consistent updates on its implementation progress. Additionally, deploy a digital transformation tracker to monitor key projects and track priority Key Performance Indicators (KPIs).**

The purpose is to broadly disseminate the Digital Transformation Strategy, articulating its purpose, and highlighting its significance. Equally important is to ensure that stakeholders understand how the Strategy is implemented. This requires transparent and visible reporting on the progress of its implementation. Communication can be carried out through a wide range of communication means, such as official documents, websites, and publicity meetings. Two-way communication practices – such as roundtable discussions, conferences, and workshops – appear to be most effective, and provide an opportunity to get broader reactions and views on the strategy and its implementation. Visibility and effective communication not only help to transparently share values, purpose and progress, but also keep the spirit of collaboration and engagement. An increasing number of countries have dedicated websites and communication channels for their digital transformation strategies.

To collect and monitor data on digital transformation initiatives, a Digital Transformation Tracker must be operationalized. Recent and accurate data on how digital transformation solutions and interventions are being used, and whether they are leading to impact, will be critical to the monitoring and implementation of this strategy. This tracker would provide stakeholders with up-to-date visibility into the progress of digital transformation initiatives, helping to build trust and confidence in the Strategy's implementation. Leverage the capacity (human and technical) of the Bureau of Statistics, LCA and LEWA to compile and measure digital strategy-related and other sets of relevant indicators periodically (e.g., annually - Internet users, device ownership, affordability indicators, digital skills, online transactions, e-commerce transactions, quarterly – broadband subscriptions, electricity access and etc.).

Additionally, ensuring that the Auditor General's Office is equipped to extend its oversight to digital audits (not just financial), would allow for a comprehensive assessment of digital systems, processes, and controls. This would also enable the identification and mitigation of potential vulnerabilities and threats in digital infrastructure and processes, ultimately enhancing the overall governance and accountability of digital initiatives within the government.

The table below provides a summary of the key Enabling Environment initiatives to be undertaken as part of this Strategy, with an indication of the priority, responsible stakeholders and potential funding sources.

|	Priority	Leading stakeholder	Potential funding sources
Establish a national governance framework to support digital transformation: 1. Establish Chief Digital Office function within MICSTI 2. Establish the Advisory Council 3. Conduct feasibility analysis and enact the necessary legislation for the establishment of autonomous or semi-autonomous entities	Very high	MICSTI	GoL/ MICSTI/development partners
Fast-track the adoption of eight critical pieces of legislation: a. Computer Crime and Security Bill, b. Electronic Transactions and Electronic Commerce Bill, c. Data Protection Act of 2011, d. Consumer Protection Bill, e. Competition Bill, f. Digital Government legislation, g. Access and Receipt of Information Bill, h. Lesotho Archives Act.	Very high	Ministry of Law and Justice With the support of relevant ministries (MICSTI, Ministry of Home Affairs, Ministry of Trade and Industry)	GoL/developing partners
Review the scope of the Universal Service Fund (USF), the Communication Policy (2008) and Communications Act (2012) to align with the requirements of a digital transformation	High	MICSTI, LCA	GoL, ITU, WB
Evaluate and execute further modernization of the legal and regulatory framework	High	Ministry of Law and Justice with the support of line ministries	GoL/WB/ /UNDP/AU/EU/ITU
Develop and implement a National Cybersecurity Strategy	Very high	MICSTI	MICSTI and ITU
Develop and implement a long-term communication plan to effectively	High	MICSTI	MICSTI With the support of

disseminate the Strategy and deliver consistent updates on its implementation progress. Implement a digital transformation tracker for key projects and priorities KPIs to ensure strategic monitoring and evaluation			the private sector

Expected outcome/KPI	Baseline	Target
The Chief Digital Office within MICSTI is fully operational.		Within 3 months of the adoption of the Strategy, following the Cabinet decision to establish the Office
A functional governance mechanism involving a minimum of four consultation or supervision meetings with the Advisory Council annually.	-	Advisory Council operational within 3 months of the adoption of the Strategy, following the Cabinet decision to establish the Council
Revised and modernized legal and regulatory framework supporting digital transformation: 1. Adoption and enforcement of digital-ready legislation (min eight critical legislations). 2. Comprehensive revision of legal and regulatory framework, with identified gaps and timelines to address them.	-	Critical legislation adopted within 12-24 months
Effective execution of the cybersecurity strategy resulting in enhanced security measures and protection against cyber threats. Measured through Global Cybersecurity Index (GCI) position.	164th (2020) – global 38th (2020) – regional	2030: Between the first 15 countries regionally (ITU Africa region) and within the first half of countries globally (97th and higher) Functional national CSIRT
Effective communication of the Strategy and its implementation, including a dedicated public website monitoring the National Digital Transformation Strategy's ongoing progress (the tracker), complemented by an annual Digital Transformation Progress Workshop open to the public.	-	Long-term communication plan within 2 months of Strategy adoption. The first Progress Workshop and the tracker open to the public within 12 months of the strategy adoption.

3.2 Digital Government

Objective: An integrated set of citizen-centric digital solutions that enhance government service delivery and offer government as a service for all sectors of society

Digital government plays a pivotal role in driving national digital transformation by leveraging technology to enhance governance, improve public services, foster innovation, and empower citizens in the digital age. Progress has been made in setting up e-government services, citizen-facing portals, digitization of the national identity registry through the digital ID, the expansion of network coverage, and the presence of the LGDN. Whilst these examples show the value that can be unlocked from e-government, Lesotho still faces significant challenges, resulting in an emerging status on the readiness rating. As per the UN E-Government Development Index (EDGI), Lesotho ranks 145th of 193 countries, falling below the continental and regional average.[15] In the E-Participation Index country ranks 117th of 193 countries.
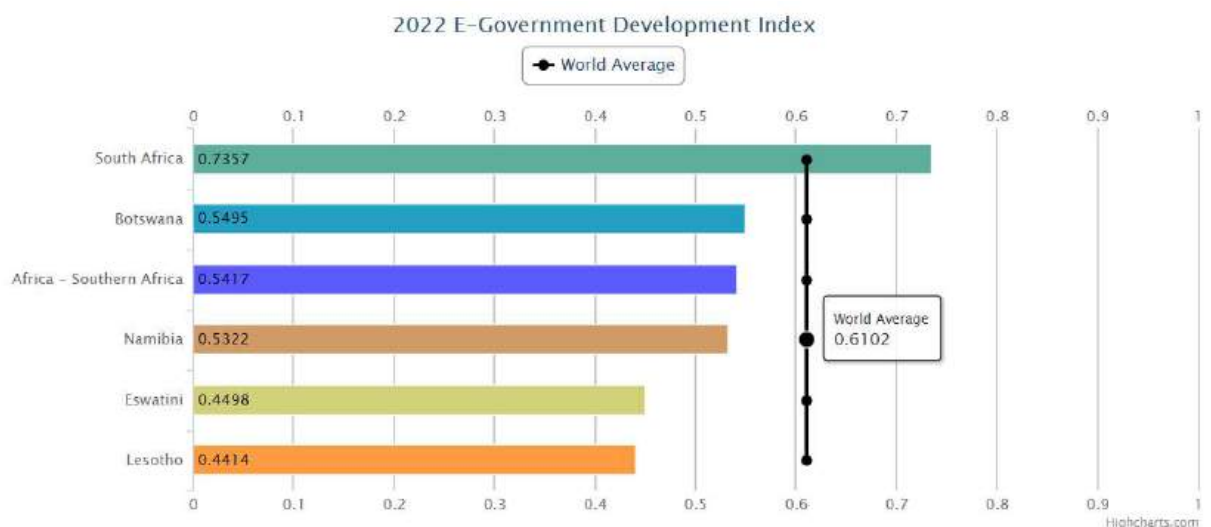
Digitization of public sector processes to enable more efficient service delivery remains relatively nascent. Lesotho scored 0.38 (on a scale of 0-1) in the 2022 GovTech Maturity Index[16], with an overall medium classification (C on scale of A to D), with its lowest scores in digital citizen engagement and the foundational aspects of digital government. A detailed list of identified challenges for the Digital Government is provided in Annex 2.

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[15] EGOVKB | United Nations > Data > Country Information
[16] GovTech Maturity Index (GTMI) Data Dashboard (worldbank.org)

Strategic interventions:

1. **Restructure Government ICT as a service offered by the MICSTI.** Line ministries and government departments deliver on prescribed mandates through the processes governed by policies and legal frameworks. Currently, ministries and departments formulate their own digital transformation journeys that coincide with over-arching needs and developments led by MICSTI, compromising on standards of public service delivery, and resulting in duplicities on infrastructure, frameworks, and human capital, hence putting an unnecessary strain on digital finance and government budget. Mainstreaming digital within the government is pivotal, but the ultimate leadership and control should be under MICSTI. This would require:

   a. Strengthen the Digital Government Implementation function (as defined in Section 3.1),

   b. Defining and legislating its roles, responsibilities, functions, and financing sources (among others)

   c. Establishing and enforcing policies, standards, and procedures for managing digital assets within the public sector.

   d. Developing and implementing comprehensive digital service standards for government services.

2. **Articulate a clear Digital Government Strategy/Plan**, outlining how a government plans to use digital technologies and data to modernize its operations, improve service delivery, and enhance citizen engagement. This requires evaluation of the strategic, technical, and regulatory prerequisites to expand the scope and functionality of government digital services, increase their adoption rate, enhance user satisfaction, ensure data availability, and improve transparency, and confidence among other objectives. The Digital Government Strategy should follow the principles, defined by the National Digital Policy 2024, namely citizen-centric, digital by design, once only, secure by design, digital-first. It is crucial to prioritize, plan and implement core digital public infrastructure (DPI), comprising a secure and interoperable network of components such as digital identity, digital payments, and data exchange systems. Systems for digital payments, digital identity, and data exchange are increasingly accepted as three self-evident categories of foundational DPI; however, they also need to be designed with this essential characteristic in mind - to interoperate with other systems rather than providing standalone solutions.[17] At its essence, core DPI forms the bedrock of essential services. Utilizing digital public goods (DPGs)[18] and building blocks[19] to operationalize this infrastructure should be a central focus of digital government strategy.

   The Digital Government strategy must prioritize accessibility and inclusivity, ensuring that all individuals can benefit from digital services. This involves implementing omni-channel service delivery, adhering to accessibility standards, and leveraging innovative technologies like natural

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[17] https://www.worldbank.org/en/events/2023/09/12/digital-public-infrastructure-accelerating-action-workshop

[18] These are open-source software, open data, open AI models, open standards, and open content that are developed worldwide and available to openly license. The Digital Public Goods Alliance (DPGA) maintains a registry where all recognized DPGs can be discovered. The DPI Approach: A Playbook | United Nations Development Programme (undp.org)

[19] These are reusable components—software code, platforms, and applications, that help scale basic digital services. They connect multiple digital services and enable large-scale interoperability. The GovStack Initiative reviews digital solutions to certify them as building-block compliant and develops technical specifications for building blocks. Open APIs a subset of building blocks. The DPI Approach: A Playbook | United Nations Development Programme (undp.org)

language processing and virtual assistance to enhance user experience. Public services accessed through digital channels should be free or charged a nominal fee. Additionally, public services that can be exempted from network usage charges, known as zero-rated services, can be identified.

3. **Develop Integrated Digital Sectorial plans, budgets and reporting**, setting clear integrated and interlinked guidelines that set the principles, models, plans, budgets, implementations and standards needed for efficient and effective implementation of digital in identified priority sectors: Education, Health, Agriculture, Manufacturing, Construction, Finance, Transport and Tourism.

4. **Define a Digital Government Enterprise Architecture** framework to support the development of digital public infrastructure (DPI). Current inefficiencies are related to the fragmented development of digital public infrastructure (DPI) and limited adoption of digital services and processes, resulting in gaps in interoperability and integration of backend systems due to the absence of an overarching digital government architecture guiding the efficient use of digital systems and supporting the business continuity of digital services. This whole-of-government architecture framework will provide a better user experience through cross-agency design and investment decisions. It is a critical component that translates transformation needs into specific functional and technical requirements leading to the deployment of transformative digital services, with the vision of moving from 'siloed capabilities' to 'connected platforms and services'. Additionally, **a digital government interoperability framework**, along with necessary policy and technical recommendations for systematic and sustainable implementation, should be defined and implemented. This will ensure technology is scalable, secure, resilient and interoperable.

5. **Establish a policy framework for the adoption and promotion of digital public infrastructure (DPI) and digital public goods (DPG) in public service delivery.** Develop policy components defining the adoption of DPI and DPGs for the delivery of public services. Implement incentives and funding schemes to support the development and dissemination of digital public goods, including open data sets, open-source software, digital platforms for public service delivery, and digital content repositories. Foster collaboration among the Government, civil society, the private sector and academia to develop local communities of technical skills and research capabilities to develop a DPI, DGPs or customize existing ones based on the nation's needs, encourage the creation of locally relevant digital solutions and content. The establishment of GovTech Lab and/or GovTech Academy shall be considered.

6. **Develop a Data[20] and transformative technologies (e.g., AI) policies[21], define data-sharing principles and standards.** Data is increasingly considered as a strategic asset around the world. It should be responsibly collected, managed, and leveraged to inform decision-making. Economically, sharing data drives innovation, enables the creation of personalized services, and new analytics-based business models, as well as fosters competition. Administratively, it enhances collaboration for the provision of public services, saves costs, and drives data and evidence-based decision-making. The data policy should include provisions/requirements for open data, meaning that all government entities adopt an "open by default" approach for non-

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[20] The AU Data Policy Framework | African Union provides high-level principle-based guidance to member states in their development of data policy appropriate to their conditions

[21] Transformative technologies (AI) challenges and principles of regulation | Digital Regulation Platform

sensitive data, ensuring compliance with relevant laws and implementing appropriate privacy, security, and ethical controls for the sharing of sensitive data. Trusted data sharing is about optimizing the amount of data shared to maximize societal benefits while ensuring that the integrity of data can be trusted and that adequate protections are in place, especially for personal data. It is important to establish a clear national data governance framework that defines rules and guidelines for comprehensive data management, including data collection, storage, access, sharing, data protection, data localization, and cross-border data transfers[22]. While defining this framework, it is crucial to understand its implications on digital trade, market developments, investment decisions, and other economic and non-economic factors. Finding a balanced approach in national data governance should involve nationally consultative processes that consider the local context, needs, and institutional capabilities.

Policy on transformative technologies shall provide a strategic framework for the development, deployment, regulation, and responsible use of these technologies within the public sector and society.

7. **Establish a robust business resilience strategy for critical public services, informed by a risk assessment**. The aim is to strengthen the public sector's capacity to withstand and recover from various disruptions. The strategy shall involve the development and implementation of proactive measures to mitigate risks, enhance preparedness, and ensure the continuity of critical services to safeguard the reliability and effectiveness of public services.

8. **Upskill the public sector, create a learning culture.** Although digital skills and capabilities are a cross-cutting issue, coming as a foundational element in all the priority areas, one of the starting points to address the digital skill gap is to put public sector employees in the driving seat. Considering that the public sector is the largest employer in the country, initiatives aimed at upskilling employees can yield significant results. Equipped with digital skills, public sector employees can serve as catalysts for knowledge dissemination, cascading their learning to colleagues and even extending it to their families and relatives, thereby initiating a chain reaction of upskilling and transformation. These upskilling initiatives should be diverse, addressing both foundational and advanced digital skills within the public sector. Furthermore, it is essential to recognize the pivotal role of leadership in driving digital transformation. Therefore, initiatives for leadership should not only focus on technical skills but also prioritize the development of leadership and soft skills necessary to facilitate cultural change underpinning digital transformation. It is important to redefine the role of LIPAM (Lesotho Institute of Public Administration and Management) and the Ministry of the Public Service in addressing this initiative.

9. **Support the development of skills and capacities within the local business community**, by offering more opportunities for small to medium businesses to sell to the government[23] and ensuring skills transfer as contract terms for big procurements. Proper contract management shall be in place to ensure that significant skills are transferred to local organizations, with the expectation that over time the local entity will be undertaking a bigger share of the work.

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[22] For instance, the current Data Protection Act of 2011 provides exceptions allowing data transfer outside Lesotho to countries with established data protection laws. However, the SIM card registration regulations (2021) prohibit the transfer of subscriber information without prior written consent from the LCA. Mobile network operators (MNOs) are required to keep their systems within the country as per their license requirements. This highlights the necessity for a clear and consistent approach to data governance.

[23] The thresholds for national and international procurement have already been addressed in the Procurement Act, 2023, under schedule 2, where goods of up to M3,000,000 are open nationally, while goods over M3,000,000 are open internationally. Procurement thresholds are determined by the Ministry of Finance and Development Planning.

10. **Raise awareness and educate citizens about the availability and benefits of digital government services to promote digital trust .** To this end, it is important to ensure citizen buy-in and usage of the current digital government services[24] is obtained, before proceeding with additional service development. Offering discounts or cashback rewards for individuals and businesses using digital government services or leveraging the private sector to deliver government digital services (digital agents' model) can be effective strategies to encourage and incentivize greater utilization of digital public services. **Communication** needs to not only be informative (of new developments), but also educational in nature. Other stakeholders, such as the private sector, business, places of learning, NGOs and MNOs, need to receive frequent communications regarding progress across various sectors of government. Various mechanisms of communication can be utilized, including change management channels.

11. **Establish mechanisms for monitoring and evaluating the performance of digital government services**, by introducing Key Performance Indicators (KPIs), user feedback mechanisms, and regular audits to ensure continuous improvement and alignment with strategic objectives. By incorporating data and insights into service design, digital platforms can be tailored to meet the diverse needs of users, promoting more personalized and effective interactions for all citizens.

The table below provides a summary of the key Digital Government initiatives to be undertaken as part of this Strategy, with an indication of the priority, responsible stakeholders and potential funding sources.

	Priority	Leading stakeholder	Potential funding sources
Restructure Government ICT as a service offered by the MICSTI	Very high	MICSTI	GoL/ MICSTI
Articulate a clear Digital Government Strategy/Plan	Very high	MICSTI	GoL/ MICSTI
Develop integrated Digital Sectorial plans (Education, Health, Agriculture, Manufacturing, Construction, Finance, Transport and Tourism)	High	Education, Health, Agriculture, Manufacturing, Transport, Finance and Tourism ministries, Ministry of Development Planning	GoL
Define a Digital Government Enterprise Architecture framework and interoperability framework	Very high	MICSTI With the support of line ministries	MICSTI/ ITU/ GovStack/ WB
Establish a policy framework for the adoption and promotion of DPI and DPGs in public service delivery.	High	MICSTI	GoL/ UNDP
Develop Data and transformative technologies (AI) policies, define data-sharing principles, including cross-border transfer	Very high	MICSTI	GoL/ UNDP/ITU With the support of private sector
Establish a robust business resilience	Very high	MICSTI	GoL

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[24] Services - Government Of Lesotho (www.gov.ls)

strategy for critical public services, informed by a risk assessment			
Upskill the public sector, create a learning culture	High	MICSTI	Private sector, ITU, WB, EU, GoL/LIPAM
Support the development of skills and capacities within the local business community	High	MICSTI	GoL
Raise awareness and educate citizens about the availability and benefits of digital government services to promote digital trust	High	MICSTI	GoL/private sector
Establish mechanisms for monitoring and evaluating the performance of digital government services	High	MICSTI	GoL/WB

Expected outcome/KPI	Baseline	Target
Key public services are digital end-to-end, provided in compliance with privacy and security requirements.		Number or list of digital services (tbd)
Digital government services are user-centric, measured in a uniform way (with embedded feedback mechanisms)		Mechanisms for monitoring and evaluating the performance of digital government services established within 12 months of Digital Government Strategy adoption
Digital government services are increasingly used (Number of users of online government services - (per year, unique users), Number of online transactions for government services - (per year), Number of digitally enabled unique identity proofs issued - (per 100 pop)	Tbd	Tbd
Digital government infrastructure and platforms are managed in a centralized, most efficient way, all systems are interoperable (Whole-of-government approach). Building and expanding a DPI is the government's priority.		
The public sector has the knowledge, skills and capacities for digital government (employees with basic digital skills, with advanced skills, every ministry has at least one digital/data/ICT professional within leadership)	Tbd	90% of public sector employees have basic digital skills 80% of digital projects are completed on time, within budget, and meet predefined quality standards.

E-Government Development Index (EDGI)	145th	EDGI scores have improved to average world level
E-Participation Index	117th	E-participation scores have improved to average world level
GovTech Maturity Index	C	B

3.3 Digital Infrastructure

Objective: Accelerate energy and ICT infrastructure developments to ensure that at least 67% of the population has access to electricity and 100% of the population has access to safe and reliable broadband internet by 2030.

Whilst significant strides in expanding both energy and ICT infrastructure have been made, significant gaps remain, limiting Lesotho's digital transformation ambitions. Unless Lesotho becomes more energy secure, and addresses existing costly grid expansion issues, the backbone of Lesotho's digital economy will not be able to support digital opportunities. In addition, consumer participation in the digital economy will remain limited unless the costs of accessing and using safe and reliable broadband are addressed. In this regard, Lesotho faces several challenges regarding the provision of energy and digital infrastructure. A detailed list of identified challenges for the Digital Infrastructure is provided in Annex 2.

Strategic interventions:

For electricity:

1. **Review and update electricity plans and strategies to ensure alignment with the goals outlined in NSDPII and digital transformation objectives**, including increased local energy production, decreased reliance on imports, and a shift towards renewable sources. Ensure cohesive planning for new connections in both grid-connected and off-grid rural areas, prioritizing electricity access to schools, health centers, local administrations, and growth-enhancing areas such as economic development zones. The affordability of electricity requires ongoing evaluation. Establish clear targets and monitor implementation progress.
Mapping existing electricity infrastructure alongside digital infrastructure can help identify gaps and facilitate collaborative efforts to close these gaps. Integrated planning initiatives shall be considered.

2. **Strengthen international collaboration to ensure participation in regional or international projects**. This can involve participating in joint initiatives, sharing best practices, and pooling resources to address common challenges, engaging in diplomatic efforts to foster cooperation. E.g. Tanzanian President Samia Suluhu Hassan recently presented an USD 8bn energy-transition proposal covering 12 southern African countries (incl. Lesotho) that are connected via the Southern African Power Pool aiming to increase renewable energy generation, particularly solar and wind, by approximately 8.4 GW. Furthermore, leveraging existing frameworks and platforms for international cooperation, such as multilateral agreements and regional organizations, can provide valuable opportunities for engagement and collaboration on digital transformation initiatives.

3. **Increase private sector participation through enhanced national coordination and collaboration.** To support the Government of Lesotho with energy supply initiatives, improved coordination and collaboration between the public sector, including the Ministry of Energy and Meteorology, Lesotho Electricity Corporation (LEC), and the Rural Electrification Unit (REU), the

private sector and donor organisations should be ensured. Reinstating the Energy Sector Coordinating Forum may be considered. The ESC was first launched in 2015 by the Ministry of Energy and Meteorology to coordinate effective dialogue and planning between local stakeholders willing to get involved in Lesotho's electrification plans. Encouraging local vendors to participate could decrease dependency on foreign vendors for the supply and maintenance of energy infrastructure, contribute to stirring innovation and local market growth. The REU has been progressive in this regard by signing a concession for the supply of electricity to rural areas via mini-grids using local companies. Public-Private Partnership (PPP) schemes should also be considered.

4. **Increase the affordability of off-grid solar home-pack systems.** To increase the affordability of off-grid solar home-pack systems, subsidized funding from the Universal Access Fund (UAF) should be considered. Solar Home Systems (SHS) are standalone solar-cell systems that provide households with cost-effective amenity power to support basic electricity needs in remote areas where grid extension is not feasible. This solution can yield rapid gains in the short term and effectively promote the importance of universal electrification. Low-cost SHS are already available in other African countries, priced at $14 to $35 from companies like M-KOPA in Uganda and Dev Solaire in the Democratic Republic of Congo, enabling basic universal access to electricity. SHS have evolved over the past decade, with contracts now offering the sale, installation and maintenance of the systems.

   Lesotho Electricity and Water Authority (LEWA) last updated the rules of the UAF in 2011, where it states that the purpose is to disburse funds to unserved areas to facilitate the development and expansion of electricity services. LEWA should revise these rules to make mention of renewable energy as a potential vehicle to support electricity access in unserved regions. Alternatively, the Ministry of Energy and Meteorology should apply to the Sustainable Energy Fund for Africa to receive sufficient funding that can be used for the procurement, continual maintenance and repair of these systems.

For ICTs:

1. **Map the broadband infrastructure (and supporting infrastructure) to identify connectivity gaps (coverage, infrastructure gaps, usage, quality, resilience, etc.) and develop a National Broadband connectivity plan to bridge the gaps.** Special focus should be on ensuring rural broadband expansion with a differentiated set of regulations (such as different spectrum prices, licenses, fiscal regimes, subsidizing shared infrastructures, etc.), expansion of a national backbone network, and connectivity for key public service institutions (such as schools, health centers, local administrations, post offices, and police stations). The broadband plan should address not only the coverage gaps but also the usage gaps, which refer to the percentage of people living within the footprint of a mobile network but not yet using mobile internet. Understanding both broadband coverage and usage gaps within a country would support the creation of a comprehensive national broadband plan and the effective utilization of the existing UAF to achieve universal broadband access. Both the UN Broadband Commission and the SADC have identified, as one of their targets, that by 2025, all countries should have a funded National Broadband Plan or strategy, or include broadband in their Universal Access and Service (UAS) Definition.[25] This is currently a missing component in Lesotho's enabling environment.

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[25] 2025 Advocacy Targets - Broadband Commission

2. **Conduct a feasibility analysis and delineate the strategy for optimizing the value of public entities/assets (such as LECC, WIOCC, data centers) to enhance broadband and electricity accessibility and improve connectivity.** Special emphasis should be placed on rural areas, where gaps in access to electricity and broadband are most prevalent

3. **Assess and implement initiatives on Smart Villages for rural communities and Smart Street/Smart Cities for urban communities, Smart Mobility and Smart Borders.**
   Initiatives for Smart Villages and Smart Streets, Smart Cities aim to digitally transform both rural and urban communities. Smart Villages focus on deploying digital technologies to enhance the quality of life and economic opportunities in rural areas, while Smart Streets, Smart Cities optimize urban infrastructure and services, promoting efficiency and improving overall urban living standards through digital innovation. Smart Mobility initiatives may involve the deployment of smart transportation solutions such as intelligent traffic management systems, electric and autonomous vehicles to improve mobility options and reduce congestion and emissions. Smart Borders initiatives focus on leveraging digital technologies to enhance border security, streamline immigration processes, and facilitate the movement of goods and people across borders. This may include the implementation of advanced biometric systems, automated clearance procedures, and digital documentation systems to improve border management and security.

4. **Review the regulatory framework to enhance competition, facilitate private sector investments, and reduce infrastructure deployment costs through collaborative regulation.**
   Options may include addressing the cost of access to international capacity and wholesale broadband segments through enhanced regulation, introducing number portability, regulatory holidays for targeted market players, reducing/minimizing spectrum costs for trial licenses[26], fiscal and other economic and regulatory incentives.[27] Additionally, reducing administrative burden through a single window for all paperwork including licenses, rights of way, and work permits, mapping existing and planned infrastructure, strengthening infrastructure sharing (including cross-sector), and considering a 'dig once' policy. Moreover, there is a need to augment capacities in the regulation of digital services and platforms.

5. **To disrupt the continuous cycle of vandalism in Lesotho, the GoL should assign energy and ICT infrastructure national priority status.** This would ensure that national telecommunication towers, fibre lines, and renewable energy infrastructure such as solar panels are included in the mandate of protection for the country's key assets, and would allow enforcing harsher punishment for vandalism of telecommunication infrastructure. There are initial signs of this initiative being realized with ICT infrastructure being incorporated into the latest draft of the Cyber Crime and Cybersecurity Bill under the "National Critical Infrastructure" section.

6. **Strengthening the enabling environment to improve devices (phones, tablets, laptops and pc) affordability** (e.g., revising sector-specific taxes, providing subsidies to target user groups, developing public-private partnerships to improve access to financing, and stimulating demand by increasing awareness and willingness to pay). The cost of smartphones for low-income citizens should be considered for subsidization using either active funding sources such as the USF, or

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[26] MNOs find the spectrum costs for trial licenses too high, hindering them from making significant investments once the trial period end.
[27] See GSR-23 best practice guidelines Best Practice Guidelines (itu.int)

through forgone earnings initiatives such as tax exemptions. The majority of low-income individuals, especially those who are business owners are unable to access these services due to the high costs of smartphones. Whilst feature phones offer basic foundational technology from which digital enablers and some applications can be realized and are affordable to own, smartphones are preferable as they allow users to fully utilize features and have fast 3G connectivity when running a business. By subsidizing the cost of smartphones using the USF or another source of funding, citizens and MSMEs alike will be able to better participate in the digital economy. Subsidies shall be well targeted to the parts of society in greatest need, such as providing subsidies for devices like laptops and tablets to students in secondary, vocational schools, and tertiary institutions or local entrepreneurs, and farmers. Additionally, conducting a thorough assessment of the impact of customs duties and taxation on smart devices and ICT hardware equipment would enable informed decision-making regarding potential adjustments.

7. **Optimise the use of Local Data Centers and create the enabling environment for data centers and cloud infrastructure.** Local data centers will become increasingly valuable as the global digital economy grows as the shorter the distance between a data center and the entities using it, the greater the performance quality of the service. Data centers provide a central location for storing, processing and disseminating data and applications. Lesotho has the opportunity to make over 30% of its world class Tier III data center carrier-neutral, making its services available to a wider market and securing an additional revenue source for the economy. A Tier III data center has several pathways for power and cooling, and additional redundancy systems to update and maintain it without requiring the system to be offline. This allows the center to have 99.98% uptime for no more than 1.6 hours of downtime per year. Lesotho's high altitude makes the country well-positioned to host multiple global data centers as the climate ensures efficient cooling processes without demanding high energy outputs. The Government of Lesotho should avail excess capacity of Lesotho's current and future data center(s) to private companies and allow them to collocate. This service can be built up in the long-run to export data center services to neighboring countries. To this end, it is necessary to develop and implement appropriate regulations and policies which guarantee data privacy and security. This should be coupled with an appropriate disaster recovery management plan. Tax incentives through the establishment of special economic zones could also be considered. An essential element for expanding/ building new world-class data centers lies in ensuring a reliable, preferably renewable, energy supply. Sustainability requirements for new data centres shall also be taken into account.[28]

The table below provides a summary of the key Digital Infrastructure initiatives to be undertaken as part of this Strategy, with an indication of the priority, responsible stakeholders and potential funding sources.

	Priority	Leading stakeholder	Potential funding sources
Review electricity plans and strategies to ensure alignment with the goals outlined in NSDPII and digital transformation objective	Very high	Ministry of Energy	GoL, AfDB
Enhance international collaboration to ensure participation in regional or	High	Ministry of Energy	

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[28] Green data centers: towards a sustainable digital transformation - A practitioner's guide (itu.int)

international projects.			
Increase private sector participation through enhanced coordination and collaboration.	High	Ministry of Energy	
Increase the affordability of off-grid solar home-pack systems.	High	Ministry of Energy LEWA	GoL, Private sector, WB
Map the broadband infrastructure to identify connectivity gaps and develop a National Broadband development plan to bridge the gaps.	Very high	LCA	LCA, ITU
Conduct a feasibility analysis and delineate the strategy for optimizing the value of public entities/assets (such as LECC, WIOCC, data centers) to enhance broadband and electricity accessibility and improve connectivity (particularly for rural areas).	Vert high	MICSTI in consultation with relevant stakeholders	GoL, WB
Assess and implement initiatives on Smart Villages for rural communities and Smart Street/Smart Cities for urban communities, Smart Mobility and Smart Borders.	Medium	MICSTI with the support of relevant ministries and stakeholders	GoL, WB, AfDB, private sector
Review the regulatory framework to foster competition, facilitate private sector investments, and reduce infrastructure deployment costs through collaborative regulation.	Very high	LCA	LCA, ITU
To disrupt the continuous cycle of vandalism in Lesotho, the GoL should assign energy and ICT infrastructure national priority status.	Very high	MICSTI	
Strengthening the enabling environment to improve devices (phones and pc) and hardware equipment affordability	Very high	MICSTI and LCA, Ministry of Finance, RSL	GoL, UAF
Optimize the use of Local Data Centers and create the enabling environment for data centers and cloud infrastructure.	High	MICSTI	MICSTI, WB

Expected outcome/KPI	Baseline	Target
Enhanced access to reliable electricity, per population	54%* (2023)	At least 67%* by 2030; 100% by 2035
All key public service institutions (health centres, schools, post offices, community councils, offices of	Tbd	100% by 2030

village and local chiefs, etc.) have access to reliable electricity and broadband services		
Installed renewable capacity for energy generation, MW	Tbd	Tbd
Universal access to affordable and reliable broadband connectivity, per population[29]	Tbd	100%
All key public service institutions are connected to broadband, with min 20 Mbps download speed[30]	Tbd	100%
Internet usage per population	58%	75%
Internet usage per registered businesses	Tbd	Tbd
Enabling policy and regulation framework, ITU regulatory tracker and G5 benchmark[31]	G3 and limited	G4 and advanced by 2030
Number of Tier 3 and Tier 4 data centers / floor space	Tbd	Tbd

The numbers were provided by the representative of the Ministry of Energy during the consultation workshop on June 11, 2024.

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[29] Clear definitions (of *broadband* and *affordable*) should be agreed upon. The ITU defines broadband as affordable when an entry-level broadband subscription costs less than 2% of GNI per capita (entry-level broadband refers to a 2GB data-only mobile broadband basket)

[30] UniversalMeaningfulDigitalConnectivityTargets2030.pdf (itu.int)

[31] ITU | ICT Regulatory Tracker (gen5.digital)

3.4 Digital Population

Objective: A digitally literate population and a technically competent workforce to ensure Lesotho transitions into a digital economy.

Digital transformation in Lesotho is being hindered by a lack of digitally-oriented skills. Digital literacy and technical competence are fundamental for unlocking the potential of digital transformation. Lesotho recognizes that digital skills are a critical component of the digital economy and emphasizes the importance of digital skills development to facilitate economic development in its NSDPII. However, for digital transformation to make a positive impact in changing lives and enabling efficient processes, Lesotho needs to overcome several challenges. A detailed list of identified challenges for the Digital Population is provided in Annex 2.

Strategic interventions

1. **Develop a National digital skills framework (for both a digitally literate society and a digitally competent workforce) and talent retention plan.** While there are several national policies directly or indirectly recognizing the need for digital skills development, there is a lack of a clear national framework delineating what digital skills encompass or how they should be developed. A comprehensive plan/ strategy developed at the national level to address the growing need for digital skills and talents within a country should outline initiatives, policies, and actions aimed at fostering the development, acquisition, and utilization of digital skills and talents across various sectors of the economy. As a part of this, in-country digital skills needs assessment can be leveraged in order to scope the current ecosystem to identify shortages and gaps in digital skills across sectors, and identify areas with the most potential for employment creation in the digital economy (largely youth focused). Initiatives aimed at retaining talent to counteract brain drain should also be incorporated.

2. **Develop a digital-ready curriculum for primary and secondary education, aiming to equip all learners with essential digital skills.** This imperative underscores the necessity for digital technology integration across all subjects (rather than teaching as a separate subject). The revised curriculum should emphasize fostering critical thinking, problem-solving, creativity, and collaboration through the utilization of digital tools and resources. It may incorporate subjects like coding, robotics, and internet safety to comprehensively prepare students for the digital world. Additionally, curriculum could be expanded to include topics such as financial literacy, including making payments electronically, digital entrepreneurship.

3. **Develop the teachers' education programme**. Equipping teachers with effective strategies to develop digital skills is essential for adequately preparing learners for the demands of the digital age. This necessitates the development of new proficiencies, capacity-building initiatives, and competence development programs for educators. By empowering teachers with the necessary skills and resources, they can effectively integrate digital technology into their teaching practices and facilitate meaningful learning experiences.

4. **Prepare and implement Child Online Protection framework.** ITU Guidelines on Child Online Protection[32] propose recommendations on how to develop a national strategy on child online protection, provided with tools to identify key stakeholders to engage with, coordination efforts and alignment with existing national frameworks and strategy plans. The necessary activities for operationalizing and integrating the guidelines into national legislation will be defined in consultation with relevant ministries and stakeholders.

5. **Develop and implement a funding strategy for digital infrastructure and services in the public education sector**. Connecting all schools to quality broadband and ensuring electricity access is essential to enable schools to leverage digital resources, facilitate online learning, and foster collaboration among educators and students, ultimately enhancing the quality and effectiveness of education delivery. A National Research and Education Network would further enhance these efforts (the body is yet to be established). The affordability of services and devices for the institutions and students should also be addressed. This can be achieved through targeted subsidies, zero-rated services, and other relevant measures to ensure equitable access to essential resources for educational purposes. Expanding the USF program to provide computers, tablets and IT tools to an increasing number of primary and secondary schools should be considered.

6. **Expand partnerships between industry and education**, including opportunities to develop ICT careers and funding digital skills development within the education system including vocational training. The private sector and all levels of education should partner to create a more demand-driven curriculum, enhance digital skills and foster Lesotho's competitiveness in response to rapid technological change. These partnerships could entail offering scholarships, trainee programs, and and vocational training opportunities for Basotho interested in acquiring specialized skills. Additionally, public-private partnerships can assist educational institutions in upgrading their physical infrastructure, accessing new technologies, and implementing innovative teaching methods, ultimately benefiting both students and the broader economy.

7. **Increase and strengthen STI system to enable digital innovation and emerging technologies** by increasing funding (aiming to allocate at least 1 percent of GDP to R&D) and adoping and implementing the draft Research and Innovation Policy (yet to be adopted by the Cabinet).

The table below provides a summary of the key Digital Population initiatives to be undertaken as part of this strategy, with an indication of the priority, responsible stakeholders and potential funding sources.

	Priority	Leading stakeholder	Potential funding sources
Develop a National digital skills framework (for both a digitally literate society and a digitally competent workforce) and talent retention plan	Very high	Ministry of Education	GoL, AfDB, WB
Develop a digital-ready curriculum for primary and secondary education,	High	Ministry of Education	UNICEF

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[32] Policy-makers | ITU-COP Guidelines (itu-cop-guidelines.com)

aiming to equip all learners with essential digital skills.			
Develop the teacher digital education programme.	High	Ministry of Education	UNICEF, UNESCO
Prepare and implement Child Online Protection framework.	Very high	Ministry of Education	ITU
Develop and implement a funding strategy for digital infrastructure (incl., electricity) and services in the public education sector	Very high	Ministry of Education/ MICSTI/ Ministry of Energy	USF, ITU, UNICEF
Expand partnerships between industry and education	High	Ministry of Education	GoL, private sector
Increase and strengthen STI system to enable digital innovation and emerging technologies	Medium	MICSTI	GoL

Expected outcome/KPI	Baseline	Target
Increased percentage of the population with basic digital skills	Tbd	75% of the population with basic
Increased percentage of youth with basic digital skills	Tbd	80% of youth have basic digital skills
Increased share of youth with advanced digital skills	Tbd	50% of youth have advanced digital skills
Increased number of graduates in ICT and computer-related science (STEAM graduates)	Tbd	Tbd
All schools and education institutions are electrified and connected to high-quality, secure, and reliable broadband	Tbd	100% by 2030
Digital devices are available for students and teachers	Tbd	75% of students and 100% of teachers by 2030

3.5 Digital Business

Objective: Accelerate business digitalization, foster entrepreneurship and innovation, and enable increased Basotho participation in e-commerce and the digital economy

Overall, digital business in Lesotho's private sector is in a nascent state, with limited use of digital technologies, a limited selection of platforms and applications, and weak transport and logistic infrastructure. Whilst ~46% of Basotho have a financial account with a commercial bank and ~28% have a mobile money account, only ~10% of citizens make online purchases and/or pay their bills electronically.[33] This is in part attributable to the lack of a legislative framework and national addressing system to support the growth of e-commerce, limited availability of online public services to support the development of e-commerce platforms, poor integration with digital payments and limited adoption by consumers owing to safety and security concerns, and lack of skills. A detailed list of identified challenges for the Digital Business is provided in Annex 2.

Strategic interventions

1. **Assess, review and adjust sector-specific regulatory frameworks to facilitate e-commerce and Digital Financial Services (DFS).** Regulations must be regularly reviewed and updated to accommodate the evolving digital landscape. Eg, Agent banking regulation could be revised to permit both banks and MNOs to establish a wide network of interoperable agents. This would facilitate the creation of synergies between banks and mobile money operators to address challenges faced by these service providers in low-density populated mountainous regions. Furthermore, there should be a focus on fostering an environment conducive to lending, supported by pro-growth and sustainable regulatory and fiscal policies. Improving the credit infrastructure, enhancing partial credit guarantee schemes, and fostering the development of capital markets would help address the challenges of limited access to finance faced by MSMEs and other businesses. Postal and courier services regulations should also be reviewed to ensure they meet digital business needs. The LCA is currently in the process of reviewing the postal regulatory framework to modernize the postal system in Lesotho.[34]

2. **Implement standardized APIs and data-sharing protocols for banks and financial institutions to enable seamless integration with e-commerce platforms, e.g. open banking standards**. This should entail technical requirements, security standards, and compliance measures to ensure the safe and effective sharing of data. Foster collaboration between regulatory authorities, financial institutions, e-commerce platforms, and other stakeholders to develop common standards and best practices for integration.

3. **Determine and implement a national addressing system that is relevant to the country**. The lack of a national addressing system represents a significant barrier to digital business and e-

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[33] Digital 2023: Lesotho — DataReportal – Global Digital Insights

[34] PUBLIC CONSULTATION : PROPOSED PROMULGATION OF THE LESOTHO COMMUNICATIONS AUTHORITY (POSTAL AND COURIER SERVICES) RULES, 2024 – LCA

commerce. E-commerce has changed the way people purchase goods and services globally, where homes, offices and drop-off points become the delivery points. Only a small proportion of the population in Lesotho has a home address. Some operators have started to use alternative options, such as GPS to track the customer's location. However, a comprehensive solution is needed. Weak physical addressing is a problem for local start-ups and e-commerce vendors, in particular delivery businesses. In a short term, guidelines for alternative means of locating senders and recipients could be developed. There are already several methods of providing such location information, including GPS, when mobile phone location data can be sent to a delivery operative to identify the location for pickup or delivery, or proprietary geocode systems (such as the what3words app) can be used.

4. **Develop a strategy for how to leverage Lesotho's Postal Services (LPS) to drive digital transformation.** Strengthen the operational capability of LPS to support e-commerce, digital financial services and ensure operational efficiency of the postal network. Postal services play a crucial role in achieving digital inclusion globally. Leveraging their historic strengths, such as a trusted brand and extensive networks reaching remote areas, posts are well-positioned to provide e-government, e-commerce, and e-finance services and to offer co-location opportunities. By transitioning postal services from physical delivery to digital service delivery, developing new digital products, and utilizing infrastructure for digital government services or establishing public Internet access points in post offices, significant strides can be made in digitalization efforts.

5. **Enhance domestic transportation and logistics infrastructure to enable efficient and timely delivery of e-commerce packages.** Facilitate the development of logistics hubs by ensuring that sites are available in strategic locations (e.g. next to trunk routes) and that the existing hubs and warehouses can be expanded and adapted to the needs of e-commerce. Consider the use of drones and other technologies for last-mile delivery of light packages in hard-to-reach areas.

6. **Support local business digitalization:** establish a comprehensive Digitalization Support Program (targeting MSMEs) offering subsidized access to digital devices and/or infrastructure, tax incentives for investing in digital infrastructure and skills, targeted skills training, and consultancy services to facilitate seamless integration of digital technologies into local business operations and other. Additionally, dedicated support schemes for e-agriculture, e-tourism, and e-manufacturing could be established to provide tailored assistance, including financial incentives, training programs, and technological resources, to businesses operating in these sectors. These schemes would aim to promote the adoption of digital technologies and innovation within specific industries, driving economic growth and competitiveness in key sectors of the economy.

7. **Support local digital entrepreneurs.** To ensure that digital entrepreneurship is well-represented and thriving within the entrepreneurship ecosystem, it's crucial to monitor and follow up on the results of the Innovation Hub closely. This involves raising awareness, motivating entrepreneurs, and encouraging participation from the private sector. Additionally, incentivizing early-stage investments from private investors is essential. The Government of Lesotho could offer incentives to private investors to support local startups outside the hub, thereby fostering a more diverse and vibrant entrepreneurial ecosystem. Furthermore, efforts should be made to enhance awareness and strengthen linkages to regional and pan-African digital entrepreneurship support programs, facilitating collaboration and knowledge sharing on a broader scale. Implementing the

draft Research and Innovation Policy, 2023 which, among other things, aims to establish a national Research and Innovation Fund would further facilitate local entrepreneurship and innovation.

The table below provides a summary of the key Digital Business initiatives to be undertaken as part of this Strategy, with an indication of the priority, responsible stakeholders and potential funding sources.

	Priority	Leading stakeholder	Potential funding sources
Assess, review and adjust sector-specific regulatory framework to facilitate e-commerce and Digital Financial Services (DFS)	High	CBL, Ministry of Finance	GoL, AfDB
Implement standardized APIs and data-sharing protocols for banks and financial institutions to enable seamless integration with e-commerce	High	CBL in collaboration with industry stakeholders	WB
Determine and implement a national addressing system that is relevant to the country	Very high	Land Administration Authority with the support of Lesotho Post, LCA	WB, UPU
Develop a strategy for how to leverage Lesotho's Postal Services to drive digital transformation	High	MICSTI, Lesotho Post, LCA	WB
Enhance domestic transportation and logistics infrastructure	Medium	Ministry of Transport, Land Administration Authority, MICSTI	WB, private sector
Support local business digitalization	Very high	Ministry of Trade	WB (Current CAFI project)
Support local digital entrepreneurs and innovation	High	Ministry of Trade	WB, Private sector

Expected outcome/KPI	Baseline	Target
Digital buyers, internet users who have made at least one purchase via any digital channel within the past year, including online, mobile and tablet purchases	Approx. 10% of population	20% of population
A national addressing system is implemented		Decisions on a national addressing system to be made within 18 months of Strategy adoption
Share of MSMEs with a basic level of digitalization	Tbd	Tbd
Number/share of enterprises using advanced digital	Tbd	Tbd

technologies		
Number of businesses supported by a local entrepreneurs support program		Tbd

4. Monitoring and Evaluation

Monitoring and evaluation will be key to the success of the Strategy.

1. Comprehensive data and implementation progress monitoring
The Chief Digital Office will be responsible for implementing a robust data monitoring system (Digital Transformation Tracker) to track the progress of digital transformation initiatives (as described in the Enabling Environment section). The Office will be accountable for collecting, visualizing and analyzing data while implementing ministries, agencies and non-governmental bodies will be responsible for reporting progress to the Office on a regular basis. Aggregated data will be provided to the CDO, CAO and Advisory Council on a quarterly basis for oversight, guidance and corrective actions.

2. Strategic evaluation and impact assessment
The Chief Digital Office in collaboration this the National Bureau of Statistics, LCA, LEWA, Central Bank of Lesotho, and other stakeholders, will lead the development of the statistical framework for the Digital Transformation Strategy for impact evaluation. This framework will encompass a range of indicators to be monitored, specify data collection methods and frequency, and outline the responsible entities for ensuring data accuracy and collection.

The Chief Digital Office will be responsible for data consolidation and regular reporting to the CDO, CAO and Advisory Council, as well as other stakeholders and the general public. Annual reports on the status and impact of Strategy implementation will be prepared and submitted to the CDO,CAO and Advisory Council, with annual Digital Transformation Progress Workshops convened to engage the public and stakeholders.

3. Strategy review
Based on recommendations from the CDO, CAO Advisory Council, or outcomes of the workshops, revisions to the Strategy may be initiated to ensure its continued relevance and effectiveness.

5. Implementation plan

Following the adoption of the Strategy, the Ministry of Information, Communications, Science, Technology, and Innovation will develop a detailed implementation plan with clear milestones, responsible entities, and timelines for successful implementation. Developing a statistical framework and conducting relevant surveys to identify baseline and target indicators shall be among the first tasks in the implementation plan. The availability of reliable statistical information in Lesotho is one of the major obstacles to data and evidence-driven decision-making.

Annex 1. SWOT analysis

Strengths	Weaknesses
• Technology and Innovation prioritized in the NSDP II (political support, commitment). • Population coverage of mobile broadband networks • High adult literacy rate	• Inadequate legislative framework • Low Internet usage • Affordability of connectivity and devices due to income gaps • Rural broadband access gaps (last mile in rural areas) • Electricity access gaps (rural in particular) • Lack of digital skills (basic and advanced) • Limited investments in R&D and innovation • Challenges in eGov. implementation including siloed approaches, lack of interoperability, vendor lock-in and insufficient local capacities.
Opportunities	**Threats**
• Government's role and support • Renewable resources for energy generation • Climate conditions for data centers • The private sector interested in closer cooperation and collaboration • Young population and entrepreneurship spirit • Regional and international coordination and collaboration (SADC, AU) • Big Data, AI, and IoT have great potential to modernize agriculture, tourism, manufacturing, as well as education and healthcare (the priority sectors)	• Lack of coordination and collaboration within the public sector and with other stakeholders • Lengthy, unpredictable process of law adoption • Cyber-threats, privacy threats • Energy dependence on imports • Prevailing lack of trust in digital technologies and services • Sustainability challenges

Annex 2. Main challenges to be addressed by the Strategy

Based on the assessment of the digital landscape and situational analysis in Lesotho, the following challenges have been identified as challenges to the digital transformation process and for which strategic interventions are put forward under each of the four pillars of the strategy.

2.1 Enabling Environment: Leadership, institutional governance, policies and legislation

- **Insufficient mechanisms for collaboration and coordination:** Thus far, Lesotho lacked a dedicated structure to convene the key stakeholders responsible for digital transformation across ministries and between government, private sector and civil society. As a consequence, digital transformation projects have been carried out in siloes. On May 2, 2023, the Cabinet of Ministers approved the designation of the Minister of Information, Communication, Science, Technology, and Innovation (MICSTI) as the Government of Lesotho Chief Digital Officer, as outlined in Memorandum C3(2023/11)69. Additionally, the Cabinet mandated the development and implementation of a comprehensive Lesotho Digital Transformation Strategy under this leadership. The challenge remains to ensure proper coordination and collaboration, not only for strategy formulation but also for its implementation. Both governmental and non-governmental stakeholders express the need and willingness for deeper cooperation and collaboration to drive the digital transformation of the country. This highlights the need to establish a strategic governance framework that ensures intra-governmental and inter-sectoral coordination and collaboration.

- **Donors and development stakeholders are supporting different parts of government:** Lesotho is receiving significant support from the development community, however this support is not being well coordinated with regard to digital transformation projects. Donors and development stakeholders often support investment in different technology systems, with little collaboration to ensure interoperability and avoid duplication. Thus efforts are not focused where these will have the greatest impact.

- **Lesotho has a history of political instability, fragile coalition governments, and high turnover of senior leadership in public administration,** impacting implementation progress and business continuity.[35] To tackle this issue, it's crucial to establish consensus on strategy goals, priorities, and implementation mechanisms, and effectively communicate the benefits. Moreover, institutional arrangements regarding digital technology should shield against political instability and siloed decision-making. Citizen-centric, digital, and inclusive services are inherently robust, fostering greater transparency and accountability despite leadership changes.

- **The legal and regulatory landscape has not been sufficiently updated to consider emerging issues in the digital economy:** A number of existing laws and regulations need to be adapted or updated, and others adopted to ensure participants in Lesotho's digital economy are protected from potential risks, without stifling innovation. Among the critical ones are legislation concerning cybersecurity, electronic transactions, data protection, consumer protection and digital government. The Government of Lesotho drafted the **Computer Crime and Security Bill**, 2023, but efforts to finalize it have not yet led to the legislation being passed. Having an e-transactions-ready legal environment is crucial to the development of the digital economy, but Lesotho lacks

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[35] World Bank. Lesotho - Country Partnership Framework for the Period FY24-28 (Report No. 183872). 2023. World Bank Group.

a clear legal and regulatory framework to enable online transactions. The **Electronic Transactions and Electronic Commerce Bill** has still not been adopted by the national Parliament. The **Data Protection Act** (DPA) from 2011[36] is somewhat out of date, given the rapid growth in data flows in the global digital economy, and therefore presents significant weaknesses. The Data Protection Commission has yet to be established. Consumer protection is presently regulated through fragmented pieces of legislation. The comprehensive **Consumer Protection Bill** has not yet been passed into law.[37] Moreover, the adoption of **Digital Government legislation**, which governs the utilization of digital technologies and data in government operations, service delivery, and citizen interactions, will be necessary. This legislation should also encompass institutional arrangements concerning the adoption and use of digital technologies within the public sector. Passing these critical legislations should be fast-tracked by making sure it is on the agenda of relevant bodies. Other areas for improvement include intellectual property (IP), and access to information[38], digital services regulation, digital ID, e-waste, national digital addressing system among others.

- **Lack of digital trust.** Trust is key to building a marketplace in the digital economy and in driving digital transformation. Many stakeholders have identified a lack of trust and confidence as prevailing issues. While addressing the lack of digital trust is a complex issue, ensuring the continuous availability of systems is crucial for building trust and confidence among users and stakeholders. Additionally, prioritizing the security of the digital environment becomes imperative.

  Lesotho's cybersecurity preparedness is relatively low across all dimensions. ITU's Global Cybersecurity Index 2020 ranked Lesotho as 164th globally and 38th regionally. The country is experiencing challenges such as cybersecurity skills shortage, unreported/unresolved cybercrimes and an increase in cyber-attacks.[39] One notable incident was the attack on the Central Bank of Lesotho in December 2023, which resulted in system outages and disruptions to interbank transfers for 8 days.[40] The strategies, institutions, and legal instruments to regulate and improve cybersecurity and build cyber resilience in Lesotho are lacking, and the private sector is concerned about the country risk exposure level.

  Given the timeline for adopting new legislation and the urgent need to address cybersecurity issues, developing and implementing a National Cybersecurity Strategy should be carried out concurrently with the passage of the Bill. Moving forward on the journey of digital transformation is only possible if sufficient trust has been guaranteed. This area includes the provision of cybersecurity in the public sector and more broadly in the economy. The main goal is to keep Lesotho's ICT and digital infrastructures reliable and secure. Current initiatives to secure cyberspace at the sectorial level (by the LCA, Central Bank of Lesotho) shall be coordinated and expanded to other relevant sectors (e.g., energy, transport, healthcare). Developing and implementing a National Cybersecurity Strategy can lay the foundation for coordinated national cybersecurity actions.[41]

[36] KM_654e-20191112091212 (centralbank.org.ls)
[37] National Trade Policy Framework 2021-2025 (1).pdf (lesothotradeportal.org.ls)
[38] There is a draft from year 2000: https://osall.org.za/docs/2011/03/Lesotho-Access-and-Receipt-of-Information-Bill-2000.pdf
[39] The impact of COVID-19 on cybersecurity awareness-raising and mindset in the southern African development community (SADC) - Bagui - 2023 - THE ELECTRONIC JOURNAL OF INFORMATION SYSTEMS IN DEVELOPING COUNTRIES - Wiley Online Library
[40] Central Bank of Lesotho restores interbank transfers 8 days after a cyberattack (techpoint.africa)
[41] Guiding principles for ICT regulators to enhance cyber resilience | Digital Regulation Platform

2.2 Digital Government

- **One of the greatest impediments to digital government is the lack of foundational elements to support a whole-of-government approach to digital transformation.** There is an absence of an institutional structure, national policies, standards frameworks, coordination and information-sharing among Ministries, departments, and agencies.

- **There are siloed operations between and within Ministries and governmental agencies that hamper the expansion of the Digital Government.** A lack of integration and coordination amongst ministries and the absence of a single long-term vision for the digitization processes has resulted in different ministries each pursuing their own development plan, focused on narrow ministerial objectives. This lack of integration leads to siloed data management, limits communication, and prevents the effective pooling of resources.

- **Insufficient capacity, scattered across line ministries and governmental agencies, hampers the strategic planning, management, development, and implementation of large-scale digital solutions.** These capacity constraints have led to limited knowledge and ability to implement integral solutions and standards, as well as a shortage of individuals trained in critical skills such as software management or data analytics.[42]

- **Overreliance on external capacities, results in vendor lock-in situations,** where maintenance of systems becomes costly or is discontinued. An example of this is the National ID system, which has been managed, and driven by a company located outside the country, and with almost no local capacity being built to help sustain the initiative.

- **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 ministries, departments, and agencies (MDAs) and developed mostly without utilizing standardization protocols or considering linkages with existing internal or external platforms.

- **Government agencies have limited online presence.** Even if websites are available, they are not updated regularly and often provide limited information.

- **Data-sharing principles between stakeholders and ministries are not clear,** the expectations around data sharing are not explicit, and standards for data sharing are not explicitly documented. A combination of physical and cloud storage is used across government, but informed protocols on data storage are not in place.

- **The limited access to government data** is underlined in the Open Data Watch's Open Data Inventory that puts Lesotho at rank 144 of 195 countries evaluated in terms of data coverage and openness.[43]

- **The use of digital government services is limited, as there is a lack of skills, trust and incentives to use digital government services.** Basic guidelines on how to access government services, and the steps required to successfully complete a process are not clear, though the new eGovernment portal goes some way to address this. The communication to the general public about digital government services and their benefits could be improved. Additionally, government-citizen communication tends to be predominantly one-directional – from the government to the citizens. There is a need to foster a culture of two-way engagement between the government and citizens across various channels.

- **The current over-reliance on cash** for government-to-person (G2P) and person-to-government

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[42] Genesis Analytics. 2021. Stakeholder engagements and consultations.
[43] https://odin.opendatawatch.com/Report/countryProfileUpdated/LSO?year=2022

(P2G) transfers limits the usage of digital financial services Lesotho remains a cash economy and significant efforts are needed to kickstart Lesotho's digital financial transformation.

- **There is a predominant reliance on paper-based processes, documentation, and communication within the public sector**. For example, digital payments are rarely accepted, but even if they are, a physical receipt is issued, which then has to be used to obtain services such as Company Registration, Company ID, or to renew a trading license.

- **Feedback mechanisms are currently lacking in digital services**, especially in Government-to-Business (G2B) or Government-to-Citizen (G2C) services. To optimize user experience, digital services should offer options in the local language and explore diverse user-centric methods, including but not limited to voice recognition technology, virtual assistance, multiple channels for accessing and interacting with digital services, and others. Digital services should also be designed in accordance with web accessibility standards and mobile app accessibility standards.

- **Data-driven and evidence-driven decision-making poses challenges due to deficiencies in data-sharing practices and mechanisms and a lack of analytical tools and expertise.** These challenges encompass poor data-sharing practices among ministries and governmental agencies, inadequate data quality, lack of data standards, interoperability issues, and insufficient data inventories. Utilizing data-driven decision-making offers an untapped potential to enhance policy formulation and deliver more effective public services. It also extends to policy implementation and monitoring, as the government could track key performance indicators, assess the impact of interventions, and adjust strategies accordingly.

- **The lack of integrated reporting, which effectively captures and communicates the government's performance, represents another significant limitation**. Integrated reporting poses a challenge as it requires collecting and consolidating data from various departments and agencies, and involves issues such as data silos, disparate data systems, inconsistent data formats, and a lack of standardized reporting frameworks.

2.3 Digital Infrastructure

Energy-specific challenges

- **Lesotho encounters local energy supply challenges, with untapped potential to expand hydropower and other renewable energy generation.** Electricity generation in Lesotho primarily relies on hydropower, supplemented by solar energy to a lesser extent. However, the country still imports more than 50% of its electricity supply during peak demand periods from Mozambique and South Africa, growing in recent years. In 2021, Lesotho imported USD 34.8M in electricity.[44] According to the LEWA, Lesotho's installed capacity for electricity generation stood at 74.7 MW comprising 'Muela (72 MW), Mantšonyane (2 MW), Semonkong (0.4 MW) and Moshoeshoe 1 International Airport (0.28 MW).[45] The highest demand in the 2022/23 period was 222.12 MW. This means that the maximum power that LEC had to import was around 147.42 MW, or 66.5% of the peak demand, to cover the deficit.[46]

- **Initiatives to increase local energy generation are underway; however, the full potential remains untapped**. The Lesotho Highlands Water Project (LHWP) Phase II, which includes the construction of a hydropower station, is currently in progress[47], with a project closeout forecasted

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[44] https://oec.world/en/profile/bilateral-product/electricity/reporter/lso
[45] LEWA-Annual-Report-2022-23.pdf
[46] LEWA-Annual-Report-2022-23.pdf
[47] https://www.hydropower-dams.com/news/lhwp-phase-ii-hydropower-component-underway/

for the end of 2028.[48] Additionally, the Government of Lesotho is developing a 30 MW solar PV plant at Ha Ramarothole in Mafeteng, which will boost the domestic capacity to 104.7 MW, contributing to energy security and reducing reliance on imports. These developments demonstrate progressive efforts in Lesotho to strengthen the national electricity grid and reduce reliance on South Africa and Mozambique. However, the country holds significant untapped potential for renewable energy, including 450 MW of hydropower and additional capacity from wind power, which could further bolster its energy independence. [49]

- Although the Government aims to increase the use of renewable energy by 500 megawatts by 2030[50], a **renewable energy framework is lacking, and the utilization of renewable energy, aside from hydropower, remains low**. Renewable energy solutions, such as off-grid solar, present an opportunity for affordable and rapid deployment alternatives. However, the major barriers to the deployment of renewables in Lesotho have been the of financial resources, economically viable technologies, and public awareness. Solar energy currently stands as the priority option for the mountainous areas of the country, which are difficult to reach through the grid. However, their maintenance presents specific challenges (e.g., remote areas, shortage of local skills and capacities).

- **Lack of coordination and collaboration.** Solar modules are being used to provide power for remote health centers and schools; however, procurements are being made separately by leading institutions, resulting in higher prices, a variety of vendors, and other inefficiencies.

- **Lesotho has made significant advances in expanding electricity access over the past decade, yet only half of the population currently has access to electricity, highlighting a notable urban-rural divide.** As of 2021, the electricity access rate stood at 50.38%, marking a 2.88% increase from 2020. The urban population has a significantly higher access rate of 80.6% compared to the rural population, which stands at 37.7%.[51] Additionally, there is the challenge of the affordability of electricity usage among the general population, especially given that approximately 53% of the populace lives below the poverty line, with a considerable portion of those affected residing in rural areas.

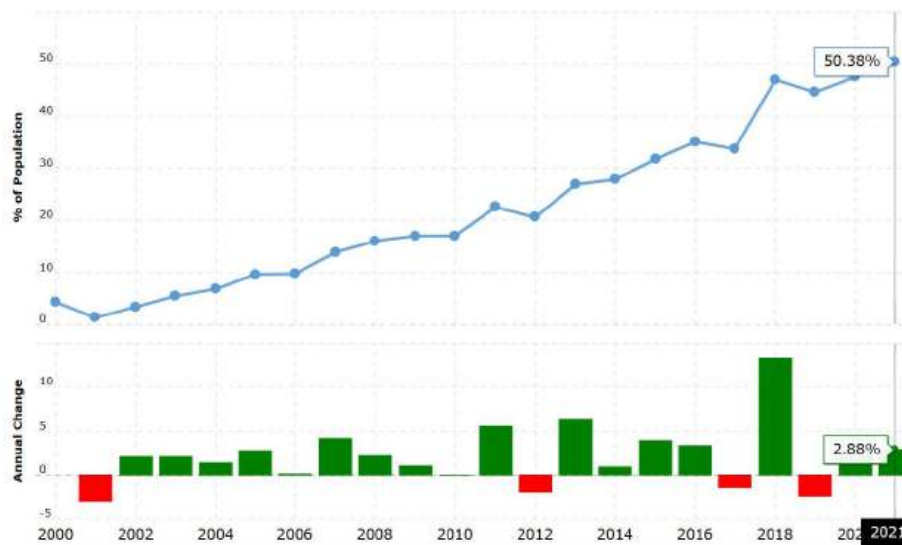[48] Programme for Infrastructure Development. 2021. *Lesotho Highlands Water Project (LHWP) Phase II.* [https://www.au-pida.org/view-project/736/]
[49] NSDPII
[50] https://digitallibrary.un.org/record/4016619?ln=en
[51] WDI - Home (worldbank.org)

Lesotho Electricity Access - the percentage of the population with access to electricity

- According to LEWA, the Lesotho Electricity Company (LEC) increased its total connections to 301,835 during the Financial Year 2022/23, marking a growth of approximately 3% in connections. Additionally, the Authority granted eleven (11) license exemptions to Sotho Minigrid SPV Portfolio (Pty) Ltd to operate mini-grids for the generation, distribution, and supply of electricity. The majority of these mini-grids operated in remote areas outside LEC's service territory. LEWA estimates that the potential number of households that can be connected through these mini-grids could be nearly 17 thousand households.

- **Access to electricity is concentrated in urban areas and new connections have not been based on targeted industrial clustering or sector clustering that would have stimulated further industrialization**.[52] Electricity is viewed as a driver of broader economic development in Lesotho, with the potential to support the industrialization of the economy, and foster diversification in manufacturing and agriculture sectors. As such, the Lesotho National Development Corporation (LNDC) identifies the provision of electricity to key economic development zones as critical to facilitating inclusive and sustainable private sector-led economic growth in Lesotho.

- **Grid extension is challenging and costly in low-density and mountainous regions**. Lesotho's rural areas generally have mountainous terrain, making it difficult and more costly to set up on-grid electricity infrastructure. The cost is underpinned by the fact that an estimated ~30% additional cabling and infrastructure is required. Further, the actual implementation will take a couple of years to execute, leaving citizens without electricity while striving to transition into the digital economy. Integrated infrastructure planning practices, which could reduce infrastructure deployment costs and capitalize on potential synergies, are currently lacking.

Togo's CIZO off-grid electricity subsidy

The Government of Togo has designed an electrification strategy using geospatial modelling to assess the most efficient means of electrifying selected rural households. The strategy covers the deployment of 555,000 Solar Home System (SHS) (CIZO programme), 300 mini-grids (55,000 connections), and 400,000 on-grid connections between 2018 and 2030 with

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[52] Lesotho-Renewable-Energy-and-Energy-Access-Project.pdf (worldbank.org)

the ultimate aim of reaching universal electrification by 2030.

As part of this strategy, the SHS subsidy program was introduced. The programme is implemented in collaboration with a range of authorized pay-as-you-go solar companies. These private sector partners are responsible for operations along the value chain (e.g. kit purchase, distribution, payment collection, maintenance), while the public sector provides subsidies for households, consumer awareness campaigns, and VAT exemptions. Households with SHSs from authorized providers are able to access a monthly subsidy of 2,000 FCFA (approximately 4$) for the SHS payment plan over a three-year period. Every rural customer is eligible for the subsidy.

Source: Togo Electrification Strategy, 2018 and GSMA

ICT infrastructure-specific challenges

- **Mobile broadband provides the primary means for people to get online in Lesotho.** Considering Lesotho's difficult and mountainous terrain, progress on coverage has been rapid, although faster 4G services are mainly available in urban areas. According to the LCA, at the end of 2021/22, 95.8% of the population was covered by 3G while 85.1% was covered by 4G.[53] To achieve high coverage rates, more Base Transceiver Stations (BTSs) were constructed to expand the network coverage. In the period of 2020/21 to 2021/22, 33 BTSs were constructed, representing an increase of 5.7%. Ten of these BTSs were constructed using the Universal Service Fund to expand mobile networks in unserved and underserved areas.

- **According to LCA data, mobile broadband penetration in Lesotho was at 69.1 percent in 2023. Whereas fixed broadband penetration stood at around 0.44 percent (2023),** being one of the lowest in Southern Africa. Fixed broadband constitutes a very small segment of the overall broadband market, it mainly comprises government ministries and agencies, enterprises and individual customers in the Maseru area.[54]

- **Quality of Service is uneven in Lesotho. Coverage of fiber-optic backbone networks is limited to urban areas. Additionally, 4G services are less accessible in rural regions.** Obtaining accurate and up-to-date comparative data on download speeds in Lesotho is challenging. However, statistics from the second quarter of 2020 indicate that the mean download speed over fixed broadband was 22.50 Mbps, while the median download speed on mobile broadband was 26.95 Mbps.[55] These indicators are lower than those in South Africa but higher than in other Southern African countries.

- **Infrastructure mapping is currently not in place.** By providing comprehensive information about existing infrastructure, infrastructure mapping systems enable informed decision-making for investments, promote collaboration and resource sharing, and facilitate the attraction of investments and funding for infrastructure projects. Several countries, including Botswana, Malawi, Namibia, Rwanda, South Africa, Zimbabwe, and others, have mapped broadband (and electricity) infrastructure to support connectivity projects.[56] Data from Lesotho is missing in the ITU Connectivity Map.[57]

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[53] Strategic plan of LCA

[54] https://lca.org.ls/wp-content/uploads/filr/3005/Q4%20Sector%20Performance%20Report.pdf

[55] Mobile Speeds Lead in Southern Africa (ookla.com)

[56] Infrastructure Mapping and Analysis for School Connectivity (itu.int)

[57] Some of Lesotho's electricity infrastructure is mapped in Open Infrastructure Map (openinframap.org)

(Source: ITU Connectivity Infrastructure Maps)

- **Despite the good mobile broadband coverage, internet usage remains limited.** As of 2022, the internet penetration rate stood at 43.7 percent of the population, according to the ITU data. The LCA estimates, that there were 58.4% of individuals using the Internet in 2023, indicating significant growth.[58] Nonetheless, there are still demand-side issues to address, including access to affordable broadband devices and data plans, as well as the relevance of available digital tools, services, and content (particularly for vulnerable populations).

- **Affordability of mobile data and internet-enabled devices continues to pose challenges in Lesotho**. According to ITU estimates, the mobile data basket cost stood at 4.9% of Gross National Income (GNI). In comparison, the average cost for mobile data across Africa during the same period was 3.2%. LCA estimates, that entry-level broadband services reached 3% of GNI in 2022.[59] The high costs of internet-enabled mobile devices create additional digital inclusion obstacles for lower income individuals, with entry level devices priced between M800 - M1,200. LCA estimates, that as a result of subsidies from the network operators, the USD50[60] target has been reached for both fixed and mobile broadband entry-level terminals by the end of 2022/23.[61] However, considering the income inequality[62] and the percentage of the population living below the poverty line[63], affordability of devices remains a significant challenge for the country.

- LCA estimates that in 2023, **83% of individuals owned a mobile phone[64]**, and there were 1.45 million smartphones connected to the network [65]. Additionally, only **18% of households had a**

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[58] **Source:** 2023 Access and Use of ICTs by Households and Individuals Survey Results by LCA

[59] https://lca.org.ls/wp-content/uploads/filr/3509/LCA%202023%20TO%202026%20STRATEGIC%20PLAN.pdf

[60] Around 950M and 20% of average monthly income.

[61] https://lca.org.ls/wp-content/uploads/filr/3509/LCA%202023%20TO%202026%20STRATEGIC%20PLAN.pdf

[62] GINI coef 44.9 according to the WB in 2017,

[63] 33.9 percent of the population is estimated to live below the US$2.15/day (2017 PPP) international poverty line in 2023, while 56.2 percent of the population is under the lower-middle-income country poverty line ($3.65/day, 2017 PPP). https://databankfiles.worldbank.org/public/ddpext_download/poverty/987B9C90-CB9F-4D93-AE8C-750588BF00QA/current/Global_POVEQ_LSO.pdf

[64] **Source:** 2023 Access and Use of ICTs by Households and Individuals Survey Results by LCA

[65] LCA data

computer at home.[66] This may be attributed to the widespread availability of mobile network coverage and the relatively low affordability of laptops and desktops.

- Currently, there are two Mobile Network Operators (MNOs) on the market: Vodacom Lesotho (VCL) and Econet Telecom Lesotho (ETL), indicating **the lack of competition in the telecom sector.** Lesotho does not have any Mobile Virtual Network Operator (MVNOs) in the market, although the regulatory framework would allow for their entry.

- **The smaller ISPs are disadvantaged by the vertically integrated structure of the market.** There are three Internet Service Providers (ISPs), ComNet, LEO and Jenny, but their market share is small and concentrated in Maseru. Despite their interest in expanding services beyond the capital, dependence on major operators and a lack of competition in the wholesale market result in high prices of leased lines and wholesale bandwidth, posing obstacles to their growth.[67]

- **The potential of LECC is not being fully utilized to expand broadband access and improve connectivity.** LECC, a subsidiary of Lesotho Electricity Company (LEC), operates as an open-access wholesale provider, offering carrier-of-carrier services to other network operators through long-term indefeasible right-of-use (IRU) agreements.[68] Small ISPs, however, cannot afford the IRUs.[69] While LECC also provides an active leased line service between LEC substations, the absence of a comprehensive mapping of existing and planned points of presence hinders informed decisions by ISPs. Moreover, LECC's strategy lacks focus on aggressively targeting home and business customers through last-mile connectivity by power line communication or fiber optics. Expanding points of presence of LECC in all towns and offering last-mile connectivity on demand could attract ISPs to these areas, fostering competition in broadband services provision to homes and businesses. The LECC could be better leveraged in driving broadband services, especially fixed.

- Backbone investment in Lesotho has been concentrated primarily on major urban areas and on intertown routes. **The national backbone and backhaul networks are relatively well extended across the country by ETL, LECC and VCL.** However, with the expansion of 4G/5G beyond urban areas, there will be a growing demand for reliable backhaul infrastructure, potentially necessitating additional investments in fiber-optic backbone networks. Leveraging LECC's investments and adopting integrated infrastructure planning could be crucial in addressing this need most efficiently and cost-effectively.

- **International bandwidth prices present challenges to smaller market players.** As a landlocked country, Lesotho is dependent on its neighbour South Africa for international connectivity. In an effort to facilitate regional integration and benefit through lower international bandwidth prices for Lesotho, the Government of Lesotho invested in the EASSy cable through a special purpose vehicle, the West Indian Ocean Cable Company (WIOCC) and LCA were to hold the Government shares in trust. ISPs can access capacity through WIOCC, however, it is unclear if this offers any price advantages. The two network operators that have direct and more favorable access to international capacity through their regional network infrastructure and parent companies, indicated that they were using WIOCC for redundancy purposes.[70]

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[66] Digital Development (itu.int)
[67] WB
[68] Dark Fibre IRU – LEC Communications
[69] "For smaller bandwidths requirements (<1G), we understand that the costs of dark fibre may seem prohibitive and unjustifiable. It is for this reason that we offer an active leased line service between any of LEC's substations. New points of presence (PoPs) will be constructed if they meet the required demand thresholds. "National Lease Line – LEC Communications
[70] WB

- There is a need to optimize Lesotho's investment in WIOCC and resolve the existing conflict of interest. **The shareholding of LCA in WIOCC creates a conflict of interest** in the institutional arrangements for the sector, with the regulator being both the referee and player in the market. It also undermines the powers of the Authority to exercise its administrative data collection duties as operators are reluctant to provide sensitive commercial data to what they view as, essentially, their competitor. The government acknowledges these concerns, as reflected in the new National Strategic Development Plan II that outlines the need to develop a framework for divesting from WIOCC and reducing its role in Econet (Government's share is 30%). Divesting from WIOCC should be prioritized, additionally exploring consolidation options for LECC, WIOCC, data centres, etc.
- **There is concern (in particular from potential newcomers and smaller market players) about high sector levies and taxes in Lesotho.** Operators in Lesotho are subject to regulatory fees and a requirement to contribute to the Universal Service Fund. Currently, the LCA imposes an annual regulatory fee of 4 percent of Net Operating Income (NOI) on all operators.[71] The USF contribution stands currently at 1.5 percent of NOI and can be increased to up to 2 percent as per the LCA Act. In 2020, the Value Added Tax (VAT) for telecommunication services was increased from 12 percent to 15 percent (for electricity from 8 to 9 percent). Even if partially absorbed by the operators, VAT increases usually impact retail pricing and the cost of communication for consumers, affecting their affordability. The evaluation of the recent increase in VAT is not currently available. Additionally, there is a 9% excise duty imposed on imported phones and other telecommunication equipment if the origin country is within the SACU region[72]. Although a significant portion of mobile device imports comes from South Africa, the country itself is subject to three forms of tax when importing smartphone devices from overseas, contributing to the import price incurred by Lesotho.
- Based on the LCA (General) Rules of 2015, the LCA may require a licensee to share its communications infrastructure with another licensee on a first-come, first-served basis, through a cost-based pricing structure and non-discriminatory terms and conditions. In practice, **infrastructure-sharing agreements in Lesotho have been voluntary and based on agreements between the market players** and the government broadcasting body. In most cases, infrastructure sharing in Lesotho is limited to passive infrastructure elements. It is the general view of operators that infrastructure sharing is currently working, however, interests for deeper sectoral and cross-sectoral collaboration and coordination were expressed. The operators have joined forces and developed a Memorandum of Understanding (MoU) on infrastructure sharing in 2018, also encouraging the government to develop rules around a "dig once" policy. [73]

- **The sustainable expansion of network coverage is hindered by extensive vandalism of infrastructure.** Vandalism is treated as a petty crime with the punishment equating to ~M2,000 fine. This subdued punishment, coupled with a lack of digital services that create value and a need for network coverage, ensures that energy and ICT infrastructure vandalism remains a prolific issue in Lesotho.

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[71]https://lca.org.ls/wp-content/uploads/filr/3469/LCA%20LICENSING%20CLASSIFICATION%20AND%20FEES%20RULES%202023%20(2).pdf
[72] Southern African Customs Union. This is a union between five countries in southern Africa: Botswana; Eswatini; Lesotho' Namibia and South Africa.
[73] World Bank Document

Data centres and cloud computing infrastructure

- Data and cloud infrastructure became pivotal foundations for economic growth and innovation as the world experiences an unprecedented surge in the generation and flow of digital data. This surge is further fueled by the emergence of advanced technologies, such as AI/ML and big data analytics. Cloud computing technologies now underpin a wide range of real-world uses – from disaster warning to smart agriculture, online education, social media engagement, digital trade, financial transactions and digital public services. Data centers serve as the physical infrastructure that support cloud services and host servers, storage, networking equipment, and other necessary hardware. Local data centres will become increasingly valuable as the global digital economy grows as the shorter the distance between a data centre and the entities using it, the greater the performance and quality of the service.

- **Future-focused digital data infrastructure in Lesotho is currently limited, representing mainly the investments made by the public sector.** The government established the Lesotho Government Data Network (LGDN), and two data centres to connect the district government offices.[74] There is a centralised Tier 2 data centre in Maseru, and a new Tier 3 data centre 130km from Maseru for disaster recovery. This infrastructure is dedicated to the public sector only (Ministries, Departments and Agencies), with the aim to centralize the hosting of IT systems and data. However, informed protocols/policies are missing about which data should be stored where. Information on private investment and their capacities in data centers and related facilities is currently not available. However, it's worth noting that some operators offer colocation services to businesses.[75]

- **Data centres are critical for government interoperability, country sovereignty and a key driver for economic growth and the new economy.** Lesotho has taken steps to establish promising foundations for the development of e-government platforms and services. Increased computing power and digital storage from the data centres increase the potential for government data usage for actionable insights and decision-making in both the public and private sectors.

- **~50% of African nations have third-party data centers, with Southern Africa providing 54% of the continent's total data centre floor space.** Africa's data centres face obstacles from weather and environmental issues, and power supply. The energy constraint is a major concern for

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[74] IST Africa. n.d. Report on ICT Initiatives, Research and Innovation Priorities and Capacity in IST-Africa Partner Countries.
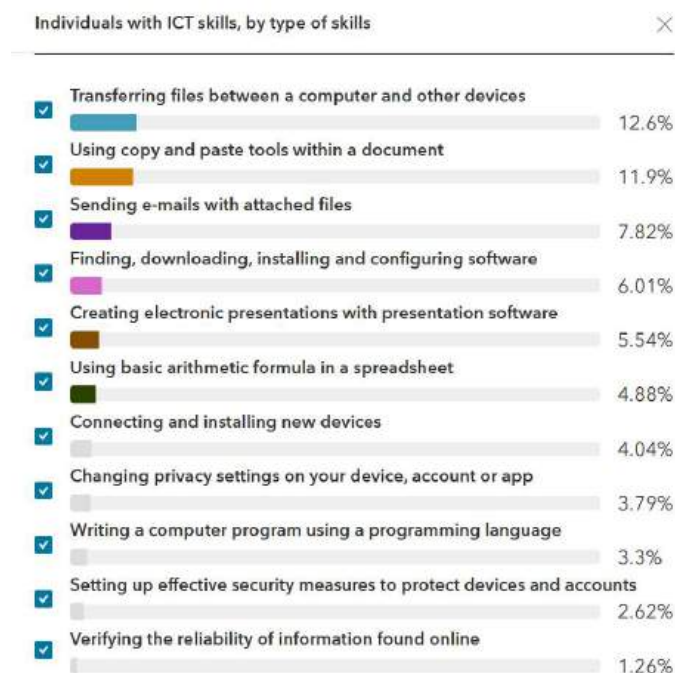[75] Fixed Solutions | Vodacom Lesotho

industries across the continent, perhaps most notably in South Africa. The sector is attracting investment, particularly from private equity, as countries seek to build their capacity and companies seek to build a continental network of data centres. Microsoft, Huawei, Oracle, with Amazon, opened a data centre in Cape Town and forecasts that revenues from this sector will grow 80% by 2025. Operating these services requires reliable and secure data centres, particularly for the continent's thriving SMEs, which do not have the resources to host their own data.[76] Lesotho has an opportunity to be carrier neutral, of which ~30% of data centres are, making their services available to a wider market.

- **Initiatives to promote localization of data centres in the country will, however, rely heavily on policy and regulation that govern access to data and security, data access rights, privacy protection and cybersecurity.**

2.4 Digital Population

- **Even though Lesotho has one of the highest adult literacy rates (82%) in Africa, digital skills are lacking.** There are low to moderate basic digital literacy levels in the country which slows digital development and ICT use and adoption. This is linked to low levels of digital financial literacy and financial inclusion.[77] As vulnerable populations are more excluded from the digital economy and formal workforce, digital literacy approaches should specifically address their needs. Lacking targeted measures for addressing the needs of vulnerable populations widens the local skills gap and risks fair work as rapid technological change continues, especially with digital business models becoming increasingly popular.

Individuals with ICT skills, by type of skills	
Transferring files between a computer and other devices	12.6%
Using copy and paste tools within a document	11.9%
Sending e-mails with attached files	7.82%
Finding, downloading, installing and configuring software	6.01%
Creating electronic presentations with presentation software	5.54%
Using basic arithmetic formula in a spreadsheet	4.88%
Connecting and installing new devices	4.04%
Changing privacy settings on your device, account or app	3.79%
Writing a computer program using a programming language	3.3%
Setting up effective security measures to protect devices and accounts	2.62%
Verifying the reliability of information found online	1.26%

Source: ITU

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[76] Africa Law and Business. 2020. Africa's growing data centre capacity. Online [https://iclg.com/alb/14220-africa-s-growing-data-centre-capacity]
[77] UNCTAD. 2019. Lesotho Rapid eTrade Readiness Assessment.

- **Formal education lacks a digitally adjusted curriculum and basic infrastructure.** Children and young people should be better equipped for the digital society of the future. That is why technology must be integrated into primary school education. Primary schooling is mandatory and free in Lesotho. The country came near to attaining universal primary education with a net primary enrolment of 85 per cent and a high retention rate until primary school graduation.[78] Basic digital skills are introduced into the formal curriculum at grade 4 level; however, challenges such as a lack of electricity, unavailability of ICT equipment, and the inadequacy of teachers' ICT skills hinder effective implementation. Additionally, the percentage of children in school-age attending with internet access at home is currently at 32%, with a significant disparity between rural and urban areas - 22% in rural areas compared to 52% in urban areas.[79] The secondary education enrolment rate of 53.8 percent and HEI enrolment rate of 9.8 percent suggest that a high percentage of the population might not have basic digital skills.[80]

- **Lesotho's quality of basic literacy education negatively affects foundational skills essential for post-secondary studies and the labor market.** In the World Bank's 2020 Human Capital Index (HCI), the country scored 0.4 out of a maximum of 1, positioning it on the lower end globally. According to World Bank data, children can expect to complete 10 years of pre-primary to secondary school by age 18. However, when years of schooling are adjusted for the quality of learning, this is only equivalent to 6.3 years, resulting in a learning gap of 3.7 years. Education spending as a percentage of the national budget over the last five years has ranged from 9 to 14 percent.[81]

- **Low enrolment rate in ICT-related fields and a high attrition rate throughout three- or four-year degree programs, result in low graduation rates and low numbers of professionals with digital specialist skills (hindering the adoption of transformative technologies such as AI, big data, IoT, etc.).** Three universities in the country offer degree programs in computer science and ICT-related programs. More recently, the National University of Lesotho (NUL) began providing courses in Artificial Intelligence and Data Science and has introduced a postgraduate program in Cybersecurity and Digital Forensics. In efforts to enhance its digital skills provision, the NUL also offers preparatory programs for professional certifications, such as CISCO networking. However, only around 8% of total tertiary enrolments were in ICT and computer-related science in 2018.[82] Additionally, data collected by the World Bank shows, that in 2018, the NUL had only 18 graduates in computer science from a cohort that began with 40 students.[83] The International Finance Corporation estimates[84] that by 2030 up to 50% of all jobs in Africa will require digital skills, with big data analytics, climate change and environmental management technologies, and encryption and cybersecurity being the primary drivers of job growth.

- **Private digital skills training providers and informal ICT skills providers offer opportunities for basic digital skills development, however, they alone cannot bridge the skills gap.** Private digital skills training providers primarily offer courses that develop skills in using office tools such as Microsoft Office, electronic communications, accounting software, and similar software

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[78] Lesotho (LSO) - Demographics, Health & Infant Mortality - UNICEF DATA
[79] Education Statistics - UNICEF DATA
[80] WB
[81] 2021-22 Education Sector Sector Brief.pdf (finance.gov.ls)
[82] BOS Publications
[83] WB
[84] The International Finance Corporation's (IFC) 2019 study on Digital Skills in Sub-Saharan Africa

packages. Skills development hubs, like Hub in Morija, Basali Tech and the Girl Coding Academy, are and initiatives such as Africa Code Week, are positively contributing to digital literacy and skills development. This necessitates the strengthening of technical and vocational education and training (TVET) structures and curricula. In 2021, less than 1 percent of the educational budget was allocated to TVET.[85]

- **Lack of devices and reliable and affordable internet connectivity is one of the prominent issues highlighted by stakeholders in the education sector.** Universities themselves lack good quality, and affordable internet connectivity. The challenge of limited ICT/IT-trained staff was mentioned by most institutions during the research conducted by the LCA. [86] Additionally, many students are unable to utilize digital resources due to a lack of proper devices such as laptops or desktops, as well as internet access outside the campus. The quality of internet connections and access to devices are foundational elements for e-learning opportunities.

- **The policy on the digital transformation of education and/or the strategy for addressing the digital divide in the education system has not yet been developed**. There are no government policies or strategies for providing laptops to students.[87] The establishment of a National Research and Education Network, aimed at providing research and education institutions with better access to fast internet bandwidth, educational resources, and support for international cooperation, is still underway. The LCA and MoET signed an MoU in 2016 to enhance education quality through broadband access, ICT training for teachers, and facilitating schools' access to electronic materials, including local content development. However, interventions in schools are constrained by the limited resources of the USF, with a bigger focus on higher education institutions rather than primary and secondary schools.

- **Child online protection framework is missing.** The country should develop and implement a national child online protection strategy to guide their responses to the harms young people face online.

- **The availability of specialist and advanced digital skills is negatively impacted by a brain drain from Lesotho to South Africa and other countries.** Many of Lesotho's ICT graduates and skilled workers migrate mainly to South Africa or elsewhere in search of better employment opportunities, more competitive wages, and a more sophisticated digital sector. It is estimated that 500,000 Basotho from Lesotho reside permanently or temporarily in South Africa.[88] Currently, Lesotho scores 7.5 on the human flight and brain drain index (0 - low, 10 - high) compared to the world average of 5.25 index points.[89] The 2017 IOM Labour Migration Assessment recognized the problem and recommended a number of actions to address the outward migration of highly-skilled individuals, including streamlining work and immigration permit processes, encouraging Basotho nationals to come back to Lesotho for managerial or other

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[85] Microsoft Word - Lesotho_TNA_Report_Final__6 May 2022 (un.org)
[86] ICT Research – LCA
[87] Some initiatives were driven by non-profit organizations. e.g. Laptops to Lesotho Project (L2L) focused on raising funds to distribute laptops to children in rural Lesotho, providing training, and establishing a LAN network to facilitate internet access.
[88] Lesotho Council of Non-Governmental Organizations. Consultations with Basotho in the Diaspora (South Africa) on National Reforms.
[89] https://www.theglobaleconomy.com/Lesotho/human_flight_brain_drain_index/.

short-term positions, and tying the supply of graduates in highly skilled sectors more closely together with demand-side information.[90]

- **The national Science, Technology, and Innovation (STI) system of Lesotho is in its early stages of development.** In 2015, government expenditure on Research and Development (R&D) amounted to USD 0.44 million PPP, equivalent to 0.01% of the GDP.[91] Lesotho had approximately 62 researchers per million inhabitants that year, a figure significantly lower than the critical mass estimates for both developed and developing countries. Typically, developed countries aim for a critical mass of around 1000 to 1200 Full-Time Equivalent (FTE) researchers per million inhabitants, while developing countries tend to target a range of 150 to 250 researchers per million inhabitants. More recent data on R&D expenditure or the number of research are not available.

Funded skills initiatives in Africa

Huawei's Seeds for Future Programme in Kenya, works in partnership with the ICT Authority, to take ICT or STEM university students through a five-day online training programme with an opportunity of an additional two week training programme in China. The program seeks to develop young local ICT talent, enhance knowledge sharing, and improve the understanding of, and interest in the ICT industry, with a possibility of employment at Huawei Kenya.

The Skills Initiative for Africa (SIFA) of the African Union Commission (AUC) is supported by the German Government. SIFA provides grants to eligible international organisations, local NGOs and accelerator programmes based in Africa that provide employment-oriented skills development for young African people.

2.5 Digital Business

- **Lesotho's regulatory environment is not agile and does not sufficiently enable the development of the digital ecosystem.** In addition to the current shortcomings in data protection laws, cybersecurity, consumer protection, and competition laws, further regulatory enhancements may be necessary. This includes facilitating the entry of Fintech companies, improving access to financial products and services, and establishing regulatory sandboxes, among other measures. To encourage technological innovation and develop local digital businesses, it is imperative to create an environment that is conducive to financial sector innovation, whether this is coming from mobile money operators, banks, or FinTechs. Postal and courier services regulations should also be reviewed to ensure they meet digital business needs.

- **Lesotho's private sector makes limited use of digital technologies.** Data from the World Bank Enterprise Surveys show that only 15 percent of formal manufacturing and services firms in Lesotho have a website compared with 31 percent of firms in Sub-Saharan Africa. Few Basotho firms engage in e-commerce. Data on the use of digital technologies in MSMEs is unavailable, while they comprise 97 percent of all enterprises in the country.[92] The number of IT firms operating in Lesotho is limited, facing challenges in firm growth primarily due to a constrained customer base.

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[90] WB
[91] Microsoft Word - Lesotho_TNA_Report_Final_6 May 2022 (un.org)
[92] 128075-WP-REVISED-P164862-PUBLIC.pdf (worldbank.org)

- **There are currently a limited number of private digital platforms in Lesotho, and around 10%[93] of the population participates in e-commerce**. Although no official statistics on digital platforms in Lesotho exist, stakeholder consultations conducted by the World Bank estimated ~13 private digital platforms, with some of them non-functional.[94] Limited content and relevant services, coupled with lacking trust and awareness, inhibit usage resulting in low levels of interaction and engagement with digital platforms.

- **Poor API integration makes it difficult to facilitate connectivity between applications across devices and programs, and limits streamlined functionality in a business ecosystem, especially between e-commerce platforms and payment systems.** Without API integration for digital payment systems like mobile money or credit/debit cards, customers cannot complete transactions, making it difficult for businesses to operate online and grow. Presently, there are numerous free website hosting platforms and e-commerce sites, however, to fully utilize their business solutions that primarily offer a payment gateway, a monthly subscription fee or high commission fees on goods sold is required. These costs can pose a barrier to entry into the e-commerce industry, especially for small businesses.

- To address a lack of interoperability between mobile money issuers' platforms and bank accounts, the Central Bank of Lesotho introduced the National Payment Switch in October 2022.[95]

- The absence of a national addressing system poses significant challenges to e-commerce, particularly in the last mile delivery process. Lesotho has never had a proper physical address system. There are no real existing systems for identifying streets, buildings and plots, as a result most of the streets in rural and urban areas have no names. Implementing a national addressing system could improve urban planning, facilitate emergency response services, enhance public transportation systems, and support economic growth through improved logistics and e-commerce. Addressing the issue in coordination with spatial planning and land use policy would be beneficial for future developments.

African Addressing examples

Tech solutions are helping to overcome addressing systems which previously took decades to implement and cost millions. In Lesotho, and other parts of Africa, there is evidence of this:

- **AfriGrid**, an alumni from the Vodacom Innovation Park program in Lesotho, brings location-based services to consumers by tying their homes or properties to unique identifiers such as water and electricity meter numbers and plot numbers to their latitude and longitudinal coordinates (GPS coordinates). This GPS system allows service delivery, emergency service response and other location-based services to operate more efficiently. However, the solution has not been widely scaled in Lesotho, in part due to a lack of funding.
- **What3words**, a mapping solution, provides accurate location for users based on a unique combination of three simple words. It's used by businesses to support logistics and navigation for deliveries, while providing customers the option of using what3words as their address enabling the smooth delivery of goods.
- In low-income or rural areas in Africa where a national addressing system is largely absent, **Jumia**, a major e-Commerce platform which uses physical drop off/pick-up points (locker system) in strategic locations such as marketplaces or near administrative offices. This enables customers to select the closest pick-up point to them, which they can easily access.

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[93] Digital 2023: Lesotho — DataReportal – Global Digital Insights
[94] World Bank. 2020. Lesotho Digital Economy Diagnostic, p 58.
[95] Switch-SesEng_Mobile_Money_12_pg_Press_Release_03_Oct_2022_.pdf

- **E-commerce would benefit from the efforts being made to improve the transport and logistics infrastructure across the country**. Lesotho relies primarily (~70%) on road transport to conduct trade and distribution, and is connected to South Africa's road network through 15 different border posts, 5 of which are commercial.[96] Road conditions are an obstacle to the overall in-country accessibility.[97] The Government has placed a priority on improving the overall transport and logistics system in the NSDPII. Improvements in transport infrastructure and the establishment of multi-modal transport networks could accelerate e-commerce and international trade. Beyond road infrastructure, warehousing and customs management require digital intervention to facilitate import and export trade. The Logistic Performance Index ranks Lesotho 139 out of 160 in terms of performance on trade logistics,[98] indicating significant room for improvement.

- According to the IMF, **access to finance for MSMEs poses significant challenges**. Lenders frequently cite insufficient financial statements and business plans from MSMEs, hindering risk assessment and evaluation of prospects. Additionally, limitations within the current legal framework constrain lenders' ability to utilize collateral. Many MSME borrowers encounter difficulty obtaining necessary documentation, often resorting to higher-cost consumer loans. Access to finance for digital startups faces even greater restrictions, with commercial banks hesitant to lend and early-stage financing limited due to a lack of angel investors, limited grant-funding mechanisms, and entrepreneurs' limited awareness and access to existing financing opportunities in the region.

- The recent launch of the Entrepreneurship Hub and Seed Financing Facility[99] in Lesotho signifies an important step forward in supporting local entrepreneurs. This initiative not only offers crucial business expertise and knowledge through its incubation programs but also provides essential seed funding, vital for launching new businesses. Bringing together diverse players within the entrepreneurship ecosystem and coordinating their efforts, strengthens Lesotho's entrepreneurship landscape. The Hub establishes partnerships with the entrepreneurship ecosystem stakeholders like Enterprise Support Organizations (ESOs), the local business community, the diaspora and investor network to attract funding from across Lesotho and the SACU region. Until recently, there were several entrepreneurship programs in place, with only two focusing on digital entrepreneurship: Vodacom's Innovation Park, no longer operational, and the Innovation Hub at the National University of Lesotho, selected as one of the Enterprise Support Organizations (ESOs) in the Entrepreneurship Hub.

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[96] UNCTAD. 2019. Lesotho Rapid eTrade Readiness Assessment.
[97] Lesotho Rapid eTrade Readiness Assessment (unctad.org)
[98] World Bank. 2018. International LPI Global Rankings 2018. Online:
[https://lpi.worldbank.org/international/global?sort=desc&order=LPI%20Score#datatable]
[99] Entrepreneurship Hub - CAFI, https://cafi.org.ls/programmes-cafi/entrepreneurship-hub/

Annex 3. Concepts of DPI and DPG

DPI refers to a set of shared digital systems which are secure and interoperable, built on open standards and specifications to deliver and provide equitable access to public and/or private services at a societal scale and are governed by enabling rules to drive development, inclusion, innovation, trust, competition and respect human rights and fundamental freedoms [100]
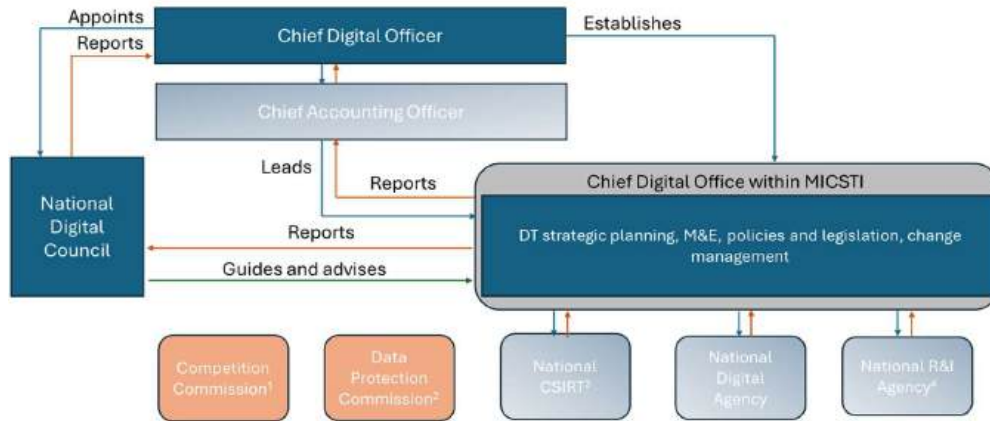
DELIVERY MODES	← Connectivity level →			← Service channel →		← Device type →				Etc.
	Online	Semi-online	Offline	Self-service	Assisted (agents)	Desktop	Smartphone	Feature phone	Device-free	
SECTORAL APPLICATIONS TO LOCAL ECOSYSTEMS	Digital commerce	Digital education	Digital health	Digital financial services	Digital climate action	Digital transport and tourism	Smart cities	Digital in industrials	Jobs and skilling	Digital agriculture and fisheries	Etc.

CORE DPI² unlock DPI potential through open standards, open-source software, and open Application Programming Interfaces (API) that enable different DPI systems to communicate³.
Refer to page 29 (Play 3) for more information.

Digital identity⁴ Digital payments⁵ Consent-based data sharing⁶ Others emerging⁷...

CORE DPI GOVERNANCE FOUNDATIONS
Refer to page 36 (Play 4) for more information.

| Strategic leadership and digital capacity to set long-term ambition, align policy, secure financing, and set technical standards | Independent and accountable institutions to prevent overreaches by the state and protect people's welfare | Legislative and regulatory frameworks to promote inclusion and innovation, resolve disputes, and encode respect for privacy | Stakeholder collaboration to collect user feedback and manage system performance |

1. Source: DEWG under India's G20 Presidency, 2023.
2. Core DPI functions defined by DEWG under India's G20 Presidency, 2023. These categories are dynamic in nature; they may evolve as more technologies mature and become core systems.
3. Source: DEWG under India's G20 Presidency, 2023.
4. The ability for people and businesses to securely verify their identity, as well as complementary trust services such as Electronic Signatures and verifiable credentials. Source: DEWG under India's G20 Presidency, 2023.

5. Every instant transfer of money between people, businesses, and governments. Source: DEWG under India's G20 Presidency, 2023.
6. Seamless flow of personal data across public and the private sectors, with safeguards for personal data protection as per relevant applicable data governance frameworks. Source: DEWG under India's G20 Presidency, 2023.
7. There may be other emerging core DPI tech functions, such as Discovery & Fulfilment and Geospatial DPI.

[The DPI Approach: A Playbook | United Nations Development Programme (undp.org)](#)

DPG refers to open-source software, open data, open AI models, open standards, and open content that are developed worldwide and available to openly license. DPGs may be implemented as a part of a country's digital public infrastructure, along with proprietary solutions. In turn, DPGs may be core in nature (digital ID and verification, digital payments, and money transfers) or sector-specific (health, education, e-governance, climate, etc.)

Both DPI and DPG are essential for fostering digital inclusion, promoting innovation, and driving economic growth in a digital economy.

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[100]

https://www.g20.org/content/dam/gtwenty/gtwenty_new/document/G20_Digital_Economy_Outcome_Document%20_and_Chair%27s_Summary_19082023.pdf

Annex 4. Long-term institutional arrangements

Long-term vision

¹ Competition Bill

² Data Protection Act, 2011

³ Computer Crime and Cybersecurity Bill, 2023

⁴ Draft Research ad Innovation Policy, 2023