



**United
Nations**

Department of
Economic and
Social Affairs

Compendium of Baseline Studies on the National Data Governance Frameworks

(DRAFT Working | Ver. 20 April 2024)

UN Peace and Development Fund Project on
Digital Data Management and Data Governance

2022-2024



**United
Nations**

Department of
Economic and
Social Affairs

Baseline Studies on the National Data Governance Framework

The Baseline Study on Project on Digital Data Governance

April 2024

CONTENTS

Introduction	1
Acknowledgements	2
Research Framework	3
Bangladesh	8
Introduction.....	8
Summary of Four Pillars.....	10
Pillar-Element Mapping Matrix and Mapping of Six Elements	10
SWOT Analysis of Bangladesh’s Data Governance Framework	15
Conclusion	16
Bhutan	17
Introduction.....	17
Summary of Four Pillars.....	19
Pillar-Element Mapping Matrix and Mapping of Six Elements	21
SWOT Analysis of Bhutan’s Data Governance Framework	24
Conclusion	25
Cambodia	26
Introduction.....	26
Summary of Four Pillars.....	29
Pillar-Element Mapping Matrix and Mapping of Six Elements	31
SWOT Analysis of Cambodia’s Data Governance Framework	34
Conclusion	35
Egypt	38
Introduction.....	38
Summary of Four Pillars.....	40
Pillar-Element Mapping Matrix and Mapping of Six Elements	40
SWOT Analysis of Egypt’s Data Governance Framework.....	49
Conclusion	50
Appendices	50
Fiji	53
Introduction.....	53
Pillar-Element Mapping Matrix and Mapping of Six Elements	59
SWOT Analysis of Fiji’s Data Governance Framework	65

Conclusion	67
Appendices	67
Ghana.....	71
Introduction.....	71
Summary of Four Pillars.....	72
Pillar-Element Mapping Matrix and Mapping of Six Elements	72
SWOT Analysis of Ghana's Data Governance Framework.....	77
Conclusion	78
Appendix 1.....	79
Lao PDR.....	81
Introduction.....	81
Summary of Four Pillars.....	84
Pillar-Element Mapping Matrix and Mapping of Six Elements	86
SWOT Analysis of Lao PDR's Data Governance Framework.....	91
Conclusion	92
Appendices	92
Namibia	98
Introduction.....	98
Summary of Four Pillars.....	100
Pillar-Element Mapping Matrix and Mapping of Six Elements	101
SWOT Analysis of Namibia's Data Governance Framework	109
Conclusion	109
Appendices	110
Rwanda.....	113
Introduction.....	113
Summary of Four Pillars.....	116
Pillar-Element Mapping Matrix and Mapping of Six Elements	116
SWOT Analysis of Rwanda's Data Governance Framework.....	121
Conclusion	122
Appendices	122
Samoa	128
Introduction.....	128
Summary of Four Pillars.....	132
Pillar-Element Mapping Matrix and Mapping of Six Elements	135

SWOT Analysis of Samoa’s Data Governance Framework	144
Conclusion	147
Sierra Leone.....	Error! Bookmark not defined.
Introduction.....	147
Summary of Four Pillars.....	150
Pillar-Element Mapping Matrix and Mapping of Six Elements	154
SWOT Analysis of Sierra Leone’s Data Governance Framework.....	162
Conclusion	164
Tanzania	164
Introduction.....	164
Summary of Four Pillars.....	167
Pillar-Element Mapping Matrix and Mapping of Six Elements	174
SWOT Analysis of Tanzania’s Data Governance Framework	180
Conclusion	182
Vanuatu	183
Introduction.....	183
Summary of Four Pillars.....	185
Pillar-Element Mapping Matrix and Mapping of Six Elements	187
SWOT Analysis of Vanuatu’s Data Governance Framework.....	194
Conclusion	196

Introduction

This report summarises the findings of empirical desk research of thirteen countries based mainly on publicly available information as well as their Member State Questionnaire¹ (MSQ) responses. These countries are Bangladesh, Bhutan, Cambodia, Egypt, Fiji, Ghana, Lao PDR, Namibia, Rwanda, Samoa, Sierra Leone, Tanzania, and Vanuatu.

The various baseline studies contained in this report have been undertaken from October 2022 to April 2024. The baseline studies are designed to provide an initial overview of the thirteen different country's data governance frameworks based on the information available and thus may not reflect fully the existing data governance frameworks or any planned future developments in their entirety.

While some insights may be drawn from comparing the different data governance frameworks of the countries studied, this report is not intended to be comparative.

¹Bangladesh's 2022 MSQ was submitted to UN DESA by the Information and Communication Technology Division for the purpose of the UN E-Government Survey 2022. The 2022 MSQ is publicly available and can be accessed here:

<https://publicadministration.un.org/egovkb/Portals/egovkb/MSQ2022/Bangladesh%20E-Gov%20Survey%20MSQ%202022.pdf>

Bhutan's 2022 MSQ was submitted by the Department of IT and Telecom and can be accessed here:

<https://publicadministration.un.org/egovkb/Portals/egovkb/MSQ2022/Bhutan%20E-Gov%20Survey%20MSQ%202022.pdf>

Cambodia's 2022 MSQ was submitted by the General Department of ICT and can be accessed here:

<https://publicadministration.un.org/egovkb/Portals/egovkb/MSQ2022/Cambodia%20E-Gov%20Survey%20MSQ%202022.pdf>

Egypt's 2022 MSQ was submitted by the Ministry of Communications and Information Technology and can be accessed here:

https://publicadministration.un.org/egovkb/Portals/egovkb/MSQ2022/EGYPT_UN%20E-Gov%20Survey%20MSQ%202022_15062021.pdf

Fiji's 2022 MSQ was submitted by the Digital Government Transformation Office and can be accessed here:

<https://publicadministration.un.org/egovkb/Portals/egovkb/MSQ2022/Fiji%20E-Gov%20Survey%20MSQ%202022.pdf>

Lao PDR's 2022 MSQ was submitted by the e-Government Center and can be accessed here:

<https://publicadministration.un.org/egovkb/Portals/egovkb/MSQ2022/Laos%20E-Gov%20Survey%20MSQ%202022.pdf>

Namibia's 2022 MSQ was submitted by the Office of the Prime Minister and can be accessed here:

<https://publicadministration.un.org/egovkb/Portals/egovkb/MSQ2022/Namibia%20E-Gov%20Survey%20MSQ%202022.pdf>

Rwanda's 2022 MSQ was submitted by the Rwanda Information Society Authority (RISA) and can be accessed here:

https://publicadministration.un.org/egovkb/Portals/egovkb/MSQ2022/Rwanda_UN%20E-Gov%20Survey%20MSQ%202022.pdf

Sierra Leone's 2022 MSQ was submitted by the Ministry of Information & Communications and can be accessed here:

[https://publicadministration.un.org/egovkb/Portals/egovkb/MSQ2022/Sierra%20Leone_Member%20States%20Questionnaire%20\(MSQ\)%20for%20the%20United%20Nations%20E-Government%20Survey%202022.pdf](https://publicadministration.un.org/egovkb/Portals/egovkb/MSQ2022/Sierra%20Leone_Member%20States%20Questionnaire%20(MSQ)%20for%20the%20United%20Nations%20E-Government%20Survey%202022.pdf)

Rather, it is a consolidation of the individual baseline studies which have been produced and authored by different individuals. As a result, there may be some differences in the approach, format, and detail of the individual country reports.

Acknowledgements

In preparing the inception of the Peace and Development Fund (PDF) project in supporting target countries in planning and implementing national data governance frameworks, this research has been initiated by the United Nations Department of Economic and Social Affairs (UN DESA) in August 2022. This working report was first consolidated by Mr. Samson Verebes during his internship at the Division for Public Institutions and Digital Government (DPIDG), UN DESA, under the supervision of Mr. Wai Min Kwok, Senior Governance and Public Administration Officer, DPIDG, UN DESA. It was further enriched and updated by Ms. Jingyi Jiang during her internship at DPIDG, UN DESA. The individual baseline studies were conducted by Ms. Jingyi Jiang for Samoa, Sierra Leone, Tanzania, and Vanuatu (completed by April 2024), Mr. Samson Verebes for Cambodia and Bhutan (completed by January 2023), Ms. Yunfei Zhou for Egypt, Namibia, and Rwanda (completed by February 2023), Ms. Qianhui Ruan for Fiji (updated by Ms. Jingyi Jiang by April 2024) and Lao DPR (completed by January 2023), Ms. Xiangyi Huang for Bangladesh (completed by October 2022), and for Ghana.

This project has been conducted with the ongoing support of and in consultation with the Ministry of Posts, Telecommunications and Information Technology of the Government of Bangladesh, the Ministry of Information and Communications of the Government of Bhutan, the Ministry of Post and Telecommunications of the Government of Cambodia, the Ministry of Communications and Information Technology of the Government of Egypt, the Ministry of Communications of the Government of Fiji, the Ministry of Communications and Digitalisation of Ghana, the Ministry of Post and Telecommunications of the Government of Lao PDR, the Ministry of Communications and Digitalisation of Ghana, the Ministry of ICT and Innovation of the Government of the Government of Rwanda, the Ministry of Communications and Information Technology of Samoa, the Ministry of Information & Communications of Sierra Leone, the Ministry of Communication and Information Technology of Tanzania, the Office of the Government Chief Information Officer of Vanuatu, and the USAID Digital Connectivity & Cyber Security Partnership Pacific.

Research Framework

This framework has been adopted from the initial baseline study on Ethiopia². Each baseline study is composed of five main parts: the summary of the national-level (or city-level) data governance framework, the summary of the four pillars, the Pillar-Element Mapping Matrix, a SWOT analysis of the existing data governance framework, and recommendations based on the analysis of four pillars and six elements.

I. Introduction

This includes an executive summary of the national-level data governance framework. This part summarizes the relevant policy documents as well as the history of the existing data governance framework.

II. Summary of the four pillars

Under the research framework, established by UN DESA with reference to the 2020 edition of the UN E-Government Survey Chapter 6³, data governance is examined through the lens of the four pillars: policy, institutions, people, and processes, and the six elements (see the following section). This allows for a comprehensive and holistic examination of the various procedural components which together enable effective, accountable, and inclusive data governance.

Four (4) pillars of data governance

- a) Policy: existing policy and regulatory framework
- b) Institutions: existing institutional framework
- c) People: existing data ecosystem and mapping of stakeholders
- d) Processes: existing data processes

It should be noted that these four pillars are interlinked and cannot be separated from each other in every case. For instance, the process pillar often incorporates the other three pillars.

III. Pillar-Element Mapping Matrix (Mapping of Six Elements)

Along with the four pillars, six elements are also used under this framework to analyse a country or city's data governance framework. This part of the report maps every pillar to every element using a matrix (see Figure 3). The six elements are listed below:

² The Baseline study of Ethiopia was conducted by Mr Mesfin Kifle, as the national consultant for the project on digital data management and data governance, led by Mr. Wai Min Kwok as the Project Manager.

³ United Nations (2020), United Nations E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, UN DESA, p. 166.

Six (6) elements of data governance

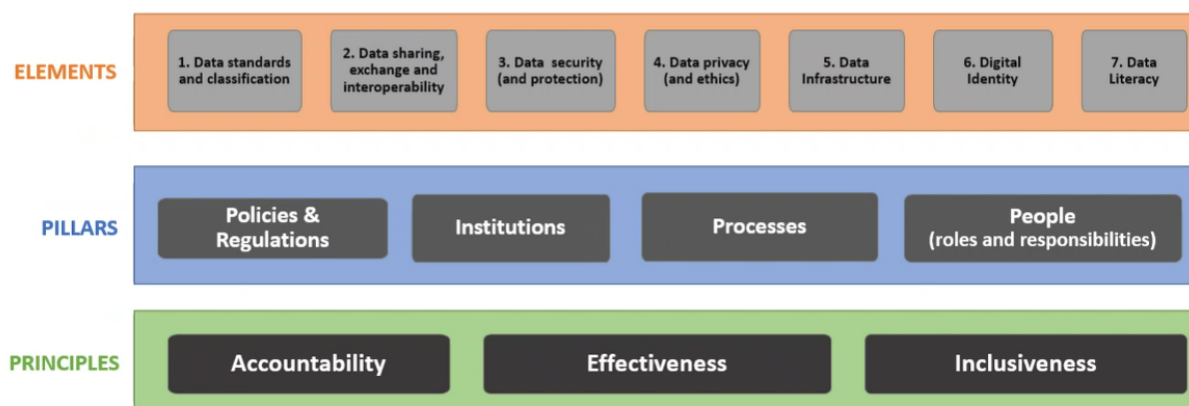
- a) Data standards & classification
- b) Data sharing, exchange and interoperability, including open government data
- c) Data security (and protection)
- d) Data privacy (and ethics)
- e) Data infrastructure
- f) Link with digital identity

The key concepts of the four pillars and six elements are defined in the project document “Developing institutional capacities for digital data management and cooperation to advance progress toward the Sustainable Development Goals” (see Figure 1) based on the data governance framework in Chapter 6 of the United Nations E-Government Survey 2020 (see Figure 2).

Figure 1: Principles, Pillars and Elements of Adopting National Data Governance Framework⁴

Adopting National Data Governance Framework

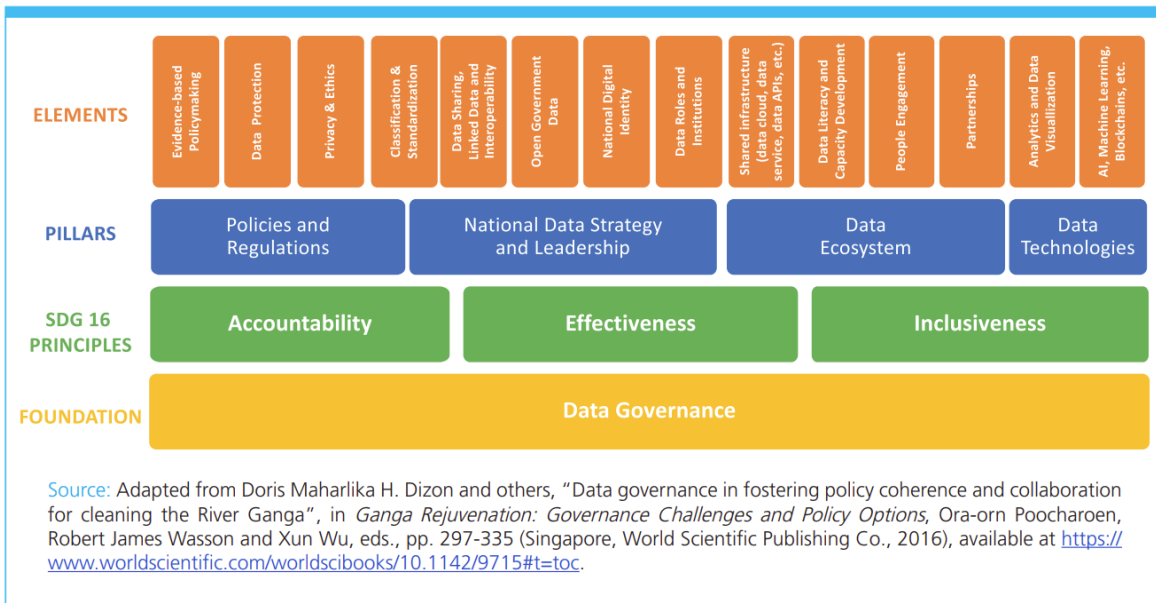
National data governance framework is the organization and implementation of **policies & regulations, institutions and processes, and people (roles and responsibilities)** which outline and enforce rules of engagement, decision rights, and accountabilities for the effective management and governance of data assets.



⁴ This figure is taken from the presentation “Adopting National Data Governance Framework for Sustainable Development - Enhancing National to Local Institutional Coordination and Monitoring Mechanisms for NSDP/SDG Implementation in Vanuatu” by Mr Wai Min Kwok, presented on 7 July 2022.

The research framework for the present report has been closely adopted from this project with the exception of the “data literacy” element.

Figure 2: Illustrative Data Governance Framework for E-Government⁵



The Pillar-Element Mapping Matrix (see Figure 3) is central to this part of the report. Each cell in the matrix maps one pillar with one element which allows for an analysis of the different aspects of data governance that is universally applicable to any national- or city-level framework.

Figure 3: The Pillar-Element Mapping Matrix⁶

Elements →	Data Standards & Classification	Data Sharing & interoperability	Data Security	Data Privacy	Data Infrastructure	Link with Digital Identity
Policy	A	B	C	D	E	F
Institutions	G	H	I	J	K	L
People	M	N	O	P	Q	R
Processes	S	T	U	V	W	X

Forming the backdrop of this research framework are the three guiding principles of data governance:

⁵ United Nations (2020), United Nations E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, UN DESA, p. 166.

⁶ Mesfin Kifle. Consultancy Approach Report of Baseline Study of National Data Governance Framework – Ethiopia.

Three (3) principles of data governance

- a) Effectiveness
- b) Accountability
- c) Inclusiveness

These three principles are embodied in goal 16 of the Sustainable Development Goals (SDG 16): *promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build **effective, accountable, and inclusive** institutions at all levels*. The concepts of these three principles and their relevance to data governance, including some commonly used strategies to operationalize the principles, are demonstrated in Figure 4.

Figure 4: The Table of Principles of Effective Governance for Sustainable Development Endorsed by the Economic and Social Council: Operationalization Strategies and Their Relevance to Data Governance⁷

Essential elements and related principles	Commonly used strategies to operationalize the principles	
	Direct relation to data governance, strategies or policies	Indirect relation to data governance, strategies or policies
Effectiveness: competence, sound policymaking, collaboration	<ul style="list-style-type: none"> • Data sharing • Investment in e-government • Strengthening national statistical systems • Monitoring and evaluation systems 	<ul style="list-style-type: none"> • Strategic planning and foresight • Results-based management • Performance management • Financial management and control • Risk management frameworks • Science-policy interface • Network-based governance
Accountability: integrity, transparency, independent oversight	<ul style="list-style-type: none"> • Proactive disclosure of information • Open government data • Registries of beneficial ownership • Lobby registries 	<ul style="list-style-type: none"> • Budget transparency • Independent audit
Inclusiveness: leaving no one behind, non-discrimination, participation, subsidiarity, intergenerational equity	<ul style="list-style-type: none"> • Data disaggregation • Universal birth registration 	<ul style="list-style-type: none"> • Accessibility standards • Participatory budgeting • Multilevel governance • Strengthening urban governance • Long-term territorial planning and spatial development

Source: United Nations, Economic and Social Council, "Relating the principles of effective governance for sustainable development to practices and results: note by the Secretariat", E/C.16/2019/4 (23 January 2019), annex, available at <https://undocs.org/en/E/C.16/2019/4>.

IV. SWOT analysis of existing data governance framework

This study utilizes a preliminary SWOT analysis to map the strengths, weaknesses, opportunities, and threats of the existing data governance framework (see Table 1).

⁷ United Nations (2020), United Nations E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, UN DESA, p. 149.

Table 1: Mapping of SWOT Analysis

	Positive	Negative
Internal factors E.g., financial resources, technical resources, research and development, organizational culture, human resources, product characteristics, and marketing resources	Strengths	Weaknesses
External factors E.g., competition, politics, economy, law, society, culture, science and technology, and demographic environment	Opportunities	Threats

V. Conclusion

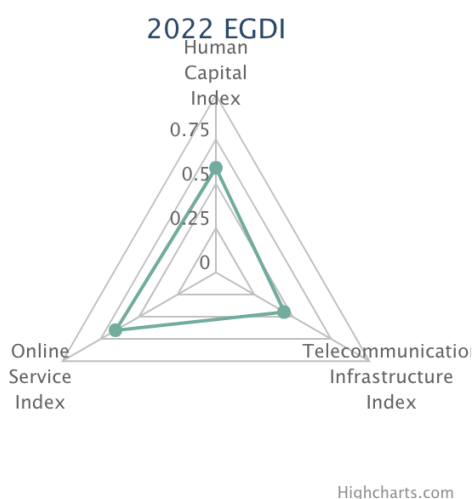
This part of the report summarizes the baseline study. Some good practices and preliminary recommendations are also provided by the respective researchers.

Bangladesh

Introduction

Bangladesh, currently a Least Developed Country (LDC), has an E-Government Development Index (EGDI) of 0.5630, situated in H2 group.⁸ Its ranking has improved from 159 in 2003 to 111 in 2022, out of 193 countries worldwide. It outperformed the sub-region average, but still lags behind in terms of the region and world average. Bangladesh is one of the leaders in e-government development among the LDCs according to the UN E-Government Survey 2022. In the Open Government Data Index (OGDI),⁹ Bangladesh has seen progress, moving from middle to high OGDI from 2020 to 2022.

Figure 5: Bangladesh's EGDI 2022¹⁰



<u>E-Government (2022 EGDI: 0.5630)</u>	
2022 Rank	111
Group	HEGDI
Rating Class	H2
2020 Rank	119
Change	-8

<u>E-Participation (2022 EPART: 0.5227)</u>	
2022 Rank	75
2020 Rank	95
Change	-20

Figure 6: Bangladesh's EGDI 2003-2022¹¹

⁸ To gain better insight into the situation of subgroups of countries with similar levels of performance within their respective EGDI groups, each EGDI group is further divided into four equally defined rating classes, or quartiles. VH, V3, V2 and V1 for the very high group; HV, H3, H2 and H1 for the high group; MH, M3, M2 and M1 for the middle group; and IM, I3, I2 and I1 for the low group.

⁹ The Open Government Development Index (OGDI) is derived as a supplementary index to the Online Service Index (OSI). It extends the dimension of the Survey by focusing on the use of open government data (OGD). The OGDI identifies three key dimensions in its current framework, which are:

- (i) policy and institutional framework (as foundation) 30%;
- (ii) platform (existence of OGD portal and features) 50%;
- (iii) data availability in various sectors such as health, education, employment, social security, environment and justice) and data application (such as through organizing hackathons) 20%.

¹⁰ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/14-Bangladesh>

¹¹ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/14-Bangladesh>

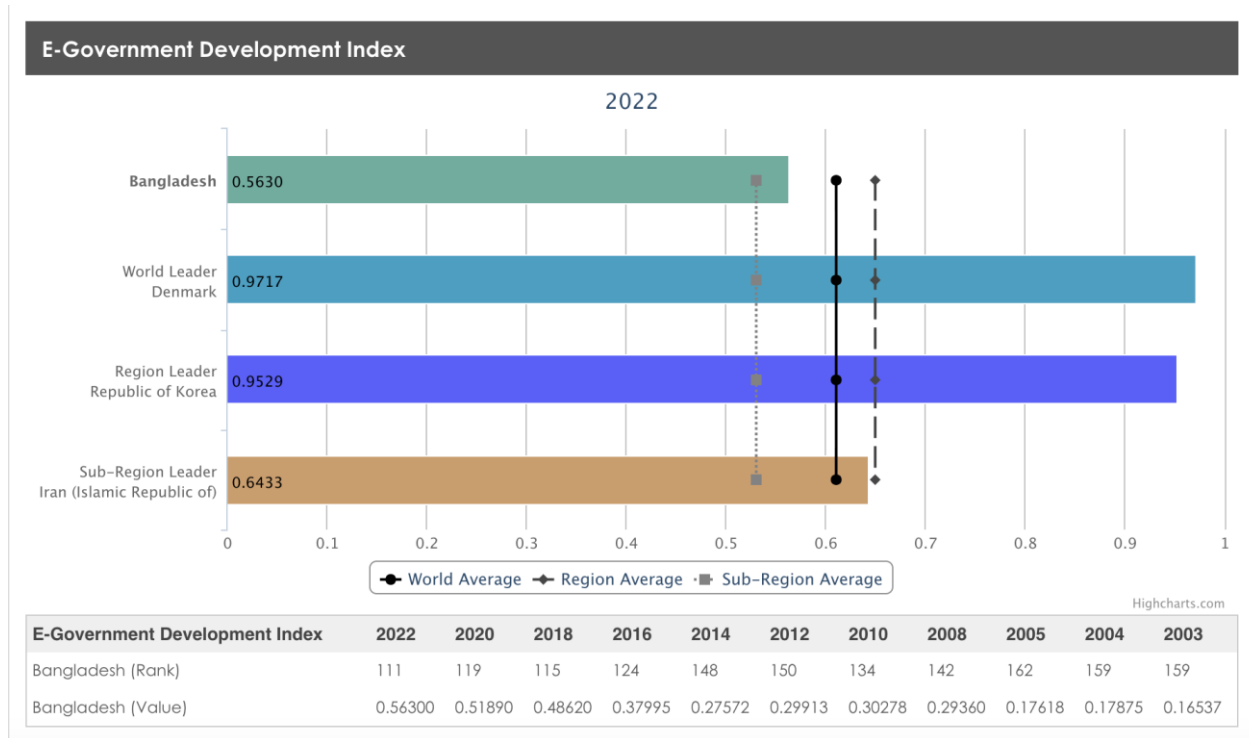


Table 2 Bangladesh's OGD I 2020-2022¹²

	OGDI Group	OGDI
2022	High OGD I	0.7296
2020	Middle OGD I	0.5250

Bangladesh has a data governance framework in its e-government national plan as well as other national policies. It aims at establishing a national statistics data warehouse and big data analysis platform and improving the current statistics work system and processes and establishing an environment for constant operation of the established data warehouse. However, the definition of data governance provided by Bangladesh itself pertains more to utilizing big data to make decisions and provide services through a national statistics platform. Thus, some elements are missing in the national data governance framework.

¹² United Nations (2020), United Nations E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, UN DESA.; United Nations (2022), United Nations E-Government Survey 2022: The Future of Digital Government, UN DESA.

Summary of Four Pillars

The four pillars and the means of substantiating them are repeated below:

- a) Policy: develop action agendas, regulations and laws, priority actions, key messaging.
- b) Institutions: assign and establish responsible government departments within the existing institutional framework. Develop digital enterprise architecture.
- c) People: assign persons responsible for data governance within government institutions. Map stakeholders within the data ecosystem.
- d) Processes: design effective processes for the implementation, financing, leadership, and management of data systems.

Pillar-Element Mapping Matrix and Mapping of Six Elements

The table below demonstrates the six elements of Bangladesh's data governance framework based on the national ICT plan items in the E-Government Master Plan for Digital Bangladesh as well as other relevant documents and policies. Currently, under Bangladesh's data governance framework, few complete plans can be identified. The focus is rather on the utilization of big data for statistical analysis and improvements to data infrastructure and the country's telecommunications infrastructure more generally.

Table 3: Six Elements of Bangladesh's Data Governance Framework

Element	Summary
Data standards & classification	<p>Bangladesh National Digital Architecture:</p> <ul style="list-style-type: none"> ➤ Based on the TOGAF Standard of the Open Group ➤ Consists of building a shared network for national digital services and achieving data standardization ➤ Defines common, acceptable standards and specifications to reduce procurement time and improve ICT quality ➤ "Whole-of-government" approach: national data portal, shared network, data standardization, a public service platform and a governance system for the national enterprise architecture
Data sharing, exchange and interoperability, including open government data	<ul style="list-style-type: none"> ➤ Bangladesh provides data services for both the public and private sectors ➤ Bangladesh encourages the development of effective digital data in the private sector through institutional support and financial incentives ➤ Bangladesh is creating databases in health, farming, tax and finance, law and other fields ➤ The Public Information Sharing System ensures maximum access to public information ➤ Integrated and interoperable information management systems

	<p>in health (and other fields) exist for both public and private facilities</p> <ul style="list-style-type: none"> ➤ Bangladesh has digitalized the information of relevant officials ➤ Implementation of databases enables relevant government agencies to connect and collect information ➤ High speed data connection and digital-government systems were introduced in all government offices for the decentralization of government activities
Data security	<ul style="list-style-type: none"> ➤ The National Data Center hosts applications for the purpose of maintaining data security ➤ The National Digital Security Framework and the National Digital Security Agency are being prepared to be implemented ➤ The cyber security experts pool as well as efforts to generate cybersecurity awareness builds capacity ➤ Data localisation policies ensure that Bangladesh's data is kept within its geographical boundaries
Data privacy (and ethics)	<ul style="list-style-type: none"> ➤ There is protection and monitoring of data for privacy and security although regulations and criminal sanctions remain absent ➤ There is a study of issues on privacy practices which will be used to establish future substantive data privacy policies
National data infrastructure	<ul style="list-style-type: none"> ➤ The data warehouse and analysis platform forms Bangladesh's national data integration infrastructure and is core to its data governance framework ➤ Bangladesh will establish a national statistics data warehouse and big data analysis platform, improve the current statistics work system and related government processes and establish an environment for constant operation of the established data warehouse ➤ Bangladesh is also working towards ensuring internet access and data transmission across the country ➤ The implementation of the policies under Information Technology Infrastructure, National Data Center Based Applications and Content Hosting for Getting National Security and Best Service will work to achieve these goals
Linking data governance to digital identity	<ul style="list-style-type: none"> ➤ Bangladesh is launching a universal identity system for inter-agency coordination ➤ The integrated national ID expands in education, healthcare, and other fields

To demonstrate the relationships between each pillar and element, a Pillar-Element Mapping Matrix is utilized (see Table 4). There are 24 cells in this matrix, reflecting the existing data governance framework in Bangladesh. This baseline report and the matrix below merely reflects a snapshot of the current situation as discovered from empirical desk research. The volume of information in each cell, including those which are left blank, should not be taken as a comprehensive evaluation or correlative of the development of each pillar-element pair. Its purpose is simply to offer a simplistic overview.

While Bangladesh performs well in some cells of the matrix, room for improvement can be identified in most of the cells. As for the pillars, Bangladesh performs better in the Policy Pillar with a relatively comprehensive nation-level plan and strategy. However, Bangladesh is relatively less comprehensive regarding the People Pillar. Regarding the six elements, Bangladesh highlights the importance of national data infrastructure and data sharing and exchange, sets goals for achieving data standardization and providing a national statistics one-stop service based on big data and integrated national ID, and is set to make further progress in data security and data privacy. Bangladesh's data governance framework is expected to be more comprehensive with the continuous effort of the government and citizens. Based on the mapping of pillars and elements, Figure 7 and 8 visualise the mapping and the comparisons between different cells in the matrix.

Table 4: Pillar-Element Mapping Matrix of Bangladesh's Current Data Governance Framework

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	<p>Plan to improve current standards management system in Y1</p> <p>Created a Digital Enterprise Architecture (Data Security, Standards, Interoperability, Data Localization, Potential Open Source Platform etc.) in line with National e-Governance Architecture</p>	<p>Plan to develop open portal on public data in Y3 and offer services in Y4</p> <p>Plan to build high speed data connection and digital-government system introduced in all government offices for decentralization of government activities</p> <p>Establish an open government data portal and create inter-department data access to ensure maximum</p>	<p>Ensure that all data of Bangladesh is kept within the geographical boundaries of the country</p>	<p>Personal data should be encrypted and kept safe in all departments</p>	<p>Establish national statistics data warehouse and big data analysis platform</p> <p>Implementation of Information Technology Infrastructure, National Data Center Based Applications and Content Hosting for Getting National Security and Best Service</p> <p>National Board of Revenue determines tariffs and VAT reduction rate on</p>	

		<p>access to public disclosure information</p> <p>Encouraging the development of effective digital data in the private sector through institutional support and financial Incentives</p> <p>Plan to build several databases in health and other social fields to provide services for the public</p>			network equipment (for data connection)	
Institutions	<p>Public Security Division</p> <p>Division enhanced quality assurance using law enforcement agencies for management information systems (MIS), data analysis tools and necessary management methods</p>	The National Data Center				
People					<p>Stated goal of establishing an environment for constant operation of the established data warehouse</p> <p>Invitational training program in Korea and domestic education and operation support</p>	

Processes		Objective of expanding the usage of big data-based private and public services and enhancing the quality of the service to relevant organizations and the public			Goal of improving the current statistics work system and processes	
------------------	--	--	--	--	--	--

Figure 7: the Pillar-Element Mapping Matrix of Bangladesh

Elements→ Pillars↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy: existing policy and regulatory framework	■	■	■	■	■	■
Institutions: existing institutional framework	■	■	■	□	□	□
People: existing data ecosystem and mapping of stakeholders	□	□	□	□	■	□
Processes: existing data processes	□	■	□	□	■	■

comprehensive (≥ 2 articles)
 mentioned but relatively not comprehensive
 no evidence

Note: In this figure, cells in dark blue mean that Bangladesh performs or plans relatively well (has more than one relevant article or regulation) in the respective pillars and elements; cells in light blue or white means that Bangladesh's current framework or plans are relatively less comprehensive (has just one or no relevant articles or regulations). The mapping above is based on documents in English only and not those published in Bengali and thus cannot depict the overall performance of Bangladesh's data governance framework.

In addition to the data governance framework referenced by Bangladesh in their 2022 MSQ, other content in the E-Government Master Plan and other national-level policies can also be considered to be part of Bangladesh's data governance framework. For example, the Bangladesh National Digital Architecture references a 'whole-of-government' approach while elsewhere referenced integrated information management systems aim at ensuring maximum access to public disclosure information. Figure 7 shows a different type of Pillar-Element Mapping Matrix of Bangladesh's data governance framework. It is important for Bangladesh to make the concept of data governance clearer in its national strategies. Defining the coverage of the data governance framework will help promote accountability and effectiveness in practice.

Figure 8: Alternative Pillar-Element Mapping Matrix of Bangladesh

Elements→ Pillars↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy: existing policy and regulatory framework	Dark Blue	Dark Blue	Light Blue	Light Blue	Dark Blue	Light Blue
Institutions: existing institutional framework	Dark Blue	Light Blue	Light Blue	White	Light Orange	White
People: existing data ecosystem and mapping of stakeholders	Light Orange	Dark Orange	Light Orange	White	Dark Blue	Light Orange
Processes: existing data processes	Dark Orange	Light Blue	Light Orange	White	Light Blue	Dark Blue

■ ■ comprehensive (≥ 2 articles)
■ ■ mentioned but relatively not comprehensive
■ no evidence

Note: In this figure, cells in dark blue and orange mean Bangladesh performs or plans relatively well (has more than one relevant article or regulation) in the respective pillars and elements; cells in light blue, light orange, and white mean that Bangladesh's current framework or plans are relatively less comprehensive (has just one or no relevant articles or regulations). The same limitations are present regarding the publication of some official documents in Bengali only.

SWOT Analysis of Bangladesh's Data Governance Framework

A preliminary SWOT analysis of Bangladesh's data governance framework is conducted mainly based on the summary of four pillars and six elements. At present, Bangladesh performs relatively better in the e-services of data exchange and digital identity while having weaknesses in people's capacity building and involvement, data security and data privacy. Bangladesh has realized its weaknesses and has put lots of effort into improving its infrastructure. Its e-government legislation also stipulates the principles, and strategies including data security, data privacy, data sharing and data standardization. Table 5 lists some preliminary analyses based on the desk research.

Table 5: SWOT Analysis of Bangladesh's Data Governance Framework

	Positive	Negative
Internal factors	Strengths	Weaknesses
	<ul style="list-style-type: none"> • Clear accountability and timeline with ranking according to the measurement of prioritization and importance • Highlights the urgent need for data infrastructure • Takes Covid-19 into consideration 	<ul style="list-style-type: none"> • Lacks domestic content in data privacy, data security, and data standards and classification. The primary focus is instead the infrastructure element • Tight budget with large number of action items

	<ul style="list-style-type: none"> • Ambition of inclusiveness: wish to ultimately enhance the lives of the public and address inequality by improving digital divide • Expands the use of big data-based services 	<ul style="list-style-type: none"> • Lacks inclusiveness as accessibility and internet access is unequal in Bangladesh
External factors	Opportunities	Threats
	<ul style="list-style-type: none"> • Cooperate with international organizations to achieve the SDGs • Make goals of one-stop e-service (national data identity and open government data portal) • Covid-19 produces new needs for e-service and e-government based on data 	<ul style="list-style-type: none"> • Lacking technology support, human resources training and financial support • Ineffectiveness and uncertainty brought by Covid-19 • Regional geopolitical threats

Conclusion

In summary, Bangladesh's data governance framework covers all four pillars. In terms of general E-Government development, it performs above the average of LDCs. However, Bangladesh still has a long way to go in establishing a comprehensive and effective data governance framework. Bangladesh is expected to improve its national data infrastructure first, before developing the rest of its nation-level data governance framework, and finally will develop diverse systems linked to big data as parts of its national data center and national data governance framework to promote e-decision-making in the long run. In addition, Bangladesh ought to develop a concrete plan or strategy on data literacy and capacity, people engagement, data security and data privacy.

Bhutan

Introduction

Bhutan graduated from LDC status in December 2023, coinciding with the end of the implementation of Bhutan's 12th Five-Year Plan (12 FYP). The UN Conference on Trade and Development's (UNCTAD) 2022 report: Towards a Smooth Transition Strategy for Bhutan, however, highlights that despite developments in human capacity, policy, and ICT infrastructure, there remains an insufficient basis to meaningfully leverage the digital economy. According to the UN E-Government Survey 2022, Bhutan ranks above sub-region average EGDI, but below region and world average. In breakdown, it ranked above the world average for online service provision and e-participation, but below the world average for telecommunication infrastructure and e-government development generally (115th out of 193 countries) and trails behind in inherent human capital.¹³ In terms of OGD, Bhutan graduated from middle to high OGD group in 2022.

Figure 9: Bhutan's EGDI 2022¹⁴



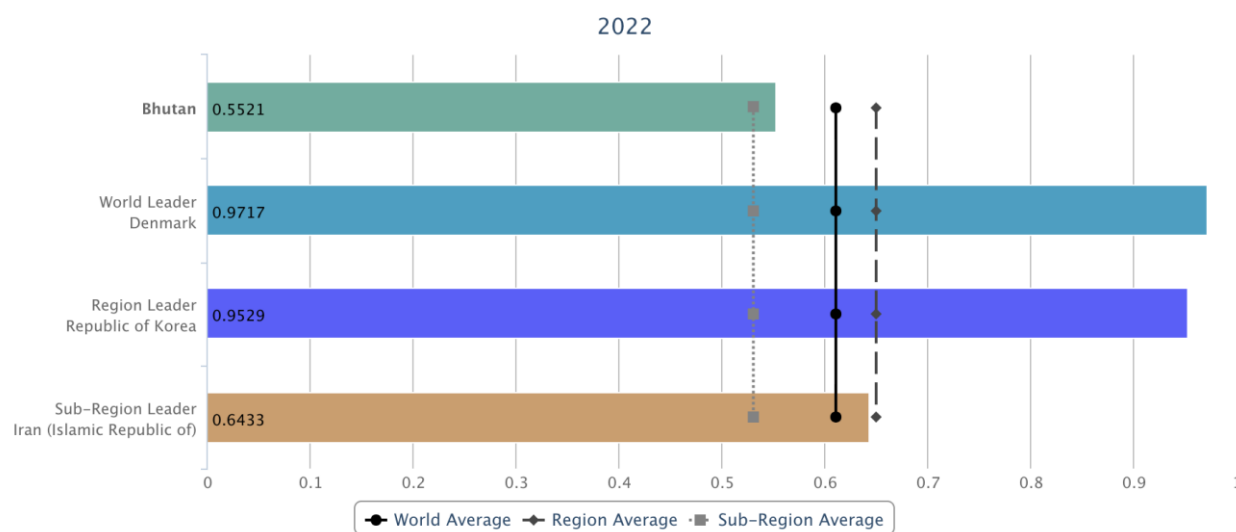
Figure 10: Bhutan's EGDI 2003-2022¹⁵

¹³United Nations (2022) United Nations E-Government Survey 2022: The Future of Digital Government, UN DESA

¹⁴ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/20-Bhutan>

¹⁵ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/20-Bhutan>

E-Government Development Index



E-Government Development Index	2022	2020	2018	2016	2014	2012	2010	2008	2005	2004	2003
Bhutan (Rank)	115	103	126	133	143	152	152	134	130	165	161
Bhutan (Value)	0.55210	0.57770	0.42740	0.35065	0.28285	0.29418	0.25983	0.30740	0.29405	0.15896	0.15680

Table 6 Bhutan's OGD I 2020-2022¹⁶

	OGDI Group	OGDI
2022	High OGD I	0.6225
2020	Middle OGD I	0.6760

In 2011, the Royal Government of Bhutan (RGoB) published the Bhutan ICT Roadmap, establishing 34 programs. This was then revised in 2015 with assistance from the World Bank. In 2014, the Department of IT and Telecom (DITT) published the Bhutan e-Government Masterplan; a holistic approach to e-government planning guided by the development philosophy of Gross National Happiness (GNH). This document recognized the lack of Whole-of-Government (WOG) initiatives with regards to data infrastructure, single source of truth data hubs, and data sharing across government institutions. A Government Data Center was also envisioned, along with regulations regarding data protection and privacy, as well as initiatives focused on data sharing and interoperability. More recently, in 2019, the DITT published the e-Governance Policy for the Royal Government of Bhutan in an effort to support and guide the implementation of the 2014 e-Government Masterplan. In 2020, the National Statistics Bureau (NSB) - the agency responsible

¹⁶ United Nations (2020), United Nations E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, UN DESA.; United Nations (2022), United Nations E-Government Survey 2022: The Future of Digital Government, UN DESA.

for open government data - published the Strategic Plan to Improve Statistics in Bhutan which focuses in part on how to improve data governance for statistical purposes. The RGoB demonstrate institutional recognition of the principles of 'digital by default', 'single source of truth', and 'whole-of-government' (WOG).

Various initiatives focused on different aspects of data governance are currently underway in Bhutan. The RGoB's Digital Drukyul Flagship Program covers a selection of major projects including the National Digital Identity Project, an Education Information Management System, an e-Patient Information System, as well as various other data-driven initiatives. As of November 2022, 72% of the Program has been completed according to the Ministry of Information and Communications (MoIC). A strong institutional structure also exists to support the development of ICT projects, including those relating specifically to data governance, with a strong focus on interoperability and WOG.

It should be noted that in December 2022, the DITT became the Government Technology (GovTech) Agency, a now autonomous agency.

Summary of Four Pillars

Table 7 summarizes Bhutan's current data governance framework in relation to the four pillars. The four pillars and the means of substantiating them are repeated below:

- a) Policy: develop action agendas, regulations and laws, priority actions, key messaging.
- b) Institutions: assign and establish responsible government departments within the existing institutional framework. Develop digital enterprise architecture.
- c) People: assign persons responsible for data governance within government institutions. Map stakeholders within the data ecosystem.
- d) Processes: design effective processes for the implementation, financing, leadership, and management of data systems.

Table 7: Four Pillars of Bhutan's Data Governance Framework

Pillar	Overview
Policy	<ul style="list-style-type: none"> ➤ The Information, Communications and Media Act of Bhutan 2018 (ICM Act 2018) contains provisions relating to: <ul style="list-style-type: none"> ○ Government agencies' treatment of sensitive personal information ○ The recognition of electronic signatures ○ Unauthorized interference with data ○ Data protection & privacy ➤ The e-Government Interoperability Framework (e-GIF) is a Government Enterprise Architecture (GEA) that promotes the integration and interoperability of ICT systems. The Data Reference

	<p>Model (DRM) defines standards to describe, share, structure and classify data with the objective of enabling information sharing and data reuse and enhancing the accessibility and integrity of data, with due consideration for data protection</p> <p>Planned developments</p> <ul style="list-style-type: none"> ➤ The Electronic Signature Rules & Regulations are being drafted ➤ Guidelines on data sharing are being developed ➤ Regulations for open government data are being developed ➤ Further guidelines will be developed by the MoIC concerning data privacy ➤ The draft E-Commerce Policy 2020 will contain provisions on data privacy and protection
Institutions	<p>Numerous institutions are relevant to data governance in Bhutan:</p> <ul style="list-style-type: none"> ➤ The Ministry of Information and Communication (MoIC) housed the former Department of IT and Telecom (DITT) which was the lead agency for e-governance. As of December 2022, the DITT is now the GovTech Agency and is now autonomous from the MoIC ➤ The e-Government Council is accountable to the Cabinet for the implementation of various e-government initiatives. Under which is the e-Government Executive Committee. Under which is the e-Government Review Committee and the Private Sector ICT Advisory panel which solicits feedback from the private sector, academia, and NGOs ➤ The e-Government Programme Management Office (PMO) manages the effective implementation of ICT initiatives across all government agencies ➤ The National Statistics Bureau (NSB) collect and publish open government data and provide workshops and skills training on data ➤ The Bhutan Computer Incident Response Team (BtCIRT) under the GovTech Agency is responsible for cybersecurity awareness, prevention and response ➤ Guidelines state that each government agency must establish/restructure a central ICT division that is responsible for the security of data systems, compliance with e-GIF standards, as well as the management of various ICT functions relating to their ministry, autonomous agency, Dzongkhag or Thromde cluster ➤ The e-Governance Policy requires the identification of a single agency responsible for the collection, management and sharing of data between agencies
People	<ul style="list-style-type: none"> ➤ Chief ICT Officers exist in all 9 ministries who report to the GovTech Director ➤ Agencies and Dzongkhags also have Statistical Officers

	<ul style="list-style-type: none"> ➤ The members of the various e-Government Committees and Council include Directors of government departments, Secretaries of Ministries, Heads of Autonomous Agencies, Chief ICT Officers, and other relevant high-level stakeholders from across government ➤ The Manual for Management of ICT Professionals outlines the responsibilities of ICT Officers and ICT associates. It also provides guidelines on career progression, capacity development, and talent and performance management
Processes	<ul style="list-style-type: none"> ➤ The National Data Exchange Layer provides a means for data exchange between data sources (DataHubs) and data consumers ➤ All new ICT initiatives are required to be e-GIF compliant which involves a series of checklists ensuring interoperability ➤ The e-Governance Committees, Council, PMO, and Advisory Panel have processes for approving, monitoring and evaluating ICT-related policies and initiatives

Pillar-Element Mapping Matrix and Mapping of Six Elements

Table 8: Six Elements of Bhutan's Data Governance Framework

Element	Summary
Data standards & classification	<ul style="list-style-type: none"> ➤ The Data Interoperability Standards assigns codes to over 5,000 different geographical areas, occupation titles, agencies, post offices, and other data categories ➤ The e-GIF DRM defines standards to describe, share, structure and classify data. It includes a standardized naming convention as well as a data access model which defines access privileges with respect also to confidentiality ➤ The e-Governance Policy ensures that government agencies classify data based on its confidentiality to facilitate secure access of permissible data by other agencies ➤ The NSB is committed to standardizing data at all levels of government for use in official statistics, based off international standards
Data sharing, exchange and interoperability, including open government data	<ul style="list-style-type: none"> ➤ The Government DataHub platform uses a National Data Exchange layer to connect data sources to data consumers using APIs to support government-to-citizen (G2C) and government-to-business (G2B) services ➤ The Health Information System (HIS) enables secure data exchange for a variety of health data <p>Open government data (OGD):</p>

	<ul style="list-style-type: none"> ➤ The Bhutan Interactive Data Portal, owned and operated by the NSB, provides public access to disaggregated open government data comprised of over 1,000 statistical indicators on Bhutan's economy and people ➤ The Dashboard to Enhance Wellbeing of All (DEWA) provides data related to the progress and status of Bhutan's socio-economic development, grouped by indicators under the Sustainable Development Goals (SDGs), Bhutan's Five-Year Plan (FYP), and Gross National Happiness (GNH) ➤ Currently no law on OGD although some government financial data is required to be shared to the public under the Public Finance Act
Data security	<ul style="list-style-type: none"> ➤ ICM Act 2018: <ul style="list-style-type: none"> ○ Various provisions on unauthorized interference with data, unauthorized access/copying of data, data protection obligations ➤ The draft E-Commerce Policy 2020 also contains provisions on data protection ➤ Internationally recognized ISO standards on data protection and cybersecurity are incorporated ➤ The BtCIRT is responsible for monitoring and responding to cyber threats to government networks, data centers, and critical ICT infrastructure. It also provides preventative cybersecurity services for government agencies and maintains incident management capabilities
Data privacy (and ethics)	<ul style="list-style-type: none"> ➤ ICM Act 2018: <ul style="list-style-type: none"> ○ Various provisions on conditions for the collection of personal data, disclosure of personal data to third parties, anonymization/pseudonymization of retained obsolete data, breach of confidentiality and privacy ○ Ensures that all government agencies take appropriate actions to ensure that the privacy of sensitive personal information is protected ➤ The draft E-Commerce Policy 2020 also contains provisions on data privacy ➤ Internationally recognized ISO standards on data privacy are incorporated ➤ The Royal Monetary Authority which has recently adopted its own Guidelines on Data Privacy and Data Protection 2022
National data infrastructure	<ul style="list-style-type: none"> ➤ The Government Data Center (GDC), opened in 2017 and managed by the GovTech Agency, serves as a centralized facility

	<p>housing business-critical applications and databases of government agencies</p> <ul style="list-style-type: none"> ➤ The Thimphu-Wide Area Network (TWAN) is a high-speed government intranet network connecting government agencies and corporations in Thimphu (capital of Bhutan)
Linking data governance to digital identity	<ul style="list-style-type: none"> ➤ The ICM Act 2018 contains a chapter on digital signatures ➤ Further rules and regulations on digital signatures are being drafted ➤ The National Digital Identity Program has completed biometric ID data for most of the population ➤ The National Digital ID solution system is expected to be rolled out in April 2023 after proof of concept demonstrated

To demonstrate the relationships between each pillar and element, a Pillar-Element Mapping Matrix is utilized (see Table 9). There are 24 cells in this matrix, reflecting the existing data governance framework in Bhutan, excluding any planned developments or stated visions. This baseline report and the matrix below merely reflects a snapshot of the current situation as discovered from empirical desk research. The volume of information in each cell, including those which are left blank, should not be taken as a comprehensive evaluation or correlative of the development of each pillar-element pair. Its purpose is simply to offer a simplistic overview. Regarding the data standards pillar and the interoperability pillar, the e-Government Interoperability Framework (e-GIF) represents much overlap between these areas.

Table 9: Pillar-Element Mapping Matrix of Bhutan’s Current Data Governance Framework

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	<p>The e-GIF DRM defines standards to describe, structure and classify data</p> <p>The e-Government Policy ensures that government agencies classify data based on its confidentiality</p>	<p>e-GIF is a GEA which promotes the integration and interoperability of ICT systems across government agencies</p>	<p>ICM Act 2018, draft E-Commerce Policy, various departmental guidelines and standards on data protection</p>	<p>ICM Act 2018, draft E-Commerce Policy, various departmental guidelines and standards on data privacy</p>		<p>Recognition of digital signatures under ICM Act 2018</p>

Institutions		The NSB is committed to enabling data sharing for statistical purposes. It also manages open government data portals	The BtCIRT, under the GovTech Agency is responsible for cybersecurity awareness, prevention, and response		The GovTech Agency manages the Government Data Center and the TWAN intranet network	
People		Two e-GIF team members sit on the e-Government Review Committee to ensure that all ICT Project Proposals comply with e-GIF standards ICT Officers in every government agency are responsible for e-GIF compliance	ICT Officers in every government agency are responsible for ensuring the security of data and systems are not compromised			
Processes		All ICT Project Proposals require an e-GIF Compliance Checklist before they are endorsed The DataHub initiative utilizes APIs to connect data sources to data consumers	BtCIRT monitors and responds to cyberthreats to the government and people and provides preventative cybersecurity services for government agencies		Government agencies can request access to GDC resources including data storage	Biometric ID collection since 2020

SWOT Analysis of Bhutan's Data Governance Framework

Table 10: SWOT Analysis of Bhutan's Data Governance Framework

	Positive	Negative
Internal factors	Strengths	Weaknesses
	<ul style="list-style-type: none"> 96.2% Mobile Network Connectivity as of 2019 Clear ambition and desire to become a digitally enabled which is also in line with guiding development philosophy 	<ul style="list-style-type: none"> There is still a lack of national standards for data, affecting data comparability and consistency Data gaps and inconsistencies remain which affects the reliability of data

	<ul style="list-style-type: none"> • Institutional recognition of the principles of 'digital by default', 'single source of truth', and 'WOG' • Interoperability baked into the processes for approving and monitoring ICT initiatives • Strong institutional structure in place for effective governance • ICT divisions and personnel present throughout the public sector 	<ul style="list-style-type: none"> • Limited use of data and statistics in decision making • Poor management and limited use of administrative data • The roles of ICT officers and associates are limited regarding data governance • Data privacy and protection legislation is comparatively less robust than other jurisdictions and lacks enforcement capacity
External factors	Opportunities	Threats
	<ul style="list-style-type: none"> • Regional and global knowledge exchange and collaborative capacity-building can accelerate and inform the implementation of the priority actions • Businesses and people in Bhutan, particularly young people, are rapidly adopting digital technologies • Covid-19 propelled the use of data in the health sector as well as the development of many citizen-oriented services 	<ul style="list-style-type: none"> • The Asia-Pacific region is a significant target for cyber-attacks • Natural disasters can damage national data infrastructure and telecommunications infrastructure. The GDC is only a tier 2 data center leaving it vulnerable • Geopolitical conflicts and cyberwarfare can hinder and undermine digital development

Conclusion

The 2019 e-Governance policy outlines some of the guiding principles that uphold Bhutan's data governance framework. The overarching focus of 'Digital by Default' entails an inherent increase in the volume and variety of data that will need to be collected, stored, managed, and shared by government agencies. The WOG approach aims to strengthen coordination and collaboration between these agencies, avoiding siloed initiatives that have defined previous approaches. The 'Single Source of Truth' principle aims to avoid data duplication and reduce errors and inconsistencies by identifying data owners who are responsible for the collection, management, and sharing of data. Ensuring data security and privacy is also a stated policy goal.

The development of DataHubs as 'Single Sources of Truth' for data categories such as land, vehicle, citizen, and business data have been leveraged through the use of a National Data Exchange to connect data consumers in Bhutan to the data they need through the use of APIs. This supports the various data-reliant government-to-citizen (G2C) and government-to-business (G2B) services provided by the RGoB, allowing for a secure and standardized environment for data sharing, including for real-time data, that ensures data privacy and confidentiality. The various departmental applications and portals that citizens and businesses interact with are supported by data infrastructure such as the Government Data Center and TWAN network. An Identity Server also provides user authentication and authorization through an ID Database. The robust API platform allowed for the swift development of numerous emergency Covid-19 systems which were

integrated with the DataHub platform, providing real-time data crucial to fighting the pandemic in 2020 and 2021.

Regarding open government data, the NSB, in partnership with the World Bank, created the Bhutan Interactive Data Portal. Financial support for this project was also provided by the governments of the UK, Ireland, Canada, and South Korea. The NSB is also committed to exploring the use of Big Data analytics to complement conventional data sources in official statistics to produce timelier and low-cost insights from large volumes of data and innovative data sources that are currently not utilized. The NSB also conducts workshops and needs-based training on basic statistical analysis and data interpretation for decision makers, planners, and media personnel. It is the leading agency outside the MoIC and GovTech Agency on data governance and data-enabled initiatives. While ICT professionals exist with clearly established roles in all ministries, autonomous agencies, and Dzongkhag and Thromde clusters, Bhutan may consider also appointing dedicated Chief Data Officers (CDOs) to place greater emphasis on data governance within government agencies. This will ensure that effective data governance is implemented effectively using a WOG approach.

There is a moderate focus on training and capacity building for data skills. Currently, ICT skills and coding are mandatory subjects in public schools although challenges remain regarding resource provision and connectivity. The Royal University of Bhutan also now offers courses on Data Science. In 2021, the Asian and Pacific Training Centre for ICT for Development (APCICT/ESCAP) hosted a virtual training on 'Realizing Data-Driven Governance' which emphasized the use of data for effective decision-making among senior managers in the Civil service with a focus on data governance and management. UNCTAD also recommends the development of partnerships at the regional and international level for skills development. The recently announced Desuung Skilling Program seeks to invite experienced and recognized international training institutes and trainers to provide training on a number of areas including Data Science.

Regarding data privacy and protection, the ICM Act 2018 affords some level of protection but is less comprehensive and robust than other data privacy regimes. Some government agencies have supplemented this legislation with their own guidance, for instance the Royal Monetary Authority which has recently adopted the Guidelines on Data Privacy and Data Protection 2022, applying specifically to financial service providers, which is far more comprehensive than the ICM Act 2018 and is reflective of the European Union's GDPR. More robust national guidelines may be considered so as to avoid the construction of multiple overlapping data privacy and protection legislative regimes. According to the UN E-Government Survey 2020, one of the most commonly cited challenges of data governance for the general public is a lack of understanding of data-related policies. Clear communication is necessary to surmount this.

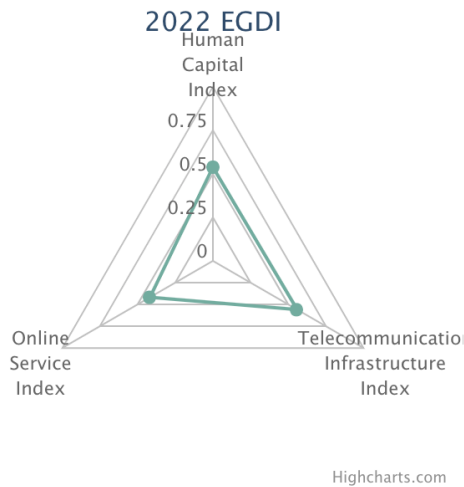
Cambodia

Introduction

Cambodia is currently categorized as a Least Developed Country (LDC) by the United Nations. In 2021, however, Cambodia for the first time met the criteria for eligibility to graduate from LDC status and is expected to graduate in 2027. The digitalization of its government, the economy and the private sector has formed a substantial component of Cambodia's economic development journey. Data from the UN E-Government Survey demonstrates that significant improvements

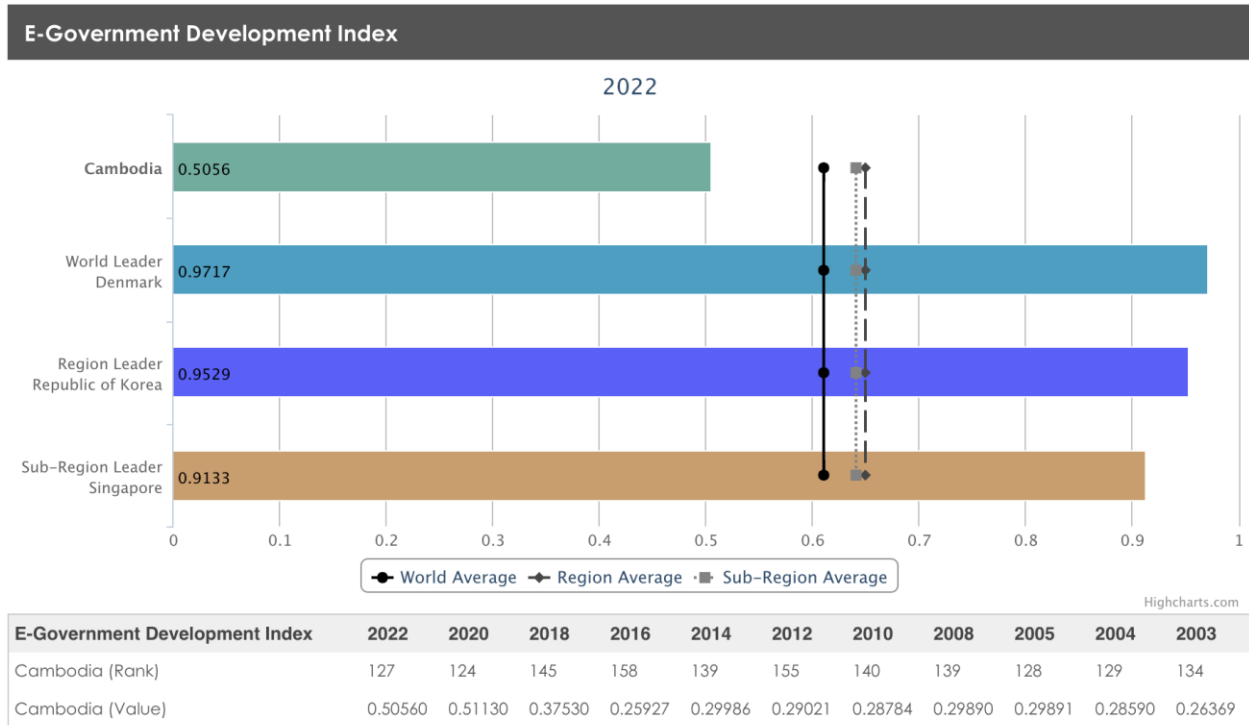
have been made by Cambodia regarding e-government development, moving up 31 places in country ranking from 2016 to 2022 and from the 'middle' to 'high' grouping under the E-Government Development Index (EGDI). Continued improvements will still be needed, however, to surpass the global average. On the other hand, Cambodia's OGDI moved from low to middle group from 2020 to 2022, presenting progress.

Figure 11: Cambodia's EGDI 2022¹⁷



E-Government (2022 EGDI: 0.5056)	
2022 Rank	127
Group	HEGDI
Rating Class	H1
2020 Rank	124
Change	+3
E-Participation (2022 EPART: 0.2841)	
2022 Rank	123
2020 Rank	129
Change	-6

¹⁷ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/29-Cambodia>

Figure 12: Cambodia's EGDI 2003-2022¹⁸Table 11: Cambodia's OGD I 2020-2022¹⁹

	OGDI Group	OGDI
2022	Middle OGD I	0.4282
2020	Low OGD I	0.3240

In accordance with the Cambodia Digital Economy and Society Policy Framework 2021-2035²⁰, the Royal Government published the Cambodian Digital Government Policy 2022-2035²¹ with the

¹⁸ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/29-Cambodia>

¹⁹ United Nations (2020), United Nations E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, UN DESA.; United Nations (2022), United Nations E-Government Survey 2022: The Future of Digital Government, UN DESA.

²⁰ Cambodia Digital Economy and Society Policy Framework 2021-2035.

https://data.opendatacambodia.net/library_record/digital-economy-and-social-policy-framework-of-cambodia-2021-2035

²¹ Cambodia Digital Government Policy 2022-2035.

vision of "building a digital government to improve the quality of life and confidence of the people through better public service". This policy document, published in January 2022, sets out the proposed priority actions and demonstrates an awareness of the country's current shortcomings regarding e-government development and data governance. These two policy documents, along with the 2022 MSQ, have informed the bulk of this baseline study.

In order to address the country's current shortcomings, Cambodia has prioritized the creation of a Data Governance Policy, an Open Data Policy, the establishment of a national data center, the formulation of laws on digital government, ICT and personal data protection, and the strengthening of infrastructure related to telecommunications and digital identity, among other actions and policies. The Data Governance Policy will lay down the principles and standards of data architecture, and the mechanisms and frameworks for data management, modification, localization, classification, sharing, and protection.

Closing the gap between policy and implementation will understandably take time. The Government of Cambodia aptly recognizes the need for a change in mindset of relevant officials, moving the emphasis of e-government from application development to the importance of data as an added value in government. The Cambodia Digital Government Policy 2022-2035 recognizes five levels of digital government based on the Gartner Digital Government Maturity Model 2.0²². Currently, Cambodia is at Level 1: e-government. This entails a focus on online service provision with limited integration of data and infrastructure. At each level, the use of data becomes increasingly integrated, open, automated, better governed and more embedded in the functioning of government.

Summary of Four Pillars

Table 12 summarizes Cambodia's current data governance framework in relation to the four pillars. The four pillars and the means of substantiating them are repeated below:

- a) Policy: develop action agendas, regulations and laws, priority actions, key messaging.
- b) Institutions: assign and establish responsible government departments within the existing institutional framework. Develop digital enterprise architecture.
- c) People: assign persons responsible for data governance within government institutions. Map stakeholders within the data ecosystem.
- d) Processes: design effective processes for the implementation, financing, leadership, and management of data systems.

Table 12: Four Pillars of Cambodia's Data Governance Framework

https://asset.cambodia.gov.kh/mptc/media/Cambodia_Digital_Government_Policy_2022_2035_English.pdf

²² Gartner (2020), Gartner Digital Government Maturity Model 2.0.

<https://www.gartner.com/smarterwithgartner/5-levels-of-digital-government-maturity>

Pillar	Overview
Policy	<p>Many of the policies, regulations and laws within Cambodia remain at the planning or pre-planning stage. The existing initiatives under the policy pillar include:</p> <ul style="list-style-type: none"> ➤ Cambodia Digital Economy and Society Policy Framework 2021-2035 ➤ Cambodian Digital Government Policy 2022-2035 ➤ ASEAN Digital Master Plan 2025 and ASEAN Data Management Framework ➤ E-Commerce Law which has provisions regarding the protection of consumer data ➤ Sub-decrees on digital signatures and ‘personal identification data’ ➤ National Strategic Plan for Identification 2017-2026 <p>Planned developments:</p> <ul style="list-style-type: none"> ➤ Draft Law on Cybercrime which has received expedited drafting ➤ Planned formulation of various laws, policies, and regulations on digital government, personal data protection, access to information, open data, and cybersecurity, among other relevant subjects.
Institutions	<p>Numerous institutions are relevant to data governance in Cambodia:</p> <ul style="list-style-type: none"> ➤ The Ministry of Post and Telecommunications (MPTC) is the body most relevant to data governance, under which exists the General Department of ICT ➤ The recently established National Digital Economic and Social Council has the role of setting vision and principles, orienting, advising, mobilising financial, technical and human resources, and promoting law enforcement relating to the digital economy ➤ Other ministries and institutions also have a significant role in the digital transformation and the realisation of data as an added value in government. Establishing a unit in charge of digital transformation for every ministry, institution and sub-national administration has been labelled a priority action ➤ In 2014, the Royal Government established the National Institute of Posts, Telecommunications, Information and Communication Technology (NIPTICT) as an agency of the MPTC to partake in the training of human capital, skills and digital literacy for civil servants ➤ Cambodia benefits from its membership, and current chairmanship, of the Association of Southeast Asian Nations (ASEAN) ➤ Plan to establish various institutions focused specifically on digital security

People	<p>The people pillar is in significant need of development. Many civil servants lack the technical skills or the mindset needed to effectively utilize data. The current stakeholders are listed below:</p> <ul style="list-style-type: none"> ➤ Chief Information Officers have been nominated from each ministry to form an inter-ministry CIO network ➤ Dedicated anti-cybercrime officers since 2008 under the Ministry of Interior's (MOI) Anti Cybercrime Department ➤ 22% of ministries and institutions currently have dedicated digital security officers ➤ Budget will be allocated to recruit an appropriate number of digital technology officers for ministries and institutions ➤ Various training programs already exist for the purpose of upskilling and training civil servants
Processes	<p>Various processes exist which act as an enabler for the effective, accountable, and inclusive use of data:</p> <ul style="list-style-type: none"> ➤ Data sharing protocols exist for the National Institute of Statistics (NIS) ➤ The Cambodia Data Exchange (CamDX) allows for interoperable data sharing between ministries, institutions and sub-national administrations, as well as the private sector ➤ Biometric ID data have been captured for the majority of the population ➤ Development of a national data center to provide common data storage and computing resources has been prioritised

Pillar-Element Mapping Matrix and Mapping of Six Elements

Table 13: Six Elements of Cambodia's Data Governance Framework

Element	Summary
Data standards & classification	<ul style="list-style-type: none"> ➤ The development of data standards has been labelled a priority action for the purpose of information systems development
Data sharing, exchange and interoperability, including open government data	<ul style="list-style-type: none"> ➤ The Cambodia Data Exchange (CamDX) is a data exchange layer (DXL) that facilitates data sharing between government agencies as well as the private sector. It prioritises security, interoperability, and scalability and is founded on the Once-Only principle ➤ The creation of a Law on Digital Government, one of the priority actions under the Cambodia Digital Government Policy

	<p>Framework 2022-2035, will include provisions on data sharing/exchange/interoperability across government agencies</p> <ul style="list-style-type: none"> ➤ The law on access to information has been drafted but is yet to be adopted ➤ The development of an Open Data Policy has been prioritised to enhance transparency, equality, and accountability, and to improve the quality of services, thus increasing public trust in the government. This will include the development of an Open Data Platform <ul style="list-style-type: none"> ○ The MPTC has partnered with the Republic of Korea's National Information Society Agency (NIA) and the Asia-Pacific Telecommunity (APT) for technical assistance on Open Data Policy and Data Governance Policy Formulation ➤ There is recognition of the need to classify data based on sensitivity
Data security	<ul style="list-style-type: none"> ➤ Light legislation on cybercrime exists under the 2019 E-Commerce Law ➤ The draft Law on Cybercrime is expected to be adopted shortly, following expedited drafting ➤ The creation of a Law on the Protection of Personal Data has been prioritized ➤ The development of digital security standards has been prioritized
Data privacy (and ethics)	<ul style="list-style-type: none"> ➤ The need for a data privacy law has been recognized by the government in order to promote trust and confidence
National data infrastructure	<ul style="list-style-type: none"> ➤ Ministries, institutions, and sub-national administrations have broadband connection as well as data storage capacity in some form ➤ The development of a national data center to provide common data storage and computing has been prioritized to replace silo and redundant systems and to reduce costs ➤ The connection of all ministries, institutions, and missions abroad using the government's own private network has been prioritized
Linking data governance to digital identity	<ul style="list-style-type: none"> ➤ Digital signatures have been recognised in law since 2017 ➤ The Law on Digital Government will establish legal norms regarding the use and management of digital identity ➤ The National Strategic Plan on Identity 2017-2026 (NSPI) sets out clear priorities and long-term vision, including the establishment of an Integrated Population Identification System (IPIS)

	➤ The biometric Khmer ID has been effectively rolled out across the country
--	---

Multiple laws have been planned and some drafted which pertain to the different elements of data governance. The planned Law on Digital Government, specifically, seeks to address a number of these elements. Implementation seems to be lacking across the board, however. Currently, policies and regulations relating to some aspects of data governance are somewhat absent which makes coordinating data processes under a Whole-of-Government (WOG) approach challenging.

To demonstrate the relationships between each pillar and element, a Pillar-Element Mapping Matrix is utilised (see Table 14). There are 24 cells in this matrix, reflecting the existing data governance framework in Cambodia, excluding any planned developments or stated visions. This baseline report and the matrix below merely reflects a snapshot of the current situation as discovered from empirical desk research. The volume of information in each cell, including those which are left blank, should not be taken as a comprehensive evaluation or correlative of the development of each pillar-element pair. Its purpose is simply to offer a simplistic overview.

Table 14: Pillar-Element Mapping Matrix of Cambodia's Current Data Governance Framework

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy		National Institute for Statistics (NIS) have data sharing protocols	Protection of consumer data under E-commerce law	Guidance on handling of 'personal identification data' by the MOI		Policy framework on identity generally Law on digital signatures
Institutions	CamDX promotes the standardization of data for the purpose of data sharing	NIS facilitate data sharing for the purpose of analytics for the government CamDX hosted and operated by the MEF	Anti-Cybercrime Department under the MOI		A national data centre operated by the MPTC exists but is yet to be expanded and utilized nationally	General Department of Identification (GDI) under the MOI
People		Chief information officers (CIOs) at every ministry form an inter-ministry CIO network	Digital security officers in some government agencies Anti-cybercrime officers under MOI			

Processes		CamDX enables data sharing between government agencies as well as the private sector				CamDigiKey mobile application verifies digital ID for the CamDX platform
------------------	--	--	--	--	--	--

SWOT Analysis of Cambodia's Data Governance Framework

A SWOT analysis (Table 15) is presented below. This has been partly adapted from the relevant parts of the SWOT analysis under section 3.2 of the Cambodia Digital Government Policy 2022-2035.

Table 15: SWOT Analysis of Cambodia's Data Governance Framework

	Positive	Negative
Internal factors	<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Political will and ambition from Government to utilize data • Institutions have been established to lead and coordinate Cambodia's digital transformation • General priority actions have been established and have been allocated responsible institutions • Multiple relevant laws and policies surrounding data have been planned and/or drafted • Adoption of latest technology has allowed for 'leapfrogging', avoiding the need to integrate and modernize legacy systems 	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • Cambodia ranks below the world average for telecommunications infrastructure²³. Coverage is uneven and quality remains low • Lack of policies, laws and regulations surrounding data • Ministries and institutions utilize data according to their own needs and in isolation, resulting in redundancy and inconsistency • Not all ministries and institutions have a dedicated unit in charge of digital transformation and/or data • Human resources with the relevant skills are insufficient • Intra-institutional connection is insufficient • Digital identity infrastructure remains lacking • National platforms for data sharing, exchange and interoperability require further development • Digital security remains weak and digital systems are vulnerable to attacks

²³ United Nations 2022, UN E-Government Survey 2022: The Future of Digital Government

		<ul style="list-style-type: none"> A 'culture of data concealment' exists among relevant officials
External factors	Opportunities	Threats
	<ul style="list-style-type: none"> Regional and global knowledge exchange and collaborative capacity-building can accelerate and inform the implementation of the priority actions Businesses and people in Cambodia, particularly young people, are rapidly adopting digital technologies Covid-19 propelled the use of data in the health sector as well as other citizen-oriented services 	<ul style="list-style-type: none"> The Asia-Pacific region is a significant target for cyber-attacks Natural disasters can damage national data infrastructure including telecommunications infrastructure Geopolitical conflicts and cyberwarfare can hinder and undermine development

Conclusion

Ultimately, the Royal Government of Cambodia's political will, spearheaded by the MPTC, to effectively utilize data and improve data governance in Cambodia is strong. This vision and ambition, however, must incorporate a Whole-of-Government (WOG) approach in order to be effective. There must be consistency among all ministries and institutions which includes an effective institutional arrangement, appointment of people and commensuration of sufficient resources for implementing and managing the various data processes. Attention must also be paid to sub-national administrations since a significant amount of data is generated at the local level. It is thus important to ensure that this data is adequately protected and secure, for sharing with other relevant government agencies as well as the public through an open data platform.

Laws and regulations are a crucial component and enabler of effective data governance. Among many functions, they have the important and necessary roles of enhancing accountability, and in some cases transparency, which promotes public trust and confidence in the Government and its digital transformation. The Government must be cautious, however, to ensure that any laws pertaining to data also respect human rights or else trust and confidence may not be sustained. Furthermore, without the necessary enforcement, as well as monitoring and evaluation mechanisms, any law, regulation or strategy will not be fit for purpose. All stakeholders serve to gain from increased certainty regarding data processes and policies, without which, reluctance to utilize data is likely to persist.

The United Nations Conference on Trade and Development (UNCTAD) notes that two of the main hurdles to data governance are an absence of vision and a lack of capacity. A lack of vision does not seem to define Cambodia's data governance framework, but capacity is the likely limiting factor. Capacity includes not only national data infrastructure but also the technical and policy capacities of human resources. UNCTAD also notes the importance of a change of mindset of relevant officials. This change in mindset includes moving away from the default model, which places emphasis on application development, towards one which recognizes the status of data as an

added value in government. While efforts to upskill civil servants are already underway, they must focus not only on the relevant technical skills but must also work to overcome what is described as a 'culture of data concealment', a conservative culture within the government, and a lack of will to utilize and share data. Cambodia recognizes that the training of public servants and technology officers must also seek to promote effectiveness and creativity when working with data and digital information systems. Internationally developed skills workshops and assessment criteria could be utilized to ensure training is effective and relevant. Digital skills may also be implemented into the education system, from primary, secondary to tertiary levels, to enhance human capital in the future workforce.

While data governance in Cambodia is considered in its infancy, some first steps and proof of concepts have demonstrated both capacity and will. One example where the Government has made considerable progress is in its development and implementation of the Cambodia Data Exchange (CamDX). Based on Estonia's X-Road, this data exchange layer (DXL) system allows for interoperable data to be shared between different agencies within the government as well as the private sector. Currently its use is limited to a small selection of applications although built with the 'Land and Expand' principle, the Government is eager to expand its use, prioritizing those services which are in high demand, complex, and relevant to individual citizens. This platform also demonstrates an institutional recognition of the 'Once-Only' principle as well as the 'Interoperability as an Ecosystem' principle.

The establishment of a national data center, operated by the MPTC, is one of the defining priority actions of Cambodia's vision for its future data governance framework. This will seek to provide common computing resources and data storage for all government agencies with the aim of reducing costs and increasing the security of digital systems. Currently, the approach seems to be inconsistent among ministries and institutions, which has resulted in siloed and redundant systems. In establishing any large project such as this, the considerations of urgency and sustainability must be balanced. Implementation understandably takes time, especially in consideration of change management as well as the importance of security and effectiveness. Short-term approaches to achieving goals, also known as a 'quick wins' approach, could be considered in the meantime, while not losing sight of the long-term vision, such as utilizing cloud storage as a low cost and secure means of adding data storage capacity, rather than investing heavily in local decentralized data infrastructure.

Regarding digital identity, Cambodia has shown ambition in ensuring all citizens have access to birth certificates, biometric e-passports, and the biometric Khmer ID Card. Identification and biometric data must be subject to the highest level of privacy and security. In Cambodia, biometric data are stored on local servers owned by the government to ensure this is the case. The COVID-19 pandemic was instrumental in demonstrating the means in which digital identity can support the health sector. A greater focus on digital identity and its accompanying infrastructure will benefit all forms of citizen-centric public service provision. The CamDigiKey application which accompanies the CamDX system is a good first step in digital ID development, although the Government must be cautious to ensure that systems are developed in a coordinated manner to avoid the known hurdles of redundancy and overlap.

Knowledge exchange and collaborative capacity-building have the potential prove incredibly valuable in developing the data governance framework. Cambodia already utilizes best practices

from the region and globally such as in the development of CamDX – based on Estonia’s X-Road, or through South Korea’s technical assistance on Open Data Policy and Data Governance Policy. Technical assistance from the ITU, UN DESA, and other international organizations can also prove highly effective. Certain elements of the data governance framework, data standards and data enterprise architecture, for instance, are easily replicable and best practices can be adopted from other countries with relative ease. Starting from scratch may not always be necessary and Cambodia benefits from being able to ‘leapfrog’ to the most modern technologies and practices available without having to integrate and modernize legacy systems.

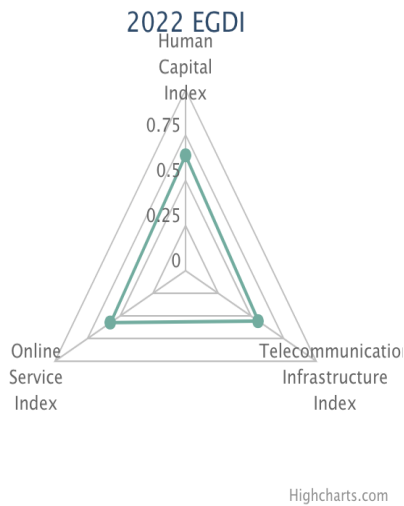
Ultimately, Cambodia has to define a sustainable pathway to fulfil its vision of maturing the national data governance framework. While there is a clear and established vision, targeting all elements of data governance, the focus on implementation and monitoring effectiveness is not as strong. Implementation requires a focus on the four pillars and must be considered from a Whole-of-Government (WOG) approach. Aligning the Government’s vision with every ministry, institution, and sub-national administration, including the relevant stakeholders and units in charge of the digital transformation, must be prioritized in order to ensure this vision is realized.

Egypt

Introduction

According to E-Government Survey 2022, Egypt, situated in the lower-middle-income country group, has an EGDI above region and sub-region average. With a rather balanced performance in HCI, OSI, and TII, its ranking progressed from 123 in 2003 to 107 in 2022. Also, Egypt has above-average OSI values, offering 20-21 online public services for the first time, which is ranking high even worldwide. Its OGDII has seen improvement from low to middle group. However, overall, Egypt falls behind world average.

Figure 13 Egypt's EGDI 2022²⁴



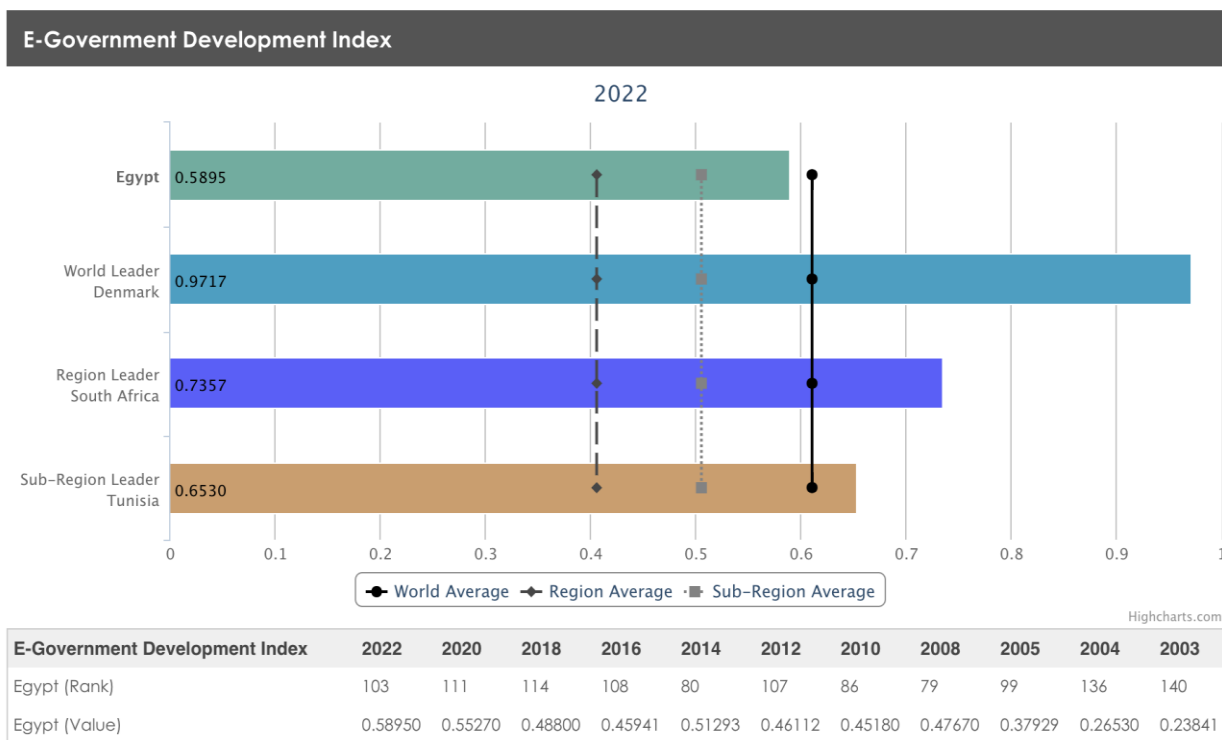
E-Government (2022 EGDI: 0.5895)

2022 Rank	103
Group	HEGDI
Rating Class	H2
2020 Rank	111
Change	-8

E-Participation (2022 EPART: 0.3523)

2022 Rank	107
2020 Rank	106
Change	+1

²⁴ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/53-Egypt>

Figure 14: Egypt's EGD I 2003-2022²⁵Table 16: Egypt's OGD I 2020-2022²⁶

	OGDI Group	OGDI
2022	Middle OGD I	0.3127
2020	Low OGD I	0.2896

Egypt has been undertaking its “Digital Egypt” strategy since 2017, under the inspiration of Egypt Vision 2030²⁷ and Egypt's digital transformation strategy²⁸. Digital Egypt employs a “Execute, Plan, Explore” (EPE) framework, and is built on three distinct tiers: digital transformation, digital skills

²⁵ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/53-Egypt>

²⁶ United Nations (2020), United Nations E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, UN DESA.; United Nations (2022), United Nations E-Government Survey 2022: The Future of Digital Government, UN DESA.

²⁷ <https://mped.gov.eg/EgyptVision?lang=en>

²⁸ <https://www.telecomreviewafrica.com/en/articles/features/2906-holding-the-future-in-a-vision-egypt-vision-2030>

and jobs, and digital innovation²⁹. The Egypt National Artificial Intelligence Strategy³⁰, notes that having an effective data strategy means having the right type of data, at the right time, accessible to the right people via the right channels, while being governed and protected in the right way. The data governance framework in Egypt places emphasis on regional and global cooperation, while trying to unify the African and Arab voices around issues of data governance.

Summary of Four Pillars

The four pillars and the means of substantiating them in Egypt are repeated below:

- a) Policy: develop action agendas based on existing policies and regulations; aim at establishing quantitative national policies decision making process through data center.
- b) Institutions: assign government departments in existing institutional framework with responsibilities. New digital enterprise architecture (e.g., in health and family welfare) will be in line with national e-governance architecture.
- c) People: show the implementing lead positions of specific information system or action items and the capacity of government professionals to implement relevant policies and regulations on data governance.
- d) Processes: identify leaders, implementing agency, partners, financing, and other information related to data system and digital identity.

Pillar-Element Mapping Matrix and Mapping of Six Elements

This part shows the mapping of six elements, based on Egypt National Artificial Intelligence Strategy³¹, National Cybersecurity Strategy (2017-2021)³², Digital Arabic Content National Strategy³³, National Free and Open Source Software (FOSS) Strategy³⁴, the Egyptian Government Cloud (EG-Cloud) Strategy³⁵, and other related projects, plans, and laws/regulations.

Table 17: Six Elements of Egypt's Data Governance Framework

Element	Summary
Data standards & classification	<ul style="list-style-type: none"> ➤ Promote Free and Open Source Software (FOSS) to decrease the barriers of digitization across public sector agencies. ➤ Data localization: Arabic language data repositories have been

²⁹ https://mcit.gov.eg/en/Digital_Egypt

³⁰ https://mcit.gov.eg/Upcont/Documents/Publications_672021000_Egypt-National-AI-Strategy-English.pdf

³¹ https://mcit.gov.eg/Upcont/Documents/Publications_672021000_Egypt-National-AI-Strategy-English.pdf

³² https://mcit.gov.eg/Upcont/Documents/Publications_12122018000_EN_National_Cybersecurity_Strategy_2017_2021.pdf

³³ https://mcit.gov.eg/Upcont/Documents/Publications_1382015000_Digital%20Arabic%20Content%20Strategy-%20English.pdf

³⁴ https://mcit.gov.eg/Upcont/Documents/Publications_18112014000_National_FOSS_Strategy_EN_17_1_1_2014.pdf

³⁵ https://mcit.gov.eg/Upcont/Documents/Publications_2552015000_EG_Cloud_Strategy_5_1_1_2015.pdf

	created by several organizations.
Data sharing, exchange and interoperability, including open government data	<ul style="list-style-type: none"> ➤ Data-once-only principle included in the Egyptian Government Digital Transformation Strategy (to be published) ➤ Egypt has met the requirements of International Monetary Fund's Special Standard for Data Dissemination (SDDS) since 2005 as the second Arab country. ➤ Egypt has a goal of promoting and developing a high-quality and low-cost digital Arabic content for all. ➤ The Access to Information and exchange of government data Law is expected to be presented by the Government to the Parliament. ➤ "Egyptian Charter for Responsible AI" is to be published.
Data security	<ul style="list-style-type: none"> ➤ The Anti-Cyber and Information Technology Crimes Law (The Cybercrime Law) and Law no. 121 of 1975 concerning the preservation and publishing of the state's official documents are published to protect data security. ➤ Several awareness sessions and training courses were organized to raise awareness of the importance of cybersecurity, and to further qualify cybersecurity officials.
Data privacy (and ethics)	<ul style="list-style-type: none"> ➤ Personal Data Protection Law is launched in 2020. ➤ The Data Protection Centre (DPC) is empowered to oversee and enforce the Data Protection Law, under the authority of the Minister of Communications and Information Technology.
National data infrastructure	<ul style="list-style-type: none"> ➤ International Infrastructure: Egypt has established itself as a major country of transit for data. Thanks to the country's unique location, more than 90% of the data passing between Asia and Europe cross the Egyptian land territory and waters. The international infrastructure has been upgraded featuring four key elements: <ul style="list-style-type: none"> ○ Expansion in international infrastructure outside Egypt ○ Expansion in international infrastructure inside Egypt ○ Expansion in Africa's international network ○ Expansion in establishing data centers ➤ National Infrastructure: <ul style="list-style-type: none"> ○ Fixed Broadband: Phase two of the project has kicked off, involving replacing copper cables with fiber optic ones, targeting both urban areas and rural villages. ○ Mobile Phone Services: accelerate the process of building new cell towers. ○ Egypt Post: Through post offices, citizens can also access Digital Egypt and notarial services, like pay bills, and transfer money.

	<ul style="list-style-type: none"> ➤ A number of national data banks have been created, including the National Gene Bank Database, the Database for the Numbering of Cattle across Directorates.
Linking data governance to digital identity	<ul style="list-style-type: none"> ➤ The Egyptian National Digital Identity is planned to link the Egyptian ID card to the Digital Signature and will be put on an electronic media. ➤ E-Signature is regulated and supervised by the Information Technology Industry Development Agency (ITIDA).

To demonstrate the relationships between each pillar and element, a Pillar-Element Mapping Matrix is utilized (see Table 18). There are 24 cells in this matrix, reflecting the existing data governance framework in Egypt. Four pillars to address elements at the national level are listed as follows: initiatives/practices on strategies/policies/regulations (i.e., legitimizing data governance for effective leadership), institutional arrangement or framework (e.g., establishing institutional organs leading, coordinating, enforcing, standardizing, and managing data governance elements), people capacity (role-based knowledge and skill) and their involvement, structured work process to realize other three pillars. This baseline report and the matrix below merely reflects a snapshot of the current situation as discovered from empirical desk research. The volume of information in each cell, including those which are left blank, should not be taken as a comprehensive evaluation or correlative of the development of each pillar-element pair. Its purpose is simply to offer a simplistic overview.

Table 18: Pillar-Element Mapping Matrix of Egypt's Current Data Governance Framework

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	<p>Implement a government-wide NLP platform to enable Arabic language applications.</p> <p>Set the standardized criteria relevant to the construction of digital repositories to serve as a center for the</p>	<p>Digital Arabic Content National Strategy: Ambitious goal of promoting and developing a high-quality and low-cost digital Arabic content for all.</p> <p>Ensure citizens' effective and efficient access to the digital government content to guarantee their involvement in the</p>	<p>The Anti-Cyber and Information Technology Crimes Law (The Cybercrime Law) ratified in 2018.</p> <p>Program to develop the appropriate legislative framework to secure cyberspace, combat cybercrimes and protect privacy and digital identity</p>	<p>Personal Data Protection Law</p>	<p>The Automation of Governorates project: introduce the latest technologies and improving the information infrastructure in the city council and provide training to employees.</p> <p>Data Centers Consolidation Initiative: aims to reduce the overall cost of data center operations and</p>	<p>Digital Citizenship Program: includes the Public Key Infrastructure (PKI), on which the e-signature is based; launch national projects aimed at using expanding applications that support facilitating and securing e-transactions</p>

	<p>production of digital content.</p> <p>A system for electronic archiving should be created to manage the preservation and retrieval process of digital output.</p> <p>A fixed digital content identifier to serve as a national ID for each material that is produced and included in the digital repository.</p> <p>A born digital content including its processing, legalization and capacities, consistent with its similar non-digital content in the repository.</p> <p>Law no. 356 of 1954 of the establishment of the Egyptian National Library and Archives</p> <p>Implement Center of Excellence approach to ensure quality and standardization of deliverables.</p>	<p>decision-making process.</p> <p>Set standards for the accessibility and availability of Open Data. Government (ODG) Content through the plans of the governmental entities and ministries.</p> <p>Develop the use of real time government content and provide access to it.</p> <p>Promote Free and Open Source Software (FOSS) used in the public sector to enable the creation of effective service delivery platform and allow for universal access to a single window that provides online government services through various media.</p> <p>Government Cloud-First Policy Initiative: when considering procurement of new IT products/services, governmental bodies consider and assess potential cloud solutions as priority.</p> <p>Defining Services Portfolio Initiative: EG-Cloud services have to be properly listed,</p>	<p>Program to support scientific research and development and cybersecurity industry development.</p> <p>Law no. 121 of 1975 concerning the preservation and publishing of the state's official documents relevant to the state's supreme policies and national security.</p> <p>The proposed data protection framework aims to protect government entities through regulation of the collection, use, disclosure, transfer and security of their data.</p> <p>Several projects are implemented to provide a safe digital environment and prevent cybercrimes and attacks, including:</p> <ul style="list-style-type: none"> - Egyptian Cyber Shield - Egyptian Anti-Malware (EGSHIELD) - Egyptian National IP-Scanner - Site Scan Platform - Cyber Attacks Early Warning System 		<p>energy consumption, which would be achieved through enabling cloud computing model.</p>	<p>relying on the PKI infrastructure.</p> <p>Authentication: e-Signature Law, Public Key Infrastructure (PKI) framework</p> <p>The Egyptian National Digital Identity is planned to link the Egyptian ID card to the Digital Signature and will be put on an electronic media.</p> <p>-Pilot Project #1 The New Digital Citizen Card</p> <p>-Pilot Project #2 The New Capital Employee Digital Card</p>
--	---	---	---	--	--	---

		comprehensively described, clearly categorized and being defined according to standards to provide a better service delivery model.	Advanced Wireless Systems' Security lab			
Institutions	Egyptian Public Authority for Standardisation and Quality Control: a scheme intending to establish a database of standards specifications, with a backlog of data entries from Egyptian standards, drawing precedents, and quality control.	<p>The Community Portal (www.kenanaonline.com): an active tool for coordination of all efforts exerted by organizations operating in the area of development by providing information about their work scope, issues and future plans and the ongoing projects to avoid duplication of work. All stakeholders contribute to the documentation process, aiming to exchange expertise.</p> <p>Luxor e-portal (the official website for tourism in Luxor); E-Portal for Community Development.</p> <p>Egypt data portal (https://egypt.opendataforafrica.org/): provide national data across agriculture, education, financial, industry, health, investment, population and so on.</p>	<p>Egyptian Supreme Cybersecurity Council (ESCC): reporting to the Cabinet of Ministers, and chaired by the Minister of Communications and Information Technology. It was mandated with developing a national strategy for cybersecurity and confronting cyberattacks. It supervises the implementation and updates of the National Cybersecurity Strategy.</p> <p>The technical arm of ESCC is the National Egyptian Computer Emergency Readiness Team (EG-CERT).</p>	According to Article 19 of the Data Protection Law, the Data Protection Centre (DPC) is empowered to oversee and enforce the Data Protection Law, under the authority of the Minister of Communications and Information Technology. (However, the DPC is not yet operational.)	<p>National Council for AI: chaired by the Minister of Communications and Information Technology, in charge of outlining, implementing and governing AI strategy in close coordination with the concerned experts and entities.</p> <p>The National Telecommunication Regulatory Authority (NTRA): awarded licenses to operators offering telecommunications services within the Egyptian market.</p> <p>Information Technology Industry Development Agency (ITIDA)</p> <p>National Telecommunications Institute (NTI): a scientific, educational and research institution and is the center of excellence for telecommunication, education, training, research</p>	<p>E-Signature is regulated and supervised by the Information Technology Industry Development Agency (ITIDA), through ITIDA-Egyptian Root Certificate Authority (Root CA), the Government Electronic Certification Authority (Gov-CA) operated by the Ministry of Finance, and other companies licensed by ITIDA to provide e-signature services.</p> <p>Plan to form a nationwide supreme committee for digital citizenship.</p>

		<p>Egypt's Governmental Single Point of Reference for FOSS (ESPF): ensure that all FOSS initiatives and stakeholders are directed towards a common goal.</p> <p>The EG-Cloud strategy committee</p> <p>The Government Portal (http://www.egypt.gov.eg/): provide Public Services like Birth certificate and national ID replacement, Educational enrolment guidelines, Car license renewal and Business Services like Taxation and Customs services, Telecommunication licensing.</p> <p>Central Agency for Public Mobilization And Statistics (CAPMAS, https://capmas.gov.eg/HomePage.aspx): a statistical agency.</p>			<p>and development and consultancy services.</p> <p>Information Technology Institute (ITI): ICT human capacity building.</p> <p>AI Center of Excellence (CoE): Tackling national projects that are based on AI application and big data; Contacting government ministries and government agencies in order to search for tasks where AI can be applied for more efficient operation and better performance.</p> <p>The Central Agency for Public Mobilization and Statistics.</p>	
People		<p>Human Capacity Building Initiative: support the adoption and development of the EG-Cloud, and among all sectors by providing qualified skilled professionals, and</p>	<p>Program to prepare human calibres and expertise necessary to implement the cybersecurity system in various sectors.</p> <p>Program to raise awareness of the</p>	<p>All controllers and processors in Egypt must appoint a Data Protection Officer (DPO), whose appointment is mandated under the Data</p>	<p>Digital Capacity-Building Programs for Government Employees.</p> <p>The National Academy of Information Technology for Persons with Disabilities (NAID).</p>	

		enhancing the skill set available.	opportunities and benefits offered by e-services to individuals, institutions and government agencies, and of the importance of cybersecurity to protect these services from risks and challenges.	<p>Protection Law.</p> <p>Data controller: Any natural or juristic person who has the right, due to the nature of work, to obtain personal data and to determine the process and the criteria of keeping or processing personal data and control it according to the determined purpose.</p> <p>Data processor: Any natural or juristic person whose work involves the processing of personal data for their own benefit or the benefit of the data controller, according to an agreement with the data controller and the instructions thereof.</p>		
Processes		The general framework of the content digitization and accessibility processes in its different phases.	The availability of the source code in FOSS expedites the process of detecting and eliminating security risks, bugs and errors, and increases confidence in the			

			<p>trustworthiness of such software.</p> <p>The EG-Cloud includes two basic deployment models: Government Private Clouds (cover the high, medium, and low assurance zones of services covering security and availability) and Public Clouds (used only for low assurance services).</p>			
--	--	--	--	--	--	--

Figure 15: the Pillar-Element Mapping Matrix of Egypt

Elements→ Pillars↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy: existing policy and regulatory framework	Well established	Well established	Well established	Roughly established	Well established	Well established
Institutions: existing institutional framework	Roughly established	Well established	Well established	Roughly established	Well established	Roughly established
People: existing data ecosystem and mapping of stakeholders	Not mentioned	Roughly established	Roughly established	Roughly established	Well established	Not mentioned
Processes: existing data processes	Not mentioned	Well established	Roughly established	Not mentioned	Not mentioned	Not mentioned

Well established | Roughly established | Not mentioned

Among the six elements, the data governance framework in Egypt is performing especially well in “Data sharing, interoperability, and open government data”, “Data security”, and “National data infrastructure”, but not equally satisfactory in “Data privacy (and ethics)”, “Link with digital identity” and “Data standards & classification”. For data privacy, although the “Personal Data Protection Law has been enacted in 2020, the Data Protection Centre (DPC), which is empowered to oversee and enforce the Data Protection Law, is not yet operational. In addition, there are no details in the Law about the process of making public claims or feedback on data privacy. For data standards, Egypt has made many efforts in data localization with the goal of increasing online content in the Arab world. However, if appropriate compatibility measures are not undertaken, this can lead to a derailment of the data with the rest of the world. Therefore, it may be essential to study how data in different languages converge is contextual to different needs in Egypt.

Among the four pillars, Egypt is doing well in policy and institution, with a detailed and comprehensive policy and organizational framework, but it may need further improvement in people and process.

For policy, Egypt's policy development in data governance follows scientific approaches. For example, the Balance Score Card (BSC) concept used to formulate the e-government strategy, the "Execute, Plan, Explore" (EPE) framework applied in the data strategy, and the Situation Analysis applied in The Egyptian Government Cloud (EG-Cloud) Strategy, National Free and Open Source Software (FOSS) Strategy, and Egypt National Artificial Intelligence Strategy. Also, almost all the launched projects have roadmaps and quantifiable goals at each step.

For Institutions, there is an institution in charge of each element, but there may be an issue of organizational redundancy³⁶. There are 7 institutions under the Ministry of Communications and Information Technology (Figure 16), but there is no formal attribution of responsibilities among these institutions, and there may be an overlap of responsible roles and issues. For example, the National Telecommunication Institute, Telecom Egypt, and National Telecom Regulatory Authority are all relevant government agencies in the telecommunications industry, but it seems unclear whether there is a mentoring or cooperative relationship between them and whether there is division of responsibilities.

Figure 16: The organizations affiliated to the Ministry of Communications and Information Technology in Egypt



For people, it is noteworthy that all data controllers and relevant institutions in Egypt will appoint a Data Protection Officer (DPO), mandated under the Data Protection Law. But unfortunately, similar rules do not exist for other elements. In addition, there is lack of monitoring and management mechanisms for DPO. Another thing is that there is no guideline for government officials and institutions on the use of social media. This could lead to problem of data security and the inappropriate use of government data.

For process, it seems like Egypt's data governance framework lacks an implementation model or mechanism for national interaction with sub-national/local entities. Although the Egyptian

³⁶ Miranda, Rowan, and Allan Lerner. "Bureaucracy, organizational redundancy, and the privatization of public services." *Public Administration Review*, vol. 55, no. 2, Mar.-Apr. 1995, pp. 193-200.

Government Digital Transformation Strategy is developed in cooperation with all government entities, according to the Member States Questionnaire (MSQ), It is not clear on the extent of the whole-of-government approach, such as the arrangement of data construction, and the person in charge of data in each province.

SWOT Analysis of Egypt's Data Governance Framework

A SWOT analysis of Egypt's data governance framework is conducted mainly based on the summary of four pillars and six elements.

Table 19: SWOT Analysis of Egypt's Data Governance Framework

	Positive	Negative
Internal factors	Strengths	Weaknesses
	<ul style="list-style-type: none"> The ICT sector in Egypt is one of the drivers of innovation. The annual growth rate of the number of companies operating in ICT communications is 13.5% Advantageous location at the junction of Asia, Europe, and Africa Maintain good regional and global cooperation, while trying to unify the African and Arab voices Scientific approaches are followed in policy development like the Balance Score Card (BSC) concept, the "Execute, Plan, Explore" (EPE) framework, Situation Analysis, and SWOT Analysis 	<ul style="list-style-type: none"> Digital education is not provided in pre-university education Internet bandwidth is not wide enough for big data, especially when required to be processed remotely The poor integration of databases raises many problems, such as redundancy, inconsistency and inaccuracy of the data needed to mine and extract useful knowledge The current legislative system does not cover the emerging challenges s, e.g. ethical issues, liability, data bias, information accessibility and circulation
External factors	Opportunities	Threats
	<ul style="list-style-type: none"> There is social and business needs for better tools related to Arabic Natural Language Processing such as Machine Translation, Text Summarization, and Semantic Information Retrieval There are many problems related to lack of data-related techniques in many domains, such as healthcare, transportation, agriculture, etc. The superior geographic location fosters its cooperation on the regional and international levels by championing relevant initiatives 	<ul style="list-style-type: none"> Decreased availability of data due to limiting changes in open data policies Uncertainties arising from COVID-19 Possible changes on regional geopolitics environment

Conclusion

In summary, Egypt has a data governance framework covering all the elements, which is particularly characterized by regional cooperation and data localization. However, there is still a series of gaps and opportunities in establishing a comprehensive and effective data governance framework. Egypt is expected to advance relevant policies and laws that are still in the draft stage and ensure their practical implementation and evaluation. Besides, the Government could pay more attention to the cooperation and interaction between national institutions and sub-national entities in terms of policy mechanisms. Finally, the issue of institutional redundancy could be addressed effectively as otherwise, it may affect the efficiency and effectiveness of policy implementation in the long run.

Appendices

Appendix III: Mapping of Laws and Regulations in Egypt

Year	Project/Plan/Law related to data governance	Related Content	URL
2022	MCIT Yearbook 2021	This yearbook brings together highlights of 2021, a year in which MCIT successfully realized numerous activities and achievements. The 2021 yearbook marks new and continuing initiatives, events and other calendar highlights relevant to Egypt's progress in the ICT field both on the local and international levels.	https://mcit.gov.eg/Upcont/Documents/Publications_2952022000_MCIT%20Yearbook%202021.pdf
2021	Egypt National Artificial Intelligence Strategy	The National Artificial Intelligence (AI) Strategy to exploit such technology to attain the country's sustainable development goals, play a key role in facilitating regional cooperation within the African and Arab regions, and establish Egypt as an active international player in AI. This is within the framework of Egypt's keenness to embrace the digital era, as advancements in technology continue to evolve every day.	https://mcit.gov.eg/Upcont/Documents/Publications_672021000_Egypt-National-AI-Strategy-English.pdf

2020	Personal Data Protection Law	<p>In line with international laws and the European Union's General Data Protection Regulation (GDPR). The Law promotes the security of personal data, which is being processed and stored online. It also sets a legal framework to regulate data transmission with other countries.</p> <p>The Executive Regulations for the Data Protection Law have not been issued yet even though they should have been issued by the Minister of Communications and Information Technology within six months from the date on which the Data Protection Law entered into force in Egypt.</p>	https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/111246/138543/F217894882/EGY111246%20Eng.pdf
2018	National Cybersecurity Strategy (2017-2021)	<p>The Egyptian Supreme Cybersecurity Council (ESCC)— reporting to the Cabinet of Ministers, and chaired by the Minister of Communications and Information Technology— has launched the National Cybersecurity Strategy (2017-2021), aiming to provide a safe and secure environment that would enable various sectors to deliver integrated e-services, in line with the State's efforts to support national security and develop the Egyptian society.</p> <p>Egyptian Supreme Cybersecurity Council (ESCC) Key Strategic Programs during the Current Phase (2017-2021)</p>	https://micit.gov.eg/Upcont/Documents/Publications/12122018000_EN_National_Cybersecurity_Strategy_2017_2021.pdf
2014	Social Responsibility Strategy in ICT Sector	<p>MCIT has developed a social responsibility strategy for Egypt ICT sector as a guideline that aims to maximize benefits of projects and regulate existing and future discussions with ICT concerned bodies to avoid duplication of projects and disseminate good practices, thereby maximizing societal benefits.</p> <p>Developing a geographic information system for social responsibility, including stakeholders from the private sector, civil society and government. Civil society information portal Training of employees of civil society organizations on the use ICTs ICT regular conference for social responsibility</p>	https://micit.gov.eg/Upcont/Documents/Publications/30122014000_Social_Responsibility_Strategy_English_30_12_2014.pdf

2014	Digital Arabic Content National Strategy	The vision of the Digital Arabic Content National Strategy seeks to create an innovative digital Arabic content that preserves the Egyptian identity, maintaining sustainable development and the shift towards a knowledge economy. This is achieved through empowering and promoting the Arabic digital content to connect with different civilizations and cultures in light of the challenges of the globalization era.	https://mcit.gov.eg/Upcont/Documents/Publications_1382015000_Digital%20Arabic%20Content%20strategy-%20English.pdf
2014	National Free and Open Source Software (FOSS) Strategy	Boosting the establishment of a well-developed open source software ecosystem, the National Free and Open Source Software (FOSS) Strategy addresses Egypt's challenges in relation with the market uptake, awareness, education and business know-how for FOSS start-up companies. FOSS Strategy unleashes the innovative potential of young people and encourages a transformative and empowering ICT industry.	https://mcit.gov.eg/Upcont/Documents/Publications_18112014000_National_FOSS_Strategy_EN_17_11_2014.pdf
2014	The Egyptian Government Cloud (EG-Cloud) Strategy	The Egyptian Government Cloud (EG-Cloud) Strategy seeks to improve the efficiency and performance of the government. It enables the delivery of optimum value by increasing operational efficiency and responding faster to integral needs. The cloud model supports governmental agencies grappling with the need to provide highly rapid reliable and innovative services despite resource constraints.	https://mcit.gov.eg/Upcont/Documents/Publications_2552015000_EG_Cloud_Strategy_5_1_2015.pdf
2005	Egyptian Information Society Initiative (EISI)	An outline of the initiatives implemented to bolster Egypt's transition into a fully-fledged information society while simultaneously addressing internal development issues through R&D, total domestic e-Access as well as the implementation of adaptable regulatory procedures in order to attract foreign investment.	https://mcit.gov.eg/Upcont/Documents/EgyInfo_Society.pdf

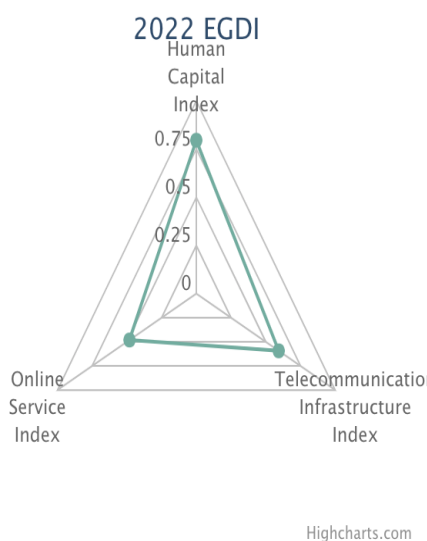
Fiji

Introduction

Fiji is a Small Island Developing State (SIDS) of upper middle-income level.³⁷ It has a high EGDI value according to the 2022 UN E-Government survey, with high TII and very high HCI. Scoring 0.6235 above world average, ranking 97/193, it is the sub-region leader in EGDI. Its OGD, on the other hand, remained in the low group from 2020 to 2022.

Despite the geographical challenges, Fiji remains one of the most developed economies in the Pacific Island region in terms of ICT infrastructure, Fiji benefits from an extensive submarine cable network connecting Fiji to neighboring Pacific Island countries and other major telecommunication hubs.³⁸ Its online service performance, however, is comparatively lower.

Figure 17 Fiji EGDI 2022³⁹



E-Government (2022 EGDI: 0.6235)

2022 Rank	97
Group	HEGDI
Rating Class	H3
2020 Rank	90
Change	+7

E-Participation (2022 EPART: 0.2386)

2022 Rank	143
2020 Rank	118
Change	+25

³⁷ <https://data.worldbank.org/?locations=FJ-XT>

³⁸ <https://www.trade.gov/country-commercial-guides/fiji-information-and-communication-technology>

³⁹ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/59-Fiji>

Figure 18 Fiji EGD I 2003-2022⁴⁰

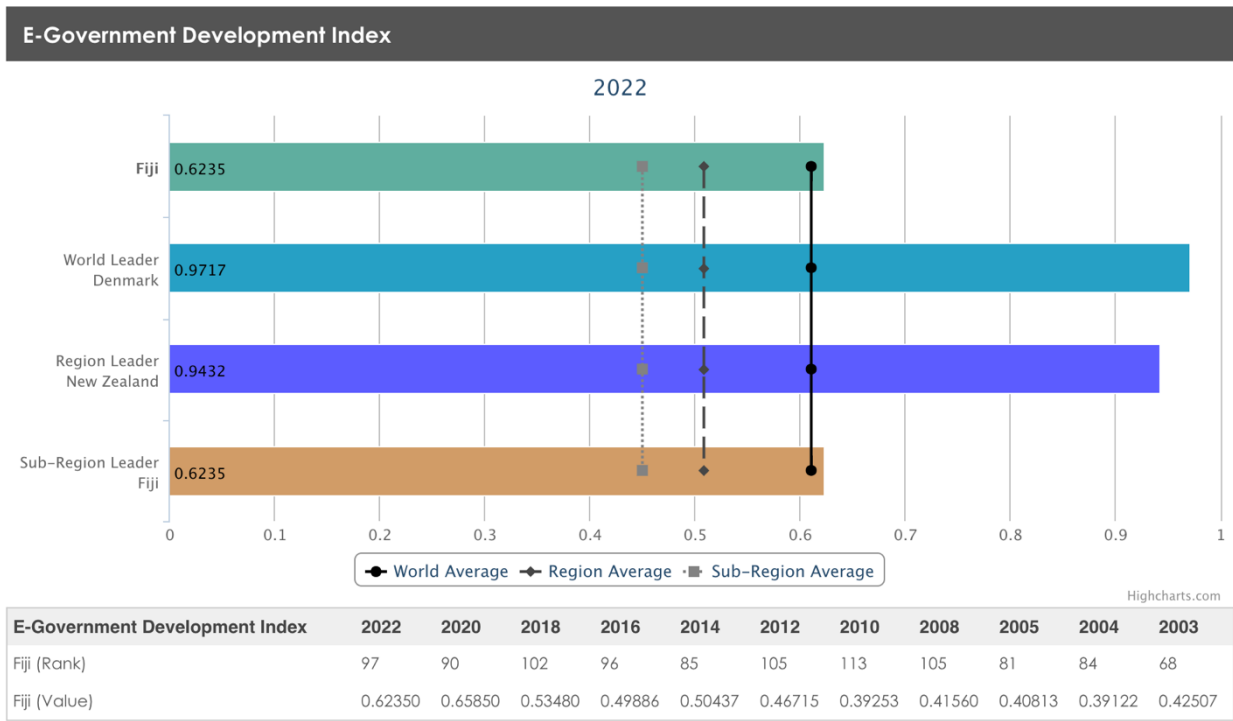


Table 20 Fiji's OGDI 2020-2022⁴¹

	OGDI Group	OGDI
2022	Low OGDI	0.2423
2020	Low OGDI	0.3240

⁴⁰ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/59-Fiji>

⁴¹ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/146-Samoa>

The initial e-government strategic plan, introduced in 2001, spanned a decade and encompassed e-development, e-government, e-business, and e-personnel. By 2009, all government departments had an online presence.

The next e-government Master Plan, published in 2007, identified four strategic purposes: (1) To implement financially sustainable service delivery models (2) To reinvent the services delivery model to provide citizen-centric outcomes (3) To enhance operational efficiencies within and across government agencies (4) To enhance the ICT skills competency of government employees at all levels. The plan articulates a 'holistic' e-government framework, which encompasses both technological and nontechnological aspects. The vision is primarily economic, namely, to increase Fiji's Gross Domestic Product and reduce the cost of doing business.⁴²

The 2008 Telecommunications Promulgation led to the end of exclusivities in the telecommunication sector. The whole market was opened to competition from October 2008. The Telecommunications Promulgation also called for the establishment of an independent regulator, the Telecommunications Authority of Fiji (TAF). Responsibility for the ICT sector policy lies with the Ministry of Communications. The five-year National Broadband Policy was launched in 2011, the first in a Pacific Island developing nation. It aims to achieve 95 per cent population coverage with minimum Internet speeds of 2 Mb/s by 2016.⁴³ In April 2011, the first Government Data Centre was commissioned, in which ICTs played the leading role to ensure that government data information is secure and reliable.⁴⁴

With the ambition to provide Government services anytime, anywhere, and to anyone with the appropriate authentication, the Government launched a 4-year program, the Digital Government Transformation Programme (DGT) in alliance with its 5-year and 20-year National Development Plan (NDP)⁴⁵, which plans to achieve full digitalization by the end of 2022.

In January 2018, the Fijian Government launched a national e-Government portal and a mobile application, DigitalFIJI, providing: a directory service with contact information for government departments and entities; a feedback system allowing users to submit feedback on government services, including being able to attach documents and photos and to track the responses to their enquiries. DigitalFIJI is managed through a Programme Management Office (PMO) that leads the Fijian Government's efforts to make more and better online services available to the Fijian people, establish the necessary governance structure for the digital transformation and ensure the long-term and sustainable impact of the digital transformation programme for every Fijian.

Aside from online services, the Fijian Government also puts its emphasis on improving telecommunications infrastructure with the cooperation of international and regional institutions. Under the framework of current legislation, data privacy and data safety are preliminarily protected under Constitution. On cyber security, Online Safety Act 2018 and Cybercrime Act 2021 were

⁴² <https://egov4women.unescapsdd.org/country-overviews/fiji/evolution-of-the-institutional-ecosystem-for-e-government-in-fiji>

⁴³

[https://www.itu.int/en/ITU-](https://www.itu.int/en/ITU-D/LDCs/Documents/2017/Country%20Profiles/Country%20Profile_Fiji.pdf)

[D/LDCs/Documents/2017/Country%20Profiles/Country%20Profile_Fiji.pdf](https://www.itu.int/en/ITU-D/LDCs/Documents/2017/Country%20Profiles/Country%20Profile_Fiji.pdf)

⁴⁴ <https://www.itu.int/en/ict-sdg-award/2015/Pages/fiji.aspx>

⁴⁵ <https://carefiji.digitalfiji.gov.fj/about-us/>

passed, along with a 2016 National Cybersecurity Strategy.⁴⁶ A new national identification system secured by facial recognition and other biometrics since 2019, with the aim to consolidate the existing overlapping identity schemes in the country. While the status and progress of this project is unknown at the time of writing, media reports suggest it is aimed at the financial sector.⁴⁷

After the 2022 General election, the new government, recognizing the DigitalFIJI flagship program, continues to advocate for equal access to ICT, enforcing the regulatory framework according to its NDP. Efforts include actively formulating a comprehensive National Digital Strategy with a whole-of-economy and whole-of-nation approach.⁴⁸; a new National Cybersecurity Strategy;⁴⁹ an e-commerce strategy that will guide the implementation of key economic policies pertaining to digital trade;⁵⁰ a national Computer Emergency Response Team (CERT);⁵¹ and plans for second subsea cable⁵²

Overall, Fiji's digital journey, driven by economic development needs, is characterized by rather developed ICT infrastructure and a e-government portal. Compared with rapid development in these areas, policies, legislations, and strategies seem to be moving more slowly. Public information on overall digital governance structure is limited online. Recognizing the importance of aligning policies with technological advancements will be instrumental in ensuring that the overall digital landscape progresses harmoniously, promoting a balanced and inclusive growth. On data governance, efforts are currently distributed without a comprehensive coordination across the entire government. Enhancing collaboration and fostering a more cohesive approach could potentially yield more effective outcomes. Luckily, Fiji has a proven capacity to conduct detailed self-evaluation and is well aware of the coordination issue. In the 2023 Voluntary National Review, a 184-page report mentioned the structural challenge of ministries working in silos and the implementation of a Data Exchange Platform (DXP) as part of the solution.⁵³

Table 21 summarizes Fiji's current data governance framework in relation to the four pillars.

- a) Policy: develop action agendas based on existing policies and regulations; aim at establishing quantitative national policies decision making process through data center.
- b) Institutions: assign Government departments in existing institutional framework with responsibilities. New digital enterprise architecture (e.g., in health and family welfare) will be in line with national e-governance architecture.
- c) People: show the implementing lead organization of specific information system or action items.

⁴⁶ <https://www.coe.int/en/web/octopus/-/fiji#:~:text=Fiji%20has%20a%205%2DYear,nature%20of%20the%20cyberthreat%20landscape.>

⁴⁷ <https://www.rfilc.org/library/inclusive-digital-identity-platforms-country-diagnostics/f>

⁴⁸ <https://www.fijitimes.com.fj/insidestory-national-digital-strategy-development/>

⁴⁹ <https://www.fijitimes.com.fj/pacific-nations-combine-to-uplift-cyber-security/>

⁵⁰ <https://english.news.cn/20230216/e037e5ab73b74742befd09cc9be79e3a/c.html>

⁵¹ <https://www.fijitimes.com.fj/alliance-to-protect-vital-cyber-systems/>

⁵² <https://www.datacenterdynamics.com/en/news/fiji-explores-plans-for-second-subsea-cable/>

⁵³ <https://hlpf.un.org/sites/default/files/vnrs/2023/VNR%202023%20Fiji%20Report.pdf>

d) Processes: show the leader, implementing agency, partners, financing, and other information related to data system and digital identity. The detailed timetable and budget plan are also offered with priority.

Table 21: Four Pillars of Fiji's Data Governance Framework

Pillar	Overview
Policy	<ul style="list-style-type: none"> ➤ E-government <ul style="list-style-type: none"> ○ E-government strategic plan 2001: e-development, e-government, e-business, and e-personnel. ○ E-government Master Plan 2007: articulates a 'holistic' e-government framework, which encompasses both technological and nontechnological aspects. The vision is primarily economic, namely, to increase Fiji's Gross Domestic Product and reduce the cost of doing business ○ The Digital Government Transformation Program (DigitalFIJI) is being implemented as part of the 5-year and 20-year National Development Plan: <ul style="list-style-type: none"> ▪ Greater connectivity is central to transforming Fiji. ▪ Digital literacy will be improved through expanding existing telecentres and establish new ones around the country ➤ ICT infrastructure <ul style="list-style-type: none"> ○ Reform of ITC Services Act 2013 ○ Telecommunications Licensing & Regulations 2012 ○ National Broadband Policy 2011 ○ Telecommunications Act 2008 ➤ Data governance <ul style="list-style-type: none"> ○ Cyber security <ul style="list-style-type: none"> ▪ Cybercrime Act 2021 ▪ Online Safety Act 2018 ▪ National Cybersecurity strategy 2016: A review is currently underway given the ever-evolving nature of the cyberthreat landscape. ○ Data privacy and protection <ul style="list-style-type: none"> ▪ No specific law or policy. ▪ Constitution provides the right to personal privacy, includes right to confidentiality of personal information. ➤ Planned development <ul style="list-style-type: none"> ○ A comprehensive National Digital Strategy with a whole-of-economy and whole-of-nation approach. ○ a new National Cybersecurity Strategy; ○ An e-commerce strategy that will guide the implementation of key economic policies pertaining to digital trade; ○ National Emergency Telecommunication Plan (NETP): set out the regulatory framework for disaster risk management

	and all activities to be implemented in each phase of the disaster management cycle.
Institutions	<p>Domestic:</p> <ul style="list-style-type: none"> ➤ Digital Government Transformation Office of the Ministry of Communications: leads the Fiji Government's efforts to make online services available to the Fijian people, establish the necessary governance structure for the digital transformation and ensure the long-term sustainability of the digital transformation programme for every Fijian.⁵⁴ <ul style="list-style-type: none"> ○ Digital Government Management Committee (DGMC): govern the Digital government transformation Programme , reports to the Digital Government Executive Committee (DGEC) ➤ Programme Management Office (PMO) :set up for the management of DigitalFIJI; ➤ Data Management Committee: setup as per the DGSF to ensure the data and information needs are addressed to support the public service delivery. Responsibility includes: <ul style="list-style-type: none"> ○ 1. Defining data management policies, standards and procedures for management and sharing of data across the government. ○ 2. Comprising data management teams for people data and business data to determine data definitions and sharing requirements. ○ 3. Providing the mechanism for coordinating and sharing of data and prioritising the data services across the government ➤ Telecommunications Authority of Fiji (TAF) ➤ Fiji Bureau of Statistics ➤ Using a multi-sector regulator model to establish a new regulatory framework (see Appendix II) ➤ Developing Public-Private Partnerships (PPPs) for infrastructure construction <p>International:</p> <ul style="list-style-type: none"> ➤ Partnership with the Singapore Government on DigitalFIJI Programme and DGSF (MSQ) ➤ Technology transfer between bilateral, regional and international partners
People	<ul style="list-style-type: none"> ➤ Leadership: Director Digital Government Transformation ➤ Chair of TAF ➤ Encourage widespread use of ICT in the public sector, and incentivise the retention of skilled IT graduates in the workforce; establishes technical colleges to teach young people ICT skills (MSQ)

⁵⁴ https://drive.google.com/drive/folders/1K2ZB3eqtJi80pLU87UIqZuV_akIJEvYY

	<ul style="list-style-type: none"> ➤ People’s engagement and feedback collection: <ul style="list-style-type: none"> ○ User satisfaction data are collected by myFeedback and DigitalFIJI Survey, while social media and emails are also a medium for e-information, e-consultation and e-decision-making in aspects of upcoming Bills and National Budgets ○ DigitalFIJI’s statistics are well collected and analysed
Processes	<ul style="list-style-type: none"> ➤ Variety of strategies and projects (see Appendix I and II)

The Fijian Government has national regulation and sub-decrees on different elements of data governance. New institutions are established with the responsibility to manage data. Close technological partnerships are developed across different sectors and countries. People’s involvement in policymaking is increased thanks to the accessible e-Government portal and the rise of internet penetration. Under the guidance of national development plan, Fijians can track their present stage in the process of digitalization.

Pillar-Element Mapping Matrix and Mapping of Six Elements

Table 22: Six Elements of Fiji’s Data Governance Framework

Element	Summary
Data standards & classification	<ul style="list-style-type: none"> ➤ The Data Management Committee is in charge of data management and definition, but no legislation is found at present
Data sharing, exchange and interoperability, including open government data	<ul style="list-style-type: none"> ➤ Data Exchange Platform (DXP), where source data agencies publish data and data subscribing agencies receive data from. Subscribers include Fiji Revenue and Customs Services, the Fiji National Provident Fund amongst systems such as the CareFIJI Check-In system (MSQ) ➤ Promotes the use of social media to facilitate public consultations during policy formulation, and expand the outreach of the Government Community Telecentre Project ➤ Enacts Data Access Policy and Data Sharing Agreements to restrict data sharing across Government
Data security	<ul style="list-style-type: none"> ➤ Develops a cyber-security policy and framework <ul style="list-style-type: none"> ○ Crimes Act 2009 makes a reference to computer offences and protects unauthorized access, modification or impairment to data held in a computer⁵⁵ ○ Cybercrime Act 2021 prescribes offences against the confidentiality, integrity and availability of computer data and computer systems⁵⁶ ➤ ICT-based monitoring tools in the public sector ➤ Planned development:

⁵⁵ <https://www.laws.gov.fj/Acts/DisplayAct/3164>.

⁵⁶ <https://www.laws.gov.fj/Acts/DisplayAct/3165>.

	<ul style="list-style-type: none"> ○ A new National Cybersecurity Strategy
Data privacy (and ethics)	<ul style="list-style-type: none"> ➤ Legislation on private information protection <ul style="list-style-type: none"> ○ Fiji's Telecommunications Promulgation 2008,⁵⁷ Constitution 2013,⁵⁸ and Information Act 2018⁵⁹ constructed a framework to restrict the misuse of private data.⁶⁰
National data infrastructure	<ul style="list-style-type: none"> ➤ Enacted and implemented ICT Development Policy and National Broadband Policy 2011, with increased mobile phone penetration, network coverage and community telecentres⁶¹ ➤ Enhances the broadband services and fibre optic connection <ul style="list-style-type: none"> ○ Launched Free WiFi (digitalFIJWiFi) in all the major cities and towns in Fiji with a help of a state-owned company, while more internet access is planned to be provided in unconnected regions⁶² ○ Access to Southern Cross Cable fiber optic network (SCCN) improves data speeds by constructing a massive submarine cable connecting the two largest islands, and lower data prices; other fiber optic cable project are underway ➤ Adopts strategies to ensures ICT infrastructure is climate resilient⁶³ <ul style="list-style-type: none"> ➤ Support the installation, operation and maintenance of adequate national/regional Early Warning Systems (EWSs) and forecasting infrastructure for hydro meteorological events for both monitoring on-going hazards and building resilience for the future
Linking data governance to digital identity	<ul style="list-style-type: none"> ➤ Private e-profile is developed as a single sign-on service to access all e-Government services, such as Deaths and Marriages Office (MSQ) ➤ Protection for digital identity: <ul style="list-style-type: none"> ○ Electronic Transactions Act 2008 refers to an electronic signature required to identify the person in an electronic communication⁶⁴

⁵⁷ <https://laws.gov.fj/Acts/DisplayAct/2930>.

⁵⁸ <https://www.fiji.gov.fj/getattachment/a3cddc01-dc73-4823-83b8-f290672ddae0/2013-Constitution-of-The-Republic-of-Fiji.aspx>. (p 18)

⁵⁹ <https://www.laws.gov.fj/Acts/DisplayAct/2460#>.

⁶⁰ An in-depth study on digital identity practices in Fiji has been done by the United Nations Capital Development Fund (UNCDF), United Nations Development Programme (UNDP) and United Nations Conference on Trade and Development (UNCTAD), p15, 2021 Pacific Fiji digital ID country diagnostic, <https://www.uncdf.org/Download/AdminFileWithFilename?id=14496&cultureId=127&filename=2021-pacific-fiji-digital-id-country-diagnosticpdf>.

⁶¹ P129. <https://www.fiji.gov.fj/getattachment/15b0ba03-825e-47f7-bf69-094ad33004dd/5-Year-20-Year-NATIONAL-DEVELOPMENT-PLAN.aspx>.

⁶² P129. Please see the link: <https://www.fiji.gov.fj/getattachment/15b0ba03-825e-47f7-bf69-094ad33004dd/5-Year-20-Year-NATIONAL-DEVELOPMENT-PLAN.aspx>.

⁶³ P129. <https://www.fiji.gov.fj/getattachment/15b0ba03-825e-47f7-bf69-094ad33004dd/5-Year-20-Year-NATIONAL-DEVELOPMENT-PLAN.aspx>.

⁶⁴ <https://www.laws.gov.fj/Acts/DisplayAct/3209>.

- A future project to generate vaccination passport for citizens and deploy a National Vaccination Passport System
- Further examine the possibility of adopting a national identity card

According to the information based on desk research and the Member State Questionnaire (MSQ) coordinated by UN DESA, each element of the data governance framework has its legislation and regulatory framework to various degrees. Among some of these elements, Fiji has launched some practices and achieved considerable results. For example, the implementation of the ICT Development Policy and National Broadband Policy 2011 has led to a considerable increase in wired and wireless network coverage. By 2015, 95% Fijians can access mobile internet connectivity across 3G, 4G, and 4G+ networks. More projects and plans are underway to improve the access and quality of digital connectivity. Digital Government service portals, such as DigitalFIJI and CareFIJI, are now able to cover functions in people and business registration, feedback collection, and public health administration.

To demonstrate the relationships between each pillar and element, a Pillar-Element Mapping Matrix is utilized (see Table 23). There are 24 cells in this matrix, reflecting the existing data governance framework in Fiji. This baseline report and the matrix below merely reflects a snapshot of the current situation as discovered from empirical desk research. The volume of information in each cell, including those which are left blank, should not be taken as a comprehensive evaluation or correlative of the development of each pillar-element pair. Its purpose is simply to offer a simplistic overview.

Table 23: Pillar-Element Mapping Matrix of Fiji's Current Data Governance Framework

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	Domestic: Fiji Standard Classification of Occupations (FISCO) – 2007 Regional Pacific Standard Industrial Classification of all economic activities 2014	The Data Exchange Platform (DXP) ⁶⁵ is governed by a series of policies and agreements between the Publishers, Subscribers and the DXP Operator (DGTO). Policies such as Data	Cybercrime Act 2021 Online Safety Act 2018 Cybersecurity Strategy 2016 Crimes Act 2009 : makes a reference to computer offences and protects	Telecommunications Promulgation 2008 Constitution 2013 Information Act 2018 These laws, however, do	Reform of ITC Services Act 2013 Telecommunications Licensing & Regulations 2012 National Broadband Policy 2011 Telecommunications Act 2008	Electronic Transactions Act 2008: refers to an electronic signature required to identify the person in an electronic communication

⁶⁵ <https://www.fbcnews.com.fj/news/digitization-drives-transparency-improvements-says-kamikamica/#:~:text=A%20data%20exchange%20platform%20is,agencies%20and%20data%20subscribing%20agencies.>

		Protection Policy and Data Access Policy and Data Sharing Agreements between Publishers and Subscribers governs the access to the DXP.	unauthorized access, modification or impairment to data held in a computer	not directly protect personal information. ⁶⁶		AML-CFT law: the Financial Transactions Reporting (FTR) Act of 2004
Institutions	Fiji Bureau of Statistics DMC: responsible for 1. Defining data management policies, standards and procedures for management and sharing of data across the government	Agencies such as the Fiji Revenue and Customs Services and the Fiji National Provident Fund amongst systems such as the careFIJI Check-In system are subscribers consuming the data from the DXP.	Ministry of Trade, Cooperatives, Small and Medium Enterprises, and Communications Fiji Police Force (with a dedicated Cyber Crime Investigations Unit) Online Safety Commission Office of the Director of Public Prosecutions – Serious Fraud Division Ministry of Home Affairs and Immigration Fiji Financial Intelligence Unit Fiji Independent Commission Against Corruption	Ministry of External Trade	Leadership: Ministry of Communication Telecommunications Authority of Fiji	Ministry of Communication Births, Deaths and Marriages Office Registrar of Companies Office
People	Government statistician: ⁶⁷ (a) to collect. compile.			Minister for External Trade	Leadership: Minister for Trade, Cooperatives, Small and Medium	

⁶⁶

<https://www.dlapiperdataprotection.com/index.html?t=law&c=FJ#:~:text=There%20is%20no%20specific%20legislation,to%20confidentiality%20of%20personal%20information.>

⁶⁷ https://www.statsfiji.gov.fj/images/documents/Statistic_Act/Statistics-Act.pdf

	analyse, abstract and publish statistical information relating to the commercial, industrial, agricultural, social, economic and general activities and condition of the people of Fiji: (b) to collaborate with departments of the Government in the collection, compilation, analysis and publication. of statistical records of administration; and (c) generally to organize a co-ordinated scheme of social and economic statistics relating to Fiji.				Enterprises and Communications Chair of TAF Improves digital literacy both within and out of the Government Improve people engagement in policy making through digital tools	
Processes	Regional partnership with Pacific data hub	Data Exchange Platform: the source of truth to share People Information from the Births, Deaths and Marriages Registry and Entity Information from the Registrar of Companies. The DXP works on a Publish and Subscribe model where source data	International partnership: a collaboration between the Fiji Police Force and the Australian Federal Police and is envisaged to assist Pacific island law enforcement better equip its personnel with the knowledge of tackling the	Public-private partnership: Outsource Fiji is working on the composition and establishment of robust data protection laws for Fiji. ⁶⁹	Establishment of a national database and an SDG tracker system with the support of ESCAP, led by FBoS. ⁷⁰ Continuously carries out plans to improve broadband services and fibre optic connection.	The launch of the electronic profile or E-profile which is a secure single sign-in portal whereby Fijian citizens can access current and future innovative government e-services using a

⁶⁹ <https://www.fbcnews.com.fj/news/outsource-fiji-working-on-data-protection-laws/>

⁷⁰ VNR 2023,p.19

		<p>agencies publish data on to the DXP and data subscribing agencies receive data from the DXP.</p> <p>Sets up social media and Government community telecentre for public information sharing</p> <p>Regional open data platform: Pacific Data Hub</p>	<p>growing threats of cybersecurity.⁶⁸</p> <p>Review of 2016 National Cybersecurity Strategy and development for a new one.</p> <p>Conducting CERT study</p>		<p>Detailed landscape for each public sector to implement the ICT projects</p> <p>Develops Public-Private Partnerships in terms of infrastructure construction</p> <p>International partnerships of ICT Programme</p>	<p>single set of credentials.⁷¹</p> <p>The Government completed a data harmonisation study, which involved cleaning several national identity databases and the introduction of a single naming system.⁷²</p> <p>Plan to create vaccination passport</p> <p>A national identity card is under consideration</p>
--	--	---	---	--	---	---

Based on the mapping of pillars and elements, Figure 19 visualises the mapping and the comparisons between different cells in the matrix. In general, the Government makes long-term and short-term plans for Government digitalization and internet connectivity, accompanied by mass involvement through digital tools. Under the guidance of national development plans, Fiji has made considerable achievements by taking on multiple different programs, especially in the area of data infrastructure which explains its good performance among SIDS. In data sharing, data standard, and classification, with the establishment of DXP and DMC, there are coordinated efforts. However, it is hard to grasp their status of development as no relevant policy document can be found online, which seems to be a common problem with Fiji's digital governance. More information is needed to verify this. In data security and digital identity, there have been some progress and preparations for future development. Institution-wise, the Government recognizes the importance of a holistic whole-of-government approach when addressing multi-stakeholders. However, it is not often clear to discern the leadership and distribution of responsibility among agencies. Likewise, more details about the people in charge need to be clarified.

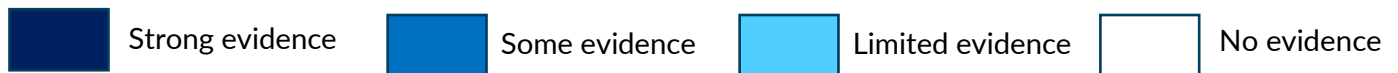
Figure 19: the Pillar-Element Mapping Matrix of Fiji

⁶⁸ <https://www.police.gov.fj/view/255>

⁷¹ <https://mcttt.gov.fj/remarks-by-the-deputy-prime-minister-and-minister-for-trade-co-operatives-and-small-and-medium-enterprises-and-communications-aiia-pacific-islands-digital-capability-uplift-program/>

⁷² Australian Strategic Policy Institute, 2020, ICT for Development in the Pacific Islands, p. 17

Elements→ Pillars↓	Data standards & classification	Data sharing, interoperability, and OGD	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy: existing policy and regulatory framework	Light Blue	Light Blue	Dark Blue	Light Blue	Dark Blue	Light Blue
Institutions: existing institutional framework	Light Blue	Light Blue	Dark Blue	Light Blue	Dark Blue	Light Blue
People: existing data ecosystem and mapping of stakeholders	Light Blue	White	White	Light Blue	Dark Blue	Light Blue
Processes: existing data processes	Light Blue	Dark Blue	Dark Blue	Light Blue	Dark Blue	Dark Blue



SWOT Analysis of Fiji's Data Governance Framework

A SWOT analysis (Table 24) is generated based on desk research about the data governance framework in Fiji, including through the MSQ. The Government has strengths in digital government service and ICT infrastructure, and has made preparations to classify and standardize data, strengthen cybersecurity, advance data protection and privacy, and establish a national digital identity program. After the pandemic, Fiji faces opportunities accompanied by challenges to transform data governance. The urgent task is to develop a whole-of-government policy framework to guide data governance development in those areas.

Table 24: SWOT Analysis of Fiji's Data Governance Framework

	Positive	Negative
Internal factors	Strengths	Weaknesses
	<ul style="list-style-type: none"> • Detailed goals and action plan to realize e-Government transformation in both short and long term • Government's recognition of a whole-of-economy and whole-of-nation approach in digital governance. • Integrated digital tools into a holistic method to address the covid-19 pandemic and promote the recovery 	<ul style="list-style-type: none"> • Specific policy is lagging behind actions. <ul style="list-style-type: none"> ○ Eg: in data standard & classification; data sharing; data privacy • Information on digital governance is limited online, including policy publication. • Short of a whole-of-government approach in practice <ul style="list-style-type: none"> ○ Leadership and distribution of

	<ul style="list-style-type: none"> • Transparent and effective feedback-collecting approaches for better data governance • Detailed self-evaluation in Voluntary National Review <ul style="list-style-type: none"> ○ • Achievements in ICT infrastructure. <ul style="list-style-type: none"> ○ Fiji is the regional leader in mobile subscribers: great opportunity for scale of transactions ○ High electricity penetration and quality ○ Free WIFI in all major cities a • Provides the mass with equal access to digital connectivity • Promotes e-Government and technology application to achieve resilient and sustainable development • Cybersecurity legislation in place • Completed a data harmonisation study, which involved cleaning several national identity databases and the introduction of a single naming system. • Strong regional and international support • Consistent digital governance efforts among different governments. 	<p>responsibility among different parties is hard to locate online.</p> <ul style="list-style-type: none"> ○ Coordination across government agencies is seen as challenging, although some departments are willing to move faster than others ○ There' s a discrepancy in priorities for investments in IT infrastructure and in the development of e-services, let alone data governance. <ul style="list-style-type: none"> • Improve digital literacy among the public • Data standards and classification <ul style="list-style-type: none"> ○ Limited policy and actions; should be improved as the database is getting larger ○ Lacking information on DMC • Data sharing <ul style="list-style-type: none"> ○ Considerable overlap in collected information across databases; robustness challenges exist ○ Lacking information on DXP • Digital identity <ul style="list-style-type: none"> ○ Preliminary attempts to identify people and corporates on the Government portal, with a great reliance on offline identity verification <p style="text-align: right;">▶</p>
External factors	Opportunities	Threats
	<ul style="list-style-type: none"> • Covid-19 produces new needs for e-Government • Unique location enables Fiji to benefit from the technology and talent communication in both Asia and America • Resources in place: <ul style="list-style-type: none"> ○ Fiji's ITS market has become increasingly competitive given that it has one of the highest rates of ICT penetration in the Oceania region. In June 2023, the Fijian government announced a budget of \$44,990 (FJ\$100,00) for a review of the government ICT network, and just over \$900,000 (FJ\$2 million) for upgrade of the IT 	<ul style="list-style-type: none"> • The Asia-Pacific region is a significant target for cyber-attacks. SIDS vulnerability: • Samoa is prone to natural disasters and suffer from climate change. This would pose threat to national data infrastructure including telecommunications infrastructure • Unexpected changes in the international situation • The Fijian Government has ambitious plans to become the first Pacific digital government but is confronted with local absorptive capacity constraints and its reliance on external support.

	<p>infrastructure and storage and server system capacity.⁷³</p> <ul style="list-style-type: none"> • Institutionalize and leverage ongoing efforts for an extension in data governance. 	
--	---	--

Conclusion

To summarize, the Fijian Government has spent notable efforts to integrate public services online and improve personal digital connectivity. However, the increase in data use has made it more urgent to implement and enforce the legislation on data privacy, security and identity, as well as set up a clear classification and sharing of data. With the gradual improvement of people's digital literacy, it is expected that there will be more advanced use of emerging technology for effective data governance in Fiji, with the aim of a more effective, accountable, and inclusive public administration.

Appendices

Appendix I: Goals, Policies, and Strategies in Fiji⁷⁴

Goal: Universal access to information and competitive telecommunication services delivered on a secure platform.	
Policies	Strategies
Improve the telecommunications infrastructure.	<ul style="list-style-type: none"> ○ Digital Government implementation – make priority Government services, particularly Disaster, Recovery and Rehabilitation accessible online by 2020. ○ Enhance competition in broadband internet services, by making the existing fixed line infrastructure available to multiple users under reasonable terms and conditions i.e. local loop unbundling. ○ Consider Public-Private Partnerships (PPPs) in the construction of communications infrastructure (particularly for towers), and landing station infrastructure for connectivity to the Southern Cross Cable fibre optic network (SCCN). Funds from the universal service obligation fund and the international inbound call levy can be used for this purpose. ○ Fiji Roads Authority (FRA), the Water Authority of Fiji (WAF), Fiji Electricity Authority (FEA) and Telecom Fiji Limited (TFL) along with other utility providers to lay fibre optic cables, conduits and

⁷³ <https://www.trade.gov/country-commercial-guides/fiji-information-and-communication-technology>

⁷⁴ <https://www.fiji.gov.fj/getattachment/15b0ba03-825e-47f7-bf69-094ad33004dd/5-Year-20-Year-NATIONAL-DEVELOPMENT-PLAN.aspx> (p 130)

	<p>chambers when conducting trenching works during road construction or maintenance.</p> <ul style="list-style-type: none"> ○ Complete the TFL fibre optic cable ring around Viti Levu. ○ Establish a second redundant link from Viti Levu to Vanua Levu through Lomaiviti, to provide resiliency to Vanua Levu, Taveuni, Levuka, Lakeba and backhaul to other islands. ○ Establish fibre optic connectivity between Viti Levu and Vanua Levu through the Samoa-Fiji submarine cable. ○ Fully implement the ICT Development Policy and National Broadband Policy 2011.
Provide equal access to ICT.	<ul style="list-style-type: none"> ○ Expand the outreach of the Government Community Telecentre Project, where feasible. ○ Improve access to computers and assistive devices for visually impaired and the hearing impaired through targeted tax incentives and subsidies. ○ TV broadcasters to provide subtitle services for hearing-impaired viewers. ○ Review the National ICT Policy to incorporate relevant aspects of the National Gender Policy 2014 and the National Disability Policy. ○ Provide subsidies to improve access for disabled people to school and community telecentres e.g., wheelchair ramps.
Strengthen the regulatory framework.	<ul style="list-style-type: none"> ○ Consolidate all existing fees for telecommunications operators (e.g., special international call handling levy, ICT levy, licensing fees, universal service obligation fund, etc.) into a single standard fee. ○ Consider establishment of a new regulatory framework for telecommunications under the multi-sector regulator model. ○ Develop a cyber-security policy and framework.
Strengthen ICT capabilities in the workforce.	<ul style="list-style-type: none"> ○ Incentivise the retention of skilled IT graduates in the workforce. ○ Prioritise the use of ICT based planning and monitoring tools in the public sector. ○ Promote the use of social media to facilitate public consultations during policy formulation. ○ Encourage widespread use of ICT in the public sector to improve work processes, productivity, and service delivery. For example, paper correspondence will be minimised in favour of more-efficient channels, such as email and teleconferencing. ○ Increase access to appropriate technologies via technology transfer between bilateral, regional and international partners. ○ Support the widespread use of ICT to provide localized weather information and forecasts to farmers, which will improve efficiency

	and productivity at the farm level.
Promote the use of “Green” technology.	<ul style="list-style-type: none"> ○ Incentivise large-scale FDI in industries that develop environmentally sustainable technology (particularly in areas such as transportation, renewable energy, manufacturing, and agriculture). ○ Incentivise FDI in business process outsourcing. ○ Develop a national framework to promote innovation, research and development (R&D) towards environmentally sustainable technology. ○ Further examine the possibility of adopting a national identity card. ○ Ensure that all imported technologies are consistent with “Green” technology specifications i.e. energy efficient, low carbon emissions, meet minimum quality standards and safety considerations, discourage parallel imports, etc. ○ Support the installation, operation and maintenance of adequate national/regional Early Warning Systems (EWSs) and forecasting infrastructure for hydro meteorological events (such as tropical cyclones, floods, etc.) and programmes for both monitoring on-going hazards and building resilience for the future.

Appendix II: Programmes and Projects in Fiji⁷⁵

Programme	Annual Target					Total Output Expected	Lead Agencies
	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022		
Develop the ICT Infrastructure							
Make priority Government services available online	Implement Digital Government Registrar of Titles; Registrar of Companies; BDM registry; and Integrated Labour Market Information	Implement Digital Government Department of Immigration; LTA; and MLMR- GIS	Implement Digital Government NEC registration	Implement Digital Government		All Government services available online	ITC; Ministry of Justice; Department of Immigration; LTA

⁷⁵ <https://www.fiji.gov.fj/getattachment/15b0ba03-825e-47f7-bf69-094ad33004dd/5-Year-20-Year-NATIONAL-DEVELOPMENT-PLAN.aspx> (p 131)

	System						
Cable connection to Vanua Levu	Begin installation of unrepeaters fibre pair and full fibre branching unit between Viti Levu and Vanua Levu	Complete installation				Fibre optic cable connected between Viti Levu and Vanua Levu	ITC, Department of Communication
Complete the TFL fibre optic cable ring around Viti Levu		Commence in 2017 and complete in 2018.				Fibre optic cable covering Viti Levu.	TFL
Develop a cyber-security policy and framework	Complete cyber-security policy and framework					Improved data security and reduced vulnerability to cyber threats	ITC, RBF – Financial Intelligence Unit, Ministry of Defence
Provide equal access to ICT							
Review the National ICT Policy						Updated ICT policy	ITC, Department of Communication
Strengthen the regulatory framework							
Consolidate all existing fees for telecommunications operators into a single standard fee						A single, simplified, standardized fee for telecommunications operators	Department of Communication, TAF, Fiji Commerce Commission, ITC
Promote the use of “Green” technology							
Develop a national framework for innovation and R&D	Develop Innovation and R&D Framework					Consolidated innovation and R&D framework	MoEHA; MoE; MITT; Office of the Solicitor General; ITC
Create a national identity card						A single, nationally recognized citizen identification card.	FRCS; FNPF; Office of the Registrar General; Fijian Elections Office; ITC; LTA; MoHMS; MWCPA; Dept. of Immigration

Ghana

Introduction

The Ghanaian government's efforts in digital governance have allowed it to make impressive progress in the E-Government Development Index (EGDI) rankings over the last decade. However, according to the latest digital governance performance in E-Government Survey in 2022, Ghana's EGDI is 106th, 5 spots down from 2020. Compared to 2020, it has made improvements in the Telecommunication Infrastructure Index (TII), and the Human Capital Index (HCI), despite the decreased Online Service Index (OSI).^[1]

Figure 20 EGDI Analysis of Ghana 2022^{[2]76}

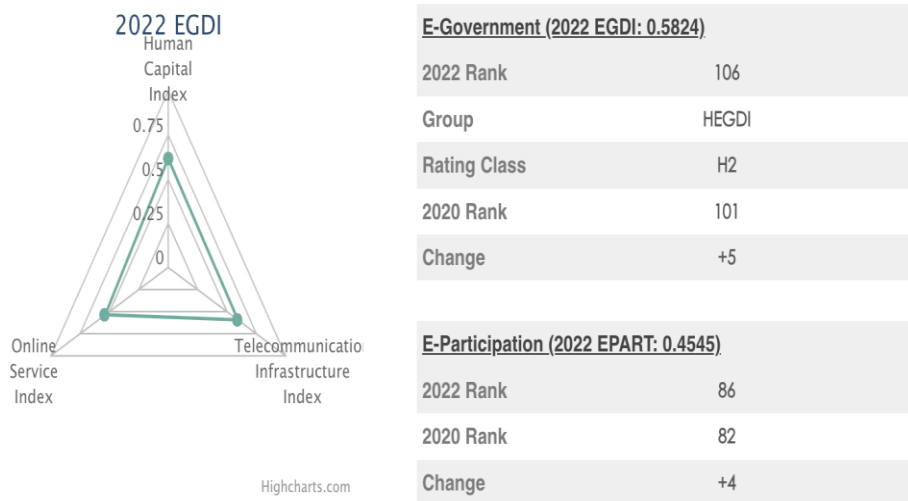
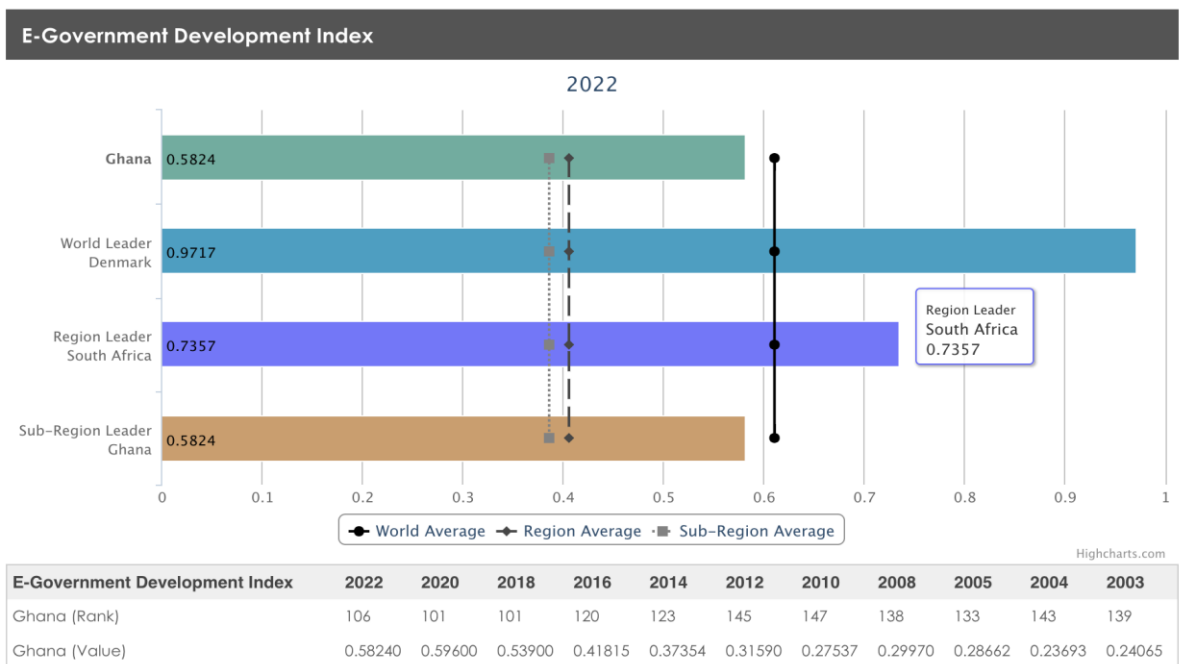


Figure 21 EGDI Analysis of Ghana 2003-2022^{[3]77}

⁷⁶ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/66-Ghana>

⁷⁷ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/66-Ghana>



The major governmental e-services are provided by Government Online Services Portal (eservices.gov.gh). It has integrated digital diverse services. individuals and business can find an overview of services and contact information of each ministry, agency and office for further information. Some services can be directly accessed on this portal, such as tax payment, birth and deaths registry. The introduction of new technologies, an increase in the number of e-services and increased digital participation could be considered targets for a more digital performance of the Ghanaian government.

Summary of Four Pillars

- Policy:** develop action agendas based on existing policies and regulations; aim at establishing quantitative national policies decision making process through data center.
- Institutions:** assign Government departments in existing institutional framework with responsibilities. New digital enterprise architecture (e.g., in health and family welfare) will be in line with national e-Governance architecture.
- People:** show the implementing lead organization of specific information system or action items.
- Processes:** show the leader, implementing agency, partners, financing, and other information related to data system and digital identity. The detailed timetable and budget plan are also offered with priority.

Pillar-Element Mapping Matrix and Mapping of Six Elements

Table 25 the Mapping of Six Elements in Ghana's Data Governance Framework

Element	Content and key focus
Data standards and classification	<ul style="list-style-type: none"> ✓ Standardization of data is preliminarily mentioned in official documents, such as Ghana eGovernment Interoperability Framework (eGIF) released in 2017 and 2022
Data sharing, exchange and interoperability, open Government data	<ul style="list-style-type: none"> ✓ In 2008, VMAX and the Multiple Layer Switch networks implemented by National Information Technology Agency (NITA) linked all Ministries, Departments and Agencies as well as important corporations and organisations to standardise information change and enable better interactions.^[4] ✓ In 2017, The Ghana Government Enterprise Architecture (GGEA) launched Ghana's e-GIF strategy to increase interoperability through the principles of shared infrastructure services, service-oriented architecture and event-driven architecture.^[5] In 2022, the government launched an updated version 2.0 that reflects a renewed commitment to enforcing GGEA/e-GIF framework implementation^[6] ✓ In 2019, The National Data Sharing Policy of the Government of Ghana was designed by Ministry of Communications of the Government of Ghana, aiming to enable proactive sharing and greater access to data generated and commissioned by the ministries, departments and agencies of the Government of Ghana^[7] ✓ (By 2019, two initiatives, namely, the Ghana Open Data Initiative (GODI) and the Ghana Data Exchange Hub has been launched.)
Data security	<ul style="list-style-type: none"> ✓ Electronic Communications Act (2008). A network operator or a service provider who is a holder of a Class Licence shall not use or permit another person to use or disclose confidential, personal or proprietary information of a user, another network operator or service provider without lawful authority. ✓ Electronic Communications Regulations (2011). The principle of privacy and secrecy in electronic communications applies to the National Communications Authority, operators of electronic communications networks and providers of electronic communications services. ✓ Cybersecurity Act (2020). Regulate cybersecurity activities in the country^[8]

Data privacy (and ethics)	<ul style="list-style-type: none"> ✓ The Data Protection Act (2012), the purpose of which is to establish a Data Protection Commission ('DPC'), to protect individuals' privacy and personal data by regulating the processing of personal information.^[9] The Data Protection Commission (DPC) was established under this Act^[10]
National data infrastructure	<ul style="list-style-type: none"> ✓ In November 2008, a nationwide e-Government network infrastructure construction began in Ghana, which aimed at expanding the national backbone infrastructure to all regions in the country and providing national data centers.^[11] ✓ Ghana has access to five submarine cables, an extensive national backbone, and the latest fixed and mobile broadband technologies. Key figures about Ghana ICT infrastructure in 2017 are as follows:^[12] ✓ In partnership with the Ministry of Communications in 2018, a Danish ICT company connects the unconnected Ghanaians in four selected villages in Western Ghana in a project called "connecting the unconnected project." This innovation consisted of satellite wifi and a local cloud at the base station that provides fast and easy access to e-Government, e-learning, e-health, and services.^[13]
Linking data governance to digital identity	<ul style="list-style-type: none"> ✓ The Government of Ghana in 2017 implemented digital governance policies such as the issuance of the digital national identification Card^[14] ✓ The Digital Ghana Agenda seeks to digitalise Government services, build a biometric National Identity register^[15]

From the perspective of the six elements, the development of data standards appears to have received more government attention in recent times, as demonstrated by two consecutive interoperability-related policy outline documents. There is already more evidence that the Ghanaian government's move to enhance interoperability is closely linked to data standardisation, which appears to be emerging gradually from 2017 onwards. As the move towards data standardisation has been rolled out, protections regarding data privacy and data security have been further consolidated. Another noteworthy fact is that Ghana maintains a historical performance above the regional average in terms of digital infrastructure (ICT), thanks to the government's early focus and continued implementation initiatives. In terms of digital identity, Ghanaian government now has plans for a digital ID card and biometrics.

Table 26 the Pillar-Element Mapping Matrix of Ghana's data governance framework

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open Government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy: existing policy and regulatory framework	This field has been mentioned in the policy framework	Specialized policy frameworks has been published in this field	Regulations can be seen in this field	Regulations can be seen in this field	A number of political documents and practices can be seen in this field	It is mentioned in the state's Digital Agenda
Institutions: existing institutional framework	Specialized institutions are promoting data standardization between differed ministries, agencies and offices	Specialized institutions are promoting data exchange between differed ministries, agencies and offices		Supporting institutions was established under Acts	Clear responsibility for public sectors to create an enable environment in this field	
People: existing data ecosystem and mapping of stakeholders	Clear information of people in charge	Clear information of people in charge			Clear information of people in charge	
Processes: existing data processes	Continuous efforts in promoting data standardiz	Continuous efforts in promoting interoperability in recent			Favourable outcomes can be seen as a result of early planning and	Methods covering digital identity are under consideration

s	ation	years			implementation	
---	-------	-------	--	--	----------------	--

For the policy pillar, Ghana has demonstrated a sustained effort. As early as 2003, Ghana incorporated e-Government into the Information and Communication Technology for Accelerated Development (ICT4AD) Policy, which was designed under the sponsorship of the African Information Society Initiative (AISII) of the Economic Commission for Africa (ECA). In 2006, all e-Government efforts were merged under an e-Government development project initiated by Ghana's Ministry of Communication. There are now policy directives and reporting documents on improving data interoperability and digital infrastructure coverage.

For the institution pillar, Ghana has demonstrated efforts to establish and improve effective institutions within the border, mainly in the area of infrastructure. For example, in 2000, the Ministry of Communications and Technology was established to champion the e-Government revolution in Ghana, by developing a robust telecommunications infrastructure and providing e-Government services. To streamline implementation of e-Government projects, the government established the Ghana Information, Communication and Technological Directorate, which metamorphosed into the NITA in 2009, as the national e-Government implementation and coordination body.

In terms of cross-border cooperation, Ghana has established a stable relationship with the World Bank. In 2006, the World Bank provided a US\$40 million facility to strengthen institutional capacity and build an enabling environment towards the e-Ghana project. In 2016, Ghana's Ministry of Communication, in collaboration with the World Bank, initiated an e-Government development project called e-Ghana, which was implemented by the NITA. In 2022, The Ghana Digital Acceleration Project was financed by the World Bank to expand access to broadband, enhance the efficiency and experience of selected digital public services, and strengthen the digital innovation ecosystem.

For the personnel pillar, positions have been created in the government specifically for digital transformation in line with the creation and restructuring of the institution. The official website of the ministry involved in the coordination and implementation of digital projects contains information on the responsibilities of officials and their involvement in the projects, and links the pages to the officials' social media (Ministry of Communication and Digitalization for example), which facilitates the flow of open information. In addition, the website shows that digital skills upgrading for women and children is also on the agenda.

For the process pillar, Ghana has an orderly digital plan, but there are still more details to be worked out, especially in terms of digital security and data privacy, and although the government is improving the regulations, there is still a lack of adequate monitoring and review mechanisms. For example, the establishment of a cybersecurity incident response team is supposed to be fully implemented to help protect public data security and mitigate losses.

Table 27 the Pillar-Element Mapping Matrix of Ghana

Elements→ Pillars↓	Data standards & classification	Data sharing, interoperability, and open Government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy: existing policy and regulatory framework	Light blue	Dark blue	Light blue	Light blue	Dark blue	Light blue
Institutions: existing institutional framework	Light blue	Light blue	White	Light blue	Dark blue	White
People: existing data ecosystem and mapping of stakeholders	White	Light blue	White	White	Light blue	White
Processes: existing data processes	Light blue	Dark blue	White	White	Dark blue	Light blue

Note: In this figure, cells in dark blue means Ghana performs or plans relatively well (abundant relevant evidence can be found) in relevant pillars and elements; cells in light blue or white means that Ghana performs or plans relatively incomprehensive (Only few or indirect evidence can be found) in the existing or additional arrangement or framework to address the issue or advance the effort of relevant elements compared with performance or concerns in other cells. With a high EGD value in the 2022 UN E-Government survey, the mapping above cannot depict the overall performance in the data governance framework of Ghana. White cells do not equate to the fact that Ghana truly lacks relevant policies or practices in relevant pillars and elements.

SWOT Analysis of Ghana's Data Governance Framework

Today Ghana is a regional leader in digitalization (as can also be initially judged from the EGD's assessment of indicators). This is mainly in the form of digital infrastructure development and the establishment of a data standards framework. Nonetheless, the Ghanaian government still needs to consider reducing the cost of network connectivity to expand the range of digital services. Inconsistent financial support and lack of public digital literacy also further limit its potential in

digital government. There exists huge development opportunities and possible risks in the process of government digitalization, which involves changes in the international situation and domestic political ecology.

Table 28 SWOT Analysis of Ghana's Data Governance Framework

Internal factors	<p>Strengths</p> <ol style="list-style-type: none"> 1. Telecommunication infrastructures and data interoperability has been continuously consolidated 2. Children and women, people living in marginalized areas are noticed 3. Well-established e-Governance portal and provide integrated services and information 4. Well-coordinated home institutions and strong partnerships with international organizations 	<p>Weaknesses</p> <ol style="list-style-type: none"> 1. High-cost internet data and the lack of a legal framework to protect users of digital governance service[16] 2. Lack of good infrastructure (energy, IT, etc.) in towns and villages 3. Lack of sustainable funding schemes for ongoing projects (At present, Ghana's project funding highly depends on donor partners such World Bank)[17] 4. Low ICT skills in the public sector. Most of the capacity-building training sessions do not furnish members of the department with the necessary advanced practical skills[18] 5. Public e-participation need to be enlarged
External factors	<p>Opportunities</p> <ol style="list-style-type: none"> 1. Well data governance performance in the region enables Ghana to become one of Sub-Saharan Africa's digital leaders and regional hubs 2. Opportunity to get financed from international society 	<p>Threats</p> <ol style="list-style-type: none"> 1. Possible economic disorder across the globe 2. Possible political obstacles within the government. Transparent governance brought about by digitisation will reduce corruption and consequently lead to opposition from corrupt officials. ^[19] 3. The unfavorable effect brought by pandemic

Conclusion

Despite a decrease in the rank of 2022 EGDI in the last 10-year data governance surveys, Ghana is still classified in the high EGDI group. This stems from the long-term efforts of the Ghanaian government on digitalization, such as the introduction of a digital strategy and the development of supporting regulations. In order to get more comprehensive support to drive the digital blueprint in Ghana, a number of objectives need to be focused on, such as securing stable

funding to support project implementation, increasing public participation and digital literacy to form a more open and inclusive digital environment, and introducing new technologies to help more people connect to quality public services.

Appendix 1

Table 29 References (Journal Paper)

No	Title	URL
1	E-Government and Public Service Quality in Ghana	https://ugspace.ug.edu.gh/bitstream/handle/123456789/31625/E%E2%80%90government%20and%20public%20service%20quality%20in%20Ghana.pdf?sequence=1 .
2	E-Government in Ghana: The Benefits and Challenges	https://www.researchgate.net/publication/352255360_E-GOVERNMENT_IN_GHANA_THE_BENEFITS_AND_CHALLENGES .
3	E-Government Services in Ghana - Current State and Future Perspectives	https://www.researchgate.net/publication/321918849_e-Government_Services_in_Ghana_-_Current_State_and_Future_Perspective .
4	Ghana's Digitization Initiatives: A Survey of Citizens Perceptions on the Benefits and Challenges to the Utilization of Digital Governance Services	https://archive.aessweb.com/index.php/5050/article/view/145 .

^[1] Apart from current E-Governance research launched by UN DESA, this research is also based on primary (Member States Questionnaire) and secondary data sources (journal articles, government policy reports, etc.) to have a preliminary understanding of data governance in Ghana.

^[2] <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/59-Ghana>.

^[3] <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/59-Ghana>.

^[4] E-Government in Ghana: The Benefits and Challenges, p128.

^[5] Ghana e-Government Interoperability Framework, pp4. Available at:

<https://nita.gov.gh/theevooc/2017/12/Ghana-eGovernment-Interoperability-Framework.pdf>.

^[6] P5. Available at: https://nita.gov.gh/theevooc/2022/02/Ghana-eGovernment-Interoperability-Framework-eGIF-Version-2.0_v.Draft-for-Stakeholder-Review-1.pdf.

^[7] <https://data.gov.gh/sites/default/files/Ghana%20National%20Data%20Sharing%20Policy%20Draft%203.0.pdf>.

^[8] <https://nca.org.gh/wp-content/uploads/2022/03/Cybersecurity-Act-2020-Act-.pdf>.

^[9] <https://www.dataguidance.com/notes/ghana-data-protection-overview>.

^[10] <https://www.dataprotection.org.gh>.

^[11] <https://iipgh.org/e-government-initiatives-in-ghana/>.

^[12] E-Government in Ghana: the Benefits and Challenges, p129.

^[13] E-Government in Ghana: the Benefits and Challenges, P132.

[14] Ghana's Digitization Initiatives: A Survey of Citizens Perceptions on the Benefits and Challenges to the Utilization of Digital Governance Services, P43.

[15] P5, <https://nca.org.gh/wp-content/uploads/2021/11/Key-NCA-Projects-2018.pdf>.

[16] John Demuyakor, International Journal of Publication and Social Studies, 2021, 6(1): 42-55.

[17] E-Government Services in Ghana - Current State and Future Perspectives, p629.

[18] Ibid.

[19] Ibid.

Lao PDR

Introduction

Lao PDR has a middle E-Government Development Index (EGDI) according to the UN E-Government Survey 2022, with a substantial improvement in the ranking, an increase from 167 in 2020 to 159 in 2022 among 193 member states. Its OGDI moved up into middle group in 2022 as well. However, there is still provision for Lao PDR to advance alongside with neighbouring countries such as Myanmar (134), Cambodia (127) and Vietnam (86). Challenges remain, such as the high cost of the internet, the urban-rural divide, and a lack of regulatory architecture. Taking digital infrastructure as an example, in 2020 only 43% of the country's population have access to the internet, compared to 70% in East Asia and the Pacific.⁷⁸

Figure 22: Lao's EGDI 2022⁷⁹



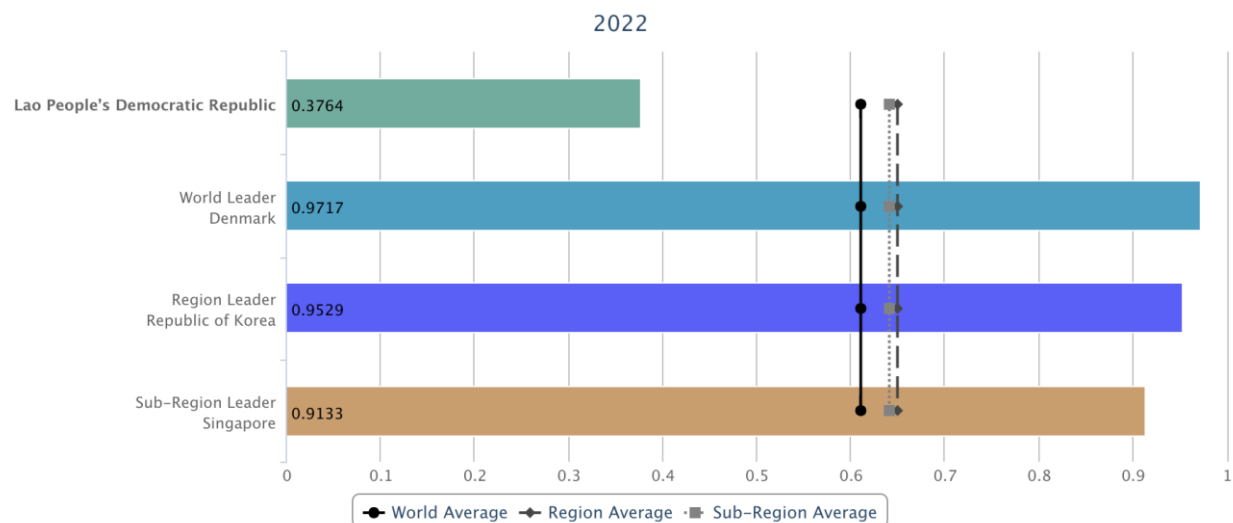
Figure 23: Lao's EGDI 2003-2022⁸⁰

⁷⁸ <https://www.csis.org/analysis/digitalizing-laos-improving-government-transparency-business-environment-and-human-capital>.

⁷⁹ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/92-Lao-Peoples-Democratic-Republic>

⁸⁰ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/92-Lao-Peoples-Democratic-Republic>

E-Government Development Index



E-Government Development Index	2022	2020	2018	2016	2014	2012	2010	2008	2005	2004	2003
Lao People's Democratic Republic (Rank)	159	167	162	148	152	153	151	156	147	144	149
Lao People's Democratic Republic (Value)	0.37640	0.32880	0.30560	0.30900	0.26588	0.29350	0.26371	0.23830	0.24208	0.23286	0.19161

Table 30 Lao's OGD I 2020-2022⁸¹

	OGDI Group	OGDI
2022	Middle OGD I	0.3127
2020	Low OGD I	0.0000

In July 2021, the Ministry of Technology and Telecommunications partnered with the UNDP to launch the Digital Government Transformation project (see Figure 24)⁸² Following the introduction of the E-Government Development Plan 2013-2020, (see Figure 25) the Government has its ambition to promote digitalization by launching the National Digital Economy Vision (2021-2040), the National Digital Economy Strategy (2021-2030), the National Digital Economy Development Plan (2021-2025), and 9th Five-Year National Socioeconomic Development Plan (the 9th NSEDP)

⁸¹ United Nations (2020), United Nations E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, UN DESA.; United Nations (2022), United Nations E-Government Survey 2022: The Future of Digital Government, UN DESA.

⁸² <https://www.csis.org/analysis/digitalizing-laos-improving-government-transparency-business-environment-and-human-capital>.

in 2021. According to the 9th NSEDP, the Government will put e-Governance⁸³ as a priority in the implementation of the work of sectors and localities and public services to enhance efficiency, accountability, transparency, and public access.⁸⁴

Figure 24: Lao PDR E-Government Transformation Plan⁸⁵

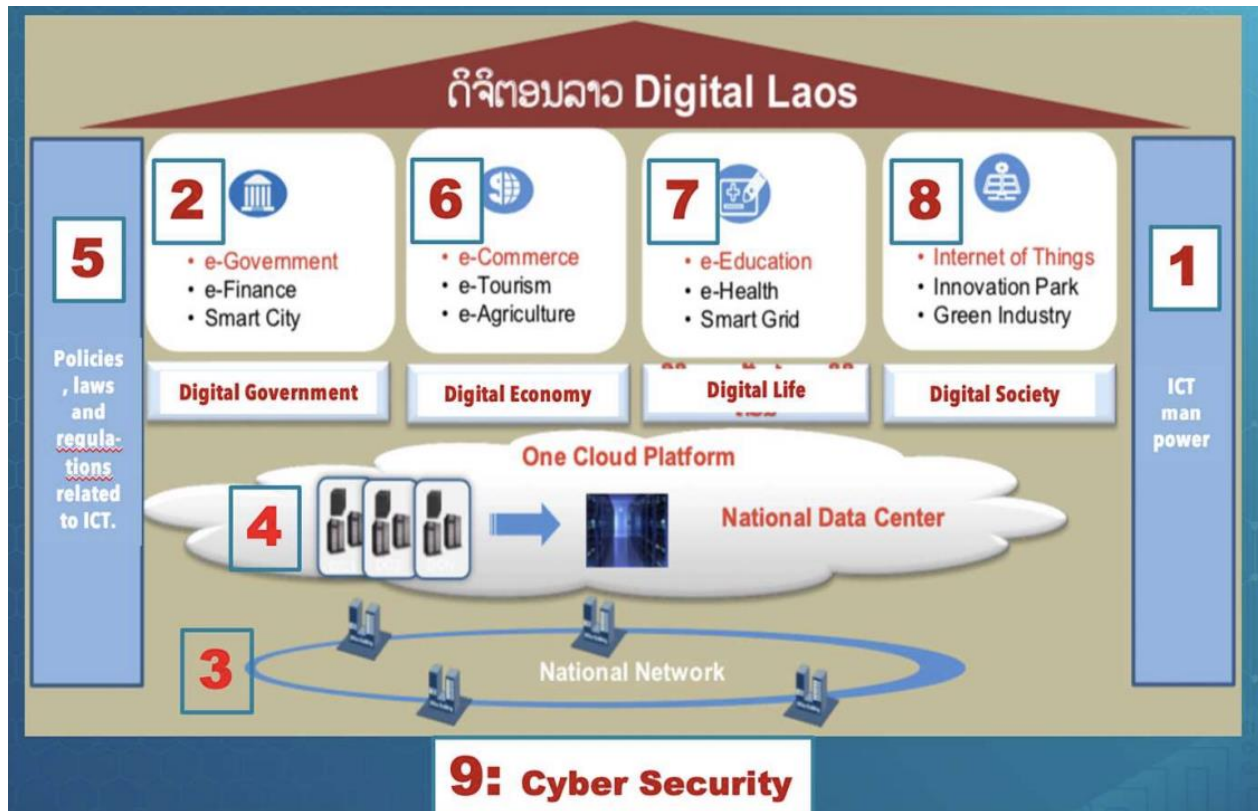


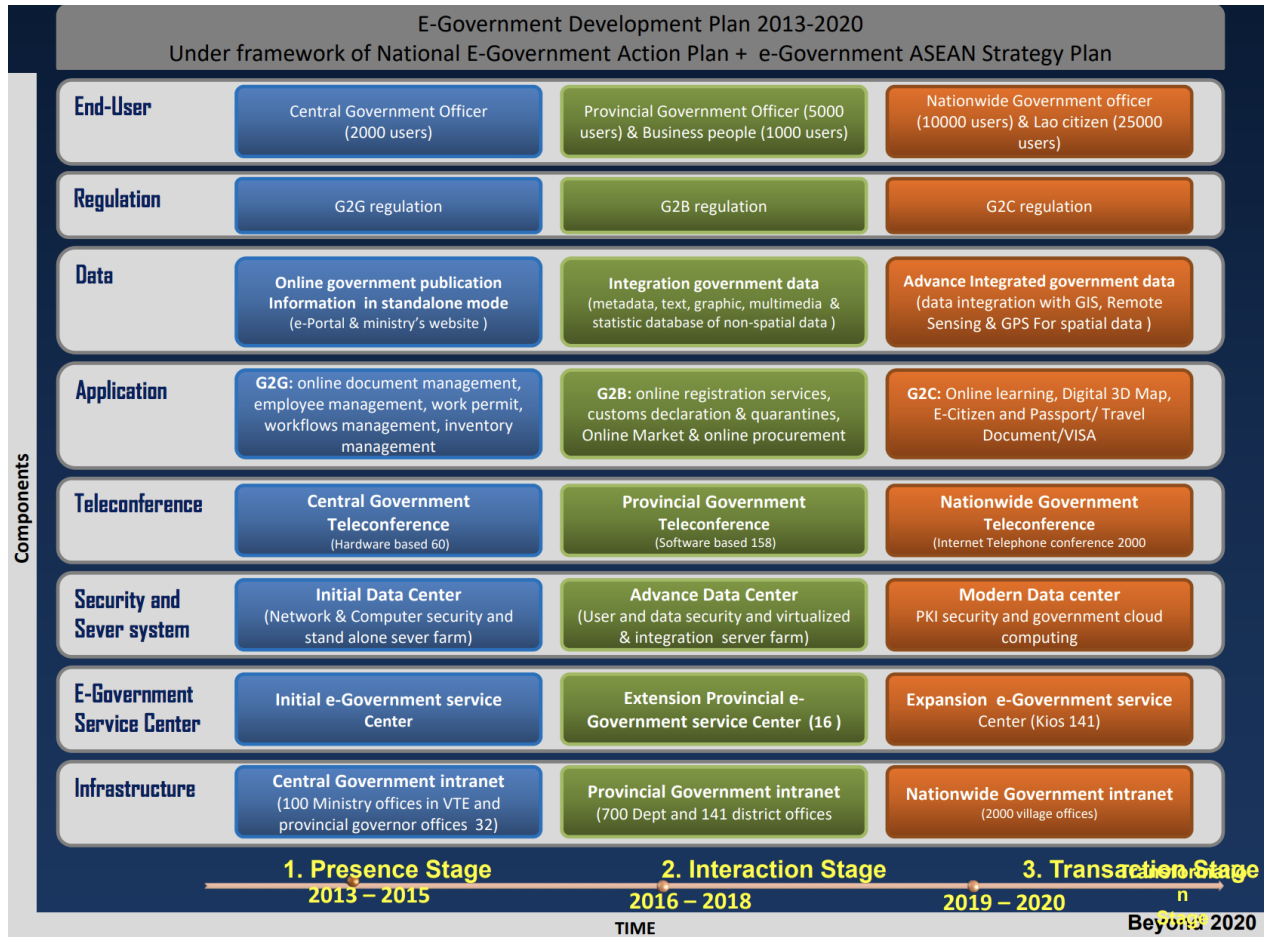
Figure 25: The E-Government Development Plan 2013-2020 of Lao PDR⁸⁶

⁸³ Different from the distinction meaning of e-Government and Digital Government given by the World Bank, both terms shared the same meaning in this paper for Lao PDR. The definition from the World Bank is available at p49, <https://thedocs.worldbank.org/en/doc/c01714a0bc2ca257bdf8f3f75a64adc-0070062022/original/Positioning-The-Lao-PDR-for-a-Digital-Future-11-10-22.pdf>.

⁸⁴ P 100. 9th Five-Year National Socioeconomic Development Plan (2021-2025). Available at https://data.opendevelopmentmekong.net/library_record/9th-five-year-national-socio-economic-development-plan-2021-2025.

⁸⁵ <https://cicc.or.jp/english/wp-content/uploads/211209-04la.pdf>.

⁸⁶ https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2017/Sep-SCEG2017/SESSION-1_Lao_Ms_Kesone_Soulivong.pdf.



Summary of Four Pillars

Table 31 summarizes Lao PDR's current data governance framework in relation to the four pillars. The four pillars and the means of substantiating them in Lao PDR are repeated below:

- a) Policy: develop action agendas based on existing policies and regulations; aim at establishing quantitative national policies decision making process through data centre.
- b) Institutions: assign Government departments in existing institutional framework with responsibilities. New digital enterprise architecture (e.g., in health and family welfare) will be in line with national e-governance architecture.
- c) People: show the implementing lead organization of specific information system or action items.
- d) Processes: show the leader, implementing agency, partners, financing, and other information related to data system and digital identity. The detailed timetable and budget plan are also offered with priority.

Table 31 Four Pillars of Lao PDR's Data Governance Framework

Pillar	Overview																													
Policy	<ul style="list-style-type: none"> ➤ Launched the National Digital Economy Vision (2021-2040), the National Digital Economy Strategy (2021-2030), and the National Digital Economy Development Plan (2021-2025) in December 2021⁸⁷ ➤ Law, declarations, and agreements (see Appendix VI) 																													
Institutions	<p>Domestic institutions:</p> <ul style="list-style-type: none"> ➤ National level strategy on e-Government development is provided by National CIO Committee, which is linked with some local development strategies ➤ G-Government platforms and services have been provided by the E-Government Centre of the Ministry of Technology and Communications (MTC). It was created by merging offices previously under in MPT and MST in October 2021⁸⁸ <p style="text-align: center;">Figure 26: Departments in MTC⁸⁹</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="14">Ministry of Technology and Communications (MTC)</th> </tr> </thead> <tbody> <tr> <td>Cabinet Office</td> <td>Personnel Department</td> <td>Inspection Department</td> <td>Planning and Finance Department</td> <td>Post Department</td> <td>Radio Frequency Department</td> <td>Digital Technology Department</td> <td>Cyber Security Department</td> <td>Technology and Innovation Department</td> <td>Telecommunication Regulatory Authority</td> <td>National Internet Center</td> <td>Digital Government Center</td> <td>Technology Promotion Center</td> <td>Technology Innovation Research Institution</td> <td>Information and Communication Technology Institution</td> </tr> </tbody> </table> <ul style="list-style-type: none"> ➤ Cooperates with LICA, JCT school, R&D, Telecom Company, ICT Company to develop applications, cloud systems, and networking <p>International institutions:</p> <ul style="list-style-type: none"> ➤ Maintain the South-South Cooperation and international cooperation programmes for ICT development ➤ Makes and align national e-Government strategy to global and regional guidelines. E.g., SDGs 2030, ASEAN ICT master plan, RCEPT 	Ministry of Technology and Communications (MTC)														Cabinet Office	Personnel Department	Inspection Department	Planning and Finance Department	Post Department	Radio Frequency Department	Digital Technology Department	Cyber Security Department	Technology and Innovation Department	Telecommunication Regulatory Authority	National Internet Center	Digital Government Center	Technology Promotion Center	Technology Innovation Research Institution	Information and Communication Technology Institution
Ministry of Technology and Communications (MTC)																														
Cabinet Office	Personnel Department	Inspection Department	Planning and Finance Department	Post Department	Radio Frequency Department	Digital Technology Department	Cyber Security Department	Technology and Innovation Department	Telecommunication Regulatory Authority	National Internet Center	Digital Government Center	Technology Promotion Center	Technology Innovation Research Institution	Information and Communication Technology Institution																

⁸⁷ P17. Digital Maturity Assessment: Lao PDR.

⁸⁸ P50. Positioning the Lao PDR for a Digital Future.

⁸⁹ <https://cicc.or.jp/english/wp-content/uploads/211209-04la.pdf>.

	<ul style="list-style-type: none"> ➤ Cooperates with ASEAN, US, EU, China, Korea, Japan, etc. in an experience exchange, consultation, and developing some applications ➤ Cooperates with UNDP for Lao digital transformation
People	<ul style="list-style-type: none"> ➤ Chief Information Officer (CIO) in Department of Planning and Cooperation responsible for national e-Government strategies ➤ Established the Lao Computer Emergency Response Team (LaoCERT) to manage and prevent cybercrimes in 2012, which has become a member of the Asia-Pacific Computer Emergency Response Team (APCERT)⁹⁰ ➤ Plans to strengthen the technical capacities, qualifications and expertise of staff in line with roles and responsibilities to maximise existing human resources potential⁹¹
Processes	<ul style="list-style-type: none"> ➤ Made National Socio-Economic Development Plan (the 9th NSEDP) with clear goals, detailed action plan and budget support on e-Government transformation (see Appendix V)

Lao PDR has embarked on the process of Governmental digitalization by developing policies and action agendas for different time spans. Large-scope of cooperation with different departments and agencies is also developed for strategy-making and implementation. National Roles and responsibilities to make e-Government strategies are clarified, and capacity-building programs for staff members are also put on the agenda. Guided by an achievable roadmap given in the 9th NSEDP, Lao PDR can accelerate the process of data governance with a concrete timeline.

Pillar-Element Mapping Matrix and Mapping of Six Elements

Table 32: Six Elements of Lao PDR's Data Governance Framework

Element	Summary
Data standards & classification	<ul style="list-style-type: none"> ➤ MTC established technical standards for Government websites in January 2020, ensuring standard quality, data security, safety, and management of public websites⁹² ➤ Works with UNDP to establish the e-Government Master Plan and e-Government standard framework (MSQ) Figure 27: Digital Government Master Plan⁹³

⁹⁰ P29. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

⁹¹ P99. 9th Five-Year National Socioeconomic Development Plan (2021-2025). P59, Positioning the Lao PDR for a Digital Future.

⁹² P74. Digital Maturity Assessment: Lao PDR.

⁹³ <https://cicc.or.jp/english/wp-content/uploads/211209-04la.pdf>.

	<p style="text-align: center;">7 Digital Government Master Plan</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%; border: 1px solid black; padding: 5px;"> <p>5</p> <p>• Procurement • Statistic • Employment • Budgeting • Vehicle use • Land ownership • Disaster</p> </div> <div style="width: 30%; border: 1px solid black; padding: 5px;"> <p>G2B</p> <p>• Certification • Investment • Taxation • Commerce • Agriculture • Tourism • Transportation</p> </div> <div style="width: 30%; border: 1px solid black; padding: 5px;"> <p>G2C</p> <p>• Population • Education • Health service • Social welfare • Justice • Labour force • Passport • Feedback</p> </div> </div> <p>4</p> <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 5px;"> <div style="border: 1px solid black; padding: 2px;">E-Document</div> <div style="border: 1px solid black; padding: 2px;">E-Workflow</div> <div style="border: 1px solid black; padding: 2px;">E-Form</div> <div style="border: 1px solid black; padding: 2px;">G-Share</div> <div style="border: 1px solid black; padding: 2px;">Open Gov Data</div> </div> <div style="display: flex; justify-content: space-around; border: 1px solid black; padding: 5px;"> <div style="border: 1px solid black; padding: 2px;">E-Signature</div> <div style="border: 1px solid black; padding: 2px;">E-Portal</div> <div style="border: 1px solid black; padding: 2px;">Lao KYC</div> <div style="border: 1px solid black; padding: 2px;">Dashboard</div> <div style="border: 1px solid black; padding: 2px;">Email, VDC, etc</div> </div> <p>3</p> <p>2 Data governance through G-Cloud to serve the government.</p> <p>1 The provision of computer network within the government organisations (through villages) at the whole, stated in the 10th years Post and Telecom Development Plan (2019-2025) of MPT.</p> <p style="font-size: small;">Laws, policies: i.e., the use of e-mail. Cooperation: MPT CIO Standardisation: i.e. web platform</p> <p style="font-size: small; text-align: right;">Human development on ICT</p>
<p>Data sharing, exchange and interoperability, including open government data</p>	<p>Government to public:</p> <ul style="list-style-type: none"> ➤ Annual report covered the statistics of telecom, ICT and e-Government services ➤ Plans to expand public services such as Open Government Data⁹⁴ <p>Public to Government:</p> <ul style="list-style-type: none"> ➤ Uses website and blogs on social media to promote e-information, e-consultation and e-decision making ➤ “E-Service”, public sector is using e-Service for communicating, sharing, transferring, and giving comments on the works ➤ “Blog”, each ministry has their website and a blog that is open for society’s feedback and comments. ➤ “Facebook page” is used for promoting, encouraging people, and sharing some information with society such as the Centre of Information and Education for Health <p>Within Government:</p> <ul style="list-style-type: none"> ➤ Horizontal level: G-Chat, a government message application, is developed to promote safe and efficient information sharing in the Government⁹⁵ ➤ Vertical level: Improves the implementation of the One-Door Service mechanism by encouraging sectors and localities to integrate their work into the system or the One-Door Service Centres at the provincial and district levels⁹⁶
<p>Data security</p>	<ul style="list-style-type: none"> ➤ Domestic: Law on Consumer Protection 2010; Law on Electronic Transactions 2012; Decree on Internet-Based Information Control Management 2014; Law on Prevention and Combating Cyber Crime 2015; Law on Electronic Data Protection Act 2017; Law on data protection⁹⁷

⁹⁴ P90. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

⁹⁵ P28. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

⁹⁶ P100. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

⁹⁷ P17. Digital Maturity Assessment: Lao PDR.

	<ul style="list-style-type: none"> ➤ Global: Signed an international cooperation agreement on Public Key Infrastructure (PKI)⁹⁸ ➤ Established a high-security ICT system to prevent cyber-attacks and data breaches; protect personal information, and prevent all forms of data infringements and prevent harmful data⁹⁹ ➤ Installed a Cyber Attack Monitoring System, the Tsubame Sensor packet traffic monitoring, and improved the information security system of the National Internet Centre in accordance with ISO27001¹⁰⁰ ➤ Plans to build an Information technology security consulting centre project and a Disaster Recovery Site to improve the security and quality of digital data centre services¹⁰¹
Data privacy (and ethics)	<ul style="list-style-type: none"> ➤ Plans to protect the information privacy according to National Digital Economy Strategy (2021-2030)¹⁰²
National data infrastructure	<p>Laws, declarations, and agreements:</p> <ul style="list-style-type: none"> ➤ Law on Telecommunications 2001; Law on Telecommunications (amended) 2021; Law on Information and Communication Technology 2016; Decree on data center 2016 <p>Government Services:</p> <ul style="list-style-type: none"> ➤ At present, each sectoral department has its portal, including education, health, environment, covid-19 response, etc.; Works on an integrated platform to install the e-Service system to all ministries ➤ Plans to expand the use of e-Service programmes to provide Government-to-Government (G2G), Government-to-Business (G2B), and Government-to-Community (G2C) services (see Appendix V)¹⁰³ ➤ Methods to improve the telecommunication and Internet connectivity (see Appendix IV and V) ➤ Completed a national and science and technology data centre that can hold data up to 400TB¹⁰⁴
Linking data governance to digital identity	<ul style="list-style-type: none"> ➤ Law on E-Signature 2019 ➤ An electronic know-your-customer (eKYC101) service managed by MTC functions as a quasi-digital ID service to identify people through mobile SIM card registration¹⁰⁵ ➤ Plans to have a Certification Authorities (CA) system development project for CA Service Providers and develop the electronic public administration system such as e-Signature¹⁰⁶

⁹⁸ P29. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

⁹⁹ P88. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

¹⁰⁰ P29. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

¹⁰¹ P29. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

¹⁰² P18. Digital Maturity Assessment: Lao PDR.

¹⁰³ P87. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

¹⁰⁴ P29. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

¹⁰⁵ P53. Positioning the Lao PDR for a Digital Future.

¹⁰⁶ P90. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

To demonstrate the relationships between each pillar and element, a Pillar-Element Mapping Matrix is utilized (see Table 33). There are 24 cells in this matrix, reflecting the existing data governance framework in Lao PDR. This baseline report and the matrix below merely reflects a snapshot of the current situation as discovered from empirical desk research. The volume of information in each cell, including those which are left blank, should not be taken as a comprehensive evaluation or correlative of the development of each pillar-element pair. Its purpose is simply to offer a simplistic overview. More practices and projects can be seen in the element of data sharing and exchange, data security and national data infrastructure, indicating the Government's key focus on the development of digitalization is at an early stage. With the expansion of digital public services and telecommunication users, the Government begin to prescribe principles in data standardization and authentication. However, little evidence can be found in the element of data privacy.

Table 33: Pillar-Element Mapping Matrix of Lao PDR's Current Data Governance Framework

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	<p>Preliminary attempts to standardize data on public websites</p> <p>Plans to build up standard framework for e-Government</p>	<p>Works on data sharing within and out of the Government</p> <p>Plans to build up an integrated Government Open Data Platform and data exchange system</p>	<p>Legislation on data security</p> <p>Improves the information security system</p> <p>Plans to carry out E-Government security and anti-virus project</p>	<p>Plans to protect the information privacy</p>	<p>Legislation on ICT and telecommunication</p> <p>Modernises telecommunication and ICT infrastructure¹⁰⁷</p> <p>Improves the government services (G2G, G2C, G2B)</p> <p>Plans to expand the use of public service system and improve the digital infrastructure</p>	<p>Plans to develop the digital identity system and e-Signature services</p>
Institutions	<p>Works with international and domestic institutions to make and follow the data standards</p>	<p>Collaborates with global institutions</p> <p>The Ministry of Technology and Communications (MTC) is responsible for e-</p>	<p>Collaborates with global institutions</p> <p>Plan to construct new institutions to improve data security</p>		<p>Collaborates with global institutions and different sectors</p>	

¹⁰⁷ P88. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

		Government services and is planned to become a model for a modernised Ministry			Plans to continue and facilitate new corporation	
People	Sets specific roles for making national e-Government strategies		Establishes a team to response to cybercrimes		Plans to provide training courses in each Government organization to use digital services	
Processes		Very detailed action plans for data sharing and integration	Detailed action plans for protect data		Very detailed action plans for improving the digital infrastructure	Detailed action plans

The Pillar-Element Mapping Matrix is generated to deep dive into the correlation of each pillar and element. This Matrix basically covers three aspects, the regulatory framework, facts of implementation and future plans in relation to each cell. It can be found that Lao PDR has development plans for over half of the cells in the next 5 years according to the 9th National Socioeconomic Development Plan. At present, the Government has increased the penetration of Telecommunication and Communication (ICT) usage and modernized the office system in the Government to promote digital transformation and legislated on e-Signature and data protection. Figure 28 shows Pillar-Element Mapping Matrix of Lao PDR's data governance framework

Figure 28: The Pillar-Element Mapping Matrix of Lao PDR

Elements→ Pillars↓	Data standards & classification	Data sharing, interoperability, and open Government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy: existing policy and regulatory framework						
Institutions: existing institutional framework						
People: existing data ecosystem and mapping of stakeholders						
Processes: existing data processes						

Note: In this figure, cells in dark blue means Lao PDR performs or plans relatively well (has more than two relevant regulations, practices or plans) in relevant pillars and elements. Cells in light blue or white means that Lao PDR's performance or plans are relatively less comprehensive (just has two

or fewer relevant regulations, practices or plans. However, due to the limited documents available in English, the mapping above cannot depict the overall performance in the data governance framework of Lao PDR. It is important to note that white cells are not equal to the fact that Lao PDR truly lacks relevant policies or practices in relevant pillars and elements.

SWOT Analysis of Lao PDR's Data Governance Framework

Table 34: SWOT Analysis of Lao PDR's Data Governance Framework

	Positive	Negative
Internal factors	Strengths	Weaknesses
	<ul style="list-style-type: none"> • Ambition to realize digital governance by carrying out short-term, mid-term and long-term plans in lined with national development plans and international agreements • Proactive cooperation with regional and global institutes in terms of e-Government strategy and practices • Comprehensive digital tools, services and training that contribute to effective operation of public sector • Continuous attempts to enact laws and regulations on telecommunications and data security • Numerous efforts paid to infrastructure construction • Open to the public feedback for better people engagement 	<ul style="list-style-type: none"> • Lacks enough methods to improve digital inclusion, and more special attention should be paid to marginalized groups to improve their digital literacy and skills • Data resides mostly in silos in line ministries with limited interoperability and exchange¹⁰⁸ • Lack of digital public standards and data protection legislation • Missing instruments to coordinate the digital transformation initiatives of the line ministries at Government level¹⁰⁹ • Few usages of emerging technologies, such as artificial intelligence, big data and IoT
External factors	Opportunities	Threats
	<ul style="list-style-type: none"> • Special geological location makes it possible for Lao PDR to become an Internet gateway between China and ASEAN¹¹⁰ 	<ul style="list-style-type: none"> • Development lags in e-Governance compared with neighbouring countries

¹⁰⁸ P55. Positioning the Lao PDR for a Digital Future.

¹⁰⁹ Pp52-56. Positioning the Lao PDR for a Digital Future.

¹¹⁰ P88, 9th Five-Year National Socioeconomic Development Plan (2021-2025).

	<ul style="list-style-type: none"> • Covid-19 produces new needs for e-service and e-Government based on data • Benefits from Technology break-through 	<ul style="list-style-type: none"> • Effectiveness and uncertainty under the Covid-19 • Regional geopolitics environment
--	--	--

Conclusion

In summary, Lao PDR is in the process of establishing a comprehensive framework to advance its digital governance as well as its data governance. With the full implementation of the Government's upcoming projects, remarkable progress can be expected in aspects of information sharing, data security and digital infrastructure. However, there is still room for improvement in Lao PDR's data standardization, data privacy protection and digital authentication, in order to create an accountable and effective data governance system. Based on the national development plans and strategies on e-Governance, it is suggested to further promote and implement Lao PDR's institution mechanisms at different levels, and work on capacity building programs among public officials and other stakeholders to tap on the full potential of digitalization.

Appendices

Appendix IV: Projects to Develop Digital Public Administration System in Lao PDR¹¹¹

Project Name	Project Period	Source of Funding
(1) Project to improve and develop the Government data exchange system to facilitate sharing and integration of Government data	/	State budget
(2) Government information centre (G-Cloud) improvement and integration project	/	State budget
(3) Project to improve and develop the internal network and ICT systems of the Ministry of Post and Telecommunications to be a model for a modernised Ministry	/	State budget
(4) Project to improve and expand the video conference system at the central and local levels	/	State budget
(5) Project to improve and expand the Government email system at the central and local levels	/	State budget
(6) Project to establish an electronic information centre in the provinces	/	State budget
(7) Project to develop, improve and maintain the e-Office system	/	State budget

¹¹¹ Pp130, 136-137. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

(8) Project to develop and expand the use of e-Office system in ministries and Government offices across the country	/	State budget
(9) Project to develop the Lao language file system (Phetsarath Office) and the system for file storage and sharing on Government cloud storage (G-Share, G-Drive)	/	State budget
(10) Project to modernise public service system with digital transformation (e-Services and Single Sign-On) at the central and local levels	/	State budget
(11) Project to develop and expand the use of the Government messaging application (GChat)	/	State budget
(12) Project to expand the use of G-Web Platform across the public sector at the central and local levels	/	State budget
(13) Government Open Data Platform integrated development project	/	State budget
(14) E-gov security and anti-virus project	/	State budget
(15) Project to study and develop a Smart City model using electronic public administration system	/	State budget
(16) Project to develop and establish a public sector reporting system (Dashboard) towards digitalisation via mobile phones	/	State budget
(17) Project to develop Lao Fonts and electronic Lao Font directory	/	State budget
(18) Project to improve the e-Government Development Index	/	State budget
(19) Public sector e-Signature (CA) development and expansion project	/	State budget
(20) Project to study the use of Blockchain technology in Government work	/	State budget
(21) Project to establish an information technology security consulting service center	2021-25	FDI ¹¹²

¹¹² FDI refers to foreign direct investment. P119. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

(22) Disaster Recovery Site project to improve the security and quality of digital data center services	2024-25	FDI
(23) CA System Development Program for Electronic Signature Services (CA Service Provider)	2022-25	FDI

Appendix V: Projects to Develop ICT and Digital Infrastructure in Lao PDR¹¹³

(1) Project for the improvement of the online ICT licensing system to provide services nationwide
(2) Project for improving the inspection of ICT equipment standards
(3) ICT services inspection project
(4) Digital park / ICT park development project in Vientiane Capital
(5) Innovation development and digital consulting centre development project
(6) Digital camp project
(7) Digital index development project
(8) Free public Wifi project
(9) IPv6 technical upgrade and trial project with local and international Internet service providers
(10) Technical and security improvement project for the national Internet service code management system (.LA) and Lao
(11) Feasibility study and construction of a national internet backup centre project
(12) Project to establish a backup registry system at the national Internet backup centres in the Northern and Southern regions
(13) Project to improve the web hosting system to increase security and ability to accommodate the growth of users
(14) Project to improve the colocation system to be able to accommodate consumption growth
(15) Cloud system extension project to support modernisation
(16) Project to establish the National Data Exchange Centre for the public sector
(17) Government network improvement and expansion project
(18) Project to develop high-speed information network to reduce poverty and support the digital Silk

¹¹³ P94. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

Road Economic Belt
(19)High-speed Internet centre infrastructure development project connecting the Subregion (CLMV)
(20)Project to establish connection points for the inbound and outbound telecommunication transmission system
(21)Procurement and installation of the electricity system for Dongphosy information backup centre
(22)Project to improve the Dongphosy centre to become a backup centre
(23)Project to study the market share structure and define the telecommunications market along with promoting fair competition

Appendix VI: Monitoring-Evaluation Framework for 9th Five-Year National Socio-Economic Development Plan (2021-2025)¹¹⁴

No.	Indicators	Base line	Base Year	2025 Target	Frequency of reporting	Responded by	Links with	SDG Tier
138	Percentage of Telecommunication and Communication (ICT) usage per capita: - Computers - Internet - Wired and wireless landlines - Mobile phones - Wired and wireless high speed internet	36% 51% 45%	2017	70% 60% 100%	5 years and annually	Ministry of Technology and Communication		
139	Percentage of population aged 15-24 using computer and internet, classified by ICT ability, sex and housing to the total population of that age group: - Percentage of computer use (female) - Percentage of Internet use (female)	30% 79% 45% 76%	2017	-	5 years	Ministry of Technology and Communication	SDG 4.4.1	II

¹¹⁴ Only indicators related to data governance are extracted. Pp119-120. 9th Five-Year National Socioeconomic Development Plan (2021-2025).

	- Percentage of computer use (male) - Percentage of Internet use (male)							
140	Proportion of coverage area of mobile signal receiving station - 3G - 4G - 5G - 3G - 4G - 5G	81% 53% 0%	2020	100% 90% 50%	Annually	Ministry of Technology and Communication	9th NSED P SDG 9.c.1	I
141	Establish a National Internet Reserve Center	-	2020	2	Annually	Ministry of Technology and Communication	9th NSED P	
142	Number of central and local offices that use the modern office system (e-office) in the party-state organization	9	2020	45	Annually	Ministry of Technology and Communication	9th NSED P	
143	Number of Government offices using teleconferencing and email systems	32 34	2020	68	Annually	Ministry of Technology and Communication	9th NSED P	
153	Proportion of One Door Service in the local level	43%	2020	15%	Annually	Ministry of Home Affairs	9th NSED P	
157	Proportion of the essential basic services required of the governing party as online services	-	2020	50%	Annually	Ministry of Home Affairs	9th NSED P	
158	Number of the essential basic services required of the governing party as online services	4	-	-	Annually	Ministry of Home Affairs	SDG 16.6.2	
159	Management within both central and local Government organizations that use digital systems	-	2020	80%	Annually	Ministry of Technology and Communication	9th NSED P	

Appendix VII: Laws, Declarations, and Agreements about Data Governance in Lao PDR by 2022

- Law on Telecommunications (amended) 2021
- Law on E-Signature 2019
- Law on Radio Frequency Communication 2017
- Law on Electronic Data Protection 2017
- Law on Internet Data Centre 2016

- Law on Information and Communication Technology 2016
- Law on Cybercrime 2015
- Decree on information on the internet 2014
- Law on Postal 2013
- Law on Telecommunications 2011
- Law on Telecommunications 2001
- Decree on e-Commerce
- Agreement on e-Office
- Agreement on the network system of MTC
- Agreement on the Government standard website
- Agreement on Email
- Agreement on Video Conference
- Agreement on G-Chat 2021 (drafting)

Appendix VIII: G2G, G2C, G2B Services in Lao PDR¹¹⁵

Government-to-Government (G2G) services		
E-services	Lead organization	Description
G-Net	MTC	Lao PDR Government intranet network.
Government email	MTC	800 email addresses have been issued for all Government employees, including those in MTC provincial offices.
G-Share ¹¹⁶	MTC	This public cloud data storage and sharing system will help Government offices store and share important data and documents.
G-Chat ¹¹⁷	MTC	This is an instant messaging app for Government officials.
Video conferencing	MTC	Video conferencing systems have been installed in all Government offices in the capital and the provinces.
E-Office	MTC	This electronic document management system can be accessed through most internet-connected devices, such as smartphones, tablets, laptops and desktop computers. The system has been installed in all MTC departments and department-level agencies, with over 3,000 documents stored in the system.
Government-to-citizen (G2C) services		
E-services	Lead organization	Description
Lao KYC app	MTC & MOH	The app allows Lao residents to submit personal details such as name, address and location, register a phone number, upload green vaccine cards, scan a QR scanning for contact tracing, and follow news and COVID-19 information.
Lao Official Gazette	MOJ & MOHA	This website publishes draft bills and legislation that can be accessed by individuals, state authorities and private organizations.

¹¹⁵ Pp20-21. Digital Maturity Assessment: Lao PDR.

¹¹⁶ <https://egc.gov.la/gweb/gweb/backend/web/index.php?r=site/detail&id=454>.

¹¹⁷ <https://egc.gov.la/gweb/gweb/backend/web/index.php?r=site/detail&id=408>.

Job portal	MLSW	The online job portal provides information on employment centres and job vacancies across the country.
Khang Panya Lao	MOES	The teaching and learning platform that facilitates children's and adolescents' learning, strengthens teaching by supporting the work of teachers and principals, and enhances the digital skills of Lao children, young people, teachers and educational staff.
e-Visa	MOFA	Non-Lao people may use this official online platform to apply for a visa prior to traveling to Lao PDR.
Government-to-business (G2B) services		
E-services	Lead organization	Description
Lao Trade Portal	MOIC	This online portal provides traders with information required to import and export goods, including on import/ export processes, regulations on specific products and relevant laws.
One-stop service website for doing business	MPI & MOIC	This service provides comprehensive services for investors. It provides investment-related information, facilitates the investment application and approval process, and issues investment licensing and investment-related notices.
Lao Services Portal	MOIC	This website provides information on trade and investment, such as laws, regulations, decisions, measures, procedures and forms.
Plaosme Platform	MOIC & LNCCI	This website offers a trading platform for online and offline businesses. It provides information about products and producers, trade agreements, and business activity workshops.

Namibia

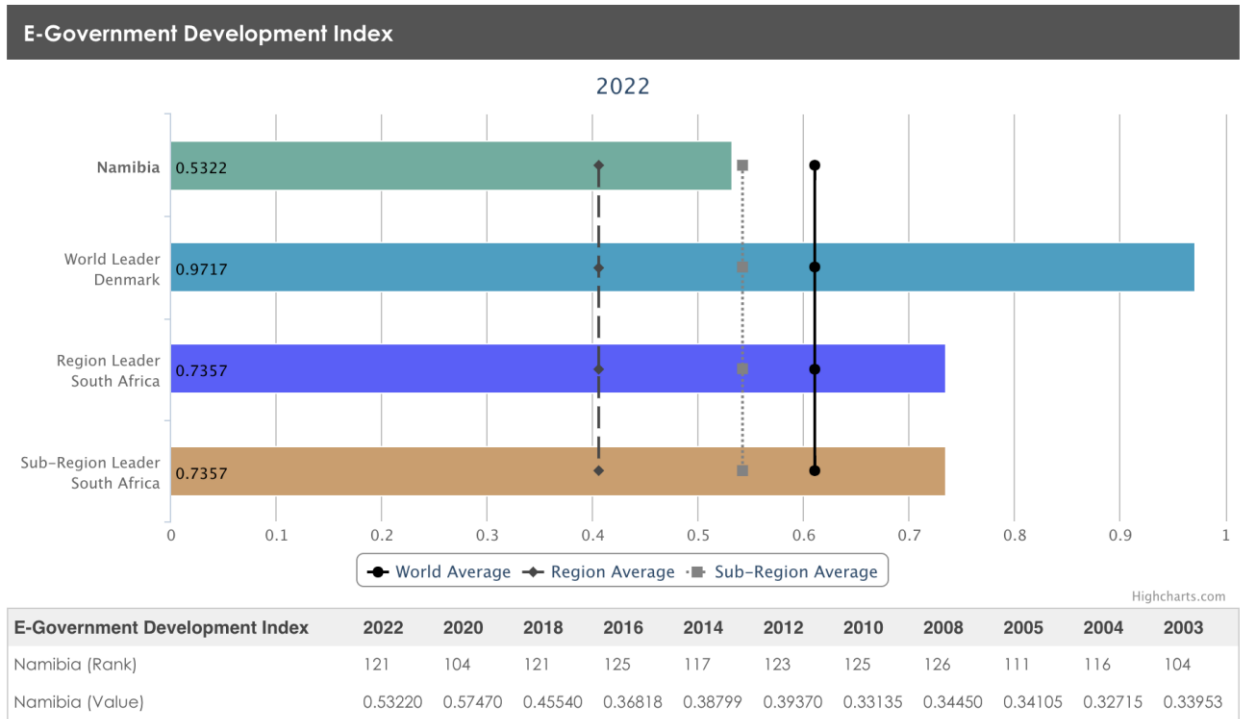
Introduction

Namibia is currently an upper-middle-income country with high socioeconomic inequalities. With an EGDI of 0.5322, it is classified in the H1 group, ranking 121/193 in 2022. Namibia has moved from the middle to the high EGDI group in 2020. However, underdeveloped or unevenly developed infrastructure will constrain e-government development. It has decreased in EGDI in 2022 (0.5747 to 0.5322), at the meantime still lagging behind in OGD. Furthermore, the post-epidemic era requires further actions to respond to the possible opportunities and challenges in data governance.

Figure 29: Namibia's EGDI 2022¹¹⁸



Figure 30: Namibia's EGDI 2003-2022¹¹⁹



¹¹⁸ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/118-Namibia>

¹¹⁹ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/118-Namibia>

Table 35: Namibia's OGD I 2020-2022¹²⁰

	OGDI Group	OGDI
2022	low OGD I	0.1775
2020	Low OGD I	0.1865

With a remarkably large area and sparse population, Namibia has strong aspirations and readiness to develop nationwide data governance framework. Ministry of Information and Communication Technology's 2017-2022 Strategic Plan was launched with the goal of ICT smart nation, knowledge-based economy, preferred film destination, informed nation, and high ICT coverage.¹²¹ Vision 2030 has set the goal to develop and implement a comprehensive ICT policy and to improve access to ICT facilities for all members of the Namibian society.¹²² In Namibia Quality Assurance Framework for Statistics published in 2020, 8 dimensions are emphasized as strong institutional support, integrity, sound methodology and statistical procedures, accuracy and reliability, relevance, timeliness, and accessibility.¹²³

Summary of Four Pillars

- a) Policy: develop action agendas based on existing policies and regulations; aim at establishing quantitative national policies decision making process through data center.
- b) Institutions: assign government departments in existing institutional framework with responsibilities. New digital enterprise architecture (e.g., in health and family welfare) will be in line with national e-governance architecture.
- c) People: show the implementing lead positions of specific information system or action items and the capacity of government professionals to implement relevant policies and regulations on data governance.
- d) Processes: show the leader, implementing agency, partners, financing, and other information related to data system and digital identity. Besides the figure below, the detailed timetable and budget plan are also offered with priority.

¹²⁰ United Nations (2020), United Nations E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, UN DESA.; United Nations (2022), United Nations E-Government Survey 2022: The Future of Digital Government, UN DESA.

¹²¹ <https://mict.gov.na/documents/32978/266786/STRATEGIC+PLAN+2017-22+FINAL+as+of+14+July+2017.pdf/e83b37b5-c26b-44e2-9c47-7fee64090182>

¹²² https://www.npc.gov.na/wp-content/uploads/2021/11/vision_2030.pdf

¹²³ <https://d3rp5jat0m3eyn.cloudfront.net/cms/assets/documents/p1esaohhpv12j4v2ruqc215lpo5.pdf>

Pillar-Element Mapping Matrix and Mapping of Six Elements

This part shows the mapping of six elements firstly, based on xxx, and other related projects, plans, and laws/regulations.

Table 36: the Mapping of Six Elements in Namibia's Data Governance Framework

Element	Content and key focus
Data standards and classification	<ul style="list-style-type: none"> ✓ Namibia subscribed to the IMF's Special Data Dissemination Standard (SDDS) in 2022.¹²⁴ ✓ Two working groups under the supervision of the Namibia Statistics Agency (NSA) are to be formed on ad-hoc basis to develop key technical and governance standards and policies.¹²⁵
Data sharing, exchange and interoperability, open government data	<ul style="list-style-type: none"> ✓ Government Of Namibia Interoperability (IOP) Framework¹²⁶ ✓ Unified eXchange Platform (UXP) that allows digital manifestations of various State institutions to be integrated into a single system. ✓ Other platforms: Integrated Tax Administration System (ITAS), Government Intranet Portal (eService), Nam-X.¹²⁷ ✓ Institutions in charge: <ul style="list-style-type: none"> – Namibia Statistics Agency is to collect, produce, analyse and disseminate official and other statistics in Namibia and to develop and coordinate the National Statistics System and the National Spatial Data Infrastructure. – The Office of the Prime Minister and the Ministry of Information and Communication Technology were given a joint responsibility to promote transparency and accessibility through the deployment of e-governance covering all Ministries and public agencies.
Data security	<ul style="list-style-type: none"> ✓ Regulations: <ul style="list-style-type: none"> – Regulations Prescribing the National Numbering Plan for Use in the Provision of Telecommunications Services in the Republic of Namibia, Numbering Licence Fees and Procedures for Number Licences – Regulations Prescribing Procedures Regarding Application For, And Amendment, Renewal, Transfer And Cancellation of Spectrum Licences ✓ Namibia is working on a national cyber security strategy to protect banks from malware attacks.¹²⁸ ✓ Mandatory SIM registration to be implemented by mobile service providers is tailor-made to protect digital identities from cybercrimes, and to ensure the effective regulation of a technological landscape.¹²⁹ ✓ A cyber security council has been set up by Bank of Namibia in 2022 to combat cyber fraud.¹³⁰
Data privacy (and ethics)	<ul style="list-style-type: none"> ✓ Namibia does not yet have legislation that directly provides for data protection, but personal data in Namibia is protected indirectly through the right to privacy in the

¹²⁴ <https://www.imf.org/en/News/Articles/2022/12/15/pr22436-namibia-subscribes-to-the-international-monetary-fund-special-data-dissemination-standard>

¹²⁵ <https://nsa.org.na/page/programs/>

¹²⁶ https://www.id4africa.com/2019_event/presentations/InF9/InF9-3-Melanie-Tjijenda-Namibia-Final.pdf

¹²⁷ <https://cyber.ee/resources/case-studies/namibia-governmental-interoperability-framework-nam-x/>

¹²⁸ <https://english.news.cn/20221121/137411e56b5b4724801983ba72ff703e/c.html>

¹²⁹ <https://economist.com.na/71855/general-news/sim-registration-is-integral-to-your-digital-identity-nghikembua/>

¹³⁰ <https://english.news.cn/20221121/137411e56b5b4724801983ba72ff703e/c.html>

	<p>Constitution of the Republic of Namibia (Article 13).¹³¹</p> <ul style="list-style-type: none"> ✓ The Ministry of Information and Communication Technology has been developing a Data Protection Bill, which is expected to: <ul style="list-style-type: none"> – protect the fundamental rights and freedoms of natural persons, – protect Namibian citizens from abuse of their personal data, – and to harmonize Namibia's data protection policy and legal framework with regional and international standards.¹³²
National data infrastructure	<ul style="list-style-type: none"> ✓ Accelerate ICT development, access and use for an inclusive ICT smart Namibia. ✓ By 2022, Namibia enjoys widespread availability of affordable and accessible full range of communication and technology infrastructure services. ✓ Promote public-private partnership funding for technology centres to advance ICT literacy. ✓ Encourage cooperation among ICT service providers in the development and utilisation of ICT infrastructure to enhance communication and accelerate socio-economic development. ✓ Regulations and policies: <ul style="list-style-type: none"> – Regulations Prescribing Functions of Carriers in Respect of Installation and of Telecommunications Facilities – Policy on Determination of Dominant Position In the Telecommunications Sector – Regulations to Ensure Fair Competition in the Telecommunications Sector ✓ The Communications Regulatory Authority of Namibia(CRAN) regulates telecommunication services and networks, including broadcasting, postal services, and the full radio spectrum. ✓ National Spatial Data Infrastructure(NSDI) coordinated by Namibia Statistics Agency is to ensure efficient production, use, maintenance and dissemination of relevant, quality and accurate spatial information.
Linking data governance to digital identity	<ul style="list-style-type: none"> ✓ Unified and Cooperative Population Identification Architecture¹³³ ✓ Related systems: <ul style="list-style-type: none"> – eNational Population Registration System – eNotification (eBirth & eDeath) – Identity Document Tracking System (NPRS) – Social Welfare System ✓ A single Identity Management System that will store the identification details. ✓ Automated Fingerprint ID System (AFIS) was applied under Vision 2030.

To show the relationships between each pillar and element better, a Pillar-Element Mapping Matrix is adopted here (see Table 37). There are 24 cells in this Matrix, referring to the existing issues or concerns required to take measures in the future to strengthen and advance the issue. Four pillars to address elements at the national level are listed as follows: initiatives/practices on strategies/policies/regulations (i.e., legitimizing data governance for effective leadership), institutional arrangement or framework (e.g., establishing institutional organs leading, coordinating, enforcing, standardizing, and managing data governance elements), people capacity (role-based knowledge and skill) and their involvement, structured work process to realize other three pillars.

¹³¹ <https://www.dataguidance.com/notes/namibia-data-protection-overview>

¹³² <https://www.dlapiperdataprotection.com/index.html?t=law&c=NA>

¹³³ https://www.id4africa.com/2019_event/presentations/InF9/InF9-3-Melanie-Tjijenda-Namibia-Final.pdf

In addition, what should be noticed is that the matrix just shows some key points in the regulation and other documents and the number of bulletins does not equal the richness and integrity of the combination of pillar and element.

Table 37: the Pillar-Element Mapping Matrix of Namibia's data governance framework

Elements→	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Pillars↓						
Policy: existing policy and regulatory framework	Namibia subscribed to the IMF's Special Data Dissemination Standard (SDDS) in 2022, becoming the fifth country in Sub-Saharan African to reach this goal.	<p>Enhance unhindered access to information for an informed nation.</p> <p>Government offices, ministries and agencies (OMAs) was planned to be on e-governance by 2020.</p> <p>Namibia has set up a Unified eXchange Platform (UXP) that allows digital manifestations of various State institutions to be integrated into a single system.</p> <p>In Namibia Quality Assurance Framework for Statistics published in 2020, 8 dimensions are emphasized as</p>	<p>Regulations Prescribing the National Numbering Plan for Use in the Provision of Telecommunications Services in the Republic of Namibia, Numbering Licence Fees and Procedures for Number Licences</p> <p>Regulations Prescribing Procedures Regarding Application For, And Amendment, Renewal, Transfer And Cancellation of Spectrum Licences</p> <p>Namibia is working on a national cyber security strategy to protect banks from malware attacks.</p> <p>Mandatory SIM</p>	<p>Namibia does not yet have legislation that directly provides for data protection, but personal data in Namibia is protected indirectly through the right to privacy in the Constitution of the Republic of Namibia (Article 13).</p> <p>The Ministry of Information and Communication Technology has been developing a Data Protection Bill, which is expected to protect the fundamental rights and freedoms of natural persons, to protect Namibian citizens from abuse of their</p>	<p>Accelerate ICT development, access and use for an inclusive ICT smart Namibia.</p> <p>By 2022, Namibia enjoys widespread availability of affordable and accessible full range of communication and technology infrastructure services.</p> <p>Promote public-private partnership funding for technology centres to advance ICT literacy.</p> <p>Encourage cooperation among ICT service providers in the development and utilisation of ICT infrastructure to enhance</p>	The government has a single Identity Management System that will store the identification details

		<p>strong institutional support, integrity, sound methodology and statistical procedures, accuracy and reliability, relevance, timeliness, and accessibility.</p>	<p>registration to be implemented by mobile service providers is tailor-made to protect digital identities from cybercrimes, and to ensure the effective regulation of a technological landscape.</p>	<p>personal data, and to harmonize Namibia's data protection policy and legal framework with regional and international standards.</p> <p>In Data Collection Processing and Dissemination Policy, it is required that:</p> <ul style="list-style-type: none"> - In every case where confidential statistical records are exchanged among producers for statistical purposes, a written confidentiality protection agreement will be prepared; an operational record will be kept to detail the manner and purpose of the processing. - Individual information obtained will not be published or disseminated in a manner which permits the identification 	<p>communication and accelerate socio-economic development.</p> <p>Regulations Prescribing Functions of Carriers in Respect of Installation and Maintenance of Telecommunications Facilities</p> <p>Policy on Determination of Dominant Position In the Telecommunications Sector</p> <p>Regulations to Ensure Fair Competition in the Telecommunications Sector</p>	
--	--	---	---	---	--	--

				of a specific individual, household, government body, undertaking including enterprises or any other organization and other providers, or any private information relating to them, except as provided under the Statistics Act.		
Institutions: existing institutional framework	Two working groups(Technical Working Group and Governance Working Group) under the supervision of the Namibia Statistics Agency (NSA) are to be formed on ad-hoc basis to develop key technical and governance standards and policies.	Integrated Tax Administration System (ITAS): to improve service delivery to taxpayers, to provide many online benefits such as 24/7 real time access to a taxpayer tax account, taxpayer self-service facility, online filing of tax returns, single	A cyber security council has been set up by Bank of Namibia in 2022 through which the banking and non-bank financial sectors can facilitate discussion and formulate operational approaches for participants to combat cyber	The Ministry of Information and Communication Technology	The Communications Regulatory Authority of Namibia(CRAN) regulates telecommunication services and networks, including broadcasting, postal services, and the full radio spectrum. National Spatial Data Infrastructure(Automated Fingerprint ID System (AFIS) was applied under Vision 2030 eNational Population Registration System eNotification (eBirth & eDeath) Identity Document Tracking System (NPRS) Social

	<p>Department of Data Quality Assurance and NSS Coordination initiated Namibia Quality Assurance Framework for Statistics (2020) and Guideline For Quality Reviewing of Statistical Reports(2020)</p>	<p>view of taxpayer's account and, accelerated processing of tax forms which real-time notification on outcome.</p> <p>Government Intranet Portal (eService) goes online in 2005.</p> <p>The e-Government interoperability system Nam-X introduced by Cybernetica in 2015 (an Estonian company) based on the improved Estonian data interoperability layer, the X-road (international cooperation)</p> <p>Namibia Statistics Agency is to collect, produce, analyse and disseminate official and other statistics in Namibia and to develop and coordinate the National Statistics System and the National Spatial Data</p>	<p>fraud.</p>		<p>NSDI) coordinated by Namibia Statistics Agency is to coordinate, facilitate and support the implementation of an information infrastructure that ensures efficient production, use, maintenance and dissemination of relevant, quality and accurate spatial information that is fit-for-purpose, particularly in providing evidence-based decision making at all levels of society.</p>	<p>Welfare System</p>
--	---	---	---------------	--	--	-----------------------

		<p>Infrastructure.</p> <p>National Statistics System is the undertaking of statistical collections and the compilation, production, analysis and dissemination of official and other statistics.</p> <p>The Office of the Prime Minister and the Ministry of Information and Communication Technology were given a joint responsibility to promote transparency and accessibility through the deployment of e-governance covering all Ministries and public agencies.</p>				
<p>People: existing data ecosystem and mapping of stakeholders</p>						

Processes: existing data processes						
--	--	--	--	--	--	--

Figure 31: the Pillar-Element Mapping Matrix of Namibia

Elements→ Pillars↓	Well established Roughly established Not mentioned					
	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy: existing policy and regulatory framework						
Institutions: existing institutional framework						
People: existing data ecosystem and mapping of stakeholders						
Processes: existing data processes						

Namibia has a very detailed national data governance policy framework that covers all six elements and is supported by appropriate institutions. However, the two pillars of “people” and “process” are not recognised in written form, which can lead to confusion and inefficiency in the policy implementation, as well as the risk of unclear and unaccountable responsibilities of the governmental officials.

As for the two well-established pillars of “policy” and “institutions”, the elements “Data sharing, interoperability, and open government data”, “Data security”, “National data infrastructure” have been performing well. For data security, a cyber security council has been set up by Bank of Namibia, which is suggested to be spread to all other data-related government agencies. For data sharing, a Unified eXchange Platform (UXP) that allows digital manifestations of various State institutions, which is also a result from international cooperation with Estonia. For data infrastructure, a series of regulations have been carried out on the provision, funding, installation, and maintenance in the telecommunications sector. However, “Link with digital identity”, “Data privacy (and ethics)”, and “Data standards & classification” have much room to be improved. For digital identity, although there are several systems based on digital identity, there is no guarantee that all people are digitally linked to these systems, nor there is specific legislation on digital identity. For data privacy, Data Protection Bill is still being developed, which is expected to establish dedicated institutions and positions responsible for data privacy, as well as legal processes related to compensation for data privacy violations. For data standards, two working groups, under the supervision of the Namibia Statistics Agency, are to be formed to develop key technical and governance standards and policies, which may hopefully bridge the current policy gap on digital standards in Namibia.

SWOT Analysis of Namibia's Data Governance Framework

A preliminary SWOT analysis of Namibia's data governance framework is conducted mainly based on the summary of four pillars and six elements (see Table 38).

Table 38: SWOT Analysis of Namibia's Data Governance Framework

	Strengths	Weaknesses
Internal factors	1. Decentralized print and audio visual functions to all 14 regional councils	1. Inadequate financial and human resources for Mandate execution
	2. Clearly defined KPI for the MICT Strategic Plan	2. Non usage of Electronic Data Record Management System and low level understanding of Performance Management System
	3. Clearly formulated Data Collection Processing and Dissemination Policy	3. No mechanism in place to monitor and evaluate service delivery
	4. A unified national system which contains all regional and local government.	4. Absence of sufficient ICT Research and Development and lack of trained and skilled ICT human resources in Namibia
		5. The vast territory poses difficulties for infrastructure development.
	Opportunities	Threats
External factors	1. There is market gap for the development of mobile application, social media platforms and local content.	1. Low ICT literacy levels nationwide
	2. Opportunities to develop advantageous industries with digital technologies like smart agriculture.	2. Negative effects of natural disasters
		3. Uncertainties arising from COVID-19. (Business Continuity and Disaster Recovery Plans is still in the draft stage.)

Conclusion

In summary, Namibia has a data governance framework covering all the elements. However, Namibia still has a long way to go in establishing a comprehensive and effective data governance framework. Based on Namibia's already relatively well-developed policy framework, it needs to pay more attention to "people" and "process", which is the guarantee of successful and effective policy implementation. Besides, the vast territory presents both difficulties in building Namibia's digital infrastructure and potential development of the country's digital industry and data governance. Finally, Namibia also needs to fully consider the opportunities and challenges presented by the pandemic.

Appendices

Appendix X: Mapping of Laws and Regulations / Policy Pillar in Namibia

Year	Project/Plan/Law related to data governance	Related Content	URL
2004	Vision 2030	We will have to transform ourselves into an innovative, knowledge-based society, supported by a dynamic, responsive and highly effective education and training system. Things to do: Develop and implement a comprehensive ICT policy; Integrate ICT education and training in school curricula; Invest in research for development to promote local ICT industries; Improve access to ICT facilities for all members of the Namibian society; Enhance bandwidth both internally and externally to at least 1 GB.	https://www.npc.gov.na/wp-content/uploads/2021/11/vision_2030.pdf
2011	Statistics Act	The Act which has been passed by the Parliament and signed by the President in terms of the Namibian Constitution to provide for the development of the National Statistics System and provide for its components and objectives; to establish the Namibia Statistics Agency and the Board of the Namibia Statistics Agency and provide for their powers and functions; to establish the National Spatial Data Infrastructure and provide for its objectives, to establish the Committee for Spatial Data and provide for its functions; and to provide for incidental matters.	http://cms.my.na/assets/documents/p194tthggutjptku1b sq3ell8g1.pdf
2014	SWAPO Party Manifesto 2014	In this Manifesto, the SWAPO Party's vision for Namibia for the next five years is set out. Promote public-private partnership funding for technology centres to advance ICT literacy. Encourage cooperation among ICT service providers in the development and utilisation of ICT infrastructure to enhance communication and accelerate socio-economic development.	https://www.kas.de/c/document_library/get_file?uuid=e9a6b462-08ee-cc3f-6630-7ebf77a78651&groupId=252038
2014	Data Collection Processing and Dissemination Policy	This Policy statement sets out policies and practices in relation to data collection, processing and dissemination (including spatial data) by statistics producers in the National Statistical System.	https://cms.my.na/assets/documents/p1b5msogm51t2q nqo13nqqg0gs05.pdf

2017	Ministry of Information and Communication Technology's 2017-2022 Strategic Plan	<p>ICT Smart Nation, Knowledge-based Economy, Preferred Film Destination, Informed Nation, High ICT Coverage</p> <p>To lay the foundation for the accelerated use and development of ICT in Namibia, and Coordinate information management within Government</p> <p>To create an enabling environment for ICT development and access to information for socio-economic growth</p>	https://mict.gov.na/documents/32978/266786/STRATEGIC+PLAN+2017-22+FINAL+as+of+14+July+2017.pdf/e83b37b5-c26b-44e2-9c47-7fee64090182
2017	Namibia's 5th National Development plan (NDP5)	By 2022, Namibia enjoys widespread availability of affordable and accessible full range of communication and technology infrastructure services.	https://www.ecb.org.na/images/docs/Investor Portal/NDP5.pdf
2018	Regulations to Ensure Fair Competition in the Telecommunications Sector	The objects of these regulations are to provide a regulatory framework for the promotion of fair competition and the protection against anti-competitive practices, in the telecommunications sector in the Republic of Namibia; to induce licensees to become more efficient in order to offer a greater choice of products and services at lower prices; to promote consumer protection in the telecommunications sector.	https://www.cran.na/yglilidy/2019/12/6593_Gen_N179.pdf

2020	Namibia Quality Assurance Framework for Statistics	<p>Application of the NQAFS is aimed at improving and maintaining the quality of statistics that are produced by the Namibia Statistics Agency and other producers in the National Statistics System. It is also aimed at ensuring/promoting confidence and trust in Namibian statistics on the part of users and the public.</p> <p>Quality Components of the NQAFS are as follows:</p> <p>A. Managing the statistical system [NQAFS 1] Coordinating the National Statistics System [NQAFS 2] Managing relationships with stakeholders [NQAFS 3] Managing statistical standards</p> <p>B. Managing the institutional environment [NQAFS 4] Assuring professional independence [NQAFS 5] Assuring impartiality and objectivity [NQAFS 6] Assuring transparency [NQAFS 7] Assuring statistical confidentiality and security [NQAFS 8] Assuring the quality commitment [NQAFS 9] Assuring adequacy of resources</p> <p>C. Managing statistical processes [NQAFS 10] Assuring methodological soundness [NQAFS 11] Assuring cost-effectiveness [NQAFS 12] Assuring soundness of implementation [NQAFS 13] Managing the respondent burden</p> <p>D. Managing statistical outputs [NQAFS 14] Assuring relevance [NQAFS 15] Assuring accuracy and reliability [NQAFS 16] Assuring timeliness and punctuality [NQAFS 17] Assuring accessibility and clarity [NQAFS 18] Assuring coherence and comparability</p>	https://d3rp5jatom3eyn.cloudfront.net/cms/assets/documents/p1esao_hhpv12j4v2ruqc215lpo5.pdf
2021	The Harambee Prosperity Plan II (2021-2025)	<p>The plan aims at implementing policy programs which enhance service delivery, economic recovery such as inclusive growth and to strengthen Namibia in terms of socioeconomic challenges and preparing it for global opportunities in relation with the Covid-19 pandemic.</p> <p>Government offices, ministries and agencies (OMAs) was planned to be on e-governance by 2020.</p>	https://www.kas.de/documents/279052/279101/Der+Harambee+Prosperity+Plan+II.pdf/

2021	Regulations Prescribing Functions of Carriers in Respect of Installation and Maintenance of Telecommunications Facilities	The objects of these Regulations are to prescribe the functions of carriers in installing and maintaining telecommunications facilities; set out the procedure to be followed and consultations to be held between a carrier and the landowner; and to make the rights granted to the carriers to install certain telecommunications facilities applicable to other telecommunications facilities.	https://www.cran.na/yglilidy/2021/08/GG-7614-dated-30-Aug-2021.pdf
2021	Determination of Dominant Position In the Telecommunications Sector	The Communications Regulatory Authority of Namibia publishes this determination of licensees holding a dominant position in the telecommunications market in Namibia.	https://www.cran.na/yglilidy/2021/02/GG-7447-dated-02-Feb-2021.pdf
2022	Amendment to Regulations Prescribing the National Numbering Plan for Use in the Provision Of Telecommunications Services In The Republic Of Namibia, Numbering Licence Fees And Procedures for a number Licences	The Communications Regulatory Authority of Namibia amends the Regulations Prescribing the National Numbering Plan for Use in the Provision of Telecommunications Services in the Republic of Namibia, Numbering Licence Fees and Procedures for Number Licences as published in Government Gazette No. 7613, General Notice No. 445 dated 30 August 2021 as set out on the Schedule.	https://www.cran.na/yglilidy/2022/11/GG-7961-dated-22-November-2022.pdf
2022	Notice of Intention to Amend the Regulations Prescribing Procedures Regarding Application for, and Amendment, Renewal, Transfer and Cancellation of Spectrum Licences	The Communications Regulatory Authority of Namibia publishes this notice of intention to amend the Regulations Prescribing Procedures Regarding Application for, and Amendment, Renewal, Transfer and Cancellation of Spectrum Licences.	https://www.cran.na/yglilidy/2022/11/GG-7962-dated-22-November-2022.pdf

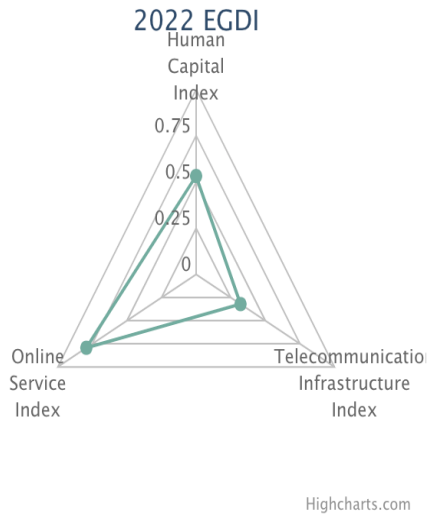
Rwanda

Introduction

Despite being an LDC, Rwanda is far outperforming those countries in the same category in terms of digital government development. Rwanda is the only country in Africa that has a very high Online Services Index (OSI) value (0.7935) even though its telecommunications infrastructure is relatively underdeveloped. Although the E-Government Development Index (EGDI) value for

Rwanda remains below the global average of 0.6102, it has moved from the middle to the high EGD group for the first time in 2022. Progress in OGDI from middle to high group is also notable.

Figure 32: Rwanda's EGD 2022¹³⁴



E-Government (2022 EGD: 0.5489)

2022 Rank 119

Group HEGDI

Rating Class H1

2020 Rank 130

Change -11

E-Participation (2022 EPART: 0.6364)

2022 Rank 53

2020 Rank 82

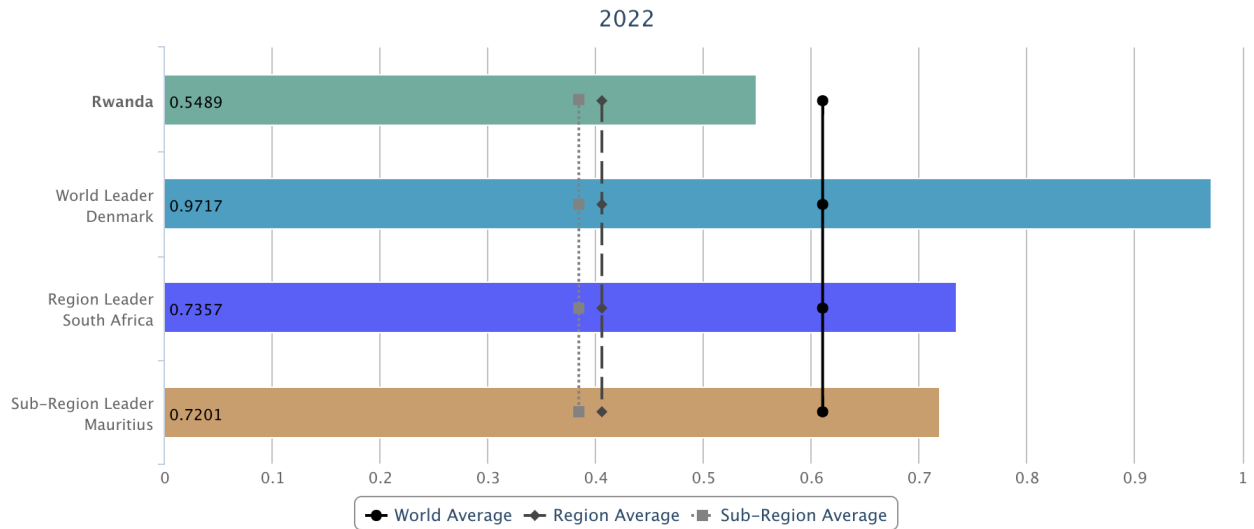
Change -29

Figure 33: Rwanda's EGD 2003-2022¹³⁵

¹³⁴ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/142-Rwanda>

¹³⁵ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/142-Rwanda>

E-Government Development Index



E-Government Development Index	2022	2020	2018	2016	2014	2012	2010	2008	2005	2004	2003
Rwanda (Rank)	119	130	120	138	125	140	148	141	143	140	138
Rwanda (Value)	0.54890	0.47890	0.45900	0.33904	0.35888	0.32913	0.27494	0.29410	0.25297	0.25107	0.24391

Table 39: Rwanda's OGD I 2020-2022¹³⁶

	OGDI Group	OGDI
2022	High OGD I	0.7070
2020	Middle OGD I	0.6417

The success enjoyed by Rwanda in digital government development derives from a long-term vision that was initiated in 2000 and realized in 2020 with the SMART Rwanda Master Plan. The Vision 2050 strategy and the Smart Rwanda Master Plan place strong emphasis on creating a prosperous and knowledgeable society through the use of smart information and communications technology (ICT) strategies.

¹³⁶ United Nations (2020), United Nations E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, UN DESA.; United Nations (2022), United Nations E-Government Survey 2022: The Future of Digital Government, UN DESA.

Summary of Four Pillars

The four pillars and the means of substantiating them in Rwanda are repeated below:

- a) Policy: develop action agendas based on existing policies and regulations; aim at establishing quantitative national policies decision making process through data center.
- b) Institutions: assign government departments in existing institutional framework with responsibilities. New digital enterprise architecture (e.g., in health and family welfare) will be in line with national e-governance architecture.
- c) People: show the implementing lead positions of specific information system or action items and the capacity of government professionals to implement relevant policies and regulations on data governance.
- d) Processes: show the leader, implementing agency, partners, financing, and other information related to data system and digital identity. Besides the figure below, the detailed timetable and budget plan are also offered with priority.

Pillar-Element Mapping Matrix and Mapping of Six Elements

This part shows the mapping of six elements firstly, based on Vision 2050 strategy, Smart Rwanda Master Plan, ICT Hub Strategic Plan (2019 – 2024)¹³⁷, ICT for Governance Cluster Strategy 2020-2022¹³⁸, ICT Sector Strategic Plan (2018-2024)¹³⁹, and other related projects, plans, and laws/regulations.

Table 40: Six Elements of Rwanda's Data Governance Framework

Element	Summary
Data standards & classification	<ul style="list-style-type: none"> ➤ Activities are classified throughout according to the single letters of Revision 4 of the International Standard Industrial Classification (ISIC Rev4).¹⁴⁰
Data sharing, exchange and interoperability, including open government data	<ul style="list-style-type: none"> ➤ Real-time specific, measurable, attainable, relevant and time-bound (SMART) analytics are used to track services delivery performance. <ul style="list-style-type: none"> ○ 89 government services are offered online,¹⁴¹ and online presence for government institutions will be further increased.¹⁴² ➤ Online platforms have been developed like Rwanda Online

¹³⁷ https://www.minict.gov.rw/fileadmin/user_upload/minict_user_upload/Documents/Policies/ICT_HUB_STRATEGY.pdf

¹³⁸ <https://www.risa.rw/index.php?eID=dumpFile&t=f&f=223&token=d186969aeee42f7cbb9f3f0086b30f71c671a620>

¹³⁹ <https://www.risa.rw/index.php?eID=dumpFile&t=f&f=77&token=b2b4584962049ecabc4816f8f42b9925ce28abfa>

¹⁴⁰ <https://dsbb.imf.org/egdds/dqaf-base/country/RWA/category/NAG00>

¹⁴¹ <https://www.minict.gov.rw/ict-for-development>

¹⁴² <https://www.risa.rw/what-we-do/e-gov/>

	<p>platform (known as Irebo system), E-Procurement System, and Rwanda Electronic Cargo Tracking System.</p> <ul style="list-style-type: none"> ➤ Inter-agency data sharing is being strengthened to facilitate problem solving and policy alignment.¹⁴³ ➤ Further expand inclusive digital services and ICT-enabled empowerment as part of its ICT for Governance Cluster Strategy 2020-2024. ➤ Support the building of data centers and cloud services.¹⁴⁴
Data security	<ul style="list-style-type: none"> ➤ Laws and regulations have been made on Governing Cybersecurity,¹⁴⁵ governing information and communication technologies,¹⁴⁶ and Cyber Crimes.¹⁴⁷ ➤ National Cyber Security Strategic Plan has been issued in 2015. ➤ The National Cyber Security Authority (NCSA) and Rwanda Information Society Authority (RISA) (However, the relationship between them is unknown)
Data privacy (and ethics)	<ul style="list-style-type: none"> ➤ The Law on the Protection of Personal Data and Privacy (Data Privacy Law) has been issued.¹⁴⁸
National data infrastructure	<ul style="list-style-type: none"> ➤ With Rwanda's focus on 4G LTE deployment, its 4G LTE service now has surpassed 3G and 3.5G services.¹⁴⁹ ➤ Guideline on Minimum Bandwidth for Broadband Internet Connectivity in Rwanda (2018)¹⁵⁰ ➤ The Rwanda Digital Acceleration Project (RDAP) in 2021 is aimed to increase access to broadband, digital public services and strengthen the digital innovation ecosystem.¹⁵¹
Linking data governance to digital identity	<ul style="list-style-type: none"> ➤ A robust ID system consisting of the National Population Register (NPR) and the National ID card database (NID) has been built. ➤ The national ID identification number is popularly used as a key to access online public services and to effect transactions electronically.¹⁵²

143 Member States Questionnaires; World Bank, "World Bank provides \$100 million to accelerate Rwanda's digital transformation", press release, 30 November 2021 (Washington, D.C.), available at <https://www.worldbank.org/en/news/press-release/2021/12/01/world-bank-provides-100million-to-accelerate-rwanda-s-digital-transformation>;

144 <https://www.risa.rw/index.php?elD=dumpFile&t=f&f=196&token=bd6db27c4bdd515ddd24fe999d04c667bd4e1acb>

145 <https://www.risa.rw/index.php?elD=dumpFile&t=f&f=302&token=ce327515f7e465fbc91eefbaefc2fb3367c2261>

146 https://www.minict.gov.rw/fileadmin/user_upload/minict_user_upload/Documents/Laws/ICT_LAW.pdf

147 <https://www.risa.rw/home/#publications>

148 <https://www.risa.rw/index.php?elD=dumpFile&t=f&f=295&token=55fe50daa4a687792f68a260a11cde46c14bd163>

149 <https://www.minict.gov.rw/ict-for-development>

150 <https://www.risa.rw/index.php?elD=dumpFile&t=f&f=102&token=94a182aa4534ae8452be49b5ad9ac92bc404973c>

151 <https://www.risa.rw/index.php?elD=dumpFile&t=f&f=302&token=ce327515f7e465fbc91eefbaefc2fb3367c2261>

152 https://researchictafrica.net/wp/wp-content/uploads/2021/11/Rwanda_31.10.21.pdf

To show the relationships between each pillar and element better, a Pillar-Element Mapping Matrix is adopted here (see Table 41). There are 24 cells in this Matrix, referring to the existing issues or concerns required to take measures in the future to strengthen and advance the issue. Four pillars to address elements at the national level are listed as follows: initiatives/practices on strategies/policies/regulations (i.e., legitimizing data governance for effective leadership), institutional arrangement or framework (e.g., establishing institutional organs leading, coordinating, enforcing, standardizing, and managing data governance elements), people capacity (role-based knowledge and skill) and their involvement, structured work process to realize other three pillars. This baseline report and the matrix below merely reflects a snapshot of the current situation as discovered from empirical desk research. The volume of information in each cell, including those which are left blank, should not be taken as a comprehensive evaluation or correlative of the development of each pillar-element pair. Its purpose is simply to offer a simplistic overview.

Table41: Pillar-Element Mapping Matrix of Rwanda’s Current Data Governance Framework

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	Activities are classified throughout according to the single letters of Revision 4 of the International Standard Industrial Classification (ISIC Rev4).	Strengthen inter-agency data sharing Data Center and Cloud Services Directives (2019) Government Web Presence Project	Laws and regulations have been made on governing cybersecurity, governing information and communication technologies, and cybercrimes. National Cyber Security Strategic Plan has been issued in 2015.	Law on the Protection of Personal Data and Privacy (Data Privacy Law) has been issued. Rwanda’s modern digital government must ensure that adequate data protection measures are in place to enable its citizens, public authorities but also private sector actors to conduct their online transactions securely with the maximum protection of their privacy.	To build a secured, shared robust and resilient infrastructure to underpin service delivery and support national ICT initiatives. Increase access to broadband, digital public services and strengthen the digital innovation ecosystem Broadband for all by 2024. With the focus on 4G LTE deployment, 4G LTE service now surpassed 3G and 3.5G services.	Africa Development Bank (AfDB) partnering with Rwanda through Ministry of ICT and Innovation in development and deployment of single digital Identification project. Plan for Unified Digital Government Back Office eID authentication used for internal (G2G) as well as for external services for business and citizens Plan to use one unified eID for Digital Government services for

						<p>business and citizens</p> <p>Begin strengthening the means of security authentication to citizens through:</p> <p>(1) public key infrastructure (PKI)-based Mobile ID, with private key that can be securely stored on SIM cards</p> <p>(2) PKI-based Smart ID, with private key securely managed in a way, that enables to use smart phones.</p>
Institutions		<p>The Rwanda Online platform (known as Irembo system)</p> <p>E-Procurement System</p> <p>Rwanda Electronic Cargo Tracking System</p> <p>Government Command Center Project</p>	<p>National Cyber Security Authority (NCSA)</p> <p>Rwanda Information Society Authority (RISA)</p>		<p>Disaster Recovery Project: provides for reliable ICT infrastructure for data hosting services, and also increases confidence in Rwanda's information security as well as ensuring business continuity.</p> <p>POSITIVO Project: to set up a computer assembly plant to produce a range of quality ICT devices in Kigali including laptops</p> <p>ICT Centralized Procurement Project: harmonizing and standardizing IT</p>	<p>A robust ID system consisting of the National Population Register (NPR) and the National ID card database (NID) has been built.</p> <p>The National Identification Agency (NIDA) is established in 2011.</p>

					equipment purchases across the government	
People					Insists on ensuring digital literacy for all by 2035 Digital Ambassadors Program: aims at mainstreaming ICT in rural areas, using ICT Buses	Director General of NIDA
Processes				Data privacy will be applied through official classification systems pertaining to critical personal information, also known as personally identifiable information (PII) and personal health information (PHI).	Establishment of Local Area Network (LAN) in sectors: not only facilitate the use of Irembo system in rural community, but also bring ICT closer to sector level and in turn empower the community at large	

Figure 34: The Pillar-Element Mapping Matrix for Rwanda

Elements→ Pillars↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy: existing policy and regulatory framework						
Institutions: existing institutional framework						
People: existing data ecosystem and mapping of stakeholders						
Processes: existing data processes						

Well established | Roughly established | Not mentioned

Among the six elements, Rwanda does especially well in “Data sharing, interoperability, and open government data” with an established online system called Irembo, thus ranking high in OSI. It also has a relatively well-established policy framework for the “National Data Infrastructure” with proper emphasis on rural areas and successful trial in public-private partnership projects like POSITIVO, but there remains much room for practical improvement since Rwanda still ranks relatively low in TII. Besides, Rwanda has also paid attention to data security with its National Cyber Security Strategic Plan¹⁵³ issued in 2015.

However, Rwanda is relatively deficient in “Data standards & classification”, and “Data privacy (and ethics)”. For the former, there is lack of official documentation on the data standards used by the government and statement of the advantages of the current standards. For the latter, although the Rwandan Government enacted the law on data privacy in the second half of 2021, it has not established a specific institution on this issue. Especially, since the law states the “right to claim for compensation” for data privacy violations but the Government does not specify the channels and institutions through which to claim. These two elements are respectively the technical and social foundations of data governance, and therefore require personnel and institutional arrangements.

Among the four pillars, Rwanda is particularly outstanding in the policy pillar. Rwanda has launched a relatively complete policy framework and specific quantifiable policy objectives on data governance, including all six elements. This framework has been gradually set up since the 2010s and is still going through amendments and improvements. For example, regulations/laws on data sharing across government agencies, and on open government data are still in the draft stage (according to MSQ). Rwanda has also done a relatively good job in the institution pillar with specific institutions in charge of data sharing, data security, and digital identity. However, Rwanda’s performance in the remaining two pillars is less satisfactory: most of the elements do not have dedicated government officials or specialized training for civil servants, and existing data processes remain unknown to the public. Without established pillars of people, and processes, there exists the risk that the policy framework cannot be well implemented.

SWOT Analysis of Rwanda’s Data Governance Framework

Table 42: SWOT Analysis of Rwanda’s Data Governance Framework

	Positive	Negative
Internal factors	Strengths	Weaknesses
	<ul style="list-style-type: none"> • It has a relatively complete blueprint with a goal towards a knowledge-based society. • It has well established public-private partnerships like the POSITIVO Project. 	<ul style="list-style-type: none"> • The underdeveloped telecommunications infrastructure may cause problem with universal access to the Internet. • Low urbanization rates and disparities between urban and rural areas may

¹⁵³ https://risa.rw/fileadmin/user_upload/Others%20documents/National_Cyber_Security_Strategic_Plan_Rwanda.pdf

	<ul style="list-style-type: none"> • Emphasis on equality: the only one female chief information officer (CIO) in Africa is in Rwanda • It has established National Data Center and Disaster Recovery Project as its backup. • It does good in ensuring e-government services by women and other vulnerable groups. 	<p>lead to geographic imbalances in data governance.</p> <ul style="list-style-type: none"> • There is Lack of detailed disclosure of policy/project funding and assurance of enough budget for all policy targets.
External factors	Opportunities	Threats
	<ul style="list-style-type: none"> • The importance of agriculture in the local economy can create opportunities for smart agriculture (while promoting data infrastructure and digital capacity in rural areas). • Cooperation with international actors to achieve SDGs may bring more chances of improvement. 	<ul style="list-style-type: none"> • Changing Regional geopolitics environment • Uncertainty under the COVID-19 (no specific policy for data government in response to the pandemic)

Conclusion

In summary, Rwanda has a relatively strong digital government framework that also plays a role in its national data governance framework across the 4 pillars and 6 elements. It performs above the average of Least Developed Countries. However, there are identified gaps, as shown in above analysis, in establishing a comprehensive and effective data governance framework. The Government could consider putting in place more organizational, personnel and process arrangements in the elements like data privacy, data standards, etc. It may also carefully consider the opportunities and challenges presented by the COVID-19 pandemic, in preparing for future pandemics and emergencies. In addition, the data governance framework could be closely connected with national economic development. As a country supported pre-dominantly by agriculture rather than services, Rwanda needs to consider the likely industrial shift to be brought by digitization and the contribution of data governance to the existing advantageous industries.

Appendices

Appendix IX: Mapping of Laws and Regulations in Rwanda

Year	Project/Plan /Law related to data governance	Goal	Related Content	URL

2019	ICT Hub Strategic Plan (2019 - 2024)	Focus on the goal to (1) create a skilled and educated workforce, (2) inculcate a culture of innovation, (3) build advanced capabilities and capacity in technology through an ambitious five-year strategic plan of actions that should position Rwanda as a leading ICT Hub in Africa.	three dimensions / strategic themes: 1. Build a critical mass of educated and IT skilled workforce 2. Foster a national innovative culture 3. Develop advanced technological capabilities in selected niche areas	https://www.minict.gov.rw/fileadmin/user_upload/minict_user_upload/Documents/Policies/ICT_HUB_STRATEGY.pdf
2020	Vision 2050	insists on ensuring digital literacy for all by 2035 and sustaining it going forward to ensure inclusive participation in a knowledge society and attain new levels of productivity for the labor force.		https://www.risa.rw/index.php?eID=dumpFile&t=f&f=302&token=ce327515f7e465fbd91eefbaefc2fb3367c2261
2019	ICT for Governance Cluster Strategy 2020-2024	ICT4 Gov Cluster Strategy 2020-2024 (Strategy here after) will strategically steer Rwanda's digital transformation in a sustainable, ambitious, modern direction. It will ensure that technological change, innovation and access to services without discrimination for geography, gender or income benefit all Rwandan citizens, businesses and public administration authorities. To this effect the Strategy's 5 Focus Areas will strive toward the advancement of Rwanda's G2G, G2C, G2B e-government capacities through: FOCUS AREA 1: Building Digital Government Systems FOCUS AREA 2: Digital Government Enablers FOCUS AREA 3: Transparent and Data-Driven Government FOCUS AREA 4: Advancing Accountability and Participatory Tools FOCUS AREA 5: Digital Skills Development.	Expected output include: Digital Government services for business and citizens are using one unified eID; Unified Digital Government Back Office eID authentication is used for internal (G2G) as well as for external a services for business and citizens.	https://www.risa.rw/index.php?eID=dumpFile&t=f&f=223&token=d186969ae42f7cbb9f3f0086b30f71c671a620
2019	ICT Implementation Guidelines for GoR	To guide ICT implementation and application cross all government institutions in Rwanda, in order to ensure consistency in terms of security, reliability, scalability and efficiency.		https://www.risa.rw/index.php?eID=dumpFile&t=f&f=197&token=0592d87da9eb3fbe27bd171d79a7240ab808192d

2019	Enterprise Architecture Blueprint Development Guidelines for GoR	The purpose of these guidelines is to help public entities and GoR's private partners to have a common understanding of EA practice and to guide the systematic mapping of the institution's IT landscape (Blueprint) in clear steps namely: the ASIS situation, the To-Be situation, the Gap analysis and the Roadmap.	In order to bring alignment between business requirements and IT capabilities, the blueprints are implemented through five (5) domains namely Business, Information, Data, Application and Technology/Infrastructure Architectures. These are commonly referred to as the BIDAT stack.	https://www.risa.rw/index.php?eID=dupFile&t=f&f=195&token=201405543a146d12cba5299b04fe081ec5a42ee4
2017	ICT Sector Strategic Plan (2018-2024)		Broadband for all by 2024, Government Digital Transformation by 2024, Digital Literacy for all	https://www.risa.rw/index.php?eID=dupFile&t=f&f=77&token=b2b4584962049ecabc4816f8f42b9925ce28abfa
2017	7 Years Government Programme: National Strategy for Transformation (NST1) 2017 - 2024		Ensure 100% Government services are delivered online by 2024 from 40% in 2017. Ensure digital literacy for all youth (16 to 30 years) by 2024 through implementation of a national digital literacy program with the objective of achieving digital literacy of at least 60% among adults by 2024.	https://www.minecofin.gov.rw/fileadmin/user_upload/Minecofin/Publications/STRATEGIES/NST1/NST_A5_booklet_final_2.04.19_WEB.pdf
2015	Smart Rwanda 2020 Master Plan	The plan is organized in three key focus areas: Business and Innovation, National Digital Transformation and Future Planning that shall drive Rwanda toward attaining "a knowledge-based society".	Objective #8. Build a secured, shared robust and resilient infrastructure to underpin service delivery and support national ICT initiatives Objective #9. Enhance the National ICT Governance Structure for effectiveness implementation of ICT programs. Objective#10. Transform digital government through e-Government and provide effective public service delivery to empower rural and urban communities	https://www.risa.rw/index.php?eID=dupFile&t=f&f=78&token=92ecd99d5603204e37be459ad2d7e471c99bc6e1

2017	REGULATION S NO 002/R/TD-ICS/RURA/017 OF 30/08/2017 GOVERNING CERTIFICATION SERVICE PROVIDER IN RWANDA	The purpose of these Regulations is to determine the modalities of licensing, Certifying, Monitoring and Overseeing the Certification service provider's activities in Rwanda.	Digital Archival like duration and process	https://www.govca.rw/download/PKI_REGULATIONS_ON_CERTIFICATION_SERVICE_PROVIDER_FINAL_2017.pdf
2020	Regulation No. 010/R/CR-CSI/RURA/020 OF 29/05/2020 Governing Cybersecurity	The purpose of this Regulation is to secure networks, their subscribers and the critical communication infrastructure to ensure the confidentiality, integrity and availability of networks and systems in Rwanda.		https://rura.rw/fileadmin/Documents/ICT/Laws/Cybersecurity_Regulation_in_Rwanda.pdf
2018	Directives on cyber security for network and information systems for all public institutions	This Directive aims at providing important instructions and guidelines for securing GoRentities ICT infrastructures and Information by: > Strengthening ICT infrastructure and information access. > Insuring high availability of data and systems for dedicated services > Protecting against malware and other related threats which can compromise the confidentiality, integrity and availability of data		https://www.risa.rw/index.php?eID=dupmpFile&t=f&f=164&token=1e7aab2ffd5ca41612507d036d34315352268dc7
2018	Law n° 60/2018 of 22/8/2018 on prevention and punishment of cyber-crimes (Cyber Crimes Law)	This Law aims at preventing and punishing cyber-crimes. This Law applies to all cyber-crimes which are committed in Rwanda or outside Rwanda if such offences have produced effect in Rwanda.		https://www.risa.rw/index.php?eID=dupmpFile&t=f&f=96&token=e72a9be3e0e792f27f3c6f22e1df60bdc3b1fea2
2015	National Cyber Security Strategic Plan	This document aims to provide an implementation guidance of the defined National Cyber Security Policy (NCSP). Specifically, it defines the establishment of a National cyber security Agency, new cyber security initiatives and priorities, roles and responsibilities for parties who will be involved in the implementation and financial implication.		https://risa.rw/fileadmin/user_upload/Others%20documents/National_Cyber_Security_Strategic_Plan_Rwanda.pdf

2015	National Cyber Security Policy	<p>The mission is “to ensure Rwandan Cyber Space is secure and resilient”.</p> <p>The goals and objectives of the National Cyber Security Policy are as follows:</p> <ul style="list-style-type: none"> · Build cyber security capabilities for detection, prevention and response to cyber security incidents and threats; · Establish an institutional framework to foster cyber-security governance and coordination; · Strengthen legal and regulatory frameworks, as well as promote compliance with appropriate technical and operational security standards, · Promote Research and Development in the field of cyber security; · Promote Cyber Security Awareness in all sectors and at levels in order to build a culture of security within country; · Promote National, Regional and International Cooperation in the field of cyber security. 	<p>Key Policy Areas: Cyber Security Capabilities; Institutional Framework for Cyber Security; Cyber Security Legal and Regulatory Framework; Critical Information Infrastructure Protection (CIIP); Government Cyber Security Enhancement Program; Cyber Security Capacity Building And Awareness; Building A Cyber Security Industry</p>	<p>https://www.risa.rw/index.php?eID=dumpFile&t=f&f=199&token=7a004b0ca75eabdd71b7e862c6fef350c3894fff</p>
2021	Law n°058/2021 of 13/10/2021 relating to the protection of personal data and privacy (the “Data Protection Law”)		<p>Data controllers and processors who are already in operation have a period of two (2) years from the Data Protection Law commencement date to conform to its provisions.</p>	<p>https://cyber.gov.rw/fileadmin/user_upload/NCSA/Documents/Laws/OG_Special_of_15.10.2021_Amakuru_bwite.pdf</p>
2021	Rwanda Digital Acceleration Project (RDAP)	<p>The Project Development Objective (PDO) is that Increase access to broadband, digital public services and strengthen the digital innovation ecosystem, namely Increase access to broadband, increase access to digital public services, Strengthen the digital innovation ecosystem.</p>		<p>https://www.risa.rw/index.php?eID=dumpFile&t=f&f=302&token=ce327515f7e465fbdc91eefbaefc2fb3367c2261</p>
2019	Data Center and Cloud Services Directives	<p>These guidelines provide best practices and implementation methods that complement TIA, CENELEC, ISO/IEC and other published data center standards and documents. It is primarily a design standard, with installation requirements and guidelines related to implementing a design. The standard includes other installation Requirements and</p>		<p>https://www.risa.rw/index.php?eID=dumpFile&t=f&f=196&token=bd6db27c4bdd515ddd24fe999d04c667bd4e1acb</p>

		guidelines for data centers where appropriate.		
2018	Guideline on Minimum Bandwidth for Broadband Internet Connectivity in Rwanda	The purpose of this guideline is to provide a framework that governs the provision, operations, maintenance, and quality of broadband Internet services in Rwanda.		https://www.risa.rw/index.php?eID=dumpFile&t=f&f=102&token=94a182aa4534ae8452be49b5ad9ac92bc404973c
	Disaster Recovery Project	This is a backup project for the National Data Center. This provides for reliable ICT infrastructure for data hosting services, and also increases confidence in Rwanda's information security as well as ensuring business continuity.		https://www.risa.rw/what-we-do/ict-services-and-me/
	POSITIVO Project	This project is an Implementation of the Agreement signed between the GoR and POSITIVO BGH Ltd in 2014 to set up a computer assembly plant to produce a range of quality ICT devices in Kigali including laptops.		https://www.risa.rw/what-we-do/ict-services-and-me/
	ICT Centralized Procurement Project	The program aims at harmonizing and standardizing IT equipment purchases across the government. It also aims at reducing cost through bulky procurements. The E-procurement system is currently being used instead of the traditional tendering process.		https://www.risa.rw/what-we-do/ict-services-and-me/
2016	Law n° 24/2016 of 18/06/2016 governing information and communication technologies	to promote an information society for the enhancement of quality of both life and work		https://www.minict.gov.rw/fileadmin/user_upload/minict_user_upload/Documents/Laws/ICT_LAW.pdf
	Digital Ambassadors Program	It is a program aims at mainstreaming ICT in rural areas, using ICT Buses. Its main mission is to bridge the digital divide in rural communities by providing basic training and access to ICT to rural based entrepreneurs, farmers, traders and rural communities especially to areas that lack access to power and connectivity.		https://www.risa.rw/what-we-do/ict-in-rural-areas/

	Establishment of Local Area Network (LAN) in sectors	The establishment of LAN in sectors will not only facilitate the use of Irembo system in rural community but also bring ICT closer to sector level and in turn empower the community at large.	283 sectors are currently installed with LAN and able to support online services through the Rwanda online platform. 133 sectors remaining are yet to be installed as this project is still ongoing.	https://www.risa.rw/what-we-do/ict-in-rural-areas/
	Government Web Presence Project	Project objective is to increase online presence for government institutions (ministries, agencies, and embassies) through content and website development.	The project focuses on providing the required technical support, upgrade, maintenance and hosting for all government websites.	https://www.risa.rw/what-we-do/e-gov/
	ICT Training and Certification Program	This project aims at increasing the number of skilled ICT professionals to satisfy the market needs.		https://www.risa.rw/what-we-do/ict-services-and-me/

Samoa

Introduction

A Small Island Developing State (SIDS), Samoa is in the lower middle-income group.¹⁵⁴ In 2022, Samoa's EDGI was 0.4207, positioned in M3 group,¹⁵⁵ ranking 152/193. Its EDGI was lower than the sub-region average and has been declining in global rankings from 117 in 2003. Though it has a rather high Human Capital Index, it underperforms in online services delivery, probably owing to unevenly developed infrastructure.¹⁵⁶ Its OGD I moved from low to middle group from 2020 to 2022.¹⁵⁷

Figure 35 Samoa EGDI 2022¹⁵⁸

¹⁵⁴ <https://data.worldbank.org/country/WS>

¹⁵⁵ To gain better insight into the situation of subgroups of countries with similar levels of performance within their respective EGDI groups, each EGDI group is further divided into four equally defined rating classes, or quartiles. VH, V3, V2 and V1 for the very high group; HV, H3, H2 and H1 for the high group; MH, M3, M2 and M1 for the middle group; and IM, I3, I2 and I1 for the low group.

¹⁵⁶ United Nations, 2020, UN E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, p. 23.

¹⁵⁷ The Open Government Development Index (OGDI) is derived as a supplementary index to the Online Service Index (OSI). It extends the dimension of the Survey by focusing on the use of open government data (OGD). The OGDI identifies three key dimensions in its current framework, which are:

(i) policy and institutional framework (as foundation) 30%;
(ii) platform (existence of OGD portal and features) 50%;
(iii) data availability in various sectors such as health, education, employment, social security, environment and justice) and data application (such as through organizing hackathons) 20%.

¹⁵⁸ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/146-Samoa>



Figure 36 Samoa EGD I 2003-2022¹⁵⁹

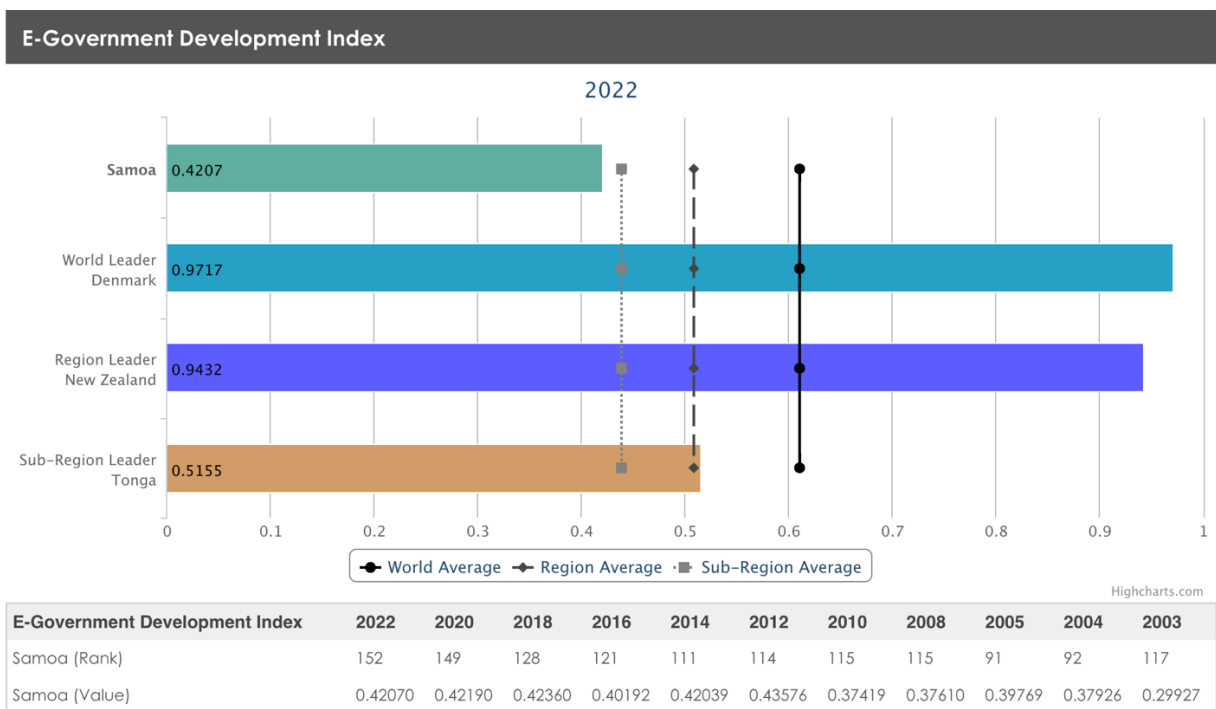


Table 43 Samoa's OGD I 2020-2022¹⁶⁰

	OGDI Group	OGDI
2022	Middle OGD I	0.3127

¹⁵⁹ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/146-Samoa>

¹⁶⁰ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/146-Samoa>

2020	Low OGD	0.2208

Numerous policies, strategies, and legislations have been set up around ICT in Samoa. In 2002, the National ICT Committee, consisting of government and industry officials, was established with the aim of concentrating on the formulation of a national ICT strategy.¹⁶¹ Subsequently, the inaugural National ICT Plan (2004–2009) was introduced, in which access to ICT, confidence and security in the use of ICT, capacity building to use ICT as a tool for development, and gender equity were listed as key issues.

In 2006, Office of the Regulator was founded under the Telecommunications Act 2005 to provide regulatory services for the telecommunications sector in Samoa. The Broadcasting, Postal Services and Electricity Acts 2010 were subsequently approved by Parliament, which also provide regulatory framework for these sectors.

In 2012, the National ICT Plan was succeeded by the National ICT Policy 2012-2017, aimed at providing an overarching framework to harmonize and align the national ICT priorities of various industry sectors and government ministries. A review of this policy was conducted in 2021, listing seven pillars and goals for the next five years: innovative economy; effective governance; digital potential; connectivity; smart society; trust and security; and sustained implementation. But so far, there has not been any release of an updated national ICT policy.

In the recent decade, progress has been accelerated. In 2016, the government published the National Cybersecurity Strategy 2016–2021, with the goal of strengthening existing IT systems and critical infrastructure sectors that support economic growth and protect the public. In the same year, The Government Internet and Electronic Mail Policy was released with the objectives of encouraging communication access to facilitate and enhance government services; improving the quality of work and employee productivity; and creating security standards to protect and maintain Government resources. The 2017 Social Media policy for Government further provided a framework for Government outreach and citizen engagement using social media.

In 2019, the Minister of Communication and Information Technology (MCIT) announced a cabinet-approved plan to create a Digital Transformation Authority (DTA). The authority is expected to set whole-of-government standards with a focus on digital identity, e-health and an online payments gateway. However, it seems that current information about the status of DTA is not readily available online.

Digital transformation is well recognized in national development. As a regular Voluntary National Review reporter, in 2020 Samoa prioritized affordable ICT and effective national data management.¹⁶² In 2021, the National Development Plan-Pathway for the Development of Samoa

¹⁶¹ Australian Strategic Policy Institute, 2020, ICT for Development in the Pacific Islands, p. 23

¹⁶² https://hlpf.un.org/sites/default/files/vnrs/2021/26192Samoa%20Second_VNR_Key_Messages_FINAL_for_submission_to_699.pdf

listed 'innovative ICT use' as one of its key priority areas. Samoa 2040 recognizes that digital technologies present transformative opportunities for the Samoan economy and emphasizes the importance of trust and access to digitalization, as well as investment in education, skills, and digital literacy. In 2022, the ICT Sector Plan 2022-2026, a continuation of Communication Sector Plan 2017-2021 was released to advance the goal of 'affordable and appropriate ICT accessible to all', with a SWOT analysis of the sector included.

Aligning with national efforts, regional and international projects have been in action. In 2014, the SAMOA (Small Island Developing States Accelerated Modalities of Action) Pathway regional initiative, endorsed by the UN General Assembly, was established. Addressing diverse development needs, it underscores the pivotal role of modern technologies and robust ICT infrastructure in achieving sustainable development. The ICT4SIDS Partnership, established to expedite SDG-related activities, offers decision support tools and specialized smart hubs globally, aiming to accelerate progress through location-specific solutions and capacity building. In 2021, funded by the Australian Government, Samoa National Computer Emergency Response Team (SamCERT) was successfully set up to enhance critical infrastructure resilience and workforce capacity for protecting digital technologies and services. 04/2021-12/2021, the World Bank funded a Digital Government Platform in Samoa,¹⁶³ but no further record can be found. Same year, Samoa's digital transformation journey commenced with the launching of the Digital Readiness Assessment (DRA) with UNDP.¹⁶⁴ In 2022, with support from UNDP, UNESCO and India-UN Fund, the Samoa Knowledge Society Initiative (SKSI) concluded with the creation of the Samoa Digital Library (SADIL), part of an effort to safeguard citizens' freedom of expression and access to information. ITU's Smart Islands Initiative have started consultations with community and stakeholders from Manono-Tai island between December 2022 and January 2023 to inform the selection and design of the digital services.¹⁶⁵

Objectives underway are the development of a National Digital Transformation Strategy,¹⁶⁶ National Digital Identity,¹⁶⁷ Passenger Data Exchange Systems,¹⁶⁸ Information Security Policy,¹⁶⁹ Open Access for Information Policy,¹⁷⁰ and Right to Information Legislation.¹⁷¹

Overall, Samoa's digital focus, bolstered by regional and international support, has been centred around ICT infrastructure development and affordable access to connectivity, in which it has made

¹⁶³ <https://ega.ee/project/digital-government-platform-samoa/>

¹⁶⁴ Several workshops were held but the assessment result cannot be found online. <https://www.undp.org/samoa/press-releases/samoas-digital-strategy-takes-another-step-closer-being-realized>; <https://www.undp.org/samoa/press-releases/samoa-launches-new-tool-it-develops-ict-policies-accelerate-digital-transformation> ; <https://www.undp.org/samoa/press-releases/samoas-digital-strategy-takes-another-step-closer-being-realized>

¹⁶⁵ <https://www.itu.int/en/ITU-D/ICT-Applications/Pages/Initiatives/ASP/Smart-Islands/Smart-Islands-Initiative.aspx>

¹⁶⁶ <https://www.undp.org/samoa/press-releases/samoas-digital-strategy-takes-another-step-closer-being-realized>

¹⁶⁷ <https://talamua.com/2023/06/15/parliament-debates-the-national-digital-identification-bill/>; <https://www.nrdcompanies.com/insights/samoa-committed-to-build-a-digital-identity-management-system/>

¹⁶⁸ <https://www.iom.int/project/supporting-government-samoa-strengthen-passenger-data-exchange-systems>

¹⁶⁹ <https://mcit.gov.ws/wp-content/uploads/2023/02/APPROVED-CORPORATE-PLAN-2022-2026..pdf>

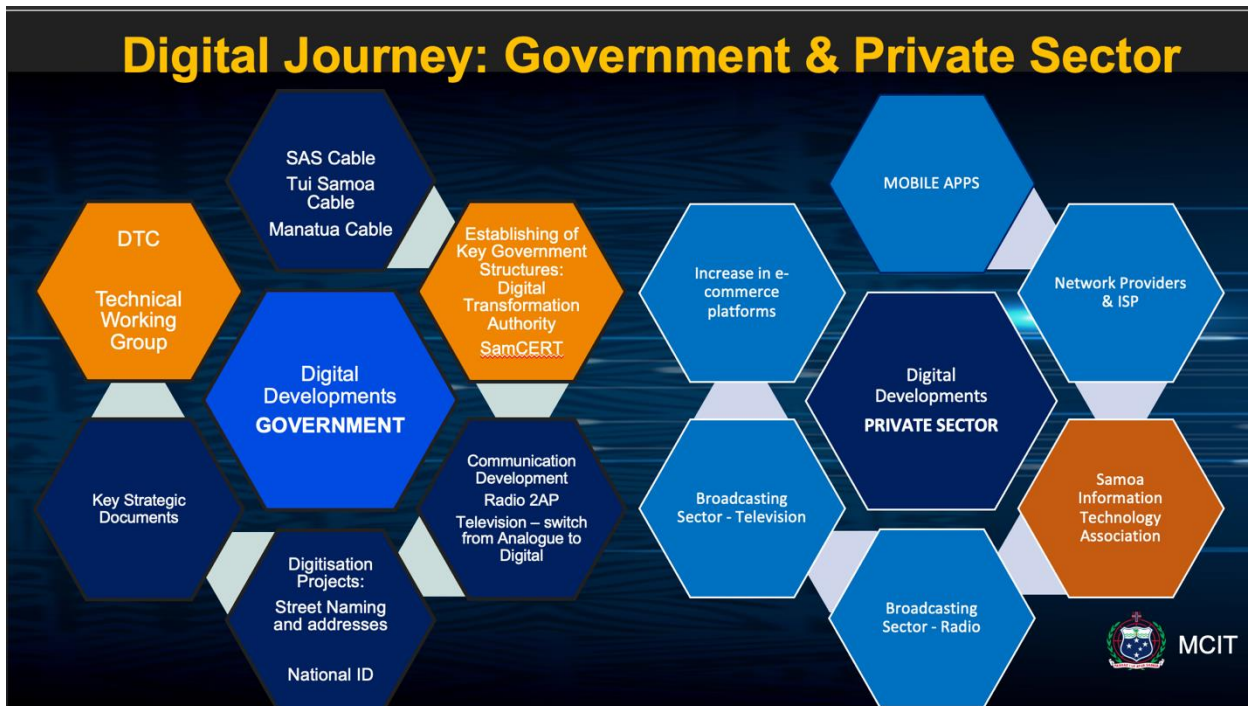
¹⁷⁰ [https://www.itu.int/en/ITU-D/Regional-](https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2020/RDF2020/Pre%20Forum%20Day%201/Samoa%E2%80%99s%20Digital%20Journey%20v4.pdf)

[Presence/AsiaPacific/Documents/Events/2020/RDF2020/Pre%20Forum%20Day%201/Samoa%E2%80%99s%20Digital%20Journey%20v4.pdf](https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2020/RDF2020/Pre%20Forum%20Day%201/Samoa%E2%80%99s%20Digital%20Journey%20v4.pdf)

¹⁷¹ <https://mcit.gov.ws/wp-content/uploads/2023/02/APPROVED-CORPORATE-PLAN-2022-2026..pdf>

notable achievements. Data governance, on the other hand, seems to be overshadowed. Establishment of data/security standards, procedures and protocols; policy coherence, reviewing and developing legislative and regulatory instruments governing ICT aspects across all of Government and working with legislators to draft instruments are yet to be listed as priorities to ensure digitalization is properly leveraged. A whole-of-government data governance should be integrated into the National Digital Transformation Strategy to provide further guidance. Notably, in the Ministry of CIT's Corporate Plan 2022-2026, goals around data standardization, data security were set.

Figure 37 Samoa's Digital Journey¹⁷²



Summary of Four Pillars

Table 44 summarizes Samoa's current data governance framework in relation to the four pillars.

- Policy:** develop action agendas, regulations and laws, priority actions, key messaging.
- Institutions:** assign and establish responsible government departments within the existing institutional framework. Develop digital enterprise architecture.
- People:** assign persons responsible for data governance within government institutions. Map stakeholders within the data ecosystem.
- Processes:** design effective processes for the implementation, financing, leadership, and management of data systems.

¹⁷² PSET ANNUAL CONFERENCE 2021

Table 44: Four Pillars of Samoa's Data Governance Framework

Pillar	Overview
Policy	<ul style="list-style-type: none"> ➤ Plan <ul style="list-style-type: none"> ○ Communications Sector Plan 2017-2022 ○ ICT Sector plan 2022-2026 ○ Ministry of ICT's Corporate Plan 2022-2026 ➤ Policy <ul style="list-style-type: none"> ○ National ICT Policy 2012-2017 ○ Internet and Email Policy 2016 ○ Social Media Policy for Government 2017 ○ Samoa eHealth Policy and Strategy 2017 - 2022 ➤ Strategy <ul style="list-style-type: none"> ○ Samoa Statistics Strategy 2022-2026 ○ National Cybersecurity Strategy 2016 - 2021 ➤ Legislation <ul style="list-style-type: none"> ○ Telecommunications Act 2005 ○ Broadcasting Act 2010 ○ Samoa Crimes Act 2013 ➤ Planned development <ul style="list-style-type: none"> ○ National Digital Transformation Strategy ○ Open Access for Information Policy ○ Information Security Policy ○ Right to Information Legislation
Institutions	<ul style="list-style-type: none"> ➤ Domestic <ul style="list-style-type: none"> ○ Ministry of Communications and Information Technology (MCIT): facilitates, leads and implements ICT developments. ○ The Office of the Regulator (OOTR): an independent authority that regulates the ICT sector. ○ Digital Transformation Authority (DTA): expected to set whole-of-government standards to drive the digital transformation agenda of the Government. ○ Samoa Bureau of Statistics (SBS). ○ Responsible Ministries (such as Ministry of Finance in terms of digital economy), Government Departments, Constitutional and Statutory Entities and other stakeholders. ➤ Regional <ul style="list-style-type: none"> ○ Pacific Islands Chapter of the Internet Society: an impartial advisor to governments and the public on matters of Internet development to Pacific Island people.
People	<ul style="list-style-type: none"> ➤ Relevant stakeholders within the data ecosystem are: <ul style="list-style-type: none"> ○ Minister of Communications and Information Technology, Office of the Regulator, Samoa Posts Limited, Broadcasting and Department for Legislative Assembly.

	<ul style="list-style-type: none"> ○ Chief Executive Officer - Ministry of Communications & Information Technology ○ Regulator of Samoa for Telecommunications, Broadcasting, Postal and Electricity ○ Minister of Statistics. ○ Government Statistician of SBS
Processes	<ul style="list-style-type: none"> ➤ Domestic <ul style="list-style-type: none"> ○ ICT infrastructure ¹⁷³ <ul style="list-style-type: none"> ▪ Three Submarine Cable systems: SAS Cable (2009), Tui-Samoa Cable (2018) and Manatua Cable (2020). ▪ Satellite links to schools and backup links by Telcos ▪ Free Wifi Access at the Airport and Public Transport. ▪ 100% 3G-4G Coverage Across all of Samoa. ▪ 100% Digital TV Coverage across all of Samoa ○ E-health system: Tamanu system¹⁷⁴ <ul style="list-style-type: none"> ▪ Phase 1 commenced in 2020 with the implementation of supply, the Electronic Logistics Management Information System (eLMIS), and Tupaia, a health data aggregation and visualization tool. ▪ Phase 2 is the introduction of the Tamanu Mobile for patient screening and this is being utilized for the COVID19 vaccination data recording and management. ▪ Phase 3 is the implementation of the patient-level electronic medical record (Tamanu Desktop) at the main hospital here in Moto'otua and the referral hospital at Tuasivi, Savai'i. ▪ Phase 4 is digitizing public health reporting which also includes the establishment of the national data warehouse (DHIS2), fully integrated with Tupaia and Tamanu.¹⁷⁵ ○ E-commerce and digital payment <ul style="list-style-type: none"> ▪ Maua app¹⁷⁶ : eCommerce Platform

¹⁷³ <https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2020/RDF2020/Pre%20Forum%20Day%201/Samoa%E2%80%99s%20Digital%20Journey%20v4.pdf>

¹⁷⁴ <https://www.bes.au/products/tamanu/>

¹⁷⁵ <https://www.samoaoobserver.ws/category/samoa/87045>

¹⁷⁶ https://play.google.com/store/apps/details?id=com.app.buyer&hl=en_US&gl=US

	<ul style="list-style-type: none"> ▪ MauaPay: Samoa’s first-ever home-grown interoperable payments system ¹⁷⁷ ▪ Samoa Automated Transfer System (SATS): new national digital payment platform¹⁷⁸ ○ Partnerships with regional countries such as New Zealand, Australia and international organizations such as UNESCO, UNDP, ITU, the World Bank. ○ SIDS and PIC cooperative initiatives. ➤ Regional <ul style="list-style-type: none"> ○ Pacific Data Ecosystem: partnership between Pacific Island Countries and Territories, Pacific Community (SPC) and the Secretariat of the Pacific Regional Environment Programme (SPREP) to promote greater coordination in data management, dissemination and uptake initiatives. Technical partners include Link Digital and Data 61. ○ In 2017, The World Bank Trust Fund for Statistical Capacity Building (TFSCB) committed USD 500,000 to SPC to strengthen the capacity of national statistical systems and social and economic planning agencies. ¹⁷⁹The deliverable was the Pacific Data Hub-Microdata library which preserves, catalogues and disseminates Pacific microdata sets. ○ SAMOA Pathway¹⁸⁰ : envisioned that national Governments will support and facilitate the expansion of ICT infrastructure through the provision of targeted training and through the promotion of good governance deriving from the establishment and management of effective, transparent and accountable institutions. ➤ Planned development <ul style="list-style-type: none"> ○ National Digital Identity
--	---

Pillar-Element Mapping Matrix and Mapping of Six Elements

Table 45: Pillar-Element Mapping Matrix of Samoa’s Current Data Governance Framework

Element	Summary
---------	---------

¹⁷⁷ <https://www.unescap.org/blog/how-one-digital-solution-enabling-samoas-digital-economy>

¹⁷⁸ <https://www.samoagovt.ws/2023/05/samoas-new-digital-payment-system-to-boost-financial-inclusion-and-support-economic-activity/>

¹⁷⁹ <https://microdata.pacificdata.org/index.php/acknowledgements>

¹⁸⁰ <https://www.un.org/ohrlls/content/samoa-pathway>

<p>Data standards & classification</p>	<ul style="list-style-type: none"> ➤ Achievements <ul style="list-style-type: none"> ○ In relation to the implementation of Samoa Strategy for the Development of Statistics 2011 – 2021 (SSDS): <ul style="list-style-type: none"> ▪ Improved compliance with international standards – including adoption of current standards (GFSM 2001/2014, SNA 2008, BPM6). ▪ Updated legislation, in the form of the Statistics Act 2015, approved by parliament. ▪ Compliance with Enhanced General Data Dissemination Standards (E-GDDS) achieved in 2017 (DQAF). ➤ Challenges <ul style="list-style-type: none"> ○ The SSS 2022-2026¹⁸¹ conducted a SWOT assessment of Samoa National Statistical System, with the following weakness and threats identified: <ul style="list-style-type: none"> ▪ Weakness <ul style="list-style-type: none"> • Scope to improve data access, standardisation, and integration. Effective exploitation of existing administrative data is key to the production of new statistics at low cost with minimal provider burden. • Capacity and data infrastructure in the areas of data processing, integration, analysis, and data security needs to be strengthened. ○ Threats <ul style="list-style-type: none"> ▪ Resources and trust issues that come along with National Digital Identity Program. ▪ Inadequate human resources. ➤ Goals <ul style="list-style-type: none"> ○ By 2023, define and deliver a program of annual reviews to inform the Statistics Advisory Board. Topic candidates include: admin data quality & access, data integration and linkage, statistical infrastructure, compliance with standards, timeliness, provider burden. ○ By 2024, undertake a self-assessment on the implementation of the OECD Council Recommendation on Good Statistical Practice and share the result with the Statistics Advisory Board
---	--

¹⁸¹https://www.sbs.gov.ws/SAMOA_STATISTICS_STRATEGY/SAMOA_STATISTICS_STRATEGY_2022%20%E2%80%93%202026-%28Bureau%20of%20Statistics%29.pdf

Data sharing, exchange and interoperability, including open government data

- Achievements
 - E-health
 - Progress has been made in the sharing of information (for example, weekly collection of forms for birth and registration forms).¹⁸²
 - Digital Economy
 - Mauapay as Samoa's first-ever home-grown interoperable payments system. ¹⁸³
 - Samoa Automated Transfer System (SATS) as the new national digital payment platform to boost financial inclusion and support economic activity.
 - Cross-ministry coordination
 - MOUs have been signed between SBS and other Ministries like Ministry of Customs & Revenue which covers everything from data sharing and the type of data shared as well as the personnel involved for security. In addition, informal discussions are also ongoing to review and refine the data that is being shared.
- Challenges
 - However, a continued and overall lack of coordination and cooperation within the Samoa Bureau of Statistics (SBS) and other government agencies, particularly in the sharing of administrative data for statistical purposes was identified. ¹⁸⁴
 - Household survey processes are essentially managed in silos except for IT support and sampling, which are centralised.¹⁸⁵
 - Specifically on Birth Registration System
 - Although the recent birth registration data is now stored and backed up on cloud or server, paper documents are still stored as an additional back-up which adds onto the issue of limited space. It also takes away from the benefits from digitalizing the records.
 - Samoa's current health information system is largely fragmented, unreliable, and paper based. There is currently no interoperability between the systems. The current e-health strategy includes provisions for planned HIS (Health Information Systems) within the eHealth environment of Samoa, but considerable progress is yet to be seen (eHealth Strategy report).

¹⁸² https://www.sbs.gov.ws/SAMOA_STATISTICS_STRATEGY/SAMOA_STATISTICS_STRATEGY_2022%20%E2%80%93%202026-%28Bureau%20of%20Statistics%29.pdf, p.32

¹⁸³ <https://www.unescap.org/blog/how-one-digital-solution-enabling-samoas-digital-economy>

¹⁸⁴ https://unstats.un.org/iswghs/documents/Survey_coordination_Samoa_report.pdf

¹⁸⁵ https://unstats.un.org/iswghs/documents/Survey_coordination_Samoa_report.pdf

	<ul style="list-style-type: none"> ▪ Additionally, LDS software currently being used by BDM is not interoperable with other software systems. The coding language used for the software is obsolete and thereby cannot be upgraded to share or receive automated information from other systems such as PATIS (medical record system used at the hospital). In the absence of automated interoperable systems, all the birth notifications are done manually using paper-based solutions like a copy of the B10 forms, which are constrained by availability of human resources and subject to human error.¹⁸⁶ <p>➤ Goals</p> <ul style="list-style-type: none"> ○ In the SSS 2022-2026 <ul style="list-style-type: none"> ▪ Develop “shared statistical infrastructure” – systems and tools used by multiple National Statistical Service agencies to promote quality and efficiency ▪ SBS to acquire and integrate administrative data to establish new statistical registers and produce new statistical outputs. ▪ Develop secure systems and protocols for data transfer, storage and analysis. ○ In Samoa E-commerce Strategy and Roadmap 2022 <ul style="list-style-type: none"> ▪ Ministry of Commerce, Industry and Labour (MCIL) to work with Samoa Bureau of Statistics to provide relevant e-commerce data in line with the data collected on e-commerce by SPC in the Pacific Data Hub.¹⁸⁷
Data security	<p>➤ Achievements</p> <ul style="list-style-type: none"> ○ Upgrade network security (Fortinet) ○ Off-site backup now in place ○ Upgrade ISP bandwidth ○ Upgrade email to cloud hosting secure by google. ○ Establishment of Cyber Emergency Response Team (CERT) ○ Policy & Strategy <ul style="list-style-type: none"> ▪ National Security Policy 2018 <ul style="list-style-type: none"> • Support the development of a skilled workforce • Provide effective safeguards in the National Broadband Highway to protect government information and the National Digital Identity

¹⁸⁶ <https://www.undp.org/sites/g/files/zskgke326/files/2023-04/Intelligence%20Report%20on%20Birth%20Registration%20System%20in%20Samoa.pdf>, p.23.

¹⁸⁷ https://www.forumsec.org/wp-content/uploads/2022/10/Samoa-ECommerce-Strategy-Roadmap_FINAL.pdf P.33

	<p>information</p> <ul style="list-style-type: none"> ▪ National Cybersecurity Strategy 2016-2021 <ul style="list-style-type: none"> • Develop necessary organizational structures with a focus on utilizing existing structures in Samoa as well as in the region. • Establish relevant Technical Measure (Entities and Standards) to eliminate Cyber Threats and Attacks, enhance Cybersecurity and promote Cybersecurity • Strengthen the legal framework to meet highest regional and international standards with regard to protection of fundamental rights as well as criminalization, investigation, electronic evidence and international cooperation; • Build digital citizens capacity, raising awareness and attaining resources to enhance Cybersecurity, combat Cybercrime activities and promote Cyber safety to the highest levels. • Cooperation; Responding to the global nature of Cybersecurity threats and attacks through a multi-stakeholder’s approach and strengthening local and global partnerships. <p>➤ Challenges</p> <ul style="list-style-type: none"> ○ Low level of awareness of cybersecurity. It was noted that people are less interested because cybersecurity is fairly new to the country and not widely used, and there is a general lack of knowledge about any national cyber-attacks or personal bad experiences with cyber-incidents.¹⁸⁸ ○ Limited capacity and data infrastructure in data security. ○ Lack of any cybersecurity-specific legislation, although several legal instruments touch upon cybersecurity-related activities.
Data privacy (and ethics)	<p>➤ Samoa currently doesn’t have national legislation or regulations addressing data protection other than dispersed references in the Telecommunications Act (2005), the Statistics Act (2015), the Electoral Act (1963) and the National Provident Fund Act (1972).</p> <p>➤ In 2021, APCICT/ESCAP conducted a webinar on “Information Security and Privacy”, in collaboration with the Ministry of Communications and Information Technology, Government of</p>

¹⁸⁸ <https://gcsc.ox.ac.uk/samoa>

	<p>Samoa. The webinar aimed to enhance understanding of civil servants on formulating and implementing information security policies, plans and programmes. It was attended by IT heads across Samoa's ministries/agencies as well as technical staff working in the area of information security.¹⁸⁹</p>
National data infrastructure	<ul style="list-style-type: none"> ➤ Achievements <ul style="list-style-type: none"> ○ Three Submarine Cable systems: SAS Cable (2009), Tui-Samoa Cable (2018) and Manatua Cable (2020). ○ Satellite links to schools and backup links by Telcos ○ Free Wifi Access at the Airport and Public Transport. ○ 100% 3G-4G Coverage Across all of Samoa. ○ 100% Digital TV Coverage across all of Samoa ○ 2AP Radio now broadcasting Digitally. ○ 2AP Radio now streaming online through 2 Apps (Zeno , Goloud) ○ Digital Streaming of Radio Content. ○ Adoption of Drones for Mapping and Digital Data supports ○ Regional initiative: The Pacific Data Hub (PDH) as a central repository of data about the Pacific and for the Pacific. The platform serves as a gateway to the most comprehensive collection of data and information about the Pacific across key areas, including population statistics, fisheries science, climate change adaptation, disaster risk reduction and resilience, conservation of plant genetic resources for food security, public health surveillance and human rights. ➤ Challenges <ul style="list-style-type: none"> ○ Limited financial and technical resources. ○ Inadequate domestic data infrastructure. ➤ Goals <ul style="list-style-type: none"> ○ Actively manage the life cycle of ICT assets (hardware, operating systems, software tools, devices) to mitigate risk of failure or poor performance due to obsolescence. ○ Improve office space and physical security.
Linking data governance to digital identity	<p>National Digital Identity in progress.</p>

To demonstrate the relationships between each pillar and element, a Pillar-Element Mapping Matrix is utilized (see Table 46). There are 24 cells in this matrix, reflecting the existing data governance framework in Samoa, excluding any planned developments or stated visions. This

¹⁸⁹ <https://www.unescap.org/events/2021/samoa-webinar-information-security-and-privacy>

baseline report and the matrix below merely reflects a snapshot of the current situation as discovered from empirical desk research. The volume of information in each cell, including those which are left blank, should not be taken as a comprehensive evaluation or correlative of the development of each pillar-element pair. Its purpose is simply to offer a simplistic overview.

Table 46: Pillar-Element Mapping Matrix of Samoa's Current Data Governance Framework

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	Samoa Strategy for the Development of Statistics 2011 - 2021 (SSDS); Samoa Statistics Strategy 2022-2026 Statistics Act 2015	Samoa Strategy for the Development of Statistics 2011 - 2021 (SSDS); Samoa Statistics Strategy 2022-2026 Samoa E-commerce Strategy and Roadmap 2022	National Security Policy 2018 National Cybersecurity Strategy 2016-2021		ICT Sector Plan 2022-2027; Ministry of ICT Corporate Plan 2022-2026; Revision of National Digital ICT Policy 2012-2017; Social Media Policy for Government 2017 Government Internet and Email Policy 2016 National Broadband Policy 2012; Co-Location and Infrastructure Sharing Policy 2011 Broadcasting Act 2010; Telecommunications Act 2005	
Institutions	Leadership: Samoa Bureau of Statistics (SBS): the agency	Leadership: SBS	Leadership: Ministry of CIT;		Leadership: Ministry of CIT;	Leadership: Ministry of CIT; SBS;

	responsible for collecting and analysing statistical information, and promoting standard concepts and “the avoidance of duplication of effort and information in the area of official statistics	Ministry of Health (on CRVS data); Ministry of Commerce, Industry and Labour (on e-commerce data)	Samoa Police Force		The Office of the Regulator	Ministry of Finance
People	<p>Minister of Statistics</p> <p>Government statistician</p> <p>Statistics Advisory Board: improve collaboration and coordination among various government agencies.</p> <p>Cabinet Development Committee: responsible for making decisions on all development projects that are submitted by government agencies for funding support.</p> <p>Inadequate human resources and insufficient access to training.</p>	<p>Minister of Statistics</p> <p>Government statistician</p> <p>National CRVS steering committee: responsible for overseeing and supporting the Civil Registration and Vital Statistics.</p> <p>Inadequate human resources and insufficient access to training.</p>	<p>Cyber Emergency Response Team (CERT);</p> <p>National ICT Steering Committee;</p> <p>Samoa Police Force Cyber Investigation team¹⁹⁰</p> <p>Low awareness of cybersecurity.</p> <p>Inadequate human resources and insufficient access to training.</p>	Inadequate human resources and insufficient access to training.	<p>Leadership: Minister of CIT;</p> <p>Regulator of Samoa for Telecommunications, Broadcasting, Postal and Electricity</p> <p>Inadequate human resources and insufficient access to training.</p>	<p>Leadership: Minister of CIT;</p> <p>Minister of Finance</p> <p>ACEO National ID Division SBS</p> <p>Inadequate human resources and insufficient access to training.</p>

¹⁹⁰ <https://www.loopsamoa.com/samoa-news/samoa-police-allocates-separate-team-tackle-cyber-crime-116669>

Processes	<p>International partnerships: The Samoa Bureau of Statistics (SBS) receives financial and technical support from several international development partners due to the relatively low level of funding available for statistical activities at the national level. The Australian Government is the primary and most consistent funding organization for SBS activities.</p> <p>Goals set in the National Statistics Strategy 2022-2026; Ministry of ICT Corporate Plan 2022-2026</p>	<p>E-health: Progress has been made in the sharing of information (for example, weekly collection of forms for birth and registration forms).</p> <p>Interoperable digital payment: Mauapay as Samoa's first-ever home-grown interoperable payments system; Samoa Automated Transfer System (SATS) as the new national digital payment platform to boost financial inclusion and support economic activity.</p> <p>Cross-ministry coordination: MOUs have been signed between SBS and other Ministries like Ministry of Customs & Revenue which covers everything from data sharing and the type of data shared as well as the personnel involved for security. In addition, informal discussions are also ongoing to review and refine the data that is being shared.</p> <p>Regional open data platform: Pacific Data Hub</p>	<p>Cybersecurity legislation and other goals set out in the National Cybersecurity Strategy 2016-2021; ICT Sector Plan 2022-2027; Ministry of ICT Corporate Plan 2022-2026</p>	<p>APCICT/ESCAP webinar on "Information Security and Privacy".¹⁹¹</p>	<p>Three Submarine Cable systems: SAS Cable (2009), Tui-Samoa Cable (2018) and Manatua Cable (2020).</p> <p>SAMOA Pathway: a regional initiative envisioned that national Governments will support and facilitate the expansion of ICT infrastructure through the provision of targeted training and through the promotion of good governance deriving from the establishment and management of effective, transparent and accountable institutions.</p> <p>Goals set in the Corporate Plan 2022-2026 and ICT Sector Plan 2022-2027.</p>	<p>The Government of Samoa has selected NRD Companies as an advisory services provider to develop Strategic and implementation plan for modern, optimal, and reliable identity management system that supports the development of unique digital identity.¹⁹²</p>

¹⁹¹ <https://www.unescap.org/events/2021/samoa-webinar-information-security-and-privacy>

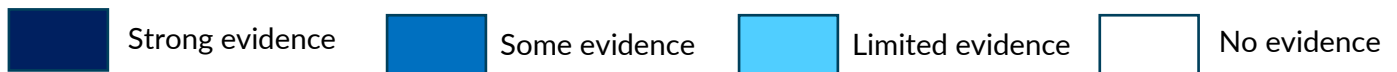
¹⁹² <https://www.nrdcompanies.com/insights/samoa-committed-to-build-a-digital-identity-management-system/>

		Goals set in the National Statistics Strategy 2022-2026; E-commerce Strategy and Roadmap 2022				
--	--	---	--	--	--	--

Based on the mapping of pillars and elements, Table 47 visualizes the mapping and the comparisons between different cells in the matrix. Policy-wise, there are few specialized policies dedicated to areas except the national data infrastructure. Institution-wise, main leadership responsibilities fall on Samoa Bureau of Statistics (SBS) and Ministry of ICT. How different departments cooperate under their coordination is yet to be found. When it comes to people, while multi-stakeholders and leaderships are usually recognized, more detailed information is hard to find. And an overall inadequate human resources and insufficient access to training have been identified by the Government.¹⁹³ Processes-wise, separate small projects are in place without efficient alignment and coordination, and data security and privacy remain underdeveloped.

Table 47 : The Pillar-Element Mapping Matrix for Samoa

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	Light blue	Light blue	Light blue	White	Dark blue	White
Institutions	Dark blue	Dark blue	Dark blue	White	Dark blue	Dark blue
People	Light blue	Light blue	Light blue	White	Light blue	Light blue
Processes	Light blue	Dark blue	Light blue	Light blue	Light blue	Light blue



SWOT Analysis of Samoa's Data Governance Framework

A SWOT analysis (Table 48) is presented below.

Table 48: SWOT Analysis of Samoa's Data Governance Framework

¹⁹³ https://www.sbs.gov.ws/SAMOA_STATISTICS_STRATEGY/SAMOA_STATISTICS_STRATEGY_2022%20%E2%80%932026-%28Bureau%20of%20Statistics%29.pdf

	Positive	Negative
Internal factors	Strengths	Weaknesses
	<ul style="list-style-type: none"> • Achievements in ICT infrastructure with the establishment of Three Submarine Cable systems. • Political will and ambition from Government to utilize data and promote digital transformation. • Human development is prioritized in digital transformation, such as access to information¹⁹⁴ and digital gender divide.¹⁹⁵ • Government recognition of a whole-of-government approach and actions taken to establish an accountable Digital Transformation Authority. • General priority actions have been established in numerous policies and strategies, and have been allocated responsible institutions with clear timelines and expected outputs. • Regular monitoring and evaluation of ICT policies is conducted and reports published, reasonably acknowledging areas of improvement. 	<ul style="list-style-type: none"> • Samoa's EGDI is 0.4207, ranking 152/193, and has decreased from No. 117 in 2003. • Data governance embedded in ICT governance. • Limited financial and technical resources. • Inadequate domestic data infrastructure. <ul style="list-style-type: none"> ○ High cost of internet and mobile services despite having the second cheapest rate in the region. ○ Limited capacity and data infrastructure in data security. ○ Inadequate human resources and insufficient access to training. • Lack of a-whole-of-government coordination in practice. <ul style="list-style-type: none"> ○ Lack of a one-stop digital government platform. ○ Lack of alignment of policies and plans. ○ Not all ministries and institutions have a dedicated unit in charge of digital transformation and/or data. ○ A continued and overall lack of coordination and cooperation within the Samoa Bureau of Statistics (SBS) and other government agencies, particularly in the sharing of administrative data for statistical purposes. <ul style="list-style-type: none"> ▪ Lack of data access, standardisation, and integration. ▪ Household survey processes are

¹⁹⁴ <https://unsouthsouth.org/2023/02/22/expanding-access-to-information-and-digital-transformation-in-samoa/>

¹⁹⁵ <https://www.samoagovt.ws/2023/03/working-together-as-a-region-to-bridge-the-digital-divide/>

		<p>essentially managed in silos except for IT support and sampling, which are centralised.</p> <ul style="list-style-type: none"> ▪ Samoa's current health information system is largely fragmented, unreliable, and paper based. ▪ Lack of software interoperability in birth registration. <ul style="list-style-type: none"> • Lack of national legislation or regulations addressing data protection and privacy, which is particularly important with the development of national ID. • Low level of awareness of cybersecurity. • Slow realization of policies and goals: for example, the DTA set up in 2019 yet to be embodied. Challenges in policy continuity during government transitions.
External factors	Opportunities	Threats
	<ul style="list-style-type: none"> • Regional and international support through strong partnerships with regional and international countries and organizations. • Open and regular dialogue with development partners. • SBS serves as a centralized database for sector statistics. • Development of DTA as the leading digital transformation institution and a comprehensive digital transformation framework. • Development of e-commerce to boost the economy and financial inclusion. • Covid-19 propelled the use of data in the health sector. <p>▶</p>	<ul style="list-style-type: none"> • Project fatigue (too many projects plus lack of coordination). • The Asia-Pacific region is a significant target for cyber-attacks. • SIDS vulnerability: <ul style="list-style-type: none"> ○ Samoa is prone to natural disasters and suffer from climate change. This would pose threat to national data infrastructure including telecommunications infrastructure. The annual cost of damages from natural disasters in SIDS can range between 1% to 8% of the entire GDP.¹⁹⁶ • Resources and trust issues that come along with National Digital Identity Program.

¹⁹⁶ <https://sdgs.un.org/smallislands/about-small-island-developing-states>

Conclusion

In conclusion, with priorities being providing accessible and affordable ICT infrastructure, Samoa has a long way to go towards a comprehensive data governance framework. The development of ICT would engender more urgent needs around data governance in the future. But there is reason to hold optimism as the Government is well aware of its digital status quo and the way forward, as indicated in detailed analytical reviews of its policies and strategies.

Envisioning the way forth, policy-wise, next step is for Samoa to develop a National Digital Transformation Strategy where data governance should be integrated. The Strategy needs to adopt a whole-of-government approach and coordinate the existing policies and strategies to offer a comprehensive national digital guidance. Institution-wise, the priority is to put the DTA into real effect as an overarching authority overseeing the implementation of digital and data governance. A clear distribution of responsibility needs to be conducted between DTA and Ministry of ICT to ensure efficiency. People-wise, more specific leadership and accountability should be assigned. Staffing should be increased and improved through more access to digital training. Process-wise, while a substantial number of projects have been initiated, the effects are usually small-scale and scattered. It is vital for the Government to re-evaluate the digital landscape to avoid project fatigue and scale up the effects.

While development in data classification, standardization, sharing, security, privacy, and identity is still immature, there are great resources and opportunities that the Government can leverage. Domestically, it shall continue on strengthening the ICT infrastructure to provide easier access to public services, boost the digital economy, and raise digital awareness, laying the foundation for a capable data governance. Internationally, as an SIDS, it should take advantage of the strong partnerships Samoa has established with regional and international countries and organizations. Together, Samoa is on track to achieve a comprehensive data governance framework.

Sierra Leone

Introduction

According to 2022 E-Government Survey, Sierra Leone, an LDC and LIC, ¹⁹⁷ranked 185/193 with an EGDI of 0.2633, categorized in M1 rating class. ¹⁹⁸ On Open Government Data Index (OGDI), Sierra Leone has sustained its position in Middle OGD I from 2020, though with a slight decline in the value.

¹⁹⁷ <https://unctad.org/topic/least-developed-countries/list>

¹⁹⁸ To gain better insight into the situation of subgroups of countries with similar levels of performance within their respective EGDI groups, each EGDI group is further divided into four equally defined rating classes, or quartiles. VH, V3, V2 and V1 for the very high group; HV, H3, H2 and H1 for the high group; MH, M3, M2 and M1 for the middle group; and IM, I3, I2 and I1 for the low group.

Despite some progress such as making significant strides towards establishing the structural and legal foundations for a comprehensive Open Data Initiative;¹⁹⁹ strengthening mechanisms for enhanced institutional engagement with local authorities;²⁰⁰ setting up regulatory sandboxes,²⁰¹ Sierra Leone still faces great challenges in e-government development in general. Positioned much below sub-region, region, and world average, it has a long way to go on digital governance including data governance.

Figure 38 Sierra Leone EGD I 2022²⁰²



Figure 39 Sierra Leone's EGD I 2003-2022²⁰³

¹⁹⁹ https://opendatatoolkit.worldbank.org/content/dam/sites/data/odk/documents/odra_sierra_leone.pdf

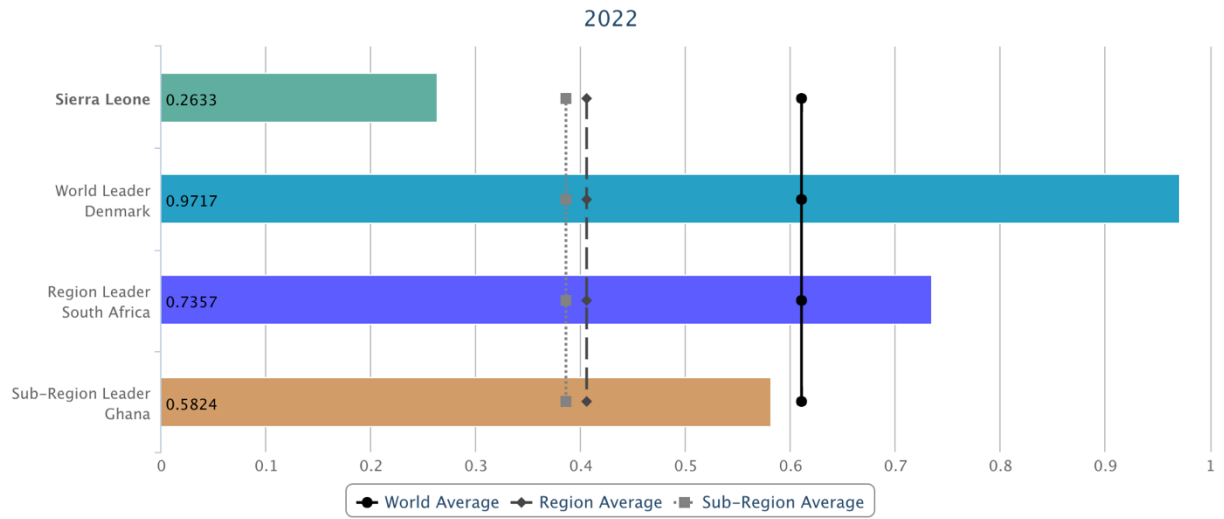
²⁰⁰ M. Wechsler, L. Perlman and N. Gurung, "The state of regulatory sandboxes in developing countries" (December 2018), available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3285938.

²⁰¹ United Nations, Department of Economic and Social Affairs, "Compendium of National Institutional Arrangements for implementing the 2030 Agenda for Sustainable Development" (2019), available at <https://sustainabledevelopment.un.org/content/documents/22008UNPAN99132.pdf>.

²⁰² <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/153-Sierra-Leone>

²⁰³ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/153-Sierra-Leone>

E-Government Development Index

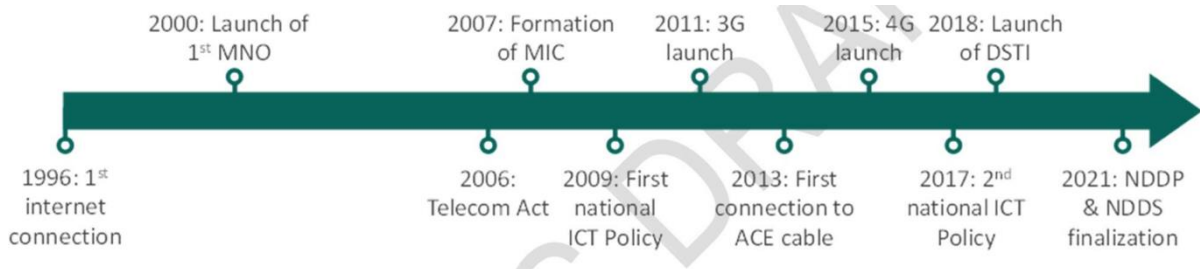


E-Government Development Index	2022	2020	2018	2016	2014	2012	2010	2008	2005	2004	2003
Sierra Leone (Rank)	185	174	174	186	186	186	177	178	167	161	167
Sierra Leone (Value)	0.26330	0.29310	0.27170	0.15942	0.13286	0.15568	0.16973	0.14630	0.16390	0.17202	0.12626

Table 49 Sierra Leone’s OGD I 2020-2022²⁰⁴

	OGDI Group	OGDI
2022	Middle OGDI	0.3718
2020	Middle OGDI	0.6271

Figure 40 Important milestones in Sierra Leone’s Digital Journey²⁰⁵



²⁰⁴ United Nations 2022, UN E-Government Survey 2022: The Future of Digital Government, p.168.; United Nations, 2020, UN E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, p.321.

²⁰⁵ <https://moic.gov.sl/wp-content/uploads/2022/08/National-Digital-Development-Strategy-2022-01-10.pdf>

Over the years, efforts have been made to leverage digital technologies in Sierra Leone. These include the establishment of a dedicated ministry to be in charge of information and communications in 2007, the development of the country's first information and communication technology (ICT) policy in 2009, the implementation of the flagship Africa Coast to Europe submarine cable landing station in Free Town in 2011, and the liberalisation of the country's international gateway in 2015. Additionally, the government leveraged its experience with the Ebola outbreak in 2018 during the COVID-19 outbreak in 2020, promoting the use of digital technologies to support learning, response, and containment measures.²⁰⁶

Though progress has been made, a lot remains to be addressed and prioritised. The World Bank's Digital Economy Diagnostic Report for Sierra Leone that was launched in 2021 identified some of the challenges the country faces, including the government's somewhat uncoordinated approach to the implementation of digital infrastructure programmes, inadequate legal and regulatory frameworks, and dated digital development strategies.²⁰⁷ All these have implications for data governance in Sierra Leone.

Summary of Four Pillars

Table 50 summarizes Sierra Leone's current data governance framework in relation to the four pillars.

- e) Policy: develop action agendas, regulations and laws, priority actions, key messaging.
- f) Institutions: assign and establish responsible government departments within the existing institutional framework. Develop digital enterprise architecture.
- g) People: assign persons responsible for data governance within government institutions. Map stakeholders within the data ecosystem.
- h) Processes: design effective processes for the implementation, financing, leadership, and management of data systems.

Table 50 Four Pillars of Sierra Leone's Data Governance Framework

Pillar	Overview
Policy	<p>Various policies, strategies, and some legislations are published in Sierra Leone.</p> <p>Policy</p> <ul style="list-style-type: none"> • National Digital transformation Roadmap and National Digital transformation Policy (in progress)²⁰⁸ • Sierra Leone National Digital Development Strategy 2021 <ul style="list-style-type: none"> ○ Brings clarity to the coordinated implementation of digital priorities

²⁰⁶ National-Digital-Development-Policy-2022-06-02.pdf

²⁰⁷ National-Digital-Development-Policy-2022-06-02.pdf

²⁰⁸ According to Sierra Leone MSQ 2022, The Ministry of information and communications is currently finalizing the National Digital transformation Roadmap and National Digital transformation Policy.

- Defines prioritized strategic objectives across thematic areas to provide a holistic national digital agenda.
- Chapter 8: Data Governance and Cybersecurity
- National ICT Policy 2009
- National ICT Policy 2017
 - Added Cybersecurity and e-Government frameworks.

Strategy

- Sierra Leone National Innovation & Digital Strategy 2019 – 2029
 - Aimed at guiding Sierra Leone's investments, policies, and governance frameworks for the country's present and future development
 - Focusing on effective service delivery, citizen engagement, and the digital economy driven by innovation and entrepreneurship.
 - Research and Development in Cyber security Technologies improved
 - Government ICT Infrastructure and e-Services Protection Enhanced
 - Cyber Security and Resilience of ICT systems Strengthened
 - Cyber security Skills, Knowledge and Awareness improved
 - Management of Cyber security risks and incidents enhanced
 - Organisational structure
 - Information System Authority
 - A national authority instituted by law must be established for guiding the digital transformation of Sierra Leone: regulating public sector data models and their access; developing and managing government data exchange infrastructure; coordinating the development and administration of government information systems, technology and services; establishing data and security standards for digital systems and a mandate to upgrading systems across the public sector.
 - Data Protection
 - A body, either standalone or embedded within an existing authority, will be established to independently mediate digital

	<p>data engagements including disputes and legal action between citizens or companies and the State. The entity will work as an extension of what is done by other entities like the Right to Access Information Commission. The overall objective is to increase transparency so that all citizens would know at all times who, when, why was their personal data accessed.</p> <ul style="list-style-type: none"> • National Digital Development Strategy 2022 <ul style="list-style-type: none"> ○ Data Governance and Cybersecurity listed as one of the strategic objectives: <ul style="list-style-type: none"> ▪ Further develop legal and regulatory frameworks on cybersecurity and data protection ▪ Support institutional leadership and coordination for cybersecurity response and strengthen cooperation at national, regional, and international levels ▪ Build human capacity, increase awareness, and gain exposure to cybersecurity ▪ Protect vulnerable assets with response readiness and risk assessment to prevent cyberattacks ▪ Protect personal data in digital transactions and communications ▪ Facilitate the use of ICT for national security ▪ Enhance the openness and exploitation of data • Draft National Cybersecurity Strategy & Policy (process finalized in March 2021, and currently is under consultation with different stakeholders in the country.) <ul style="list-style-type: none"> ○ Mentions the creation of a National Cyber Security Council (NCSC), of a National Cyber Emergency Response Coordination Unit (NCERCU) and of a National Cyber Incidence Response Team (NCIRT).²⁰⁹ • National Development Plan <ul style="list-style-type: none"> ○ The government is well aware of the importance of digital development as it stated in the NDP that “building a digital economy and leveraging ICT tools to stimulate growth in all sectors of the economy will be the focus of the government”.
--	---

²⁰⁹ https://www.itu.int/en/ITU-D/Cybersecurity/Documents/National_Strategies_Repository/00090_03_Sierra%20Leone%20national-cyber-security-strategy-2017-final-draft.pdf

	<ul style="list-style-type: none"> ○ Practically, this means transitioning the Sierra Leonean economy from a manually driven economy dominated by agriculture and mining to a well-functioning digital economy that will enable the country to achieve economic growth, reduce poverty, offer new job opportunities for the youth, and grow its Micro, Small and Medium Enterprises (MSMEs). <p>Legislation</p> <ul style="list-style-type: none"> ● The Statistics Act (2002) ● National Telecommunications Act (2006) <ul style="list-style-type: none"> ○ Provided the mandate for establishing the institutions to implement the ICT transformation of Sierra Leone under the supervision of the Ministry of Information and Communication ● The Right to Access Information Act (2013) ● The Electronic Transactions Act (2019) <ul style="list-style-type: none"> ○ Provided an initial legal and regulatory framework for conducting secure transactions using electronic devices or related media, including electronic signatures, the retention of personal data, and the evidential weight of electronic information. ● Cybersecurity and Crime Bill 2021 ● Draft Data Protection Act 																					
Institutions	<p>Leadership</p> <ul style="list-style-type: none"> ➤ Ministry of Information and Communications (MIC) <p>Institutional structure²¹⁰</p> <table border="1"> <thead> <tr> <th>INSTITUTION</th> <th>MAIN ROLE</th> <th>MANDATE</th> </tr> </thead> <tbody> <tr> <td>National Digital Development Council</td> <td>Strategy</td> <td> <ul style="list-style-type: none"> - To provide oversight on digital programmes - To offer strategic direction on the integration of digital technologies in government </td> </tr> <tr> <td>Ministry of Information and Communications</td> <td>Policy</td> <td> <ul style="list-style-type: none"> - To provide overall policy direction on national digital development - To monitor the implementation of the policy </td> </tr> <tr> <td>National Communication Authority</td> <td>Regulation</td> <td> <ul style="list-style-type: none"> - To regulate digital service provision </td> </tr> <tr> <td>Independent Media Commission</td> <td>Regulation</td> <td> <ul style="list-style-type: none"> - To regulate media services for free and fair pluralistic competition </td> </tr> <tr> <td>National Digital Development Agency</td> <td>Implementation</td> <td> <ul style="list-style-type: none"> - To lead in the implementation of digital infrastructure programmes through a WoG approach </td> </tr> <tr> <td>Universal Access Development Fund</td> <td>Equity in service delivery</td> <td> <ul style="list-style-type: none"> - To provide equitable and efficient access to digital services among unserved and underserved populations </td> </tr> </tbody> </table>	INSTITUTION	MAIN ROLE	MANDATE	National Digital Development Council	Strategy	<ul style="list-style-type: none"> - To provide oversight on digital programmes - To offer strategic direction on the integration of digital technologies in government 	Ministry of Information and Communications	Policy	<ul style="list-style-type: none"> - To provide overall policy direction on national digital development - To monitor the implementation of the policy 	National Communication Authority	Regulation	<ul style="list-style-type: none"> - To regulate digital service provision 	Independent Media Commission	Regulation	<ul style="list-style-type: none"> - To regulate media services for free and fair pluralistic competition 	National Digital Development Agency	Implementation	<ul style="list-style-type: none"> - To lead in the implementation of digital infrastructure programmes through a WoG approach 	Universal Access Development Fund	Equity in service delivery	<ul style="list-style-type: none"> - To provide equitable and efficient access to digital services among unserved and underserved populations
INSTITUTION	MAIN ROLE	MANDATE																				
National Digital Development Council	Strategy	<ul style="list-style-type: none"> - To provide oversight on digital programmes - To offer strategic direction on the integration of digital technologies in government 																				
Ministry of Information and Communications	Policy	<ul style="list-style-type: none"> - To provide overall policy direction on national digital development - To monitor the implementation of the policy 																				
National Communication Authority	Regulation	<ul style="list-style-type: none"> - To regulate digital service provision 																				
Independent Media Commission	Regulation	<ul style="list-style-type: none"> - To regulate media services for free and fair pluralistic competition 																				
National Digital Development Agency	Implementation	<ul style="list-style-type: none"> - To lead in the implementation of digital infrastructure programmes through a WoG approach 																				
Universal Access Development Fund	Equity in service delivery	<ul style="list-style-type: none"> - To provide equitable and efficient access to digital services among unserved and underserved populations 																				
People	<ul style="list-style-type: none"> ➤ Minister of Information and Communications ➤ National Digital Development Technical Working Group ➤ Members of the National Digital Development Council 																					

²¹⁰ National-Digital-Development-Policy-2022-06-02.pdf

Processes	<ul style="list-style-type: none"> ➤ Two leading documents on digital development in Sierra Leone: National Digital Development Strategy & Policy <ul style="list-style-type: none"> ○ Both documents are the results of consultations with MDAs, Development Partners, Civil Society Organization (CSOs), academia, service providers, and representatives of the private sector who participated in multiple workshops in 2019¹⁵ and September 2021¹⁶ as well as 25 in-depth interviews conducted in October and November 2021. ➤ Partnerships <ul style="list-style-type: none"> ○ International <ul style="list-style-type: none"> ▪ The Global Partnership for Sustainable Development Data supports country partners at the national and sub-national levels in Sierra Leone to develop and implement whole-of-government, multi-stakeholder data roadmaps for sustainable development.²¹¹ ▪ World Bank funded Sierra Leone Digital Transformation Project (USD 50,000,000 grant).²¹² ▪ Digital Impact Alliance <ul style="list-style-type: none"> • connect governments, funders, and development actors with the essential insights, knowledge, and tools needed to advance positive, sustainable and inclusive digital transformation. ○ Regional <ul style="list-style-type: none"> ▪ Smart Africa ▪ Economic Community of West African States (ECOWAS) ▪ African Union
------------------	--

Pillar-Element Mapping Matrix and Mapping of Six Elements

Table 51: Six Elements of Sierra Leone's Data Governance Framework

Element	Summary
Data standards & classification	<ul style="list-style-type: none"> ➤ Achievements <ul style="list-style-type: none"> ○ National Strategy for the Development of Statistics (NSDS) <ul style="list-style-type: none"> ▪ SSL always applies international concepts definitions and classifications for the statistics it produces. A majority of the MDAs apply international concepts

²¹¹ <https://www.data4sdgs.org/node/424>

²¹² <https://projects.worldbank.org/en/projects-operations/procurement-detail/OP00277495?>

	<p>definitions and classifications for the statistics they produce.</p> <ul style="list-style-type: none"> ○ Digital health strategy in 2019 <ul style="list-style-type: none"> ▪ Prioritises Development of standards, SOPs, guides, and architecture design. <p>➤ Challenges</p> <ul style="list-style-type: none"> ○ Siloed implementation approach <ul style="list-style-type: none"> ▪ This is exemplified by the parallel identity systems with different standards (passports, national ID, driving license, social security, voter's ID, etc.) that MDAs individually conduct their own biometric capturing and still require cross checks to validate data (i.e. data from National Electoral Commission [NEC] needs to be routinely updated with that of NCRA for each election cycle). ○ Absence of common standards for data sharing ○ Limited obedience of standards <ul style="list-style-type: none"> ▪ About a one-third apply them only sometimes or rarely. For example not all producers present relevant statistics according to the Economic Activity Code based on the International Standard Industrial Classification (ISIC). This situation can lead to incompatibility among different domains of statistics and lesser quality statistics. <p>➤ Planned development</p> <ul style="list-style-type: none"> ○ National statistical standards, based on international standards, should be made developed by SSL for individual sector concepts, definitions and classifications and methods. ○ Mechanisms for promoting awareness of, familiarity with, and compliance by sectors with the standards and methods should be developed.
<p>Data sharing, exchange and interoperability, including open government data</p>	<p>Data sharing</p> <p>➤ G2G</p> <ul style="list-style-type: none"> ○ G2G data sharing, such as national ID, is gradually becoming more mainstream and some MDAs have developed bilateral interoperability processes, such as the interface between MoF's IFMIS (which runs on the Freebalance platform) and CS-DRMS (Commonwealth Debt Recording and Management System). ○ Acknowledging its vital role and accumulating requests from other MDAs, NCRA seeks to establish a platform for

ID interoperability. The legal framework has already been established, but the lack of funding (both for CAPEX and OPEX of the platform) is impeding any progress.

Open Government Data

➤ Achievements²¹³

- In 2008, Sierra Leone established the Open Government Initiative (OGI), followed by the adoption of the Right to Access Information Act in 2013 and the joining of the Open Government Partnership (OGP) in 2014.
- The OGI, out of the Office of the Presidency, led the crafting of the open government commitments of the most recent OGP National Action Plan, with support from the World Bank.
- Passing a robust and proactive Archives and Records Management Bill and establishing an Open Data Portal (opendata.gov.sl) provide further justification for a full-fledged Open Data Initiative.
- Visible political leadership on open data and open government
- Establishing a cross-agency Open Data Council, which provides a space for coordination on open data.
- The Right to Access Information Act provides an important basis for open data, and it is encouraging that the Government has already drafted legislation on Data Protection and Archives and Records Management.

➤ Challenges²¹⁴

- The institutionalization and sustainability of such an initiative is significantly challenged by limited resources, ICT infrastructure, data and ICT literacy, and a critical lack of records management.
- Slow progress on implementation of the access to information legislation questions whether there is sufficient capacity and political will for an open data initiative to succeed. The Government is aware of this, and there is a growing consensus that data management, disclosure and record keeping must be strengthened as vital assets for the development of the country.
- Broader representation in terms of both data suppliers and data users, including government and on-government members should be reflected in the Open Data Council.

²¹³ Open Data Readiness Assessment.pdf

²¹⁴ Open Data Readiness Assessment.pdf

Data security	<ul style="list-style-type: none"> ➤ On June 23, 2021, the Parliament of Sierra Leone passed the Cyber Security and Crime Bill into law. The Act was enacted by the President of Sierra Leone in November 2021. <ul style="list-style-type: none"> ○ The act provides prevention on the abusive use of computers and a timely and effective collection of electronic evidence for investigation and prosecution of cybercrime. It will also protect critical national information infrastructure, promote cybersecurity, protect computer programs, intellectual property and privacy rights. ○ The Cyber Security and Crime Act 2021 was developed to align with the Budapest Convention on Cybercrime with Sierra Leone's intent to join the convention in the future. The Bill was drafted with the support of the ECOWAS Commission, European Union and the Council of Europe.²¹⁵ ○ The bill establishes National Cybersecurity Coordination Centre (NC3), which is headed by National Cyber Security Coordinator.²¹⁶ <ul style="list-style-type: none"> ▪ National Cybersecurity Advisory Council: provide strategic leadership and oversight guidance on the implementation and development of a national cybersecurity legal framework and to make recommendations to the Government on issues relating to the prevention and combating of cybercrime and the promotion of cybersecurity in Sierra Leone. ▪ Capacity building and collaboration program: By organising training sessions for the Police and Law Enforcement agencies, the centre has facilitated knowledge transfer and shared best practices in cybersecurity and cybercrime investigation. ➤ The Government is working on a draft Data Protection Act.
Data privacy (and ethics)	No specific data privacy legislation has been adopted.
National data infrastructure	<ul style="list-style-type: none"> ➤ Achievements <ul style="list-style-type: none"> ○ ACE cable landing station in 2011

²¹⁵ <https://www.coe.int/en/web/octopus/-/sierra-leone>

²¹⁶ <https://www.ilraj.org/publications/sierra-leones-cybersecurity-odyssey-progress-challenges-and-future-paths/>

	<ul style="list-style-type: none"> ○ National Fiber Terrestrial Backbone and the ECOWAS regional backbone infrastructure (ECOWAN) ○ Internet Exchange Point (IXP) 2010 <ul style="list-style-type: none"> ▪ allows ISPs to exchange data traffic locally rather than over international links ➤ Challenges²¹⁷ <ul style="list-style-type: none"> ○ Limited infrastructure sharing <ul style="list-style-type: none"> ▪ Standard internal network infrastructure is needed. Many government bodies host their own sectoral servers and data centers, with different levels of specifications, and some do not meet minimum requirements. ○ Lack of interconnected platforms ○ Lack of basic utilities (i.e. electricity) ○ Low purchasing power of the population ○ Limited institutional coordination and lack of harmonisation in the ICT sector ➤ Planned development <ul style="list-style-type: none"> ○ Develop and implement a national master plan for robust and reliable digital infrastructure ○ Ensure predictable investment-enabling regulation with a clear execution strategy ○ Improve the universal access to digital services focusing on areas unserved and underserved by digital services ○ Promote measures that increase the affordability of devices and services ○ Reduce the environmental impact of digital development
<p>Linking data governance to digital identity</p>	<ul style="list-style-type: none"> ➤ Achievements <ul style="list-style-type: none"> ○ Nearly 80% of the Sierra Leonean population has a verified digital and biometric record with the National Civil Registration Authority (NCRA). However, the level of digitalization of identity remains low. ○ National Civil Registration Act 2016 <ul style="list-style-type: none"> ▪ Gives the authority to the National Civil Registration Authority to perform integrated civil registration. ▪ This national registry will serve as a platform for a national digital identification roll out in Sierra Leone for all citizens. Entities and assets including businesses, vehicles, land, and more will be

²¹⁷ National-Digital-Development-Strategy-2022-01-10.pdf

digitized and linked to the digital identities of individuals and organizations in a systematic and secure manner allowing for a well integrated civic, cultural and economic wellbeing.

- E-ID pilot project 2019
 - The National Digital Identity Platform (NDIP), leveraged blockchain technology and focused on providing access to IDs to facilitate financial inclusion through digital credit registry for E-KYC. However, the rollout stopped shortly after, and there is no plan for restarting the project at this time.²¹⁸
- Challenges
 - Disparate institutions in Sierra Leone collect personal data of citizens with and without a legal mandate.
 - Manual and paper-based data collection systems which are not integrated.
 - Data standards are individually set.
 - Where there are changes in the citizens' data, citizens have the onus to update their records in each database.
 - The financial burden, not to mention the time for citizens due to this inefficiency, is significant.

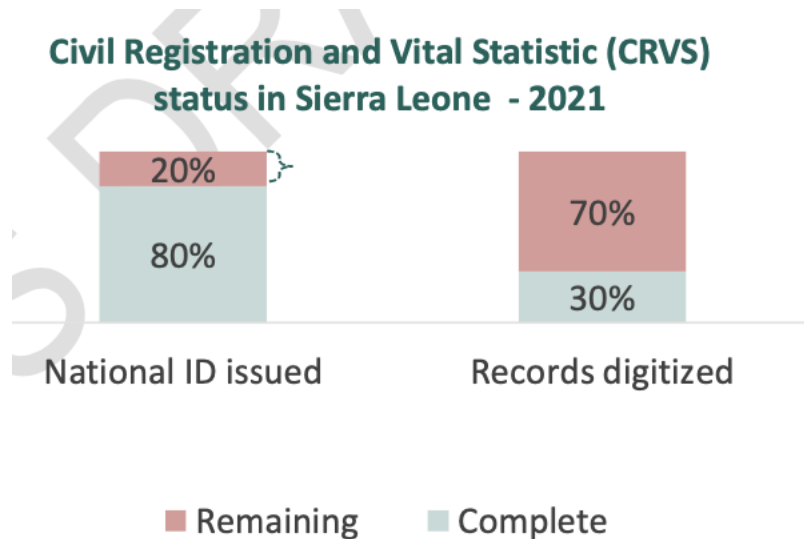


Table 52: Pillar-Element Mapping Matrix of Cambodia's Current Data Governance Framework

²¹⁸ National-Digital-Development-Strategy-2022-01-10.pdf


Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	<p>National Strategy for the Development of Statistics (NSDS) 2016-2020</p> <p>Digital health strategy in 2019</p>	<p>Archives and Records Management Bill</p> <p>Right to Access Information Act, 2013</p> <p>OGP National Action Plan</p>	<p>National Cyber security and data protection strategy</p> <p>Cyber Security and Crime Bill</p> <p>Draft Data Protection Act</p>		<p>National Digital Development Policy & Strategy 2021</p> <p>National ICT Policy 2017</p> <p>National ICT Policy 2009</p> <p>National Telecommunications Act (2006)</p>	<p>National Civil Registration Act 2016</p>
Institutions	<p>Statistics Sierra Leone</p>	<p>Cross-agency coordination: Open Data Council</p> <p>Open Government Initiative: a State House body set up in 2008 and whose main objective is to enhance transparency, accountability and the free-flow of information in governance.</p> <p>Right to Access Information Commission</p> <p>Ministry of Information and Communications</p>	<p>National Cybersecurity Coordination Centre (NC3)</p> <p>Cyber Unit at the Criminal Investigation Department in Sierra Leone Police</p>		<p>Ministry of IC</p> <p>The Regulatory Authority, NATCOM</p> <p>The National ICT Task Force</p>	<p>Leadership: National Civil Registration Authority (NCRA)</p>
People	<p>Statistician General</p>	<p>Director of the Open Government Initiative</p>	<p>Leadership: National Cyber Security Coordinator</p>		<p>Leadership: Minister of IC</p>	

Processes	<p>SSL always applies international concepts definitions and classifications for the statistics it produces. A majority of the MDAs apply international concepts definitions and classifications for the statistics they produce.</p> <p>Digital health strategy in 2019 prioritises development of standards, SOPs, guides, and architecture design.</p> <p>Goals set in National Innovation and Digital Strategy: establish standards for data collection, storing, and sharing (2023)</p>	<p>G2G data sharing, such as national ID, is gradually becoming more mainstream and some MDAs have developed bilateral interoperability processes</p> <p>Open Government Initiative (OGI)</p> <p>Open Data Portal (opendata.gov.sl)</p>	<p>The Global Cyber Security Capacity Centre (GCSCC), in partnership with the Ministry of Information & Communications of Sierra Leone, helped conduct a national cybersecurity capacity assessment using the Cybersecurity Capacity Maturity Model for Nations (CMM) in 2016</p> <p>Capacity building and collaboration program: By organising training sessions for the Police and Law Enforcement agencies, the centre has facilitated knowledge transfer and shared best practices in cybersecurity and cybercrime investigation.</p>		<p>ACE cable landing station in 2011</p> <p>National Fiber Terrestrial Backbone and the ECOWAS regional backbone infrastructure (ECOWAN)</p> <p>Internet Exchange Point (IXP) 2010 allows ISPs to exchange data traffic locally rather than over international links</p> <p>World Bank funded digital transformation project</p> <p>Goals set in the National Innovation and Digital Strategy: Establish digital tools and infrastructure for securely managing and sharing of confidential citizen data using state-of-the-art cybersecurity methods (2025)</p>	<p>E-ID pilot project 2019: The National Digital Identity Platform (NDIP), leveraged blockchain technology and focused on providing access to IDs to facilitate financial inclusion through digital credit registry for E- KYC. However, the rollout stopped shortly after, and there is no plan for restarting the project at this time.</p>

Based on the mapping of pillars and elements, Table 53 visualises the mapping and the comparisons between different cells in the matrix. Policy-wise, Sierra Leone, though with two overarching documents to lead national digital development: National Digital Development Strategy 2021 and National Digital Development Policy, currently does not have a comprehensive data governance framework. It has comparably more policies established in national data infrastructure, data security, and open government data. Data standards, classification, identity, and especially data privacy remain underdeveloped, without data protection legislations in place. Institution-wise, general organisational structure and responsibility distribution can be identified in the policies, engaging multiple stakeholders. However, with many commissions, councils, and units being established, it is important to refine a coordination system. When it comes to people, leadership is more difficult to locate, as well as data focal points in MDAs (Ministries, Departments, Agencies). Process-wise, multiple actions have been taken. Considerable achievements include an Open Data Portal, partnerships in conducting cybersecurity assessments, Internet Exchange Point and E-ID pilot project. Overall, what is needed is a more coordinated and sustained approach in actual policy implementation.

Table 53: The Pillar-Element Mapping Matrix for Sierra Leone

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	Some evidence	Strong evidence	Strong evidence	No evidence	Strong evidence	Limited evidence
Institutions	Limited evidence	Strong evidence	Strong evidence	No evidence	Strong evidence	Limited evidence
People	Limited evidence	Limited evidence	Limited evidence	No evidence	No evidence	No evidence
Processes	Limited evidence	Strong evidence	Strong evidence	No evidence	Strong evidence	Limited evidence

 Strong evidence
  Some evidence
  Limited evidence
  No evidence

SWOT Analysis of Sierra Leone's Data Governance Framework

A SWOT analysis (Table 54) is presented below.

Table 54: SWOT Analysis of Sierra Leone's Data Governance Framework

	Positive	Negative

Internal factors	Strengths	Weaknesses
	<ul style="list-style-type: none"> • Clear definition and understanding of data governance, with clear vision and objectives set. • Emphasis on a whole-of-government approach and coordination in digital governance. • Visible political leadership and institutional framework in digital development. • Detailed situation analysis in the national strategies. • Identification of good practices from other countries in the national strategy. • Ambition to take global leadership in the design and implementation of these hybrid systems using state-of-the-art technologies (virtual instances, computation on the edge, mixed reality, quantum computing, etc.) in collaboration with both established global companies and regional start-ups. 	<ul style="list-style-type: none"> • Limited capacity in the operationalisation of the objectives. <ul style="list-style-type: none"> ○ Delay in policy delivery due to long consultations. ○ Limited obeyance of standards. ○ Needs to strengthen the evaluation and monitoring of policies. • Lack of functional coordinated actions at sectoral and national levels for data governance. • Absence of data management leaders <ul style="list-style-type: none"> ○ No Chief Information Officer responsible for the information technology and computer systems at government level or cross-agency level. ○ Data management focal points in MDAs are difficult to locate. • Lack of legislation for data protection and privacy. • Limited digital literacy and engagement by relevant players. • Lack of awareness among the populace on data privacy, security, and open data. <ul style="list-style-type: none"> ○ Most citizens are unaware of the existence of the Right to Access Information Act, let alone all the rights that come attached to it.²¹⁹ ○ Weak cybersecurity education and awareness in citizens.
External factors	Opportunities	Threats
	<ul style="list-style-type: none"> • International capacity-building support such as from Global Cybersecurity Capacity Centre (GSCCC), ITU, and Foreign and Commonwealth Office. 	<ul style="list-style-type: none"> • Lack of funding. • Lack of basic utilities (i.e. electricity). • Low purchasing power of the population.

²¹⁹ <https://www.developlocal.org/perspectives-on-open-data-sierra-leone/>

	<ul style="list-style-type: none"> • Various African countries and regional institutions, including the African Union, the Economic Community of West African States, and the Mano River Union, have formulated policies on ICT, e-governance, and digitization, informing policy development in Sierra Leone.²²⁰ • Collaboration with both established global companies and regional start-ups. 	<ul style="list-style-type: none"> • Vulnerability to cyber-attacks.
--	---	---

Conclusion

To summarise, Sierra Leone's Gov has emphasised a whole-of-government approach in digital development. In the two leading national policy and strategy, it has conducted well-rounded situation analysis of digital governance in general and data governance in specific. With clear strategic objectives set, GovSL has acute awareness of the status quo and distinct vision of the way forward. The challenge, however, lies in the operationalisation of the strategies. There is still a big gap in ridding itself of siloed sectoral approaches towards a coordinated outcome, as such in developing data standards, establishing once-only data sharing mechanism,²²¹ building sharing infrastructure, etc. Limited resources, ICT infrastructure, data and ICT literacy, and a critical lack of records management are hindering further progress.

To deal with this, Sierra Leone should prioritise developing a comprehensive data governance framework, either separately or integrated into the National Digital Transformation roadmap & Policy in progress. It can build on the chapter of data governance mentioned in the National Policy 2021. At the same time, it should continue to leverage international support and public-private partnerships to advance the goals set.

Tanzania

Introduction

According to 2022 E-Government Survey, United Republic of Tanzania ranked 153/193 with an EGDI of 0.4169, above region average and categorized in M3 rating class.²²² Despite being an

²²⁰ Sierra-Leone-National-Innovation-and-Digital-Strategy.pdf

²²¹ For example, see EU's practice in once-only principle: https://commission.europa.eu/news/once-only-principle-system-breakthrough-eus-digital-single-market-2020-11-05_en

²²² To gain better insight into the situation of subgroups of countries with similar levels of performance within their respective EGDI groups, each EGDI group is further divided into four equally defined rating classes, or quartiles. VH, V3, V2 and V1 for the very high group; HV, H3, H2 and H1 for the high group; MH, M3, M2 and M1 for the middle group; and IM, I3, I2 and I1 for the low group.

LMIC²²³ LDC²²⁴ with limited infrastructure, Tanzania—with OSI values of 0.4700—offers online services at levels that are above the average.

Figure 41 Tanzania EGDI 2022²²⁵



In terms of Open Government Data Index (OGDI), Tanzania has made considerable progress moving from Middle to High OGDI group in 2022.

Table 55 Tanzania's OGDI 2020-2022²²⁶

	OGDI Group	OGDI
2022	High OGDI	0.5521
2020	Middle OGDI	0.7983

It was identified that such success derives in part from the fact that it has comprehensive digital government strategies supported by forward-looking digital government plans aligned with the

²²³ <https://blogs.worldbank.org/africacan/what-does-tanzanias-move-lower-middle-income-status-mean>

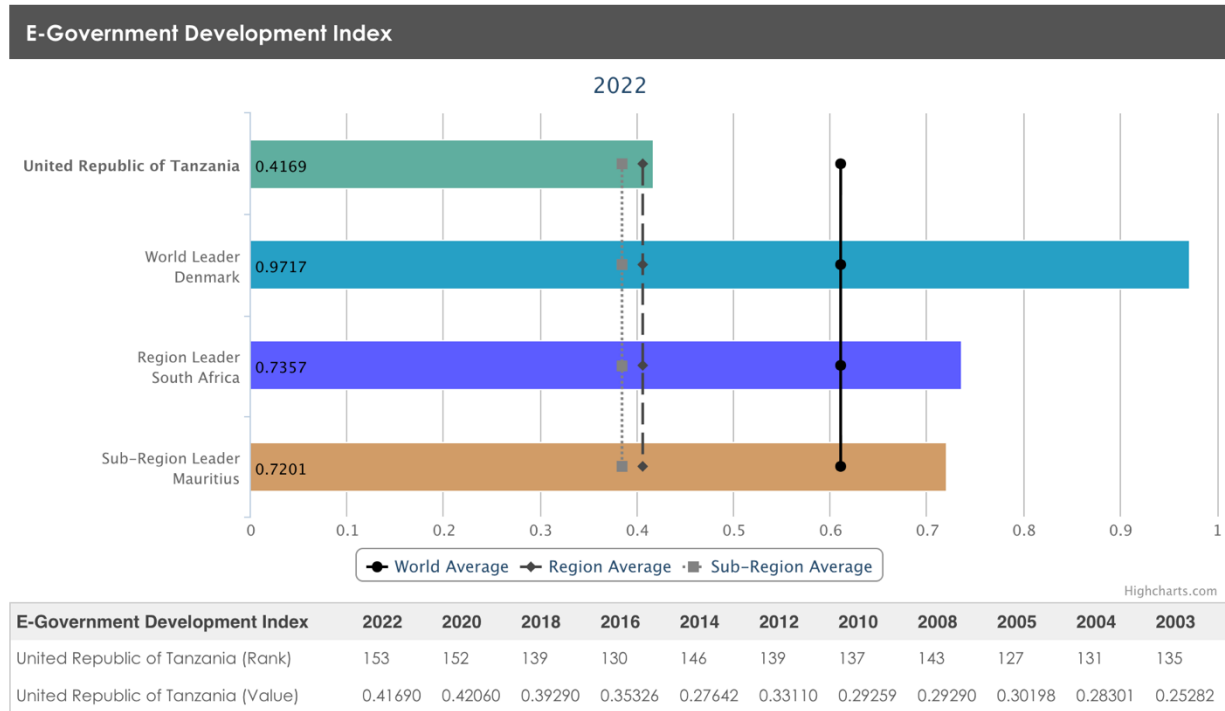
²²⁴ https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf

²²⁵ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/183-United-Republic-of-Tanzania/dataYear/2022>

²²⁶ United Nations 2022, UN E-Government Survey 2022: The Future of Digital Government, p.168.; United Nations, 2020, UN E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, p.321.

national policies and the Sustainable Development Goals.²²⁷ However, further efforts are still needed as Tanzania's EGDI is still much below world average.

Figure 42 Tanzania's EGDI 2003-2022²²⁸



ICT development has accelerated rapidly in Tanzania since 1994, when the sector began liberalising. The catalysts were the Communication Act of 1993 and the National Telecommunication Policy 1997, which provided the framework for sector reforms and private sector engagement.

A milestone in the liberalisation agenda was reached with the enactment of the Tanzania Communication Regulatory Authority Act of 2003 (TCRA Act) and the establishment of the Tanzania Communication Regulatory Authority (TCRA) in 2003 as an independent regulator for the postal, broadcast and communication industries.²²⁹

In 2019, the United Republic of Tanzania established the e-Government Authority with a mandate to coordinate, promote and enforce e-Government policies in order to facilitate public access to digital services. The country requires that online services provision be tracked and measured so that the progress and impact of e-government development can be assessed, and every public institution collects statistics on the usage of e-government services through their respective websites or portals. The United Republic of Tanzania embraces a public-private partnership

²²⁷ United Nations, 2020, UN E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, p. 45.




²²⁸ <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/183-United-Republic-of-Tanzania/dataYear/2022>

²²⁹ <https://bowmanslaw.com/insights/overview-of-data-infrastructure-in-east-africa-tanzania/>

approach to e-government implementation and works closely with private sector and regional institutions on the adoption of new technologies.²³⁰

Currently, Tanzania is yet to implement a comprehensive nationwide framework or blueprint to guide its digitalisation drive, although there are ongoing efforts to draft and finalise a national digital transformation guideline. In the meantime, the digital policy landscape has been steered by the Tanzania Development Vision 2025, which is influenced by the commitments made in the ruling party's election manifesto. Vision 2025 aims to transform the country into a semi-industrialised economy, with digital and ICT identified as main inputs for socio-economic development. In the last two decades, Vision 2025 has been supported by FYDP I, II and III. The government uses these development plans to outline its investments and policy priorities to transform the structure of the economy.

Figure 43 Tanzania's Digitalisation Journey: Policies and Regulations 2003-2022²³¹

Examples of supporting policies and regulations		
 Existing policies/regulations	 Policies/regulations under review or being drafted	 Policies not in place or requiring updates
<ul style="list-style-type: none"> – National ICT Policy of 2016 – The e-Government Act 2019 – The Cybercrimes Act 2015 – The Electronic Transactions Act 2015 – The Electronic and Postal Communications (Online Content) (Amendment) Regulation 2022 – Digital Health Strategy 2019-2024 	<ul style="list-style-type: none"> – National ICT Policy (review) – Digital Economy Framework – Digital Transformation Guideline – Personal Data Protection Act – Start-up Policy – National Innovation Framework 	<ul style="list-style-type: none"> – Pro-competition regulation for digital markets e.g. e-commerce framework – Digital literacy and smart phone strategy – AI strategy – Regulatory Sandbox Framework – Sector-specific digital strategies

Summary of Four Pillars

Table 56 summarizes Tanzania's current data governance framework in relation to the four pillars.

- i) Policy: develop action agendas, regulations and laws, priority actions, key messaging.

²³⁰ United Nations, 2020, UN E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, p. 45.

²³¹ GSMA, 2023, Tanzania's Digital Journey: Opportunities for value creation

- j) Institutions: assign and establish responsible government departments within the existing institutional framework. Develop digital enterprise architecture.
- k) People: assign persons responsible for data governance within government institutions. Map stakeholders within the data ecosystem.
- l) Processes: design effective processes for the implementation, financing, leadership, and management of data systems.

Table 56 Four Pillars of Tanzania's Data Governance Framework

Pillar	Overview
Policy	<p>Numerous laws, policies, strategies, and convention on ICT governance, e-government, and data governance were released in Tanzania.</p> <p>Legislation</p> <ul style="list-style-type: none"> ➤ The Electronic and Postal Communications Act (EPOCA) 2010 <ul style="list-style-type: none"> ○ Under section 98, the Act protects data by imposing the duty of confidentiality on licensees of network services or their agents who may encounter personal information of the customers. ○ Section 120 of the Act prohibits unlawful interception of communication of any person. ➤ The Cybercrimes Act, 2015 <ul style="list-style-type: none"> ○ Criminalizes and penalizes a number of cyber activities such as data espionage, publication of child pornography, publication of pornography, publication of false, deceptive, misleading or inaccurate information, production and dissemination of racist and xenophobic material, initiating transmission of or re-transmission of unsolicited messages and violation of intellectual property rights and other types of cybercrimes. ➤ The Electronic Transactions Act, 2015 <ul style="list-style-type: none"> ○ Provides for the protection of electronic transactions in the country. ➤ The Electronic and Postal Communications (Consumer Protection) Regulations, 2018 <ul style="list-style-type: none"> ○ Aimed at protecting consumers' data in dealings with service providers. ➤ eGovernment Act of 2019 <ul style="list-style-type: none"> ○ Laid the foundation for ICT governance and management across various MDAs and LGAs, Regional Secretariats (RS), and Local Government Authorities (LGAs). ➤ The Electronic and Postal Communications (Online Content) Regulations, 2020

	<ul style="list-style-type: none"> ○ Aimed at regulating online content service providers, internet service providers, application services licensees and online content users. ○ Under regulation 16, the law prohibits publication of content which infringes personal privacy and integrity under regulation. ➤ The Electronic and Postal Communications (SIM Card Registration) Regulations, 2020 <ul style="list-style-type: none"> ○ Provide for SIM cards registration by use of biometric data, focused on prohibition of biometric information. ➤ Personal Data Protection Act (PDPA) 2023 <ul style="list-style-type: none"> ○ Provide for principles of protection of personal data so as to establish minimum requirements for the collection and processing of personal data; to provide for establishment of Personal Data Protection Commission; to provide for improvement of protection of personal data processed by public and private bodies; and to provide for matters connected therewith.²³² <p>Strategy</p> <ul style="list-style-type: none"> ➤ Government Cybersecurity Strategy 2022 <ul style="list-style-type: none"> ○ Five objectives: <ul style="list-style-type: none"> ▪ Research and Development in Cyber security Technologies improved ▪ Government ICT Infrastructure and e-Services Protection Enhanced ▪ Cyber Security and Resilience of ICT systems Strengthened ▪ Cyber security Skills, Knowledge and Awareness improved ▪ Management of Cyber security risks and incidents enhanced ➤ Tanzania e-Government strategy 2022-2037 <ul style="list-style-type: none"> ○ Envisions a digital government that is more interconnected, integrated, and coordinated for the efficient delivery of public services.²³³ ➤ Tanzania Development Vision 2025 <ul style="list-style-type: none"> ○ Recognizes that ICT is central to a competitive social and economic transformation.
--	--

²³² <https://oagmis.agctz.go.tz/portal/acts/237#:~:text=An%20Act%20to%20provide%20for,processed%20by%20public%20and%20private>

²³³ <https://www.utumishi.go.tz/uploads/documents/sw-1688121445-Tanzania%20e-Government%20Strategy%202022.pdf>

	<ul style="list-style-type: none"> ➤ Digital Economy Strategic Framework <ul style="list-style-type: none"> ○ A paradigm shift that outlines how Tanzania harnesses the power of digital technologies to boost economic growth, create jobs, and improve the livelihoods of its citizens and residents. <p>Policy</p> <ul style="list-style-type: none"> ➤ National Telecommunications Policy 1997 ➤ National ICT Policy 2003 <ul style="list-style-type: none"> ○ Essentially, the policy aimed to streamline and effectively utilize ICT as a tool for national development and progress. ➤ National Postal Policy 2003 ➤ National ICT Policy 2016 <ul style="list-style-type: none"> ○ NICTP-2016 focus was to accelerate socio-economic development, aiming to transform Tanzania into an ICT-driven middle-income economy and an information society. ➤ National ICT Policy 2024 <ul style="list-style-type: none"> ○ Outlines a distinct vision for an advanced digital economy, emphasizing various key components including the development of strong digital infrastructure, improving data governance, and facilitating information sharing. ○ Data governance is highlighted with the policy objective to enforce the use of standards and guidelines for management of electronic data. ○ A key component of the monitoring and evaluation NICTP-2024 framework includes periodic reviews, ensuring that it remains aligned with overall governmental goals and responsive to the continuously evolving technological landscape. <p>Convention</p> <ul style="list-style-type: none"> ➤ African Union Convention on Cyber Security and Personal Data Protection 2014
Institutions	<p>Key institutions include:</p> <ul style="list-style-type: none"> ➤ Ministry responsible for ICT; ➤ Sector Ministries; ➤ Regional Administration and Local Government; ➤ The Judiciary; ➤ Private Sector; ➤ Civil Society Organizations (CSO); ➤ Education and Research Institutions; ➤ Regional and International Organizations. <p>However, management of data is fragmented across sectors.</p> <ul style="list-style-type: none"> ➤ E-government Institutions

	<ul style="list-style-type: none"> ○ E-Government Authority: Coordination, promotion and oversight of e-Government implementation. ➤ The Ministry of Information, Communication, and Information Technology (MICIT) <ul style="list-style-type: none"> ○ Formulate and monitor implementation of policies on information and communication technologies and Postal services. It is envisaged to lead the digital transformation agenda in Tanzania. ○ The Tanzania Communications Regulatory Authority (TCRA) <ul style="list-style-type: none"> ▪ Mandated to regulate the electronic and postal communications sector in Tanzania. ▪ Content Committee <ul style="list-style-type: none"> • Regarding data governance, the Committee is responsible for handling consumer complaints which may include data or privacy infringement committed by content service providers or any other actors.²³⁴ ○ The Information and Communication Technologies Commission (ICTC) <ul style="list-style-type: none"> ▪ Provide advice, strategic planning, implementation, and investment in ICT, Monitor, and coordinate National ICT initiatives, and provide foresight on trends and opportunities for ICT uptake for the nation's socio-economic development. ○ Tanzania Telecommunications Corporation (TTC) <ul style="list-style-type: none"> ▪ Manages and operates the National ICT Broadband Backbone (NICTBB) on behalf of the MICIT ○ Tanzania Posts Corporation (TPC) <ul style="list-style-type: none"> ▪ National postal operator's role is to provide mail, parcel, and courier logistics and promote e-commerce services. ○ Universal Communications Service Access Fund (UCSAF) <ul style="list-style-type: none"> ▪ Tasked to promote inclusive access to telecommunications services. ➤ Others <ul style="list-style-type: none"> ○ The Tanzania Police Force <ul style="list-style-type: none"> ▪ Deal with cybercrimes. ○ The Judiciary
--	--

	<ul style="list-style-type: none"> ▪ Responsible for interpreting all laws and administering justice in the ICT environment.
People	<p>Three levels of leadership:</p> <ul style="list-style-type: none"> ➤ Political leadership to champion ICT transformation process at national and local government level ➤ Senior administrative leadership including Chief Information Officers (CIOs) ➤ Managerial officials to spearhead policy implementation at institutional level and technical leadership. <p>Detailed current stakeholders are listed below:</p> <ul style="list-style-type: none"> ➤ Leadership <ul style="list-style-type: none"> ○ The Permanent Secretary of the Ministry responsible for ICT; ○ Minister of State, Public Service Management and Good Governance oversees e-Government policy. ○ In each public institution there is an ICT Management Unit responsible for implementation of e-Government initiative at institutional level. ○ On e-Government coordination, the e-Government Act 2019 has established the following three committees: National e-Government Steering Committee responsible for decision on e-Government policy matters; the e-Government Technical Committee responsible for e-Government technical matters; and Institutional e-Government Steering Committee responsible for Institutional related e-Government decision.
Processes	<p>Public-private partnerships</p> <ul style="list-style-type: none"> ➤ Efforts were deployed to create a conducive environment for PPP to operate, by developing the national PPP Policy 2010, Legislation and Regulations to support ICT development. <p>Strategic ICT leadership & human capital development</p> <ul style="list-style-type: none"> ➤ Training sessions were conducted for over 1,345 participants, which included leaders, managers, and senior technical officers from several sectors. ➤ In addition, a diverse group of political leaders and senior executives took part in multiple workshops and discussions, which were focused on advancing the country's agenda for digital transformation.²³⁵ <p>E-government establishment</p> <ul style="list-style-type: none"> ➤ An effective and efficient institutional eGovernment framework; ➤ Successful provision of various e-Government trainings;

²³⁵ Tanzania National ICT Policy 2024

	<ul style="list-style-type: none"> ➤ Construction of the e-Government Infrastructure, including the Government Network and Data-centre; ➤ Establishment of shared Government-wide operations support systems; ➤ Launch of Government e-Services flagship projects; and launching of Government e-Services flagship projects; ➤ Promoting Citizens literacy and awareness on e-Government. <p>Rapid data collection and digitisation initiatives</p> <ul style="list-style-type: none"> ➤ Digital Tanzania²³⁶ <ul style="list-style-type: none"> ○ A multi-stakeholder project to increase access to affordable, high quality internet services for government, businesses and citizens and to improve the government's capacity to deliver digital public services. ➤ The Data Use Partnership (DUP) <ul style="list-style-type: none"> ○ A Tanzanian Government-led initiative that is improving the national health care system through better digital health systems and the use of health information.²³⁷ ➤ Digital identity (digital ID), biometric voters' cards, and SIM card registration <ul style="list-style-type: none"> ○ In 2014, Tanzania expanded its nationwide programme of issuing biometric National Identity Cards to its citizens and residents. ○ In 2015, the country introduced a Biometric Voter Registration System in preparation for the 2015 constitutional referendum, with a target of registering at least 20 million voters.²³⁸ ○ In March 2018, Tanzania's communications regulator, Tanzania Communications Regulatory Authority (TRCA), in collaboration with the National Identification Authority, commenced a 30-day pilot project for biometric registration of customers of all telecommunication service providers. According to the TCRA, the provision of fingerprints would establish proof of identity, seal existing loopholes, and prevent criminal activities such as fraud, verbal abuse and threats, and collect correct subscription statistics from the telecom sector. After what the government claimed was a successful pilot, the exercise was rolled out nationwide.
--	---

²³⁶ <https://dtp.mawasiliano.go.tz/home>

²³⁷ Data Use Partnerships: The Journey to better data for better health in Tanzania, https://media.path.org/documents/PATH_DUP_CommsOverview_Governance_R1.pdf?_gl=1*z7noxw*_gcl_au*NjkzNDc0NzYzLjE3MDIzNzA4NzQ.*_ga*MTA0NjAzNDE3NS4xNzAyMzcxODc1*_ga_YBSE7ZKDQM*MTcwMjM3MDg3NC4xLjAuMTcwMjM3MDg3NC42MC4wLjA

²³⁸ CIPESA, 2022, Governance Regulation in Tanzania: Gaps, Challenges, and Opportunities, p.4.

Pillar-Element Mapping Matrix and Mapping of Six Elements

Table 57: Six Elements of Tanzania's Data Governance Framework

Element	Summary
Data standards & classification	<p>Considerable efforts have been made in this field.</p> <ul style="list-style-type: none"> ➤ E-government Act 2019 <ul style="list-style-type: none"> ○ Section 49 of the Act requires e-Government Authority to issue technical standards and guidelines to be complied by public institution in the case of creation, capturing, storing, maintenance disposal, access and sharing of electronic data. ➤ Data Quality Assessment Framework <ul style="list-style-type: none"> ○ Assist the users of official statistics to check that the quality standards of the agencies and processes are being met. Different dimensions include: relevance; accuracy; integrity; methodological soundness; timeliness; accessibility; and serviceability ➤ On the E-gov Authority portal, there is a section dedicated to 'standards and guidelines', which: <ul style="list-style-type: none"> ○ provide technical standards and guidelines on how to implement e-gov initiatives. ○ include government domain naming standards, government email naming standards, data entry verification self-audit checklist. ➤ On the National Bureau of Statistics (NBS) portal, there is a section dedicated to 'Standards', which includes a series of standards on: <ul style="list-style-type: none"> ○ Economic Statistics Manuals, Standards & Classifications ○ System of National Accounts (SNA) ○ International Standard Industrial Classification (ISIC) ○ Central Product Classification (CPC) ○ Government Finance Statistics Manual (GFS) ○ Balance of Payments Manual (BPM) ○ Fundamental Principles of Statistics ○ Labour Statistics Classifications ○ Statistical Guidelines ○ Framework for the Development of Environment Statistics (FDES 2013)
Data sharing, exchange and interoperability,	<p>Data sharing and exchange platform:</p> <ul style="list-style-type: none"> ➤ Government Enterprise Service Bus-GOVESB to facilitate efficient data sharing and exchange in the Public Service.

<p>including open government data</p>	<p>Data sharing guidelines:</p> <ul style="list-style-type: none"> ➤ e-Government Act, 2019 and its General Regulations <ul style="list-style-type: none"> ○ Emphasizes for a need to create primary data once and share it among Public Institutions that require them for effective e-services delivery. ➤ Electronic Data Sharing and Exchange Guidelines 2021 <ul style="list-style-type: none"> ○ Written to assist public institutions to share and exchange data efficiently and securely. ➤ Criteria for Data Sharing and Exchange through Government Enterprise Service Bus (GovESB) 2022 <p>Open data platform:</p> <ul style="list-style-type: none"> ➤ Enhanced General Data Dissemination System (e-GDDS)- OpenData for the National Bureau of Statistics, Tanzania <ul style="list-style-type: none"> ○ E-GDDS is implemented through the Open Data Platform (ODP) and the National Summary Data Page (NSDP). ○ The Enhanced General Data Dissemination System enable Tanzania to improve data dissemination practice, enhance transparency, timeliness and facilitate evidence based policy decisions. Dissemination of macroeconomic and socio-economic data through the NSDP provide easy access to information and act as a one stop centre for National and International data users.
<p>Data security</p>	<p>Laws, strategies, and institutions are established to regulate and protect data security.</p> <p>Law</p> <ul style="list-style-type: none"> ➤ The Cybercrimes Act, 2015 <ul style="list-style-type: none"> ○ Provides for offences related to violations of privacy against or using a computer system located in Tanzania. ➤ The Personal Data Protection Act 2023 <ul style="list-style-type: none"> ○ Regulates how public and private organizations collect, store, use, and share personal data. It protects personal data from collection, processing, storage, and disposal. The Act also specifies data protection rules for direct marketing, cross-border data transfers, and employment. <p>Strategy</p> <ul style="list-style-type: none"> ➤ Government Cybersecurity Strategy 2022 <ul style="list-style-type: none"> ○ Transition the Government from the current institutionalized silo-based cyber environment into collaborated secured cyber environment that promotes efficient and effective delivery of public services. ○ The Government of Tanzania intends to roll out cyber security awareness campaigns and encourage public

	<p>institutions to adopt cyber security best practices; invest in developing Government cyber security professionals; strengthen support for innovation in cyber security; and assist individuals in pursuing a career in cyber security and digital forensics in order for it to adapt to the rapidly evolving cyber services landscape.</p> <p>Institutions</p> <ul style="list-style-type: none"> ➤ Tanzania Police Force Cyber Crimes Unit specialises in cybercrimes. ➤ Tanzania Computer Emergency Response Team (TZ-CERT): a team with the responsibility of coordinating response to cyber security incidents at the national level and cooperate with regional and international entities involved with the management of cyber security incidents.
Data privacy (and ethics)	<p>Long-awaited legislation on data privacy.</p> <ul style="list-style-type: none"> ➤ Personal Data Protection Act 2023 <ul style="list-style-type: none"> ○ The Act covers both data protection and privacy standards for public and private institutions. It protects personal data regardless of who processes it. This inclusivity recognizes Article 16 of Tanzania’s Constitution’s right to privacy and personal security. ○ Established the Personal Data Protection Commission (PDPC): tasked with enforcing the provisions of the Act and ensuring the security of everyone’s personal data.²³⁹ ○ Before this Act, there had not yet been a comprehensive legislation on protection of private information or data. Whatever little of data protection legal provisions there were, they were to be found in varying degrees in a number of sector related legislations, especially in the banking, electronic, and telecommunications sectors, as well as penal in statutes.²⁴⁰
National data infrastructure	<ul style="list-style-type: none"> ➤ Six (6) data centres infrastructure which qualify to host mission critical systems namely National Internet Data Centre (NIDC), Government Data Centre (GDC), National Identification Data Centre (NIDC), TiGO Data Centre, VodaCom Data Centre, and Wingu Data Centre. ➤ Ministries, institutions, and sub-national administrations have broadband connection as well as data storage capacity in some form.

²³⁹ <https://medium.com/@deoshayo.phd/unlocking-data-protection-navigating-tanzanias-personal-data-protection-act-in-the-digital-age-592ed334c3be>

²⁴⁰ <https://www.dataguidance.com/notes/tanzania-data-protection-overview>

	<ul style="list-style-type: none"> ➤ The development of a national data center to provide common data storage and computing has been prioritized to replace silo and redundant systems and to reduce costs. ➤ The connection of all ministries, institutions, and missions abroad using the government's own private network has been prioritized. ➤ Development of Data exchange platforms (Government Enterprise Service Bus - GovESB) for electronic data sharing between public and private stakeholders.
Linking data governance to digital identity	<p>Current progress</p> <ul style="list-style-type: none"> ➤ NIDA card is an 80kb nearfield communications (NFC) smart card with contactless technology that can be used as a mobile wallet, and its implementation makes Tanzania one of the two countries in Africa with advanced identification technology. Authentication is mainly through fingerprints.²⁴¹ ➤ Focal Institution: National Identification Authority (NIDA) <p>New development in process</p> <ul style="list-style-type: none"> ➤ Unique Number ID²⁴² <ul style="list-style-type: none"> ○ Change the current state of things in the country where many different IDs are issued for different uses. ○ With the system, a person's profile will have more details than in the current ID, and users will have access to a plethora of digital government and private sector services using just the unique number, he says. There will also be no need for holding a physical card.

Table 58: Pillar-Element Mapping Matrix of Tanzania's Current Data Governance Framework

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	E-government Act 2019 Data Quality Assessment Framework	Electronic Data Sharing and Exchange Guidelines e-Government Act 2019: emphasizes	The Cybercrimes Act, 2015 The Personal Data Protection Act 2023	Personal Data Protection Act 2023	National ICT Policy 2024, 2016, 2003	Personal Data Protection Act 2023

²⁴¹ Centre for Internet and Society (CIS), and Research ICT Africa (RIA), 2021, Digital identity in Tanzania, p.15.

²⁴² <https://www.biometricupdate.com/202307/tanzanian-govt-underlines-importance-of-new-digital-id-system-in-the-offing>

	e-Government Application Architecture- Standards and Technical Guidelines Statistical Guidelines	for a need to create primary data once and share it among Public Institutions that require them for their operations. Criteria for Data Sharing and Exchange through Government Enterprise Service Bus (GovESB)	Government Cybersecurity Strategy 2022			
Institutions	E-gov Authority National Bureau of Statistics (NBS)	E-Government Authority	Tanzania Police Force (TPF) : deals with computer-related crimes	Personal Data Protection Commission: tasked with enforcing the provisions of the Act and ensuring the security of everyone's personal data	Ministry of ICIT	National Identification Authority (NIDA)
People	Leadership: Director General of E-gov Authority Senior administrative leadership: each Public Institution has Director of ICT which report directly to the CEO/DG/Permanent Secretary for Ministry level.	Leadership: Director General of E-gov Authority Senior administrative leadership: each Public Institution has Director of ICT which report directly to the CEO/DG/Permanent Secretary for Ministry level. Data custodian and data requestor	TPF Cybercrimes Unit Tanzania Computer Emergency Response Team (TZ-CERT)	Board of Personal Data Protection Commission: the governing body of the Commission Content Committee: responsible for handling consumer complaints which may include data or privacy infringement committed by content service providers or any other actors.	Leadership: Director General of E-gov Authority; Minister of MICIT; Director General of TCRA Senior administrative leadership: each Public Institution has Director of ICT which report directly to the CEO/DG/Permanent Secretary for Ministry level.	Leadership: Director General of NIDA
Processes	e-GA provides specialized training programmes to Government	Data exchange and sharing platform: GOVESB	Laws, strategies, and institutions are established to regulate and	Publication of a comprehensive data protection act	National Internet Data Centre: A state-of-art tier-3 Data Center that offers multiple	Dissemination of NIDA card

	employees in order to build competences, skills and experiences necessary for the implementation and promotion of e-Government Initiatives	Open data platform: Enhanced General Data Dissemination System (e-GDDS)- Electronic Data Sharing and Exchange Guidelines Subjected to review at least once every three years or whenever necessary changes are needed.	protect data security. E-Gov Authority provides disaster recovery service to ensure that there is efficient recovery of information systems supporting Institutions' main business processes and Operations by establishing guidelines, procedures and key contact information to recover critical Networks, Systems		redundancy scheme to ensure availability and reliability ²⁴³	Development of Unique Number ID
--	--	---	---	--	---	---------------------------------

Based on the mapping of pillars and elements, Table 59 visualizes the mapping and the comparisons between different cells in the matrix. Policy-wise, there are rich policies, especially in data standards & classification, data sharing, data security, and national data infrastructure. However, a more coordinated and overarching policy framework is needed to avoid policy fatigue. Institution-wise, main leadership responsibilities fall on E-GA and MICIT. How they distribute work and how different departments cooperate under their coordination is yet to be found. When it comes to people, while multi-stakeholders and leaderships are usually recognized, more detailed information is hard to find and leadership's effectiveness needs improvement.²⁴⁴ Process-wise, multiple actions have been taken. Considerable achievements have been made in establishing a data sharing platform and an open data platform. National data center is providing critical support to public services. Digital identity roll out is still in progress. An overall coordination on the processes in those six areas need to be strengthened.



Table 59: The Pillar-Element Mapping Matrix for Tanzania

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
-------------------------	---------------------------------	--	---------------	---------------------------	------------------------------	----------------------------

²⁴³ <https://nidc.co.tz/web/about>

²⁴⁴ GSMA, 2023, Tanzania's Digital Journey: Opportunities for value creation, p.55.

Policy	Strong evidence	Some evidence	Some evidence	Limited evidence	Strong evidence	Limited evidence
Institutions	Limited evidence	Limited evidence	Limited evidence	Limited evidence	Limited evidence	Limited evidence
People	Limited evidence	Limited evidence	Limited evidence	Limited evidence	Limited evidence	Limited evidence
Processes	Limited evidence	Strong evidence	Limited evidence	Limited evidence	Strong evidence	Limited evidence

 Strong evidence
  Some evidence
  Limited evidence
  No evidence

SWOT Analysis of Tanzania's Data Governance Framework

A SWOT analysis (Table 60) is presented below.

Table 60: SWOT Analysis of Tanzania's Data Governance Framework

	Positive	Negative
Internal factors	<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Strong political will by the government to put in place a proper policy, legislative and institutional framework for data governance. • Key institutions have been established to lead and coordinate digital transformation. • Rich and forward-looking policy guidance, strategies, acts are in place. • Regular review conducted. • Recent legislative progress in data privacy and data protection. • Digital transformation and data governance recognized and prioritized in the national development plan. • Good performance in Open Government Data. 	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • Tanzania 's 2022 EGDI value is 0.44169, substantially lower than the global average of 0.6201, ranking 153. • Practice of Data transfer outside the Jurisdiction.²⁴⁵ <ul style="list-style-type: none"> ○ The CAG found that NIDA had allowed 41 private companies and 26 public institutions access to the NIDA database without MoUs (referred to as DSAs elsewhere in this document) documentation signed and in place. This means the government could not properly collect revenue or ensure safe and secure

²⁴⁵ <https://ad-abinallah.medium.com/an-introduction-on-data-governance-in-tanzania-8761e223d171>

	<ul style="list-style-type: none"> • Well-established public-private partnerships. • Funding and technical support from regional partners such as the African Union (AU); international partners such as the World Bank. 	<p>access to data by private and public institutions²⁴⁶</p> <ul style="list-style-type: none"> • Lack of a whole-of-government coordination in data governance. <ul style="list-style-type: none"> ○ Lack of comprehensive legal framework for the whole ICT sector in the country. ○ Policy fatigue and administrative burden. ○ Unclear and ineffective inter-institutional work distribution <ul style="list-style-type: none"> ▪ E-GA with MICIT? ▪ Personal Data Protection Commission and Content Committee? ▪ While e-GA collaborates with the MICIT, the oversight role by the Office of the President - Public Service Management and Good Governance (PO-PSMGG) rather than the MICIT might be a deterrent in proper funding and strategising. Top leadership of e-GA may therefore not have a holistic picture in promoting e-government services as part of a wider digital transformation goal. ²⁴⁷ ○ Fragmented sectorial e-government portals. ○ Lack of expertise and budget.
--	--	--

²⁴⁶ Centre for Internet and Society (CIS), and Research ICT Africa (RIA), 2021, Digital identity in Tanzania, p.37.

²⁴⁷ GSMA, 2023, Tanzania's Digital Journey: Opportunities for value creation, p.55.

		<ul style="list-style-type: none"> • Immature performance management systems which make accurate tracking and monitoring of data governance across public sector institutions challenging. • Inadequate Government Data-centre Resources • Limited citizen knowledge on the rights and risks of Data Governance.²⁴⁸ • Internet connectivity is still beyond the reach of most citizens living in rural areas and mobile data is particularly expensive with users in Tanzania paying more compared to other countries in East Africa.²⁴⁹ • Claw-back clauses in several legislations that leave room for information disclosure.²⁵⁰
External factors	Opportunities	Threats
	<ul style="list-style-type: none"> • Existence of ICT sector laws that allow to make e-Government regulations whenever necessary. • Increasing transparency and accountability and balancing online services are fundamental factors for success.²⁵¹ • Develop a whole-of-government data governance framework based on current rich policies and institutions. • Data governance spearheaded in the health sector through Data Use Partnerships could be expanded to other sectors. 	<ul style="list-style-type: none"> • Vandalism of ICT infrastructure • Unreliable or absence of power supply. • Policy disruption due to change in domestic politics.²⁵² • Highly reliant on international vendors due to the scarcity of in-house or local technical experts in government agencies.²⁵³

Conclusion

To summarize, the Tanzanian Government have exhibited their strong commitment to digital transformation through the establishment of numerous policies, strategies, and legislations. It has also shown robust performance in online service by providing e-government services. Recent

²⁴⁸ <https://ad-abinallah.medium.com/an-introduction-on-data-governance-in-tanzania-8761e223d171>

²⁴⁹ <https://bowmanslaw.com/insights/overview-of-data-infrastructure-in-east-africa-tanzania/>

²⁵⁰ CIPESA, 2022, Governance Regulation in Tanzania: Gaps, Challenges, and Opportunities, p.13.

²⁵¹ Lupilya et al, 2015, E-Government Transformation in Tanzania: Status, Opportunities, and Challenges

²⁵² <https://ad-abinallah.medium.com/an-introduction-on-data-governance-in-tanzania-8761e223d171>

²⁵³ CIPESA, 2022, Governance Regulation in Tanzania: Gaps, Challenges, and Opportunities, p.4.

progress includes the launch of digital identity and the Personal Data Protection Act 2023. While those achievements deserve recognition, Tanzania still needs improvement in ICT infrastructure and policy and institution coordination. The next step is to develop a national digital transformation framework with data governance included, to provide an overarching guideline for Tanzania's digital journey and to avoid policy fatigue. An enhanced performance management system is also in need for benchmarking the way forward. To achieve this, Tanzania should build on the many existing institutional and policy resources and prioritize effective enforcement and coordination.

Vanuatu

Introduction

Graduated from LDC in 2020, Vanuatu is now a lower middle-income country.²⁵⁴ As noted in the 2022 E-government survey, it has seen significant improvement in EGDI value, now positioned in the MH group.²⁵⁵ Yet, Vanuatu's EGDI value is 0.4403, substantially lower than the global average of 0.6201, ranking 135.

Since the rapid development of telecommunications in 2007, multiple policies on e-government and ICT have been published. Vanuatu's initial e-government plan was unveiled in 2008, outlining the establishment of the Government Broadband Network (GBN)—the primary infrastructure linking government offices in the main provincial centers and providing Internet access to these offices.²⁵⁶ This plan aligned with the enactment of the 2009 Telecommunications and Radiocommunications Regulation Act, which deregulated the telecom market and established the independent statutory body Telecommunications and Radiocommunications Regulator (TRR).

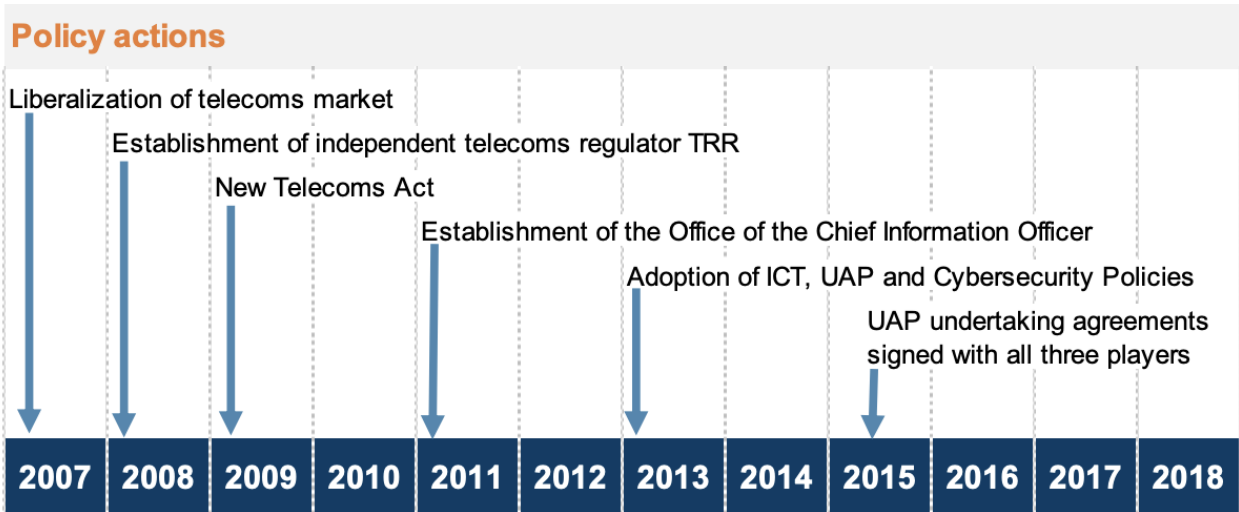
Subsequent policies emerged within 2012 to 2014, including the launch of the integrated government (iGov) initiative in 2012, designed to enhance ICT governance, and the 2014 m-Gov strategy targeting e-government initiatives on mobile devices, which is seen as a model for other small island developing states in the region.²⁵⁷ Notably, in 2013, the Republic of Vanuatu Government published the National Informational and Communication Technology Policy, with access to ICTs in Education, access to ICT Infrastructure and Devices, and e-government as its top priorities. Cybersecurity policy and Universal Access Policy were also introduced. These three policies serve as the foundation for digital governance in Vanuatu.

²⁵⁴ <https://data.worldbank.org/country/VU>

²⁵⁵ United Nations 2022, UN E-Government Survey 2022: The Future of Digital Government, p.168.

²⁵⁶ United Nations, 2018, Leveraging Investments in broadband for National development: The Case of Vanuatu, p.7.

²⁵⁷ Australian Strategic Policy Institute, 2020, ICT for Development in the Pacific Islands, p.36.

Figure 44 ICT-related Policy Actions in Vanuatu 2007-2018²⁵⁸

Recent progress has been in making. In Vanuatu 2030- the National Sustainable Development Plan 2016 to 2030, to “increase use of and access to information and communications technologies, including on-line government services” was put on the agenda. In 2021, National Cyber Security Strategy 2030 was published as a partial effort towards a standard National Security Strategy. ITU’s Smart Islands project is providing support to the development of a Digital Government Masterplan Framework with a whole of government approach.²⁵⁹

With much of the digital focus on e-government, no comprehensive national policy framework dedicated to data governance has been published. Few exceptions are the specialized policy on data protection, privacy and cyber security. Other policy actions remained on the ministerial level. In 2014, the Strategies for the Vanuatu Statistical System was published by National Statistics Office. It outlined data development actions aimed at improving the statistical information base, emphasizing data quality, availability, integrity, reliability, accuracy and consistency, and management. In the Health Sector Strategy 2021-2030, it prioritized promoting quality data collection, analysis and dissemination systems for health information through improved systems and expanded capacity of the health sector workforce to understand and utilise data for planning and decision-making.²⁶⁰ The National Geospatial Data Policy, led by Ministry of Lands & Natural Resources aimed at create an enabling environment for centralization, coordination, management and dissemination of geospatial data.²⁶¹

²⁵⁸ United Nations, 2018, Leveraging Investments in broadband for National development: The Case of Vanuatu, p.16.

²⁵⁹ <https://www.itu.int/hub/2021/02/least-developed-no-longer-how-digital-transformation-drove-vanuatus-ldc-graduation/>; https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2021/Regional%20Dialogue/S4/Vanuatu_Smart%20Islands%20v4.pdf

²⁶⁰ Government of The Republic of Vanuatu, 2020, Health sector strategy 2021-2030, p.27.

²⁶¹ Government of The Republic of Vanuatu, 2020, The National Geospatial Data Policy 2020-2030, p.8.

Summary of Four Pillars

Table 61 summarizes Vanuatu's current data governance framework in relation to the four pillars.

- m) Policy: develop action agendas, regulations and laws, priority actions, key messaging.
- n) Institutions: assign and establish responsible government departments within the existing institutional framework. Develop digital enterprise architecture.
- o) People: assign persons responsible for data governance within government institutions. Map stakeholders within the data ecosystem.
- p) Processes: design effective processes for the implementation, financing, leadership, and management of data systems.

Table 61: Four Pillars of Vanuatu's Data Governance Framework

Pillar	Overview
Policy	<ul style="list-style-type: none"> ➤ National Level <ul style="list-style-type: none"> ○ The 2013 National Informational and Communication Technology Policy, Universal Access Policy, Cybersecurity Policy lay the foundation for digital governance in Vanuatu. ➤ Ministerial level <ul style="list-style-type: none"> ○ Strategies for the Vanuatu Statistical System: improve the statistical information base, emphasizing data quality, availability, integrity, reliability, accuracy and consistency, and management. ○ Health Sector Strategy 2021-2030: promote quality data collection, analysis and dissemination systems for health information through improved systems and expanded capacity of the health sector workforce to understand and utilise data for planning and decision-making. ○ National Geospatial Data Policy: create an enabling environment for centralization, coordination, management and dissemination of geospatial data. ➤ Recent development <ul style="list-style-type: none"> ○ Vanuatu 2030- the National Sustainable Development Plan 2016 to 2030: to increase use of and access to information and communications technologies, including on-line government services. ○ National Cyber Security Strategy 2030: to deliver six national priorities: <ul style="list-style-type: none"> ▪ Cyber Resilience; ▪ Cyber Security Awareness; ▪ Cyber Capability and Literacy; ▪ Addressing Cybercrime; ▪ International Engagement; and ▪ Cyber Security Standards and Legal Frameworks.

	<ul style="list-style-type: none"> ○ Data Protection and Privacy Policy. ➤ Planned development <ul style="list-style-type: none"> ○ Develop a Digital Government Masterplan Framework with a whole of government approach with ITU. ○ Develop a Digital Governance Road Map, Cybersecurity Strategy and Government security policy handbook.²⁶² ○ Review the national ICT policy, cybersecurity policy and universal access policy. ➤ Legislation <ul style="list-style-type: none"> ○ Cybercrime Bill ○ Digital Data Protection and Privacy Bill ○ Harmful Digital Communication Content Bill ○ Submarine Cable Protection Bill
Institutions	<ul style="list-style-type: none"> ➤ Domestic <ul style="list-style-type: none"> ○ Council of Ministers: oversee the National ICT Development Committee ○ Multi-stakeholder National ICT Development Committee: responsible for the development and coordination of national ICT policy. ○ OGCIO, established in 2012, is in charge of Vanuatu's ICT leadership; its mandate is to 'to encourage the spread of ICTs in society to efficiently and effectively achieve an educated, healthy and wealthy Vanuatu' and 'to lead the iGov initiative'. ○ Telecommunications, Radiocommunications and Broadcasting Regulator (TRBR): a statutory body operating independently from the government; act as the sector regulator as well as an implementing agency for specific ICT development initiatives, particularly where such implementation could not be more effectively done by a sector-specific Ministry or Government Department. ○ Computer Emergency Response Team (CERT) Vanuatu: the central cyber security information and incident response hub for Vanuatu ○ Digital Safety Authority (DSA) (In progress): oversee, monitor and enforce compliance and safeguarding of the data protection and privacy rights of individuals. ○ Responsible Ministries, Government Departments, Constitutional and Statutory Entities and other stakeholders, ➤ Regional

²⁶² Australian Strategic Policy Institute, 2020, ICT for Development in the Pacific Islands, p.36.

	<ul style="list-style-type: none"> ○ Pacific Islands Chapter of the Internet Society: an impartial advisor to governments and the public on matters of Internet development to Pacific Island people.
People	<ul style="list-style-type: none"> ➤ Relevant stakeholders within the data ecosystem are: <ul style="list-style-type: none"> ○ Prime minister, who is also the Minister responsible for ICT/Telecommunications ○ Ministers ○ Government Chief Information Officer of OGCIO ○ Senior Internet Governance Officer OF TRBR
Processes	<ul style="list-style-type: none"> ➤ Regional <ul style="list-style-type: none"> ○ Pacific Data Ecosystem: partnership between Pacific Island Countries and Territories, Pacific Community (SPC) and the Secretariat of the Pacific Regional Environment Programme (SPREP) to promote greater coordination in data management, dissemination and uptake initiatives. Technical partners include Link Digital and Data 61. ○ In 2017, The World Bank Trust Fund for Statistical Capacity Building (TFSCB) committed USD 500,000 to strengthen the capacity of national statistical systems and social and economic planning agencies to provide policy-makers and analysts with important demographic, economic and social indicators for planning and decision-making. ➤ Planned development <ul style="list-style-type: none"> ○ Secure Platform for Exchanging of Data: integrate all government systems that enable data sharing and connect government databases by a data exchange service layer.

Pillar-Element Mapping Matrix and Mapping of Six Elements

Table 2: Pillar-Element Mapping Matrix of Bangladesh's Current Data Governance Framework

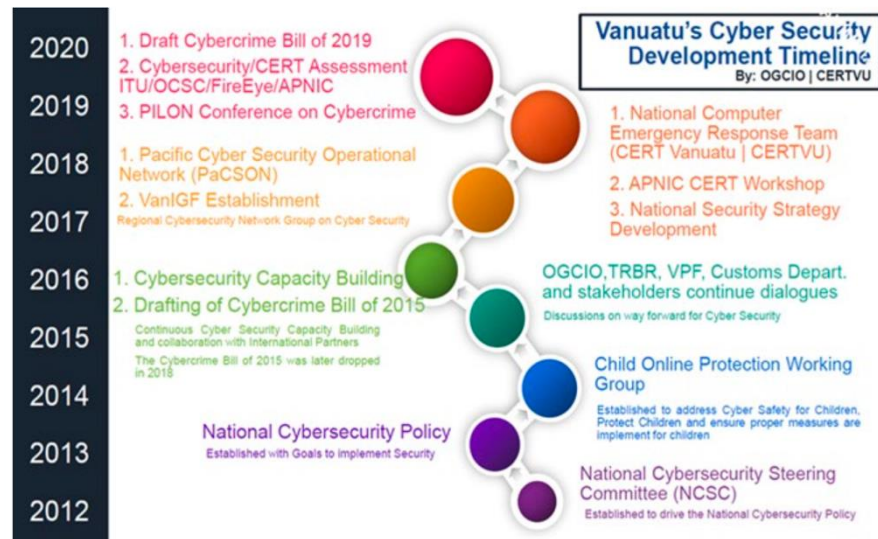
Element	Summary
Data standards & classification	<p>Data standardization and classification have been put on the agenda of several ministries. However, there is not a whole-of-government approach in place.</p> <ul style="list-style-type: none"> ➤ Data standardization has been listed as one of the strategic areas in the National Geospatial Data Policy (NGDP) 2020-2030, including geospatial data capture guidelines and projections and datum standards. ➤ In the National Strategy for the Development of Statistics 2016-2020, Vanuatu Statistical System (VSS) was requested to develop a quality standard for the use of national classifications and

	<p>frameworks, with different agencies using different classifications for the same thing. On data standardization, mainstreaming statistical monitoring and evaluation frameworks with policy development process was listed as first-class priority, requesting VSS agencies to review of all existing policies for common indicators, gaps and possible adjustments to standardize indicators. Though the action timing targeted at 2016-2017, however, no latest update was published.</p> <ul style="list-style-type: none"> ➤ The Vanuatu Standard Industrial Classification 2016 (VanSIC 2016) is a national classification of all economic activities taking place in Vanuatu and has been compiled by the Vanuatu National Statistics Office (VNSO) with assistance and technical advice from the Pacific Community (SPC). VanSIC 2016 is used for classifying data according to kind of economic activity in the fields of economic and social statistics, such as for statistics on production or national income, demography of enterprises, employment, population and others.
<p>Data sharing, exchange and interoperability, including open government data</p>	<p>Data sharing has been under construction in Vanuatu, but very much remains on the planning level.</p> <ul style="list-style-type: none"> ➤ Data sharing arrangements between government departments remain weak, which results in a reliance on families to provide the appropriate information to each individual department. Consequently, several distinct state population databases co-exist.²⁶³ Data sharing and coordination was listed as an integral aspect of the Civil Registration and Vital Statistics (CRVS) Policy 2017-2030. ➤ MOUs for data sharing, publishing a national short-term geospatial data sharing guideline, and securing data sharing platform were listed as policy objectives in NGDP 2020-2030.
<p>Data security</p>	<p>With several policies, legislation, and strategy in place, data security is the priority of the Vanuatu government, likely as a result of undergoing multiple cyberattacks.</p> <ul style="list-style-type: none"> ➤ Policy <ul style="list-style-type: none"> ○ National Cybersecurity Policy 2013: sets out the Goals, Policies and Objectives for the Republic of Vanuatu in maximizing safety and security in relation to the use of information and communication technology (ICT). ○ National Harmful Digital Communication Policy 2023: develop an Act and address legal framework gap. ➤ Strategy

²⁶³ Pacific Community, 2023, Civil Registration and Vital Statistics Systems in The Pacific, p.112.

- National Cyber Security Strategy 2030:
 - Effectively collaborate across national and international digital environment to combat Cybercrime through multiple frameworks and approaches.
 - Establish the Vanuatu Police Cybercrime Department, Cyber Defence and Intelligence Unit and Digital Forensics Lab.
 - Enforce the National Cybercrime Act of Vanuatu.
 - Enforce future Harmful Digital Communications Act of Vanuatu.
 - Enforce future Data Privacy and Protection Act of Vanuatu.
 - Develop and establish an eSafety Commissioner body to address cybercrime and cyber safety issues and incidents.
- Legislation
 - Cybercrime Act No.22 of 2021: to protect the confidentiality, integrity and availability of computer systems, programs and data.

Figure 45 Cyber Security Development over the past 10 years²⁶⁴



Data privacy (and ethics)

- National Data Protection & Privacy Policy 2023:
 - Create the foundations of a data protection and privacy law

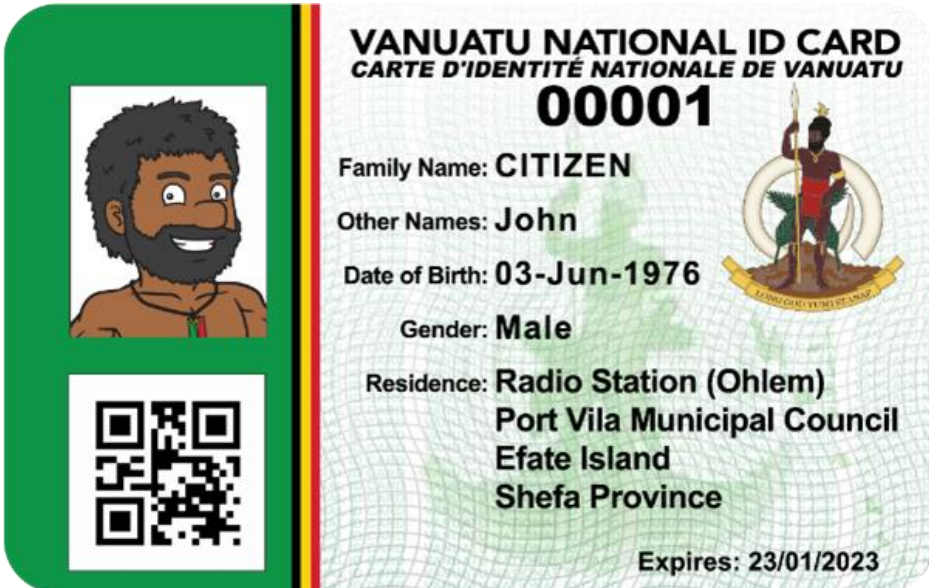
²⁶⁴ The Office of the Government Chief Information Officer (OGCIO), 2021, National Cyber Security Strategy 2030, p.13

	<ul style="list-style-type: none"> ○ Establish the requirement for an independent and impartial Digital Safety Authority (DSA) appropriately empowered, resourced and equipped to sufficiently oversee, monitor and enforce compliance and safeguarding of the data protection and privacy rights of individuals; ○ While this Policy only deals in detail with personal data, it recognises the need for and the importance of policies dealing with other (non-personal) data, particularly in relation to its importance to Vanuatu’s data sovereignty. This data sovereignty requires policies to be developed concerning data ownership, ‘data as a commodity’ operationalised through a secure protected transparent infrastructure, and overall, the need for a clear definition and governance model for data created, stored and re-used.
<p>National data infrastructure</p>	<ul style="list-style-type: none"> ➤ Strategy <ul style="list-style-type: none"> ○ National Broadband Strategy 2018: aims to provide affordable and reliable internet access to all citizens by 2025. To achieve this goal, the government has focused on building digital infrastructure, such as laying fiber optic cables and establishing Wi-Fi hotspots in public areas.²⁶⁵ ➤ Services <ul style="list-style-type: none"> ○ Databases running on OGCIO servers include the Court Management System, the Civil Registry information management system, ASYCUDA World—the Automated System for Customs Data developed by the UN Conference on Trade and Development (UNCTAD)—and the Police Information Management System. The Civil Registry is now accessible in all provincial hospitals and municipal headquarters. Data from the registry is used to validate the electoral roll.²⁶⁶ ○ The Ministry of Finance’s Smart stream system is the largest system run by government. It’s the government’s central planning and budgeting system and has ancillary modules, including human resource management, payroll services, donor information and project reporting. For security reasons, access is tightly controlled and maintenance is ensured by donors and the commercial provider.²⁶⁷ ➤ Challenge

²⁶⁵ <https://isp.page/news/vanuatus-digital-leap-the-role-of-government-in-expanding-internet-access/#gsc.tab=0>

²⁶⁶ Australian Strategic Policy Institute, 2020, ICT for Development in the Pacific Islands, p.36.

²⁶⁷ Ibid., p.37.

	<ul style="list-style-type: none"> ○ Many of Vanuatu’s government departments are currently using local computer drives to help store data instead of more secure web servers or the cloud.²⁶⁸ ○ The affordability of broadband access is an issue for many living in the Pacific Islands. In Vanuatu, the cost of access to mobile broadband is equivalent to more than 5 per cent of gross national income per capita.²⁶⁹
<p>Linking data governance to digital identity</p>	<p>Vanuatu has made considerable progress in digital identity.</p> <p>Integrated Identity Management system: This distributed system made of microservices, a resilient architecture designed to scale to new uses, will be the one stop data platform for government and public service delivery. The ambition is to contribute an additional 6% of GDP yearly growth thanks to this transformational project.²⁷⁰</p> <ul style="list-style-type: none"> ➤ New website of the Civil Registration & Identity Management Department: offers a user-friendly interface where individuals can register vital events and apply for various identity documents seamlessly online. It will serve as a centralised hub for all civil registration and identity management services in Vanuatu.²⁷¹ ➤ National digital ID card: current National ID already includes a proxy ID in the form of a QR code. The vision is to connect all SIM cards in Vanuatu to their holder’s ID, and to release a public service portal to maintain this information up to date and <div style="text-align: right;">  <p>VANUATU NATIONAL ID CARD CARTE D'IDENTITÉ NATIONALE DE VANUATU 00001</p> <p>Family Name: CITIZEN</p> <p>Other Names: John</p> <p>Date of Birth: 03-Jun-1976</p> <p>Gender: Male</p> <p>Residence: Radio Station (Ohlem) Port Vila Municipal Council Efate Island Shefa Province</p> <p>Expires: 23/01/2023</p> </div>

²⁶⁸ <https://thediplomat.com/2022/12/vanuatu-government-struggling-back-online-after-cyberattack/>

²⁶⁹ United Nations, 2020, UN E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, p.68.

²⁷⁰ <https://www.undp.org/pacific/stories/digital-national-id-small-item-pocket-big-step-vanuatu>

²⁷¹ https://www.dailypost.vu/news/civil-registration-and-identity-management-department-s-new-website-to-improve-online-service-delivery/article_dafd0bf6-a91d-5d03-af53-4e996d4524b4.html

accurate. People will be able to access many government services online, saving precious time and money.²⁷²

To demonstrate the relationships between each pillar and element, a Pillar-Element Mapping Matrix is utilized (see Table 3). There are 24 cells in this matrix, reflecting the existing data governance framework in Vanuatu, excluding any planned developments or stated visions. This baseline report and the matrix below merely reflects a snapshot of the current situation as discovered from empirical desk research. The volume of information in each cell, including those which are left blank, should not be taken as a comprehensive evaluation or correlative of the development of each pillar-element pair. Its purpose is simply to offer a simplistic overview.

Table 3: Pillar-Element Mapping Matrix of Vanuatu's Current Data Governance Framework

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy	National Geospatial Data Policy (NGDP) 2020-2030; National Strategy for the Development of Statistics 2016-2020; Vanuatu Standard Industrial Classification 2016 (VanSIC 2016)	Civil Registration and Vital Statistics (CRVS) Policy 2017-2030; National Geospatial Data Policy (NGDP) 2020-2030	National Cybersecurity Policy 2013; National Harmful Digital Communication Policy 2023; National Cyber Security Strategy 2030; Cybercrime Act No.22 of 2021	National Data Protection & Privacy Policy 2023	National Informational and Communication Technology Policy 2013; Universal Access Policy 2013 National Broadband Strategy 2018;	Sectoral regulation governing data privacy could provide framework for regulation covering digital ID platform.
Institutions	Ministry of Lands & Natural Resources; Vanuatu Statistical System (VSS)	Minister of Internal Affairs; NGDC, CERTVU and OGCIO	The Office of the Government Chief Information Officer (OGCIO); Vanuatu Police Force	Digital Safety Authority (DSA)	OGCIO; Ministry of Finance Telecommunications, Radiocommunications and Broadcasting Regulator (TRBR)	Ministry of Internal Affairs; Vanuatu National Statistics Office (VNSO)

²⁷² Ibid.

<p>People</p>	<p>Leadership : National Geospatial Data Committee Executive; Minister of Finance</p> <p>Data scientist: Government Statistician</p>	<p>Leadership : National Geospatial Data Committee Executive;</p> <p>Minister of Internal Affairs;</p> <p>Government Chief Information Officer of OGCIO</p>	<p>Leadership: Government Chief Information Officer of OGCIO;</p> <p>Vanuatu’s National Computer Emergency Response Team;</p> <p>e-Safety Commission;</p> <p>Vanuatu Police Cybercrime Department, Cyber Defence and Intelligence Unit and Digital Forensics Lab.</p>	<p>Leadership: Prime Minister;</p> <p>Chief Information Officer (CIO)</p>	<p>Leadership: Chief Information Officer (CIO)</p>	<p>Leadership: Minister of Internal Affairs;</p> <p>Civil Registration and Vital Statistics Department</p>
<p>Processes</p>	<p>VanSIC 2016 is used for classifying data according to kind of economic activity in the fields of economic and social statistics, such as for statistics on production or national income, demography of enterprises, employment, population and others.</p>	<p>Very detailed action plan for implementing data sharing in National Geospatial Data Policy (NGDP) 2020-2030</p>	<p>Detailed action plan in National Cyber Security Strategy 2030</p>		<p>Databases running on OGCIO servers include the Court Management System, the Civil Registry information management system, ASYCUDA World—the Automated System for Customs etc.</p> <p>Smart Island Initiative by the UN: enhances broadband availability and affordability across communities, providing opportunities for digital skills development and access to digital services, which</p>	<p>New website of the Civil Registration & Identity Management Department:</p> <p>National digital ID card</p>

					are essential to SDG targets. ²⁷³	
--	--	--	--	--	---	--

Based on the mapping of pillars and elements, Table 4 visualizes the mapping and the comparisons between different cells in the matrix. Policy-wise, Vanuatu is comparably more established in data security, data privacy, and national data infrastructure. Institution-wise, the responsibilities are clearer in these areas, plus digital identity domain. When it comes to people, while multi-stakeholders and leaderships are usually recognized, more detailed information is hard to find. An exception is data security, with clearer designation to be held accountable. Processes-wise, national ID card with QR code has been developed, while in other domains action plans are hard to be tracked and verified through online research.

Table 4 : The Pillar-Element Mapping Matrix for Vanuatu

Elements → Pillars ↓	Data standards & classification	Data sharing, interoperability, and open government data	Data security	Data privacy (and ethics)	National data infrastructure	Link with digital identity
Policy						
Institutions						
People						
Processes						

Well established Roughly established Not mentioned

SWOT Analysis of Vanuatu's Data Governance Framework

A SWOT analysis (Table5) is presented below.

Table 5: SWOT Analysis of Vanuatu's Data Governance Framework

	Positive	Negative
Internal factors	Strengths	Weaknesses

²⁷³ <https://pacific.un.org/en/164892-smart-islands-initiative-affordable-accessible-digital-future-pacific-communities>

	<ul style="list-style-type: none"> • Political will and ambition from Government to utilize data. • Institutions have been established to lead and coordinate Vanuatu's digital transformation. • General priority actions have been established and have been allocated responsible institutions. • Multiple relevant strategies, policies, and legislations surrounding data have been published and/or planned. • ICT infrastructure construction has always been put on the government's agenda, resulting in significant increase in Internet users to 66.3% of the population.²⁷⁴ • Data security has been especially strengthened in the legal framework due to previous cyberattacks. • Considerable progress has been made in digital identity establishment, prompted by voter registration needs and with the help of UNDP in support of a wider Integrated Identity Management system. 	<ul style="list-style-type: none"> • Vanuatu's EGDI value is 0.4403, substantially lower than the global average of 0.6201, ranking 135. • The affordability of broadband access is an issue for many living in the Pacific Islands. In Vanuatu, the cost of access to mobile broadband is equivalent to more than 5 per cent of gross national income per capita.²⁷⁵ • Lack of policies, laws and regulations on a comprehensive data governance framework. ICT governance prevails in mindset and actions. • Lack of a-whole-of-government approach, with scattered ministerial efforts in data governance. • Lack of follow-ups and updates on the implementation of action plans, policies, and strategies on data governance. • Delay in legislations to keep up with technological usage in civil registration, particularly in the case of national ID.²⁷⁶ • Ministries and institutions utilize data according to their own needs and in isolation, resulting in redundancy and inconsistency. • Not all ministries and institutions have a dedicated unit in charge of digital transformation and/or data. • Lack of whole-of-government training efforts focused on data literacy and governance. • National platforms for data sharing, exchange and interoperability require further development. • Digital security remains weak and digital systems are vulnerable to attacks. • Inaccessibility of civil registration services and low levels of awareness of the importance of registration among the public pose challenge to data availability.
--	--	---

²⁷⁴ <https://datahub.itu.int/dashboards/umc/indicator/?e=VUT&i=11624>

²⁷⁵ United Nations, 2020, UN E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, p.68.

²⁷⁶ Pacific Community, 2023, Civil Registration and Vital Statistics Systems in The Pacific, p.111.

External factors	Opportunities	Threats
	<ul style="list-style-type: none"> • Regional and global knowledge exchange and collaborative capacity-building can accelerate and inform the implementation of the priority actions • Businesses and private sector are active in digitalization and have potentials to contribute to the data eco-system. • Covid-19 propelled the use of data in the health sector as well as other citizen-oriented services 	<ul style="list-style-type: none"> • The Asia-Pacific region is a significant target for cyber-attacks. • Prone to natural disasters, Vanuatu is threatened by damages to national data infrastructure including telecommunications infrastructure. • Previous cyberattacks have deterred officials to use online services, preventing progress towards cloud storage.

Conclusion

In conclusion, Vanuatu is still on its way towards a comprehensive data governance framework. Previous efforts on ICT infrastructure construction and e-government have laid a foundation for future improvement and should be recognized. Data governance should be integrated into the development of a Digital Government Masterplan Framework. An overarching data governance framework will ensure a whole-of-government approach in guidance and implementation.

Overall, considerable policies, strategies, legislations, and plannings have taken place, especially around data security and data privacy, and national data infrastructure. In this context, it is important for Vanuatu Government to track and update the implementation status of those action plans for transparency and accountability. In the meantime, more efforts should be directed toward policy development and collaboration in data classification, standardization, affordable data infrastructure, and data sharing.

To achieve this goal, the Government shall arrange for training for data literacy and governance in government officials, clearly define the responsibilities of relevant institutions and people, leverage regional and global platforms, private and non-profit resources, and conduct constant monitoring and evaluation of the process.