SCOPING REVIEW OF THE LEGISLATIVE AND POLICY ENVIRONMENT ON SUB-NATIONAL AND NATIONAL DATA SYSTEMS AND DATA USE

FINAL REPORT – KENYA, SENEGAL, AND ZAMBIA

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IDinsight

APHRC African Population and Health Research Center

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ACRONYMS AND ABBREVIATIONS

APDP	Personal Data Protection Authority
APHRC	African Population Health and Research Centre
ANSD	National Agency of Statistics and Demographics
CBS	Central Bureau of Statistics
CDP	Personal Data Protection Commission of Senegal
COG	Council of Governors
CIDP	County Integrated Development Plan
CIMES	County Integrated Monitoring and Evaluation System
CIPESA	Collaboration on International ICT Policy in East and Southern Africa
CLEAR	Centres for Learning on Evaluation
DHIS2	District Health Information System
EDSS	Enhanced Data Dissemination System
EMIS	Education Management Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GDSS	General Data Dissemination System
GIS	Geographic Information System
GPE	Global Partnership for Education
GCP	Gross County Product
GDP	Gross Domestic Product
GW-M&E/MIS	Government-wide M&E Information Management System
IEN	National Education Identifier
IMF	International Monetary Fund
Ken-Info	Kenya Data Portal and the Kenya Socioeconomic Database
KHISIF	Kenya Health Information Systems Interoperability Framework
KIPPRA	Kenya Institute for Public Policy Research and Analysis
KNBS	Kenya National Bureau of Statistics
KSDS	Kenya Strategy for Development of Statistics
MNDP	Ministry of National Development Planning
MOE	Ministry of Education
MoGE	Ministry of General Education
MOH	Ministry of Health
M&E	Monitoring and Evaluation
KENADA	National Data Archive
NDP	National Development Plan
NEMIS	National Education Management Information System
NIMES	National Integrated Monitoring and Evaluation System
MED	National Monitoring and Evaluation Department
NSS	National Statistical System
PSE	Plan Senegal Emergent
SIMEN	Information and Management System of the Ministry of National Education
SDSS	Special Data Dissemination System
SNDS	National Strategy for the Development of Statistics, 2019-2023
SRSD	Regional Statistics and Demography Service
TOC	Technical Oversight Committee
UN	United Nations
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Programme

EXECUTIVE SUMMARY

CONTEXT AND SCOPING OBJECTIVES

This review is a preliminary assessment of the legislative and policy environments governing data systems in Kenya, Senegal, Uganda, and Zambia to inform the African Population and Health Research Centre's (APHRC) broader initiative to support stronger evidence-based decision-making at national and subnational levels. Our assessment was conducted along three dimensions: data governance, data supply, and data demand, around which we developed a framework to provide an overall assessment of the policy ecosystems in the respective countries. Our assessment aimed to kick-start the exercise of understanding what inputs are in place, and what gaps will need to be addressed. This report is based on a review of policy and legislative documentation, alongside interviews with key officials. The results highlight the state of data systems in each country mapped out against the themes in our framework. We also identify next steps for APHRC to engage with stakeholders in these countries to offer additional support.

SUMMARY OF FINDINGS

We found that across the four countries, one of the strengths of existing data systems lies in the domain of the policy and legislative landscape governing data demand and use. In each of the four countries, there are policies that have been established to empower the main statistical bodies and improve planning, monitoring, and budgeting at the national level. These include various statistics acts, national strategies, development plans, and monitoring and evaluation policy documents. Uganda, for instance, has a policy on nearly every stage of the data value chain and was the first (among the four countries) to establish its Statistics Act (1998) and Access to Information Act (2005). However, despite the availability of policy guidelines on the use and importance of data, there is a clear gap in implementation across all four countries.

National statistical bodies have also made strides to ensure the use of data best practices over the years, such as increasingly digitizing data collection and storage. There have been notable improvements in data practices across all four countries. These include moving to digital data collection methods where possible and transcribing any paper-based data to electronic formats for proper storage. These practices have enabled a more secure means of centralizing national data, particularly in Kenya, Senegal, and Zambia.

Much remains to be done to instil a data use culture that focuses less on using data for reporting and tracking targets, and more on improving the ability of national and subnational decision-makers to use data to achieve their intended socio-economic outcomes. We found that while a large amount of data is being collected in all four countries, only a fraction is being used to actually drive improvements at the subnational and national levels. In addition, while there is a heavy focus on regular reporting particularly at the subnational level, without a clear mapping to how the data in progress reports should drive specific actions, many opportunities to use data for better governance are being missed.

There are multiple data silos and a general lack of interoperability between national and subnational data entities and within data systems. Across all four countries, agencies, ministries, and subnational units use different systems to collect and store data, and there is no mutual agreement on a single source of truth for shared data entities. Data collection efforts are likely being duplicated, and there are no systems to govern the production and storage of commonly used entities that are used across different subnational units and sectors. Poor awareness of what others are doing also

limits the ability of individual departments to identify use cases for integration. The resulting cycle, where key stakeholders operate in silos and data can rarely be used outside of the narrow domain for which it was collected, seriously limits the vast potential of data sharing and data use for decision-making.

Opportunities for strengthening data systems are hamstrung by a skills gap and insufficient human capacity to fulfil national and subnational data mandates. Across all four countries, there is a significant lack of human resources, especially at the subnational levels. This is particularly acute in Senegal, Uganda and Zambia, where there are not enough competent statisticians and data analysts to meet the data demands in the subnational data units. Additionally, there is a lack of targeted empowerment of and partnership with the available skilled data champions (such as academics) at the national and subnational levels. This leads to data systems that lack the capacity to fulfil their mandates.

Despite the high number of existing partnerships with local partners and international development agencies, funding still remains a significant challenge in the data systems across all four countries. We found that while each of the four countries' main data stakeholders collaborate with local and international partners to support their data objectives, funding still remains a major challenge. Big donors such as The World Bank and various UN agencies fund most of the data collection activities. Additionally, national and subnational makers do not allocate enough resources to data activities such as monitoring and evaluation. As such, data activities particularly at the subnational level are deprioritised or delayed due to the lack of adequate financial resources.

Based on these findings, we recommend the next steps that APHRC can consider when engaging further with stakeholders in these countries to create more robust data systems.[1] We list the next steps below and welcome the reader to engage with these and the rest in the country-specific sections that follow.

[1] Due to the contextual differences and specificity of recommended next steps for subnational and national decision makers, we have omitted them from the "Summary of Findings" and, instead, included them in the country-specific sections of this report.

NEXT STEPS

Based on the findings of the scoping review, the following overall suggestions on how APHRC can collaborate with key stakeholders in Kenya, Senegal, Zambia and Uganda to strengthen their data systems. More refined and specific next steps for each of the countries have been included in the country-level sections.

Table 1: Next steps for APHRC

#	Recommendation	Next Steps
1	Define a common set of criteria that will be used to select and execute engagements	Define the key factors that will be used to identify partners within each country. This includes deciding at which level (national or subnational) to engage depending on the existing data infrastructure, capacity, and partnerships.
		Develop a "Theory of Change" for these partnerships, outlining pathways to influencing decision-making within subnational governments, and possible approaches to co-implementation with local stakeholders. This will help to define the scope of a potential engagement.
		Obtain access to the data systems themselves within selected subnational bodies to obtain a deeper understanding of specific areas where support is most helpful.[2]
		Leverage existing initiatives instead of creating new ones. To avoid further proliferation of data initiatives, the focus should be on building on existing programs and partnerships that selected decision-makers already have in place.
2	Provide support to improve harmonisation, data use culture and human resource capacity	Advocate for partners to integrate data systems to ensure that only useful data is collected, and key stakeholders can systematically access each other's data and make access to outside stakeholders easier.
		Provide basic tools such as visualisations and dashboards to show decisionmakers how data can be easily used for decision-making
		Work with selected partners to hire, train and empower skilled data champions to lead data activities in the selected partners' data systems.

[2] This should be accompanied by further, more focussed stakeholder interviews with key individuals within the data system to understand the needs of the users of a specific system, as well as the data generating process.

INTRODUCTION

BACKGROUND

Strong data systems form the backbone of effective data-driven policymaking at all levels of government, and are key enablers to designing, implementing, and monitoring policy more effectively and efficiently. Although much progress has been made towards creating functioning data systems in most African countries, there is scope to accelerate progress by sustainably creating the conditions for data-driven governance. Doing so will require building on existing efforts and bringing together stakeholders across sectors. The African Population and Health Research Center (APHRC) sought the services of consultants in Kenya, Senegal, Uganda, and Zambia to understand subnational and national data dynamics in order to inform an upcoming process that seeks to promote the use of evidence in planning and decision making.

This exercise was grounded in the fact that monitoring progress and tracking the performance of evidence-based decision-making in Africa is increasingly becoming an important part of the development process. This, however, requires the existence and use of strengthened data systems to satisfy the demand and supply needs in the data ecosystem – both at the subnational and national levels. The legislative and policy environment governs the data ecosystem and influences demand and use of data, and therefore this effort began with a scoping review of the governing environment for data.

RESEARCH OBJECTIVES

Through this exercise, the scoping review team sought to understand:

- **Each country's policy and legislative environment** that governs data generation and use.
- **Existing data systems** in terms of structure, data demand and supply, data integration, and data use practices at national and subnational levels.

This review would then further contribute to the understanding of capacities of subnational and national governments concerning data and data systems in the following areas:

- Institutional capacity
- Regulatory capacity
- Technical capacity
- Infrastructure and human resources (integrated data systems and skilled workforce)
- Financial capacity with respect to data use and evidence-informed decision-making
- National data ecosystems, especially on existing systems for evidence
- Informed decision making at the subnational levels

EVALUATION FRAMEWORK

To ensure a standardized process was used to assess the data ecosystems in each country, the scoping review team worked closely with APHRC to develop a framework around which the review was structured. The framework focuses on three key areas that contribute to a healthy national or subnational data system and data use - **a supportive policy and legislative environment, a robust supply of quality data, and user capacity and demand for data**. We investigated specific aspects of these three key areas, as shown in Figure 1 below. We used this framework to understand the national data governance policies and how they complement the existing subnational practices around the production and use of data. Beyond the scoping review, the framework can help APHRC identify opportunities to improve the effectiveness of data systems in selected countries. It should also help underline the fact that using data effectively requires more than simply making data

available, and that deep thinking around critical data issues like quality, security, and interoperability is needed. A detailed version of the evaluation framework has been included in Appendix 1.

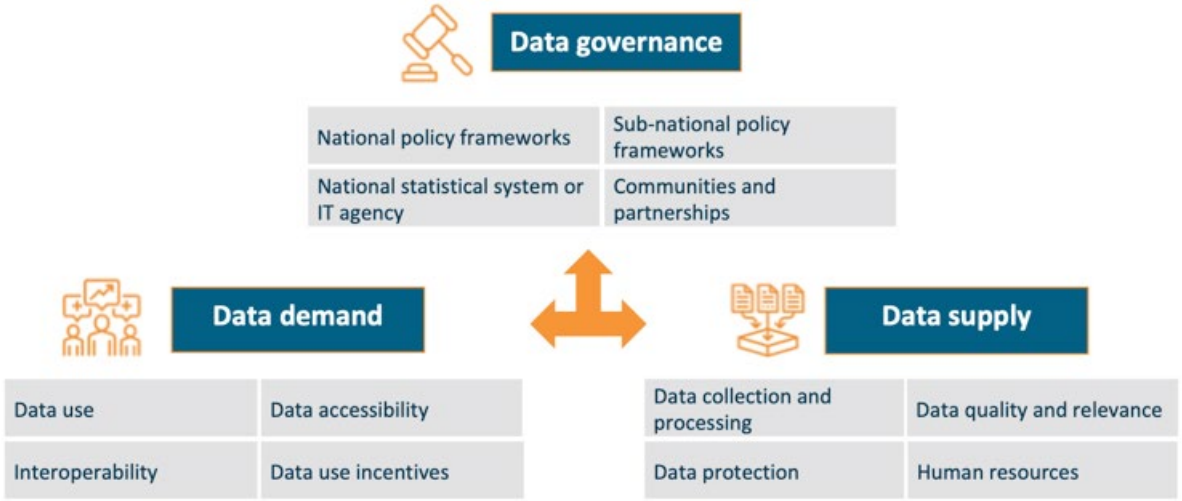

Figure 1: Key features of the evaluation framework

The remainder of this report outlines the findings from applying this evaluation framework at a country-level in Kenya, Zambia, and Senegal.

KENYA

BACKGROUND

Kenya is the largest economy in Central and Eastern Africa[3] and one of the fastest growing economies in Sub-Saharan Africa. With a notable reduction in child mortality, achievement of almost universal primary school enrolment, and narrowed gender gaps in education, Kenya enjoyed a relatively stable period of sustained socio-economic growth in the years preceding the COVID-19 pandemic. This is demonstrated in Table 1, which shows select the progress on select socio-economic indicators compiled from World Bank Development Indicator Database,[4] 2020 Human Development Report (where Kenya was ranked 143rd),[5] the Kenya Integrated Household Budget Surveys of 2005/06[6] and 2015/16,[7] and the Kenya Demographic and Health Survey 2014.[8]

Table 2: Kenya at a glance: Select development indicators from the World Bank Development Indicator Database & Official Government Sources

Indicator	Base Year	Base Estimates	Year of Most Recently Published Data	Current Estimates	Sub-Saharan Africa
Life expectancy at birth (years)	2009	59.9	2019	66.7	61.5
Mortality rate, under-five (per 1,000 live births)	2009	60.3	2019	43.2	76.7
Expected years of schooling (years)	2010	10.7	2019	11.3	10
Government expenditure on education (% of GDP)	2010	5.5	2018	5.3	4.7
Literacy rate, adult (% ages 15 and older)	2007	72.2	2018	81.5	65.3
Gross national income (GNI) per capita (constant 2017 PPP$)	2010	3,317	2019	4,244	3,685
Antenatal care coverage, at least one visit (%)				93.7	84.1
Maternal mortality ratio (national estimate, deaths per 100,000 live births)	2009	724	2014	377	535.2
Population living in overall poverty, based on national estimates (% of the total population)	2005/06	45.9	2015/16	36.1	55
Population living in extreme poverty, based on national estimates (% of the total population)	2015/16	19.1	2015/16	8.6	43.4
Unemployment, total (% of labour force)	2009	9.6	2019	5.0	6.4
Unemployment, youth (% ages 15 - 24)	2006	19.7	2019	12.85	10.7

[3] https://www.futuredirections.org.au/publication/kenyas-fast-growing-economy-a-success-so-far-but-underlying-problems-are-coming-to-the-surface/

[4] https://data.worldbank.org/indicator/SL.UEM.1524.NE.ZS?locations=KE

[5] http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/KEN.pdf

[6] https://catalog.ihsn.org/index.php/catalog/1472/download/42105

[7] https://www.knbs.or.ke/?wpdmpro=basic-report-well-kenya-based-201516-kenya-integrated-household-budget-survey-kihbs

[8] https://www.dhsprogram.com/pubs/pdf/sr227/sr227.pdf

Internet users, total (% of population)	2009	6.1	2019	22.6	25.2
Mobile phone subscriptions (per 100 people)				96.3	76.6

Most of these socio-economic gains have been bolstered by factors such as the launch of Vision 2030, Kenya's long-term development agenda in 2008.[9] As part of the *Vision 2030* agenda, President Uhuru Kenyatta launched the "Big Four" action plan in 2017, which highlights development priority sectors in his final term: enhancing manufacturing, food security and nutrition, universal health coverage, and affordable housing.[10]

The political scene has also contributed highly to Kenya's sustained socio-economic growth. In particular, the 2010 Constitution of Kenya equalized governance structures and gave a voice to historically marginalized communities by devolving governance of 14 functions, previously held at national level to the 47 county governments (see Figure 2).[11] The functions are contained in Schedule IV of the Constitution and include: agriculture; county health services; control of air pollution, noise pollution, other public nuisances and outdoor advertising; cultural activities, public entertainment, and public amenities; county transport; animal control and welfare; trade development and regulations; county planning and development- which includes statistics; pre-primary education; implementation of specific national government policies on natural resources and environmental conservation; county public works and services; firefighting and disaster management; control of drugs; and ensuring and coordinating public participation in governance. Governors head the counties, whose functions are further decentralised into geographic and administrative units such as sub-counties, wards and villages as shown in Figure 3 below. The counties, however, remain the main administrative and financing centres for all public goods and services including healthcare, education and infrastructure. As such, Kenya's 47 counties are the main producers and custodians of county-specific data that relates to these public goods and services.

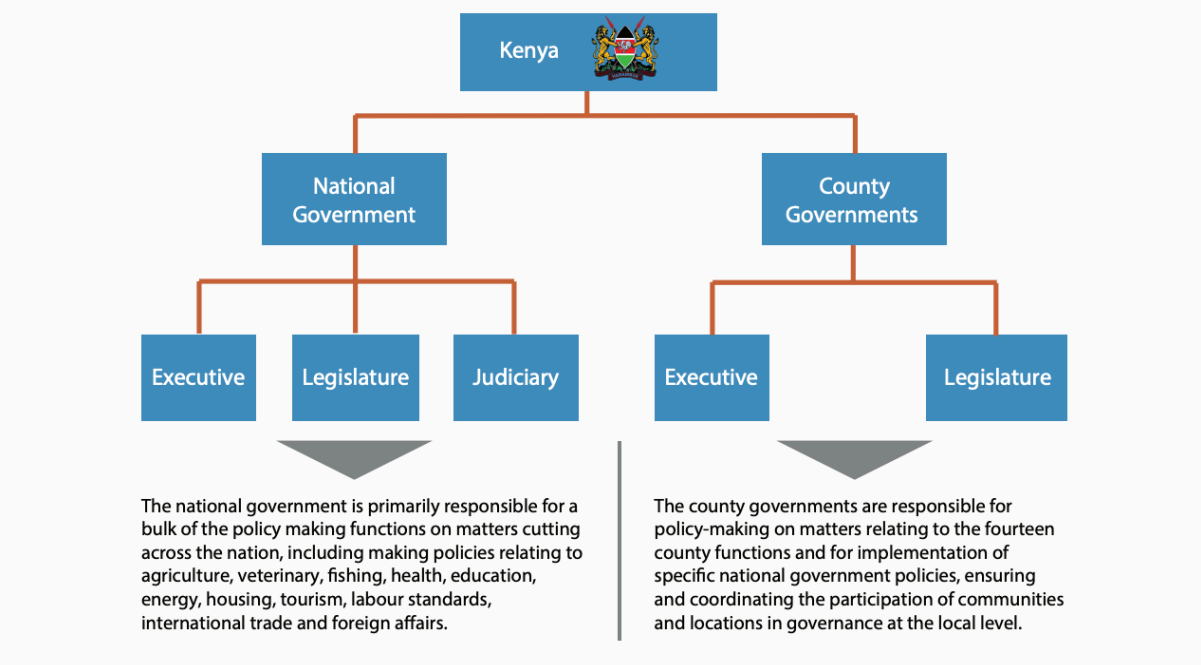

Figure 2: Structure of government in Kenya. Source: CIMES 2019

[9] "Overview." World Bank
[10] The Presidency
[11] USAID - Devolution in Kenya

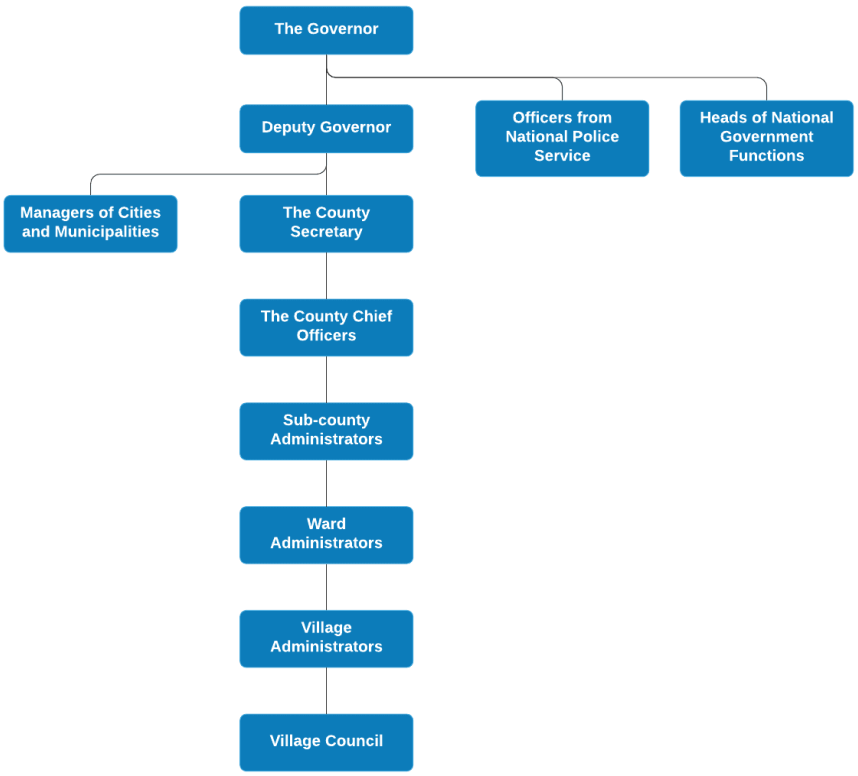

Figure 3: Structure of governance at the county level

APPROACH

For mapping out Kenya's data landscape, two data sources were considered:

1. **Reviews of country-level policy and legislative documentation governing data generation and use**. This consists of the main documentation establishing the national statistical authorities in the country, national-level reports such as the National Monitoring and Evaluation Policy, county-level reports such as the County Integrated Monitoring and Evaluation System (CIMES), County Integrated Development Plans (CIDPs), County Annual Development Plans (CADPs), Budget Implementation Reports by the Controller of Budgets existing attempts to harmonise data systems such as the National Integrated Monitoring and Evaluation System (NIMES) and sector-level policies such as the Kenya Health Information Systems Interoperability Framework (KHISIF). These reviews aimed to identify legislation or parliamentary acts that govern the national and sub-national structures' abilities to improve their capacity to produce data, use data for decision-making, and feed data up into the national structures.
2. **Interviews with key stakeholders at the national and particularly the sub-national level**. We conducted 6 interviews with officials from various stakeholders in the country's data ecosystem including national bodies, county governments, and key private partners. In particular, we interviewed 2 officials from the Council of Governors (COG), 1 official from the Kenya National Bureau of Statistics (KNBS), 2 officials from Meru County, and 1 official at the Kenya Institute for Public Policy Research and Analysis (KIPPRA). Through these interviews, we aimed to understand the mandates of national and sub-national governments to improve and enhance their capacity and systems to both generate and use data and evidence. In addition, the interviews also sought to understand the data systems that are currently used at the subnational levels, and how those systems interact with the national-level data structures.

Given the timelines of the project, we prioritised interviewing stakeholders we had pre-existing relationships with, and whom we could interview within the project timelines. Therefore, the key stakeholders we interviewed for this project, that is, the COG, KNBS, Meru County and KIPPRA, were selected based on referrals from existing contacts. This referral approach enabled us to increase our chances of stakeholder receptiveness to the interviews, but does mean that the sample selected will not be representative of the overall data ecosystem.[12]

FINDINGS

A. Legal and Policy Framework

1. National Data Ecosystem

1.1 There are a number of national-level policies that have been already legislated, and that outline the importance and use of statistics and data.

The Constitution of Kenya 2010, as outlined under Articles 10, 56, 174, 185, 201, 203, 225, 226 and 227 is perhaps one of the most important legislative documents. It requires that both the national and county governments utilize monitoring and evaluation data as the basis for establishing, guiding and tracking national projects, programs, policies and resource allocation.[13]

In addition to the Statistics Act, there are long-term development plans such as Vision 2030 which have been implemented through three five-year medium-term plans (Medium Term Plan I (MTP I, 2008-2012), Medium Term Plan II (MTP II, 2013 – 2017), and Medium Term Plan III (MTP III, 2018 – 2022)). These development plans not only identify key policy actions, reforms, programs and projects that the government wants to implement, but they also put demands on data and provide frameworks on how the different development indicators should be evaluated.

In accordance with MTP III, The Statistics Act No. 4 of 2006 which establishes KNBS as the body responsible for collecting, analysing and disseminating official statistics in the country was revised in 2019 to align it to requirements of the Constitution of Kenya. The Act also establishes KNBS as the custodian of official information in the country that coordinates the National Statistical System (NSS). Additionally, under the First, Second, Third and Fourth Schedules, the Statistics Act provides guidelines on the collection, analysis and compilation of statistical information, as well as the fundamental principles of official statistics.

The Government of Kenya, within the MTP III implementation cycle also prioritized the enactment of the Data Protection Act, 2019. The act establishes the office of the Data Protection Commissioner to make provision for the regulation of the processing of personal data and to provide for the rights of data subjects and obligations of data controllers and processers. It further puts in place frameworks for the transfer of personal data outside Kenya.

The enactment of the law was expedited following concerns of critiques of the *Huduma Number Registration Exercise*[14]*.* The Huduma Kenya programme aimed to providing a Multi-channel, "single window" citizen access to transactional Government services. It envisioned doing so by consolidate citizen information including: national identification numbers, passport numbers, driving licence

[12] In addition to the stakeholders we successfully interviewed, we reached out to other stakeholders whom we did not have pre-existing relationships with (including national ministry officials, county officials, civil society organisations, academics and private partners in the data space), but received few or no responses. Additionally, some counties required the IDinsight team to present physical letters of request to their chiefs, which we were unable to do due to the restrictions on inter-county travel resulting from the COVID-19 pandemic.

[13] County Integrated Monitoring and Evaluation System 2019

[14] https://www2.deloitte.com/content/dam/Deloitte/ke/Documents/risk/Kenya%20Data%20Protection%20Act%20-%20Quick%20Guide%202021.pdf

numbers, national social security numbers, and national hospital insurance fund numbers among others. This makes Kenya the third county in East Africa to have data protection legislation.

Progress on the implementation of government plans and priorities related to data system improvement for various sectors are tracked through regular progress reports from the Presidential Delivery Unit; Sector reports submitted to treasury at the end of each budget cycle; and annual performance reports prepared by state departments, agencies, and parastatals.

1.2 National agencies often supplement the existing national-level data policies with global statistical policies and development plans.

Interviewees highlighted the common practice of supplementing existing national-level policies with globally-recognized statistical policies and development plans. For instance, KNBS makes use of the UN Fundamental Principles of Official Statistics to get specific guidance on statistical considerations such as confidentiality, professional conduct and data transparency.[15]

KNBS also makes constant reference to the International Monetary Fund's General Data Dissemination System (GDDS), Enhanced Data Dissemination System (EDDS), and the Special Data Dissemination System (SDDS). These provide guidelines and frameworks for the frequency of data production, improvement and dissemination that less developed, developing, and developed countries can use, respectively.[16] Kenya, for instance, utilizes the EDDS due to the large informal sector that limits compliance with constant data collection standards.

Additionally, most interviewees made references to the stipulations made by the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs) for the production official development indicators. Given the close alignment of the SDGs to Kenya's Vision 2030, the SDG data stipulations are frequently centered in the national government's priorities. For instance, following a data roadmap process that was convened in 2016 to track the progress made towards achieving the SDGs, there was a highlighted need to create a bill to ensure data protection.[17]

1.3 There are new national-level data policies that have been drafted and are awaiting launching and/or formal legislation.

There are some national-level data policies that are currently in the process of getting legislated. For instance, the Privacy and Data Protection Policy 2018, which outlines nation-wide data protection policies, mandates and penalties has been drafted and is awaiting legislation. In order to guide the implementation of the data protection policy, the Office of the Data Protection Commissioner was established in 2019 in accordance with the provisions of the policy.[18]

In addition to the Privacy and Data Protection Policy 2018, KNBS launched the Kenya Strategy for Development of Statistics (KSDS) on April 21st, 2021. KSDS, which is based on the national development plans, provides a national framework for strengthening the country's statistical capacity across the National Statistical System (NSS). The key areas highlighted in the strategy are an effective NSS, data quality, provision of adequate infrastructure for the production of statistics, and statistical advocacy.[19]

[15] UN Fundamental Principles of Official Statistics
[16] IMF Standards for Data Dissemination
[17] https://www.data4sdgs.org/sites/default/files/services_files/RoadmapsAssessmentReport_Dec2017_FINAL.pdf
[18] https://ict.go.ke/wp-content/uploads/2020/03/Data-commissioner..pdf
[19] http://www.knbs.or.ke/?p=6304

1.4 Despite the availability of global and a few legislated national-level data policies and strategies, there is a notable delay and deprioritising of legislating, amending and revising them.

The National Monitoring and Evaluation Policy 2018, even though it is used as the national framework for monitoring and evaluation (M&E), has not been officially legislated since it was drafted in 2002. Similarly, the National Integrated Monitoring and Evaluation System (NIMES), which was established in 2004 to provide a framework and guidelines for M&E at the national-level, has never been legislated. The only steps that were taken in the institutionalization of NIMES were the establishment of the National Monitoring and Evaluation Department (MED) within the Ministry of Devolution and Planning to guide the implementation of NIMES, the creation of a National Steering Committee for M&E to oversee the implementation of NIMES, and the Technical Oversight Committee (TOC) to provide technical assistance in the implementation of NIMES.[20]

2. Subnational Data Ecosystem

2.1 County-specific guidelines for the governance and implementation of monitoring and evaluation programs and policies were recently developed; however, there has been a delay in the legislation of the county statistics governing Act.

As part of the Government's priorities between from 2013-2017, it established statistics offices in the 47 counties which serve the purpose of supervising and coordinating statistical programmes at county level and ensuring that international standards are applied in production and dissemination of county statistics. In addition, the office serves the function of ensuring that there is harmony between national data and aggregated county data[21].

In 2019, the National Treasury and Planning in collaboration with the COG developed Guidelines for the Development of County Integrated Monitoring and Evaluation System (CIMES) to guide and track the implementation of all county-level programs. These guidelines, influenced by the national-level draft policy, NIMES, were established to meet the need for county-level guidance on the development of proper M&E systems. CIMES tracks the implementation of Vision 2030 at the county level, as well as county-specific development plans such as the County Integrated Development Plan (CIDP).

CIMES stipulates the legal and policy frameworks for county M&E, ways of collecting and using data to build sustainable county-level M&E systems (Figure 4 and Figure 5), ways of strengthening county capacities for M&E, required institutional frameworks for county M&E, and ways of reporting, dissemination and citizen engagement in county M&E systems.

[20] http://newdemo.planning.go.ke/wp-content/uploads/2020/11/GUIDELINES-FOR-IMPLEMENTATION-OF-NIMES-2015.pdf
[21] http://vision2030.go.ke/wp-content/uploads/2018/06/Second-Medium-Term-Plan-2013-2017.pdf

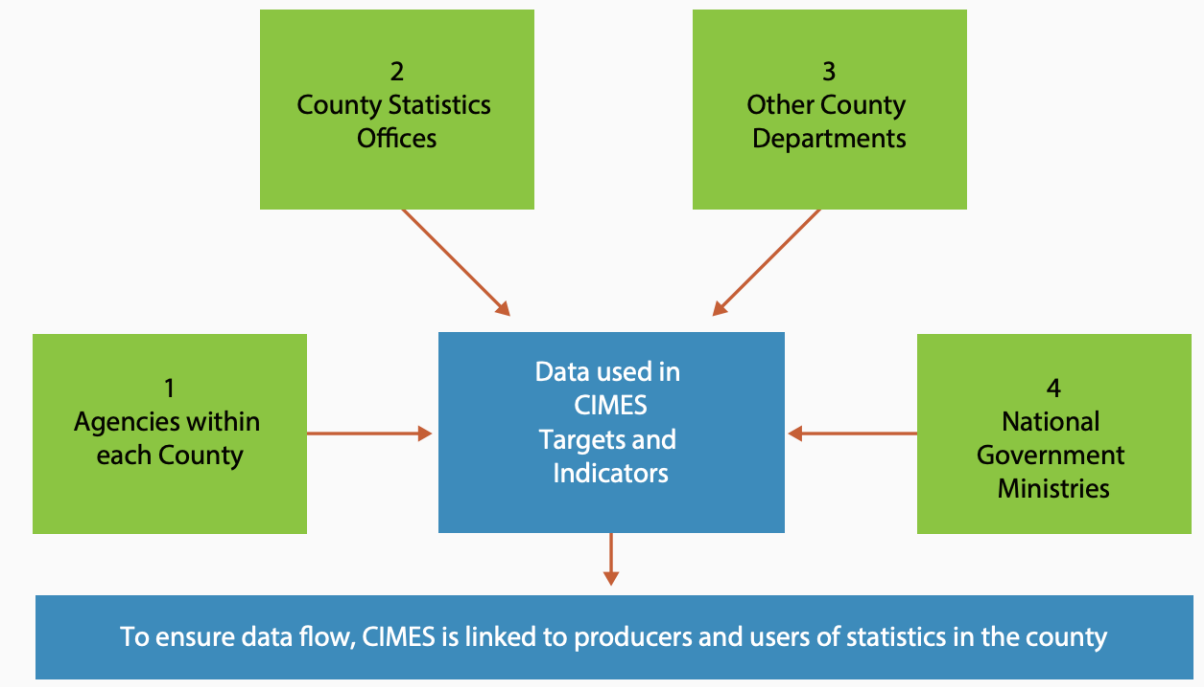

Figure 4: Data sources for CIMES. Source: CIMES 2019

Figure 5: Steps to designing, building and sustaining a result-based M&E system. Source: CIMES 2019

CIMES also provides a list of data points to be collected in tracking all county departments such as education, agriculture, health and ICT.

Despite the progress made, the County Statistics Bill has been in senate since 2016 and has not been enacted. The purpose of the Bill was to provide a framework for the collection, compilation, analysis and dissemination of statistical information, to establish a county statistics office, and to establish the office of the county statistician. As a result of this delay, while the function is theoretically devolved by the constitution requiring it to be shared by the national and county governments, it has still not been effectively streamlined in counties.

The absence of clear guidelines for the establishment of statistics and monitoring and evaluation offices in counties is further manifested by the fact that the function is domiciled in different directorates across counties. In some counties, it is even hosted under the office of the governor which may hinder objectivity of processes and functions as this is an elected position.

2.2 While the policies that are currently used vary from county to county, some counties are pioneers in the creation and adoption of county-specific guidelines for the production and use of data.

The County Government Act (CGA), 2012 under section 47 requires all counties to create performance management plans to evaluate performance of the county public service and the implementation of county policies. Reports emanating from performance monitoring and evaluation are to be tabled by the governor before the county assembly and are required by law to be made publicly available. Section 108 of the CGA further requires that County Integrated Development Plans contain clear provisions for monitoring and evaluation.

All 47 counties have integrated a Monitoring and Evaluation Framework to guide the implementation of projects identified in the County Integrated Development Plans (CIDPs), which are currently in their second cycle since devolution took effect in 2013. CIDPs are further broken down into Annual Development Plans (ADPs) to streamline implementation. A review of the frameworks put forward revealed that most indicators selected for measurement focused more on whether or not the proposed activities were implemented as opposed to the outcomes generated.

Despite having no guiding regulation, a number of counties have proceeded to develop localized monitoring and evaluation policies or proposed legislation to guide practices. For instance, Samburu County[22] , Tana River County[23], and Meru County are among counties in the country that have proceeded to design localized policies to guide Monitoring and Evaluation. Turkana County[24], perhaps among the most advanced in streamlining processes and pushing to enact its Monitoring and Evaluation Bill in 2019.

While most counties do not have approved policies or enacted acts relevant to data management, those that do not are taking steps to increase internal technical capacity. Among the findings emanating from the Key Informant Interviews with counties, was the fact that officials from Bomet County had recently undertaken a benchmarking exercise with Meru County Officials to learn best practices in the design of M&E policies and frameworks. In addition, monitoring and evaluation departments from several counties including Bungoma, Kajiado, Machakos, and Narok have tapped into the expertise of organizations like KIPPRA, who are mandated by law to build the capacity of government officials at both national and sub-national level on tools for monitoring and evaluation of polices as well as the use of evidence in policy design. Similarly, in 2019 the County Government of Kisumu worked with external consultants to support them in reviewing the status of M & E activities and designing a policy framework and M&E plan[25].

To streamline implementation of planned activities and strategies in policies, frameworks and plans, resources are allocated to the function based on county specific needs. Though budgets towards M&E are typically low, being as low as Kes 1.9 million (an equivalent of approximately $17,560) for the first 9 months of the Financial Year 2019/20 for counties like Homa Bay County, the absorption rates remain below 90 per cent for most counties. Budgets for Monitoring and Evaluation in most counties are often utilized on administrative and staff related costs such as the establishment of committees. Arising from the fact that most counties cited inadequate technical capacity to undertake monitoring and evaluation functions in progress reports at the end of the implementation of CIDP 2013-2017, a

[22] https://www.samburu.go.ke/me/
[23] https://www.tanariver.go.ke/download/2019-tana-river-county-monitoring-evaluation-policy/#
[24] https://www.turkana.go.ke/wp-content/uploads/2019/10/Turkana-County-M-E-Bill-2019-Revised-2.doc.pdf
[25] https://www.kisumu.go.ke/wp-content/uploads/2019/03/ToRs-for-ME-System.pdf

significant proportion is also being channelled towards internal human and infrastructure capacity development[26].

Notwithstanding the fact that monitoring and evaluation is a constitutional requirement, the extent to which policies are either developed and adopted or capacity is built for their development, is still strongly dependant on the level of prioritization of the function in CIDPs at the beginning of the implementation cycle. For instance, in the case of Meru, the county executive prioritized development and implementation of an efficiency monitoring standard operating procedures, plan and framework, a results tracking framework, and a performance appraisal. Strengthening of institutional frameworks for the establishment of a delivery unit and the training of staff was also prioritized[27].

2.3 Like national agencies, counties often refer to regional and global development plans that guide data use and economic planning at the county level.

In addition to key local guidelines on budgetary ceilings and progress reporting that are incorporated within Vision 2030, Medium Term Plans, and County Integrated Development Plan (CIDPs), counties refer to regional and global policies to guide data use. County Integrated Development Plans (CIDPs) for the period 2018-2022 are the first to be aligned to Sustainable Development Goals (SDGs), East Africa Community Vision 2050 and Africa Union Agenda 2063. An anonymous interviewee from Meru County stated "we make sure [the county's] work is aligned within a regional framework because we are not doing work in a vacuum".

B. Data Collection and Use

1. Key Stakeholders

1.1 At the national level, the main data producers and users are KNBS and government ministries/agencies, respectively.

In accordance with the Statistics (Amendment) Act, No. 16 of 2019, KNBS, previously the Central Bureau of Statistics (CBS) is the main producer of national statistics in the country. KNBS is responsible for producing statistics on the country's economics on a monthly quarterly and annual basis. Every 10 years, the bureau also conducts large scale national surveys which include the population and housing census, demographic health surveys, integrated household budget surveys, census of industrial establishment, Medium, Small, and Micro Enterprise Surveys, and the census of industrial production.

In response to demand from government, the bureau has also undertaken various surveys aimed at supporting in generating localized solutions. For instance, since the onset of COVID-19 the bureau undertook a household survey aimed at understanding the socio-economic impact of COVID-19 on citizens. In addition, they supported the Central Bank in the development of a Financial Access for Micro and Small Enterprise (MSE) COVID-19 tracker. [28]

In support of the bureau, state agencies and parastatals collect and remit sector specific information and for compilation. Table 2 below gives a summary of examples of administrative data from ministries and parastatals remitted to KNBS for compilation annually in the Economic Survey[29]:

[26] https://cob.go.ke/publications/consolidated-county-budget-implementation-review-reports/

[27] https://cog.go.ke/media-multimedia/reportss/category/106-county-integrated-development-plans-2018-2022?download=306:meru-county-integrated-development-plan-2018-2022

[28] https://www.knbs.or.ke/?wpdmpro=finaccess-mse-covid-19-tracker-survey

[29] https://www.knbs.or.ke/?wpdmpro=economic-survey-2020

Table 3: Examples of Administrative Data Compiled by KNBS from various Primary Sources

Source (includes affiliated agencies)	Subset of Data Collected
Ministry of Labour and Social Protection	• Gazetted Monthly Basic Minimum Wages • Collective Bargaining Agreements Registered by the Industrial Court, 2018 and 2019
The National Treasury	• Monetary Indicators such as: net foreign assets; Broad Money Supply; domestic credit; consolidated Accounts of the Banking System; Nominal Principal Interest Rates, etc. • Gross Secondary Capital Market Statistics • Performance Indicators for Life Insurance Business & General Insurance • Assets of Pension Funds • Budget Indictors: National Budget Estimates; Gross Receipts on the Recurrent & Development Accounts • Trade indicators including value of imports and exports; Import Duty Collections on Selected Categories of Commodities
Controller of Budgets (Independent Office)	• County Government revenue
Ministry of Agriculture, Livestock, Fisheries and Cooperatives	• Production of Selected Agricultural Commodities • Production, Area and Average Yield • Number of Agricultural Societies and Unions
Ministry of Water & Sanitation and Irrigation	• Water Supply and Usage, Sanitation, and Waste Management Indicators
Ministry of Petroleum and Mining	• Petroleum & Electricity Supply and Demand • Average Retail Prices of Selected Petroleum Fuels and Electricity; • Installed and Effective Capacity of Electricity; • Generation and Imports of Electricity, and other energy related indicators
Ministry of Housing and Urban Planning	• Number and value of Private and Public Buildings Completed • Housing Loans advanced by government • Roadworks and rail construction completion status
Ministry of Transport	• Road Maintenance Funds by Source • New Registration of Road Motor Vehicles and Motor Cycles; Road Transport Licenses Issued; Reported Road Traffic Accident
Ministry of Communication and ICT	• Fixed Telephone and Mobile Network Services; Internet Access
Ministry of Education	• No. of institutions by category; enrolment; teacher pupil ratios; student attainment indicators
Ministry of Health	• Registered Members of the National Hospital Insurance Fund; NHIF Receipts and Payouts; Health Facilities by Level, Type and Ownership

KNBS also offers technical assistance in the generation of data to government agencies such as The National Treasury and Planning during the national budgeting process, among others. The main data users, on the other hand, are various government agencies, investors, international agencies, civil society organizations and private citizens conducting research.

1.2 At the county level, the main data producers are the implementers of county programs and projects, while the users are county offices, KNBS and national ministries/agencies. Each county generates data that is used for county planning purposes and that gets compiled by KNBS into official national statistics.[30] This data is generated by program implementers such as technical officers on the ground, who then share it with the county offices and national ministries. Each county also has M&E

[30] http://extwprlegs1.fao.org/docs/pdf/ken127322.pdf

units and technical officers who lead most of the data activities. Therefore, as the main administrative units, Kenya's counties are the main producers and custodians of county-specific data.

In collaboration with KNBS, County Governments also support in the compilation of county level information from administrative records and partly from the recent surveys and census.[31] The first cycle of development of County Statistical Abstracts was done in 2017, the current cycle is underway and has only been completed in Makueni and Laikipia counties.

1.3 Academic institutions, think tanks and people in academia are a central part of the Kenyan data ecosystem.

Most major universities in the nation have departments that provide the intellectual capital and human resource for people who end up working in KNBS and statistical departments in various government agencies. Academics also help to quality control data systems. For instance, KNBS often shares early versions of questionnaires and surveys with academic and think tanks such as KIPPRA for feedback. Additionally, policies that are drafted or designed to guide data work are given to academics and think tanks for them to provide input on the content and quality of the policies.[32]

2. Data Demand and Use Culture

2.1 At the national level, there is more demand and use of data for policy-making than ever before, as highlighted by the COVID-19 pandemic response and policy-making process.

According to a report by the Council of Governors, despite the fact that there are no commensurate investments in robust data production systems to generate what counties need, there is an appreciation of the value of data in decision making by both politicians and technocrats.[33] One of the respondents from KNBS, stated that as the producer of official national statistics, KNBS constantly receives data requests from government agencies and departments, research institutions, international organisations such as the International Monetary Fund (IMF), World Bank and the African Development Bank, local media, and activists. He cited in particular that KNBS conducted two surveys on the impact of COVID-19 on the economy that informed the country's pandemic response policies.[34]

2.2 While data demand and use culture varies from county to county, there have been notable improvements in the data use culture across all counties over the last few years, especially with the creation of M&E departments and technical officers.

At the county level, there are both statutory and non-statutory demands of data. For instance, the county procurement authority and controller of budgets constantly requires data from all county departments to ensure procurement and payments are made. The counties are also required to submit data to national government agencies such as the COG for the creation of annual progress reports and to aid in national-level decisions. In accordance with the County Government Act, 2012, the governor is required to submit annual performance reports on priorities to their respective county assemblies for consideration. These reports are to be made publicly available. This is evidenced by the current COVID-19 pandemic, where counties are required to send weekly statements to inform subnational and national pandemic control measures.

[31] https://www.knbs.or.ke/?wpdmpro=laikipia-county-statistical-abstract-2020

[32] Although we were unable to connect with academics within the project timelines, we have listed some academic and think tank entities within the stakeholder document.

[33] https://www.cog.go.ke/phocadownload/reports/County%20Data%20Assessment%20Report.pdf

[34] https://www.knbs.or.ke/?wpdmpro=survey-on-socio-economic-impact-of-covid-19-on-households-report-wave-one

Non-statutory demands of data vary from county to county, and are engrained in each County's CIDP depending on how much they prioritise data. Meru County, for instance, is constantly producing data to monitor county projects and check how aligned the county activities are with annual development plans. A high prioritisation of data in Meru County has enabled the county to come up with a county M&E framework, an M&E policy and a handbook - all of which outline how to create, use and monitor county data. Other counties like Turkana[35] and Vihiga[36] have gone the extra mile of leveraging on geographic information system (GIS) to map out natural resources and in physical planning for social amenities like hospitals, schools, boreholes etc.

3. Data Systems and Practices

3.1 While data at the national level has become easy to access over the years through open data sources and publicly available datasets, there are challenges with obtaining updated datasets that map onto current user needs.

Over time, data has become easier to access. In the 90s, for instance, the poverty data that used to be collected by the Central Bureau of Statistics was not easily accessible even by ministries and government agencies. Additionally, data from the Welfare Monitoring Service at the time would omit the North Eastern region, one of the most historically and socio-economically marginalized regions in Kenya. Most of the reliable data at the time was only available and accessible for purchase through international organizations such as the IMF and World Bank.

Over time, however, online databases and public datasets that contain government data across various indicators and geographic regions in the country have emerged. These include the KNBS website, which allows any user to take 5% of the data on most surveys for their own data analysis.[37] Open data platforms include Kenya Open Data,[38] and the Kenyan Open Data Initiative,[39] which, in fact, made Kenya the first developing country to have an open government data portal, the first in sub-Saharan Africa and second on the continent after Morocco.[40]

But despite the availability of open data sources, there are still some considerable challenges with access and data coverage.[41] For instance, most of the open databases are not frequently updated, some datasets are difficult to find and some contain rudimentary indicators that do not necessarily map onto the government's urgent demands.

3.2 Despite the availability of data at the county level, there are challenges with consolidation, making it difficult for decision makers to access and verify the data.

[35] https://www.turkana.go.ke/wp-content/uploads/2019/10/Turkana_CIDP_Book_POPULAR_V3.pdf
[36] https://vihiga.go.ke/documents/2018-2022%20CIDP%20Popular%20Version%20FINAL.pdf
[37] https://www.knbs.or.ke/
[38] https://www.opendata.go.ke/
[39] https://data.humdata.org/
[40] https://www.centreforpublicimpact.org/case-study/open-data-kenya
[41] For instance, according to the 2020/21 Open Data Inventory (ODIN) Annual Report, Kenya had a score of 43/100 (55/100 coverage, 32/100 openness), where coverage scores indicate the availability of key indicators and disaggregation while openness indicates "whether data can be downloaded in machine-readable and non-proprietary formats, are accompanied by metadata and whether download options exist such as bulk download and user-selection or APIs, and have an open terms of use or data license." Kenya's scores are lower than countries such as Senegal, which had a score of 49/100 (50/100 coverage, 49/100 openness) and Zambia, which had a score of 46/100 (40/100 coverage, 52/100 openness): Open Data Inventory

Given the statutory and non-statutory demands of data at the county level, most counties often collect data to monitor projects and create progress reports. However, this data is not always consolidated in ways that are relevant and accessible to decision makers. One of the reasons for this is the delayed legislation of the Statistical Bill, which establishes county statistical offices for the management and storage of all county data. As such, data in the counties is currently managed and stored by M&E departments and technical team members in each of the other departments. This contributes to the lack of proper data coordination and single data repositories at the county level, making it difficult for users to access and verify the data.

3.3 At the national level, efforts are made to ensure that the data is collected digitally to the extent possible, adheres to high standards of protection and quality, and is stored in machine readable formats.

KNBS uses a mix of digital and non-digital methods of data collection. Censuses and most of the simpler surveys are collected using digital platforms. However, complex surveys like the Foreign Investment Survey and some monthly economics surveys are easier done on paper because they are quite long. KNBS' data collection processes are guided by the Statistics Act and training manuals, which outline data protection laws. For instance, to ensure compliance with high standards of confidentiality, KNBS is not allowed to collect and publish data that is not aggregated for more than three authorities or entries.

Additionally, KNBS has elaborate supervision and coordination structures to ensure that the data collected meets data quality standards. Once data is collected, it is immediately sent to central servers that check for data quality in order to intervene as soon as possible. After collecting data, KNBS stores it in machine-readable formats, that is, databases compatible with data systems such as Microsoft Excel, Stata and SPSS.

3.4 While data collection, processing and storage practices vary from county to county, there have been notable improvements in aligning with best practices across all counties.

Across all counties, there has been increased usage of data templates and basic data analysis tools that have been created by the Knowledge Management Unit of the COG. This has improved data collection at the county level. In Meru County, data is collected using both digital and non-digital (paper-based) means. In the event that the data is collected using non-digital means, data collectors are required by the Meru M&E Framework and handbook to digitize the data by uploading it onto a Meru Geographic Information System (GIS) platform. The data is then accessible to county officials on a dashboard on Meru County's website. The Meru M&E department, along with the economic planning officers are the authorities in charge of ensuring compliance with data protection policies during collection, processing and storage.

In Kisumu County and Bungoma County, efforts have been made to design a web based automated M&E system capable of tracking project implementation across departments.[42] In addition, counties such as Nairobi,[43] Bungoma,[44] and Mombasa,[45] that do not have adequate internal capacity to undertake M&E have integrated plans to conduct training on competency gaps within their annual development plans.

[42] https://www.kisumu.go.ke/wp-content/uploads/2019/03/ToRs-for-ME-System.pdf
[43] https://nairobiassembly.go.ke/ncca/wp-content/uploads/paperlaid/2020/ANNUAL-DDEVELOPMENT-PLAN-2021-22.pdf
[44] https://bungoma.go.ke/wp-content/uploads/2020/10/THE-ANNUAL-DEVELOPMENT-PLAN-FOR-FY-2019-draft-4.pdf
[45] https://www.mombasaassembly.go.ke/wp-content/uploads/2020/05/Mombasa-ADP-2020-21-Final.pdf

3.5 One of the biggest challenges in the national and subnational data ecosystems is the lack of interoperable systems across various open data portals and databases.

There are multiple data repositories by thematic areas, such as the Kenya Open Data Initiative, the KNBS' National Data Archive (KENADA), Kenya Data Portal and the Kenya Socioeconomic Database (Ken-Info).[46] And while interoperability might be difficult for KNBS to achieve (because it relies on data from different sources, including counties and different government agencies), a lot can be done to ensure more harmonisation across all these data portals and reduce lags in information flow.

3.6 Similarly, across a majority of counties in the country, there is a lack of harmonisation of data because there is no single custodian of all the county data.

There are a number of factors that contribute to the lack of data harmonisation and interoperability in most of the counties. For instance, a lot of the data is not fully disaggregated by geography (sub-county, ward and villages). There is also no single custodian of data due to the lack of statistical offices. Additionally, a lot of county partners propose different systems for the collection, processing and storage of data. This often creates silos and overwhelms county systems. While the COG constantly publishes county reports on the Maarifa Center platform, there are no basic dashboards for data harmonisation and visualisation across all the counties.[47]

The County Government Act, 2012 under clause 105 requires that all counties establish a GIS based database system.[48] As a result of the complexity involved in setting up GIS systems, there are very few counties that have been able to make progress towards creating a single data platform and increasing interoperability. Vihiga County, has established the Vihiga Geospatial Technologies Services (GTS)/GIS directorate which has been charged with the responsibility of establishing frameworks for its implementation. The county was also among the first to leverage on information from GIS databases in the implementation of the Constituency Development Fund in Emuhaya Constituency between 2008 and 2017.[49] Meru County, has also developed a web-based GIS platform that was initially meant for land visualisation, but that now has a data and M&E interface for the reporting of all county projects.[50] Makueni County, with the support of UNDP is also developing a County Spatial Plan, and has established a GIS Mapping Centre within the County.[51] Despite the slow progress towards the implementation of this clause, the Council of Governors with the support of UNDP is working to streamline County Spatial Planning with the support of consultant experts in the areas of physical planning, climate change, gender, and Geographical Information Systems.[52]

3.7 While KNBS ensures that data at the national level is disseminated and accessible through digital dashboards, emails and paper copies, civic engagement with the data is lacking.

KNBS has developed different portals and dashboards for the dissemination and visualisation of the data produced. These include KENADA, Kenya Data Portal and Ken-Info.[53] Additionally, KNBS frequently sends out emails and hardcopy reports of new surveys.

[46] https://www.knbs.or.ke/?p=112
[47] https://maarifa.cog.go.ke/
[48] http://www.parliament.go.ke/sites/default/files/2017-05/CountyGovernmentsAct_No17of2012_1.pdf
[49] https://africanews.space/kenya-passed-a-law-mandating-all-counties-to-develop-gis-based-database-systems-and-the-results-are-incredible/
[50] The platform was initially provided by the Ministry of Lands for use in land mapping. However, Meru County hired a developer to create data and M&E interface that can be used to store and visualise all county data in real time.
[51] https://www.ke.undp.org/content/kenya/en/home/presscenter/pressreleases/2018/Spatial-Planning-Makueni.html
[52] https://www.ke.undp.org/content/kenya/en/home/presscenter/pressreleases/2018/Spatial-Planning-Makueni.html
[53] https://www.knbs.or.ke/?p=112

There has been a significant challenge, however, in maintaining citizen engagement with the data. For instance, most of the citizen-led activism efforts barely utilize data informed processes. The situation trickles down to the grassroots (i.e. village-level), where there is a dearth of village-level data to express people's needs at town hall gatherings. According to KNBS, there is a significant lack of appreciation of the importance of statistics from the general public. Additionally, some of the people who engage with the data seem to have political and vested interests, such as disputing the data in order to critique the government or get greater resource allocation in their counties.[54]

3.8 Infrastructure remains a Challenge to the development and utilization of proper data systems especially at County Level.

The proportion of internet users in Kenya, still stands at approximately 23%, which amounts to less than a quarter of the population. An assessment undertaken by the Council of Governors identifies the lack of infrastructure as a major hindrance to the streamlining of data systems in Counties. In Wajir and Kisumu for instance, internet connectivity was unstable and the statistics offices lacked appropriate software for data processing. In addition, considering the vital role played by all County departments/ directorates in the submission of administrative data to the M&E office for compilation, it was found that in some instances such as in Kakamega County, infrastructure was limited outside of the planning offices.

3.9 Despite improvements in human capacity over the last decade, understaffing remains a significant setback at both the national and subnational levels.

Across all the counties, M&E offices have been created with skilled M&E officers. Additionally, the COG also has sectoral committees to support county data activities. However, there is still a significant lack of human capacity to match the data demand at the county level. For instance, the development of the COG data dashboard has been delayed due to challenges of human capacity. Similarly, KNBS does not have the capacity to generate primary data, and instead relies on counties to collect and provide the data.

3.10 In terms of the skillset of the current data workforce in the counties and at KNBS, there are certain academic requirements all data officers should have.

These include Economics, Data Science, Actuarial science, Demography, Accounts and Finance. Additionally, all employees undergo training sessions relevant to their lines of work, where they are guided on data best practices in accordance with the Statistics Act, policy guidelines and training manuals. For instance, in Nairobi County, in the 2019/20 implementation cycle, it was envisioned that members of the planning and ICT departments underwent needs-based training to enhance performance improvement.[55]

4. Funding and Partnerships

4.1 While funding for data activities remains a challenge in Kenya and most other developing nations, KNBS receives funding from the National Treasury and collaborates with local and international development agencies to support most of its activities.

Apart from KNBS, which receives funding from the National Treasury, most of the other funding for national data-related activities is decentralized and included in ministerial, county and program budgets. In addition to the National Treasury, KNBS has also received funding and support from development agencies such as UN Women who are currently funding a survey on time use analysis,

[54] This is done either through disputing the poverty data that is produced or influencing the numbers at the point of collection in order to make some counties look like they have more people, so as to increase their resource allocation.

[55] https://nairobiassembly.go.ke/ncca/wp-content/uploads/paperlaid/2020/ANNUAL-DDEVELOPMENT-PLAN-2021-22.pdf

the World Bank who fund a lot of poverty-related data activities, United Nations Children's Fund (UNICEF) who fund a lot of surveys involving children under 5 and mothers surveys, the United Nations Development Programme (UNDP) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). Over the years, KNBS has established partnerships with various local and international bodies so as to collect data across different indicators. The local agencies include the Communications Authority, the Central Bank of Kenya, and the Ministry of Energy. International agencies include Statistics Sweden, the United Kingdom Office for National Statistics, Statistics Norway, Statistics Canada, the African Development Bank, the IMF, and the World Bank, among others. In fact, KNBS has a directorate that deals with coordination of all local and international data partnerships.

However, data and data collection remains expensive, and according to an interviewee from KNBS, "funding is something we will never have enough of."

4.2 While funding for data activities varies from county to county, allocation for data activities is generally very limited in most counties with a few exceptions such as Meru, Vihiga, Bungoma, and Narok county.

At the county level, statistics falls under the planning docket. Therefore, funding for statistics is informed by a voting system like all the other activities of the county. And while there are no specific funds allocated to data collection, there is funding for M&E work. Counties also often receive financial and in-kind support from partners helping them to collect data.

However, the allocation of funding for data activities in the county budget varies from county to county. A major hindrance to increments in budgets for monitoring and evaluation, is that even among the counties with the highest allocation, utilization remains low. Absorption rates for Vihiga, Bungoma, Meru, and Narok for the first 9 months of the 2020/2021 financial year stood at 19.9%, 68.1%, 44%, and 21% respectively.[56]

In counties where there is high prioritization of data requirements in policies and plans, additional measures have been put in place to raise revenue for monitoring and evaluation activities. For instance, according to an anonymous interviewee from Meru County, the county government imposes a 2% levy on all project budgets for M&E work in line with global requirements.

4.3 In addition to improved political goodwill, there are stronger collaborations between county departments and stakeholders such as KNBS than before.

There has been a notable improvement in political goodwill of subnational data activities across all counties. This is highlighted by the fact that data prioritisation was one of the considerations during the Sixth State of Devolution address in in 2019.[57] Additionally, all counties have built capacities for M&E officers over the last few years. There have also been increased partnerships with KNBS, which has led to better coordination of data collection across the counties. For instance, KNBS recently developed and launched the GCP (Gross County Product) indicator to inform the contribution of each county to the country's Gross Domestic Product (GDP).

[56] https://cog.go.ke/media-multimedia/reportss/category/106-county-integrated-development-plans-2018-2022?download=306:meru-county-integrated-development-plan-2018-2022

[57] https://s3-eu-west-1.amazonaws.com/s3.sourceafrica.net/documents/119229/STATE-of-DEVOLUTION-ADDRESS-2019.txt

C. Overview of the Data Systems in Key Sectors

1. Health

The Ministry of Health (MOH) is perhaps one of the government agencies with more elaborate data systems in the country.

This has been necessitated, in the last few years, by the President's "Big Four" agenda, which lists "universal health coverage" as one of the four pillars President Kenyatta wants to achieve before the end of his presidential term in 2022.[58] In order to ensure alignment with this, MOH has identified the main challenges affecting health data systems in Kenya and created policy provisions to address them.

Each of the 47 counties in the country has health departments that are constantly producing data across all their different health facilities.

As such, there is not a dearth of health data in the country. Instead, there is a challenge with harmonisation. For instance, some of the data is digitized, while some is paper-based. Health data is also not transmitted from all counties in a harmonised way and at the same time, creating lags and duplication in the consolidation of national health data. Additionally, there are multiple databases and platforms that have been created over the years to help store and visualise health data, creating silos.[59] A good example is HIV/AIDS data, which has 5 main data repositories, shown in Figure 6 below.

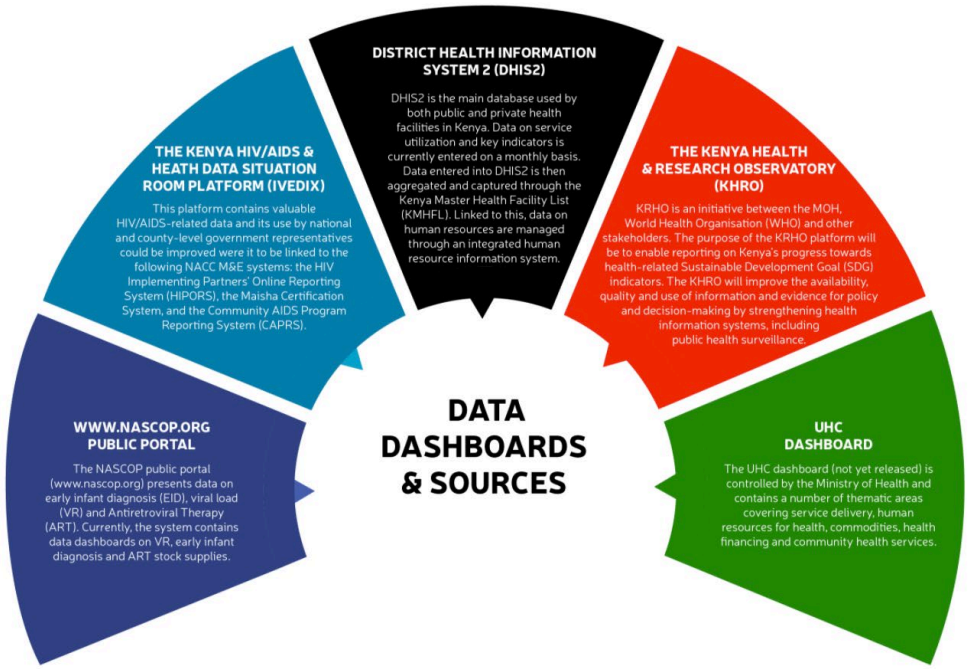

Figure 6: Main data dashboards and sources in the HIV/AIDS sector. Source: Global Partnership for Sustainable Development Data

[58] https://www.president.go.ke/
[59]https://www.data4sdgs.org/index.php/resources/joining-data-universal-healthcare-kenya-view-ministry-health

MOH has, over the years, established and made available a number of policies to address the challenges in the health data systems.

These include the Kenya e-Health Strategy 2011 - 2017, Kenya National e-Health Policy 2016 – 2030, the Health Act 2017 and, most recently, the Kenya health information systems interoperability framework (KHISIF):

- The Kenya e-Health Strategy 2011 - 2017 outlines strategies for the actualization of e-Health in Kenya; specifically, how to use ICTs effectively in delivering health sector information.
- Kenya National e-Health Policy 2016 – 2030 establishes policies for health on the adoption of e-Health, regulation of health data, electronic records, interoperability, sharing of data, confidentiality, capacity building, financing and access, among others.
- Health Act 2017 documents the legal provisions for e-Health. It contains clauses on data security, data privacy and interoperability.
- Kenya health information systems interoperability framework (KHISIF) outlines Kenya's framework towards achieving interoperability in the health sector, and best practices in health information systems governance and standardization. It also sets out recommendations for health information exchange architecture and provides a roadmap to impactful interoperability. Figure 7 below shows the proposed conceptual framework to ensure the health architecture across various health systems and providers is interoperable.

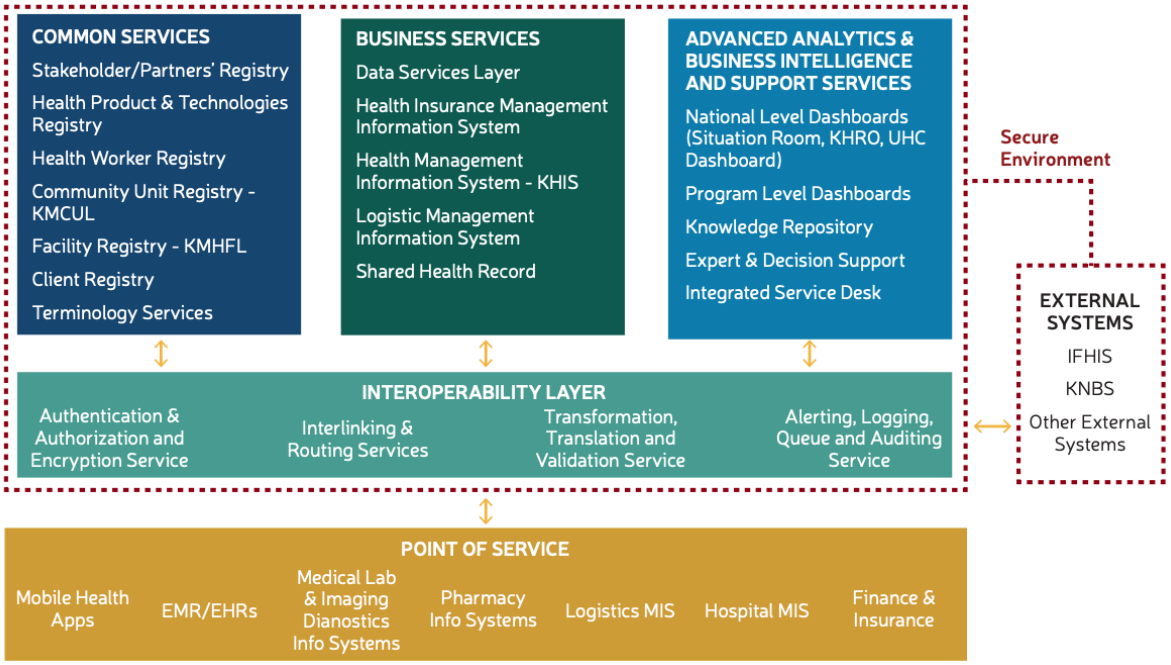

Figure 7: Kenya Health Interoperability Framework. Source: Kenya Health Information Systems Interoperability Framework

2. Education

While there are not a lot of widely available policies guiding data management in the education sector, the National Education Sector Strategic Plan 2018 -2022 outlines the main data challenges and proposed solutions the Ministry of Education (MOE) is undertaking.

Some of the challenges include lack of timely, reliable and accurate data. Additionally, there is a lack of harmonisation of all the different education data systems across the 47 counties. Like in the Health sector, this creates silos and a situation where different counties have different portals or data systems that do not interact with each other, leading to duplication and mismatches.

In response to these challenges, the MOE received a grant from the Global Partnership for Education (GPE) to create and launch the National Education Management Information System (NEMIS) in 2018.

NEMIS is an online platform that stores all schools' and students' education data from the time of registration at all levels of education in the country. This data includes but is not limited to the curriculum information, students' performances, teaching and non-teaching staff information, and financial records. NEMIS is, therefore, a harmonised way of collecting all education data in the country and will be invaluable in tracking various education indicators and programs over time.[60]

However, in order to fully realize the benefits of NEMIS[61] the government has identified areas to build human and infrastructural capacity that will need to be prioritised.

These include finalizing the establishment of the legal framework for NEMIS, offering frequent training to the NEMIS technical team on emerging technologies in data security and analysis, decentralizing NEMIS by establishing county offices to ensure proper management at the main administrative unit, and providing human resources to manage and lead NEMIS system at the sub-counties and villages across all learning institutions.

NEXT STEPS

This scoping exercise demonstrates that while there have been notable improvements in the legislative environment and data use culture across the nation and most of the 47 counties over the years, there are still some obstacles national and subnational agencies and counties face when executing their mandates. The scoping exercise, therefore, provides information that can inform APHRC's next phase of the data scoping work.

Our scoping exercise focused on a limited number of national agencies, subnational units and document reviews. However, the country has a much broader range of legislative documents, ministries and counties we did not evaluate in this activity. As such, we believe this exercise should serve as the beginning of a larger push to get a comprehensive understanding of the data ecosystem to inform government and development sector support. This section outlines some next steps to APHRC and subnational and national decision makers to achieve this broader goal.

1. Next steps for APHRC

1.1. Focus on supporting data systems in counties rather than any other level of decision-making and finalize a selection criteria based on key priority areas.

The devolution system of governance in Kenya has decentralized most power (including data mandates) to the county level. As such, the most data partnerships, funding and infrastructure APHRC can engage with are available at the county rather than the national level. However, due to the different dynamics in play and the uniqueness of each county, it will be important to agree on a process for county selection based on key criteria. And while IDinsight can propose a few counties such as Bomet, Meru, Laikipia, and Makueni, it is important to note that these are based on interviewee's opinions and our understanding of selection criteria (counties with strong underlying infrastructure, a partner academic institution, and available funding). It will be important for APHRC to define a final selection criterion and develop a long list of possible partner counties that can be

[60] All You Need to Know About NEMIS
[61] National Education Management Information System (NEMIS)

targeted for support before selecting a few. This is because there are country-specific situations that may not be necessarily evident for the seemingly poorer performing counties.

1.2 Focus on the following highlighted areas when strengthening county and sector capacities: harmonising data systems, capacity building and creating institutional frameworks for data activities.

"We are not short of data or policies. But there is a lot of working in silos – what we would want to see is strategic partnerships and collaborations of people in the data space to work towards a central place and harmonisation." [Anonymous interviewee]

One of the most important challenges that emerged from the scoping exercise was the lack of data coordination and harmonisation at the national, subnational and sector levels. As such, one of the most valuable ways to strengthen data systems would be to provide support for a harmonised way of collecting, storing, sharing and receiving data. This is as much a political challenge as it is a data challenge, and supporting significant policy changes that create more harmonised data systems requires that APHRC first deeply understand the data and political structures underpinning the data systems.

Another challenge is the lack of adequate and empowered human capacity for data activities. APHRC might want to consider identifying "data champions" in the counties that will be picked for data systems strengthening. APHRC could then not only ensure these "data champions" are skilled, but that they are also empowered and ignited to understand the importance of following up on data.

In addition to human capacity, APHRC could consider helping these "data champions" develop institutional capacities and frameworks to produce, collect and store data. This could be through the creation of county-specific data frameworks and handbooks to guide data activities.

2. Next steps for subnational decision makers

2.1 Prioritise allocating more funding to data activities at the county level

"Data is key but data is expensive. You will find that most people do not allocate resources for data – they will allocate resources for building a road, but not a survey to see if people need a road, or what the social impact of the road is." [Patrick Kigunda (Meru County M&E Director)]

One of the most pressing challenges that were highlighted in the scoping exercise was the varied funding for data activities across the counties, where some counties allocate more than others. It will be important for counties to learn from each other by looking at the better performing counties and the amount of funding they allocate to data activities.

2.2 Build and empower data teams that will lead all county data activities

"It will be important to put a team together with people who have capacity and who appreciate what data can do for the county. We need to build a team that understands what data is for." [Patrick Kigunda (Meru County M&E Director)]

Seeing as data informs many county activities, it is important to ensure there are teams that are empowered to be the custodians of all county data and to ensure that data in the county is used in accordance with the data mandates. These teams will also be responsible for the coordination of data collection, analysis, use and management of data, to reduce the current silos.

3. Next steps for national decision makers

3.1 Prioritise the review, legislation and amendment of data policies

"Policy-wise, we lag behind too much. The Data Protection Policy is still being debated. For instance, there was a recent public discussion about this policy. It is unfortunate that now is when we are getting concerned about data protection." [Anonymous interviewee]

At the national level, there is a notable delay in drafting, reviewing and legislating policies for data activities. A lot of the M&E policies, frameworks and handbooks that are used at the national level have not been officially legislated. It will be important to set these policies as legal blueprints and laws so as to standard the implementation of data practices and incentivize decision makers to prioritise data activities.

3.2 Sensitize national decision makers to help them understand the importance and need for data in decision making

"I would recommend the sensitization to help people and decision makers understand the need for data in guiding how resources will be allocated and other county decision making." [Anonymous interviewee]

Sensitization of decision makers at the national level on the role data plays in effective governance will be key to ensuring improved data use and adherence. Due to the statutory demands of data, sensitization at the national level will have a trickle-down effect on subnational units and sectors. It will also create data use incentives across national and subnational units.

ZAMBIA

BACKGROUND

Zambia had one of Africa's fastest growing economies from 2004-2014, with real GDP growth averaging approximately 6.7% per annum. However, the rate of growth has slowed post-2015, because of dropping commodity prices (particularly copper), reduced electricity production, and local current depreciation.

Table 4: Zambia's profile, from the Human Development Report 2020

Indicator	Zambia	Sub-Saharan Africa
Life expectancy at birth (years)	63.9	61.5
Mortality rate, under-five (per 1,000 live births)	57.8	76.7
Expected years of schooling (years)	11.5	10
Government expenditure on education (% of GDP)	4.7	4.7
Literacy rate, adult (% ages 15 and older)	86.7	65.3
Gross national income (GNI) per capita (constant 2017 PPP$)	3,326	3,685
Antenatal care coverage, at least one visit (%)	96.9	84.1
Maternal mortality ratio (deaths per 100,000 live births)	213	535.2
Population in multidimensional poverty, headcount (%)	47.9	55
Population living below income poverty line, national poverty line (%)	54.4	43.4
Unemployment, total (% of labour force)	11.4	6.4
Unemployment, youth (% ages 15 - 24)	21.4	10.7
Internet users, total (% of population)	14.3	25.2
Mobile phone subscriptions (per 100 people)	89.2	76.6

Zambia's current governance structure across its 10 provinces is, to some extent, devolved. The Zambian administrative system is divided into four units: provinces, districts, constituencies, and wards. In total there are 10 provinces, 116 districts, 156 constituencies, and 1,624 wards in the country (Figure 8). Local government authorities assume administrative responsibility for health, education, and infrastructure. These authorities also have a limited scope to generate revenue and to determine their own expenditures.

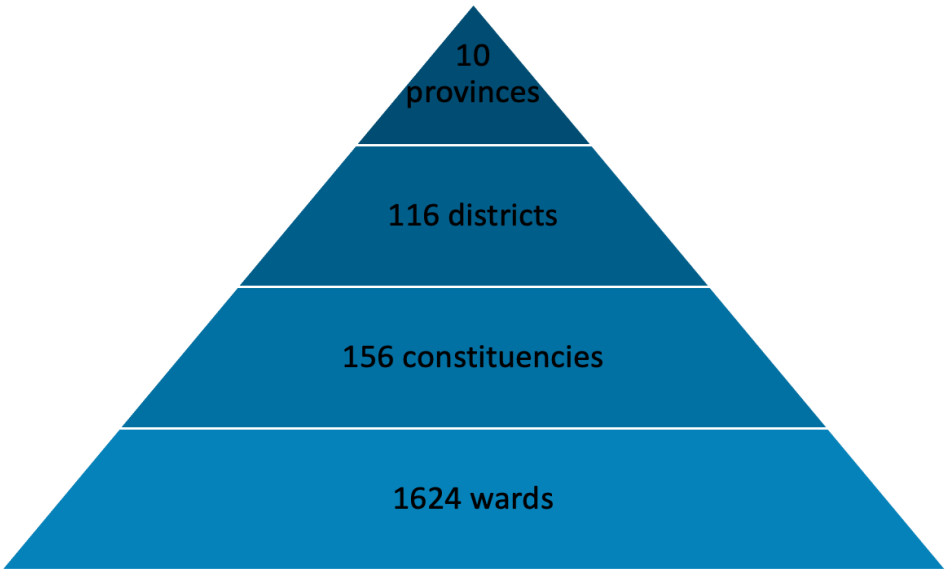

Figure 8: Illustration of the governance structure in Zambia

There are three branches of government in Zambia: executive, legislative and judicial. Members of legislature, or members of parliament are elected to the National Assembly. Each elected Member of Parliament represents a constituency (Figure 9). The Zambian president appoints a Cabinet, populated by ministers, their deputies, and provincial deputy ministers. The president also appoints a provincial minister to represent each province, which is composed of districts. Each district has a district council chairman, who reports to the provincial deputy minister. The permanent secretary heads each province's administrative body. Major cities in Zambia such as Lusaka, Ndola, and Kitwe also have councils and mayors. Additionally, Zambia has a House of Chiefs with 50 members gathered from all provinces. The members advise on a variety of customary and traditional issues.

	Central			Local		
	Institution	**Policy Head**	**Executive Head**	**Institution**	**Policy Head**	**Executive Head**
National	Cabinet	Republican President	Secretary to the Cabinet			
	Line Ministries	Minister	Permanent Secretary			
Provincial	Provincial Administration	Provincial Minister	Permanent Secretary			
District	District Administration		District commissioner	City and Municipal Councils	Mayor	Town Clerk
				District Councils	Chairman	Council Secretary
Sub District				Wards	Councilor	

Figure 9: Government administration structure in Zambia. Source: UN Habitat, Fiscal Decentralisation in Zambia

APPROACH

We focused on two sources of data for the Zambian data landscape:

1. Reviews of national policies and other documentation governing data, monitoring and evaluation. Key documents are listed below:

- The National Monitoring & Evaluation Policy, developed for 2019-2023, aims to assess the country's progress in achieving middle income status by 2020.
- The National Development Planning and Budgeting Policy in 2014 outlines guidance for data collection in the public sector.
- The National Performance Framework is linked to the Vision 2030. It outlines key performance indicators intended to measure progress towards middle-income status by 2030.
- National Health Strategic Plan Monitoring and Evaluation Framework is likely one of the more detailed sector-specific plans. It combines priorities from the NDP, and the Sustainable Development Goals into one set of indicators. It is based on the World Health Organisation Africa Region Framework for Universal Health Coverage.
- National e-Health Strategy provides guidance on mainstreaming the use of ICT in the health sector. A key goal here is to improve the interoperability of health data between different systems.
- Smart Zambia Institute: In 2016 the government mandated the creation of the Smart Zambia Institute, which attempts to coordinate the implementation of electronic government services and platforms.
- National Statistics Act: In 2018 the government passed the Act in an attempt to consolidate and expand the mandate of Zambia Statistics Agency, the country's statistical body.
- National Strategies for the Development of Statistics, developed for 2019-2023 is intended to strengthen the role of the national statistical system in Zambia.

2. Interviews with key stakeholders to cross-check desk literature. In order to compile this section, we conducted 7 interviews with stakeholders from or working closely with government:

- Monitoring & Evaluation Manager, Ministry of Health (MoH)
- Senior Monitoring & Evaluation Officer, Healthy Learners (an NGO that works with MoH)
- Principal Planning Officer, Budgets, Ministry of General Education
- Assistant Director, Monitoring & Evaluation, Ministry of National Development Planning
- Assistant Director, Information Research and Dissemination Division, Zambia Statistics Agency
- Assistant Director, Economic and Financial Statistics Division, Zambia Statistics Agency
- Principal Systems Developer, Smart Zambia Institute

3. Considerations on national versus subnational data systems in Zambia: As we conducted interviews and reviewed literature, it became apparent that national data systems were the focus of policies and implementation. National systems were important in informing central

decision-making, which then filtered down to the subnational units. Subnational data systems were important in that they fed the national system, however, there was limited focus on these systems in their own right, as complete institutions. Therefore, in the following Zambia Country Report, APHRC will find a larger spotlight placed on national systems, to mirror the existing system.

FINDINGS

A. Legal and Policy Framework

1. National Data Ecosystem

1.1 The Zambian government has outlined a vision to gain middle-income status by 2030, dubbed Vision 2030.

In pursuit of this vision, the government releases a 5-year National Development Plan (NDP) that is the basis of all its economic and social activities, including governance of all data-related endeavours. The current 7th NDP provides detailed information on policy and strategy from 2017-2021. Each line ministry formulates its own strategies and goals based on this plan.

1.2 Between 2006-2011, Zambia's economic growth averaged 5%; this was below target and increased pressure on the government to demonstrate results of its development programmes.[62]

The government conducted a needs assessment study in 2015. The findings indicated very limited links between evidence and policy making, and weak partnerships between programmes and annual budgets, patchy systems of data collection and an uncoordinated M&E system. The findings also showed a mismatch in M&E levels across governments. Generally most ministries had planning departments, however planners did not have M&E activities in their job descriptions. M&E deliverables were then executed by staff with other planning roles. This stretched them thin and also made it difficult to link planning activities to data. The National Monitoring and Evaluation Strategy highlights that midline and endline evaluations are conducted for NDPS, but few other policies or programmes are evaluated.

1.3 The government has attempted to address these data coordination challenges through a set of new policies.

In 2014 the government passed the National Planning and Budgeting Policy, which aimed to strengthen the link between planning, monitoring, and budgeting. The government also developed the National Strategies for the Development of Statistics, which aimed at boosting the national statistical system in mandate and usage. Smart Zambia Institute was established to coordinate ICT systems across government platforms. The government also began a phased approach towards setting up a government-wide M&E information management system (GW-M&E/MIS). In 2018, a National Performance Framework was also developed for stakeholders to unify their projects and measurements in line with the NDP and Vision 2030.[63]

2. Subnational Data Ecosystem

2.1 Data collection in Zambia is highly sector-specific and each line ministry determines its own approach to data collection and usage amongst its subnational units.

[62] National Monitoring & Evaluation Policy, 2019-2023
[63] National Monitoring & Evaluation Policy, 2019-2023

The exceptions are the Zambia Statistics Agency and the Ministry of National Development Planning, which centrally oversee the production and dissemination of data across stakeholders. Although there is a National Monitoring and Evaluation Policy, implementation is patchy and ministries still rely on their own systems. Data from each ministry follows the administrative subdivision and is fed upwards from subunits and aggregated until it reaches the national level.

2.2 Health and education data is collected via subnational units specific to each line ministry and then aggregated at each level.

Health data is collected from community workers, and then passes to the health facility level. Facility data is then aggregated at the district level and again at the province and ministry level, until a final dataset sits within the Ministry of Health headquarters. Tertiary hospitals are under the jurisdiction of national administrative bodies, whereas general and lower tier hospitals fall under provincial administrative units. Education data follows a similar structure, except data is first aggregated at the school level. Timeframes for this aggregation can vary at each level, but generally take place every 1 - 2 months.

B. Data Collection and Use

1. Key Stakeholders

Below is a compilation of key players in the data ecosystem in Zambia.

A. **The Zambia Statistics Agency (Zamstats)**

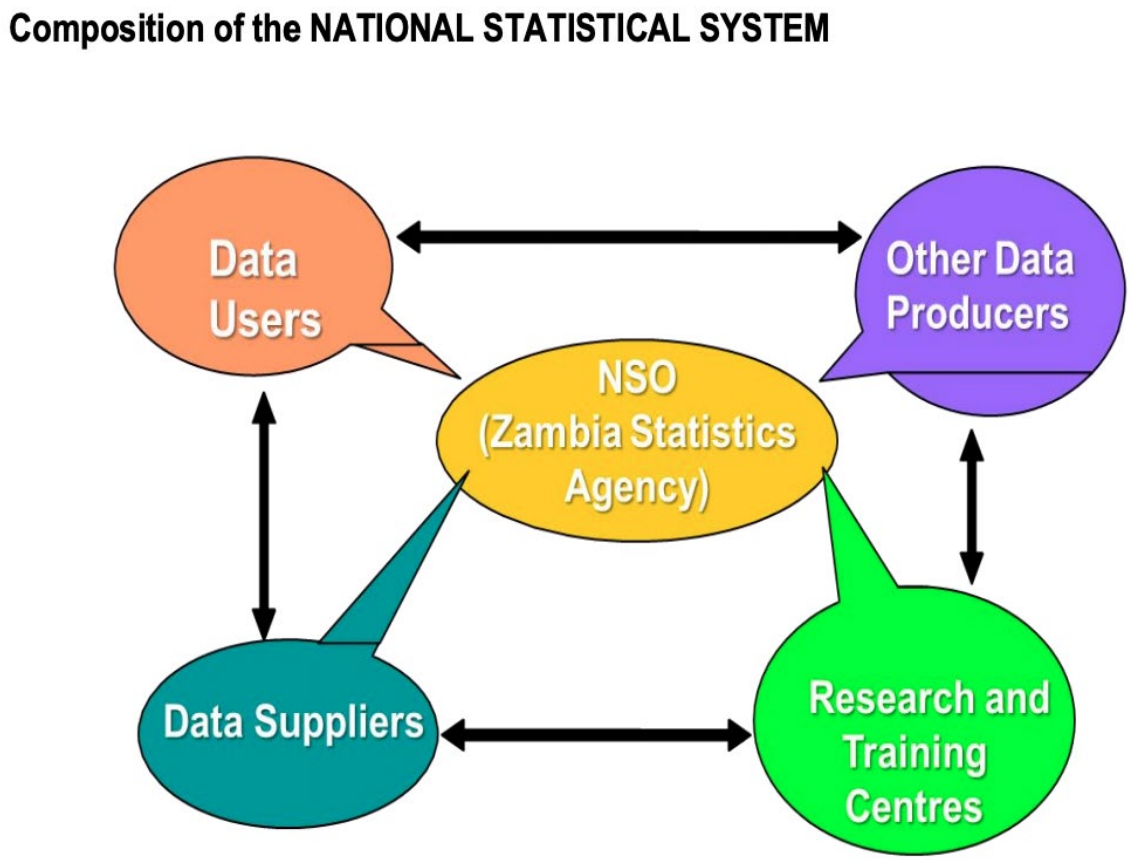

Figure 10: Structure of the national data ecosystem as described by the Zambia Statistics Agency

1.1 The official statistics body for the country is Zambia Statistics Agency, previously the Central Statistical Office, overhauled in 2018 by the National Statistics Act.

The landmark Act mandated that Zambia Statistics Agency should lead the charge in establishing an integrated statistical system, with increased coordination and collection of data, protection of personal data, and building the capacity of institutions. They have also developed the National Strategy for the Development of Statistics, which aims to integrate different sectors' statistical needs into one document.

1.2 Zambia Statistics interviewees have maintained that this Act has changed the data ecosystem in Zambia by offering a holistic governance approach to data use.

Zambia Statistics Agency has a variety of outputs. One of their key disseminations is a statistical bulletin, in circulation since 2004, which outlines progress being made against set indicators in achieving Vision 2030. They also undertake a Housing and Population Census every 10 years. Zambia Statistics Agency's national administrative database is composed of data sourced from these surveys, alongside administrative data sourced from individual sectors.

1.3 Despite their widened scope, the Zambia Statistics Agency still faces challenges in implementation.

There is a lack of recognition amongst stakeholders that statistics are a major component of national development. This results in insufficient usage of data in decision-making. Zambia Statistics Agency is required to establish a statistical unit in each line ministry, but this is not always a smooth process, and they have not been able to coordinate all activities within individual institutions. The quality of administrative data from other institutions is also not guaranteed. Data completeness was also another challenge, with one interviewee estimating that reporting capacity in 2018 stood between 31-34%.

1.4 As Zambia Statistics Agency is the official source for statistics, requests can get overwhelming with people requesting a combination of data that is only available from specialised surveys.

For example, there was a spike in demand to assess the impact of COVID-19 on specific sector activities. The team is then stretched thin in responding to these requests. Further, nuanced and specific datasets for niche requests do not always exist and would require a new survey.

1.5 Opportunities for collaboration with Zambia Statistics Agency focus on capacity building of data skills.

Requests for data come from a variety of stakeholders, and training in specialised data processing is valuable. The breadth of skillsets also needs to be increased to accommodate the new, wider mandate of Zambia Statistics. Other practical ways of assistance include developing terms of references for new statistical offices, and promoting collaborations with other partners and statistical offices.

B. **Ministry of National Development Planning**

1.6 The Ministry of National Development Planning (MNDP) is in charge of planning and economic activities in order to achieve Vision 2030.

MNDP's monitoring and evaluation department tracks the delivery of public services and assesses the impact of policies and development projects. The department began by collecting information from stakeholders, who would submit it in different formats. They then moved to a standardised method of collection, with a centralised M&E platform, as part of the National Monitoring and Evaluation

Strategy. The platform is loaded with input, output, outcome, and impact data from Zambia Statistics and other sector-specific stakeholders. This data is then monitored against the preloaded work plans for ministries. The platform is not fully operational, but targets full functionality by the end of 2021. If the platform usage reaches 80-90%, then data delays will be significantly reduced. Donor support was used to develop this platform, however, after 2 years of support, costs are now being borne by the government. MNDP also works closely with Zambia Statistics to provide statistics and share these with the government.

1.7 Despite the development of an electronic platform, MNDP still faces challenges in the usage of the platform.

The interviewee from MNDP cited behavioural challenges, where people were intimidated by the use of technology in M&E, and found paper-based templates easier. He also said there was a need for platforms to be used at the district level as well, not just at higher national levels. MNDP also does not have authority from the treasury to recruit staff at will, although they do require recruitment of more officers to perform data analysis and M&E functions. This need will only increase if this platform is adopted and used across ministries.

2. Data Demand and Use Culture

2.1 The Zambian government is making a push towards encouraging a culture of data use through policies that emphasise the need for data in decision-making and monitoring & evaluation. For example, it passed the National Statistical Act of 2018 that addresses coordination of the country's data system.

Development of a centralised M&E platform housed within MNDP has also begun. The National Monitoring and Evaluation policy was also launched to give guidance on measuring and reporting activities, thereby encouraging a culture where decisions are informed by data. High-level decisions at MoH and MoGE are informed by data out of necessity. For example, patient-level data informs funding for clinics, and enrolment data informs funding for schools. However, aside from cost-related planning, there is a limited indication that this data is used for official monitoring purposes, as a way to course-correct programme delivery.

Additionally, despite the new documentation, the data systems are still siloed and collaboration between different ministries is not an everyday activity. Systems tend to be developed for the functions of each ministry, rather than the government as a whole. This means that each ministry has its own culture of data use, which varies drastically depending on capacity and donor collaborations. Some interviewees have pointed out that this is understandable, given the difference in the type of data collected by each ministry, and that it will take a major shift for ministries to leave their current platforms developed for their unique data needs.

Subnational units are often altogether omitted as data users because data-informed decisions are made centrally, and then imposed using a top-down approach. The data collection pattern remains similar across ministries and follows a bottom-up pattern from district level to the provincial level.

2.2 Accessing data for use in decision-making, or general interest entails a degree of bureaucracy, with a lack of interoperability hindering collaboration between users.

The data user has to submit written requests to a head of department who may often be too busy to grant approval, cutting the end-user's access off completely because of a lack of capacity at the statistical offices. When these requests are approved, individuals are granted access to data subsets. This authorisation policy sometimes acts as a roadblock towards data utilisation. Interviewees have mentioned there can be some politically oriented suspicion around why the user wants to access the

data. The interviewee also mentioned that it is possible the user may be denied access if the data will be used for political purposes.

If issued, the data is also only a subset of a wider dataset, which cannot be freely accessed. Only subsets that match the individual's written request are released. If the user has an expanded scope of analysis or has a new research question, he/she has to begin the approval process again, stating the new purpose. One interviewee described some data as "embargoed."

A lack of interoperability remains a major challenge in data usage, as data is not easily transferable between ministries or to other users. If a user does gain access, many interviewees have said the data is issued in a format that cannot be easily accessed or requires some decryption before use.

3. Data Systems and Practices

3.1 Data systems, including monitoring and evaluation systems, in Zambia, appear to be operational but somewhat fragmented.

National M&E strategies appear to be drafted, but it is unclear whether they have been implemented. Major ministries such as education and health do have comprehensive information management systems, although these seem to be lacking in other ministries. The M&E plans in place vary depending on the sector, with some sectors lacking one altogether. This makes it difficult if not impossible to assess the state of the data ecosystem at a national level.

3.2 Each ministry uses its own internal policies that govern their use of data.

Most ministries will have guidelines that dictate how data should be managed. All interviewees mentioned that data stored on government servers were usually encrypted, de-identified and password-protected. Differential access was also granted to users. For example, data producers at the bottom tiers would only have access to district data, but individuals at national level such as statisticians can access national datasets. There are also National Data Warehouses that store aggregated government data over extended periods.

3.3 Most government representatives interviewed mentioned that there has been a large shift from paper-based to digital surveys for data collection.

Even if records are paper-based, they get transcribed into an electronic format and the resulting data is stored on government servers, or at the National Data Warehouse. Where possible, surveys are also being aggregated to save on data collection time and costs.

3.3 Smart Zambia Institute and Zambia Information and Communications Technology Authority (ZICTA), and internal ministry ICT teams are bodies that monitor the use of data in Zambia.

There are some political sensitivities that arose when speaking with interviewees, with some declining to answer questions on whether there were penalties enforced against those who do not comply with data guidelines.

3.4 Skills training and lack of capacity were perhaps the commonly cited challenges.

This was particularly acute for subnational rural units. There tended to be some level of mismatch between the demand and supply of data. Stakeholders were requesting specialised or disaggregated data, which could only be procured through detailed data analysis, and there were not enough analysts with the time or skillset to meet this type of demand for nuanced data. This is also underscored by the difficulty in finding academics that were linked to government bodies and involved in activities such as capacity building with the government. There are many members of academia

who conduct research and publish papers, but few who actively and frequently engage with the government on the particular issue of data use.

3.5 A further issue was timeliness of data production.

3 out of the 4 ministries interviewed gave examples of the delays in disseminating data outputs. For example, the last MoGE bulletin was implemented in 2019, but it is supposed to be conducted on an annual basis. The latest MoH Zambia Demographic Health Survey is supposed to be conducted every 2 years, but because of delays it has been informally pushed to every 4 years. Zambia Statistics poverty statistics were collected in 2015, but the latest figures were supposed to be available in 2021.

4. Funding and Partnerships

4.1 Each government partners with donors and other development partners to achieve its own objectives.

- Ministry of General Education works with IPA, AKROS, UN Group, World Bank and others.
- Ministry of Health works with the USAID, CDC, UN group and others.
- Ministry of National Development Planning works with other ministries and assorted donors
- Zambia Statistics partners with government ministries, banks, and sector partners within the private sector, academia, and NGOs. It also partners with Swedish statistical office.

4.2 Prohibitive financial costs are a common problem.

For example, approximately 11,000 schools in Zambia would need to be documented in the EMIS system by a limited number of staff with a cut budget at MoGE. M&E budgets are also generally not a high priority for government, with most funding coming from big donors. One interviewee said that government budgets for M&E were most often spent on staff upkeep such as salaries, and there was little left over for project work. Slashed budgets also mean little capital is left to spend on digital equipment or software necessary for digitising the data.

4.3 Kanyamuna et al. (2020) find that M&E documents pay only "sporadic attention" to the issue of budgeting.[64]

The authors also conclude that there were no independent or consistent budgets in government departments solely for M&E. The authors also mention that there were repeated instances of budget cuts and withholding of funds for activities. Most pertinently, when budgets had to be reduced, M&E activities were hit the heaviest. Budgets for M&E activities were limited, with the exceptions of the National Development Planning, Health, Education, Agriculture, Fisheries and Livestock. Budgets, where available, were also designated to monitoring, with almost nothing ringfenced for evaluations.

4.4 The Ministry of General Education is facing major financial constraints.

Education was allocated 20.2% of the national budget in 2015, however in 2021 it was only allocated 11.5% in 2021, totalling a 43% reduction over the last 5 years.[65] This reduction in budget was compounded by the adverse effects of COVID-19 on schools, which often did not have buffers in their budgets. MoGE's budgeting department is also dependent on timely enrolment data to determine allocations to each school. However, the 2021 allocation is based on 2019 data, which is likely to have fluctuated due to COVID. In light of this, most non-essential services have seen a dip in spending and

[64] Kanyamuna, V., Mubita, A., & Kotzé, D. A. (2020). Is the policy environment for Zambia supportive of a thriving whole-of-government monitoring and evaluation system? *Advances in Social Sciences Research Journal,* 7*(1)* 542-554.
[65] Zambia National Education Coalition

a squeeze in budgets. Interviewees have indicated this will have a strong negative effect on funding of monitoring and evaluation of education-related activities.

4.5 Donor contributions have helped to plug this gap.

For example, between 2004-2011, USAID donated $26.5 million towards strengthening the information system to strengthen resource management in the education sector. UNICEF is also funding AKROS in order to continue developing the EMIS system.

4.6 Similarly, the Ministry of Health is also experiencing significant constraints.

8.1% of the national budget in 2021 was allocated towards the healthcare years.[66] As of 2018, the healthcare budget totalled 16.8% of the national budget, signalling a 107% cut across three years. Interviewees have estimated approximately 10% of this total health budget is directed towards monitoring and evaluation. Most of these activities are donor-funded, including capacity building of research staff and implementation of the DHIS2.

4.7 Zambia Statistics Agency also faces funding constraints as government budgets are generally reducing.

They are adopting a policy of integrating surveys where possible and aligning with donors to plug in gaps. For example they recently received $250,000 to fund an initial phase of a COVID-19 survey. From an online search, it is unclear what percentage of the national budget is allocated towards MNDP in 2021.

4.8 Interviewees have cited funding as a major area for collaboration.

As donors in partnership with the government have spearheaded many M&E activities and technologies, there are clear pathways for collaboration. For example purchase of basic equipment such as laptops, or covering costs such as Internet access in order to access and process the digital data. In-kind donor contributions, which focus on capacity building and technical support rather than cash influxes, are also in demand.

C. Overview of the Data Systems in Key Sectors

1. Health

1.1 The Ministry of Health (MoH) has one of the most well developed data collection and monitoring systems in government.

Data is collected either through paper or the electronic health record system, depending on system availability. The Ministry uses several individual tools to collect data. For example for HIV/AIDS alone there are over 18 different forms and registers such as the HIV Testing Services Register and the HIV Care and Treatment Activity Register.[67]

[66] Zambia National Education Coalition
[67] Zambia Consolidated Guidelines for Treatment and Prevention of HIV Infection

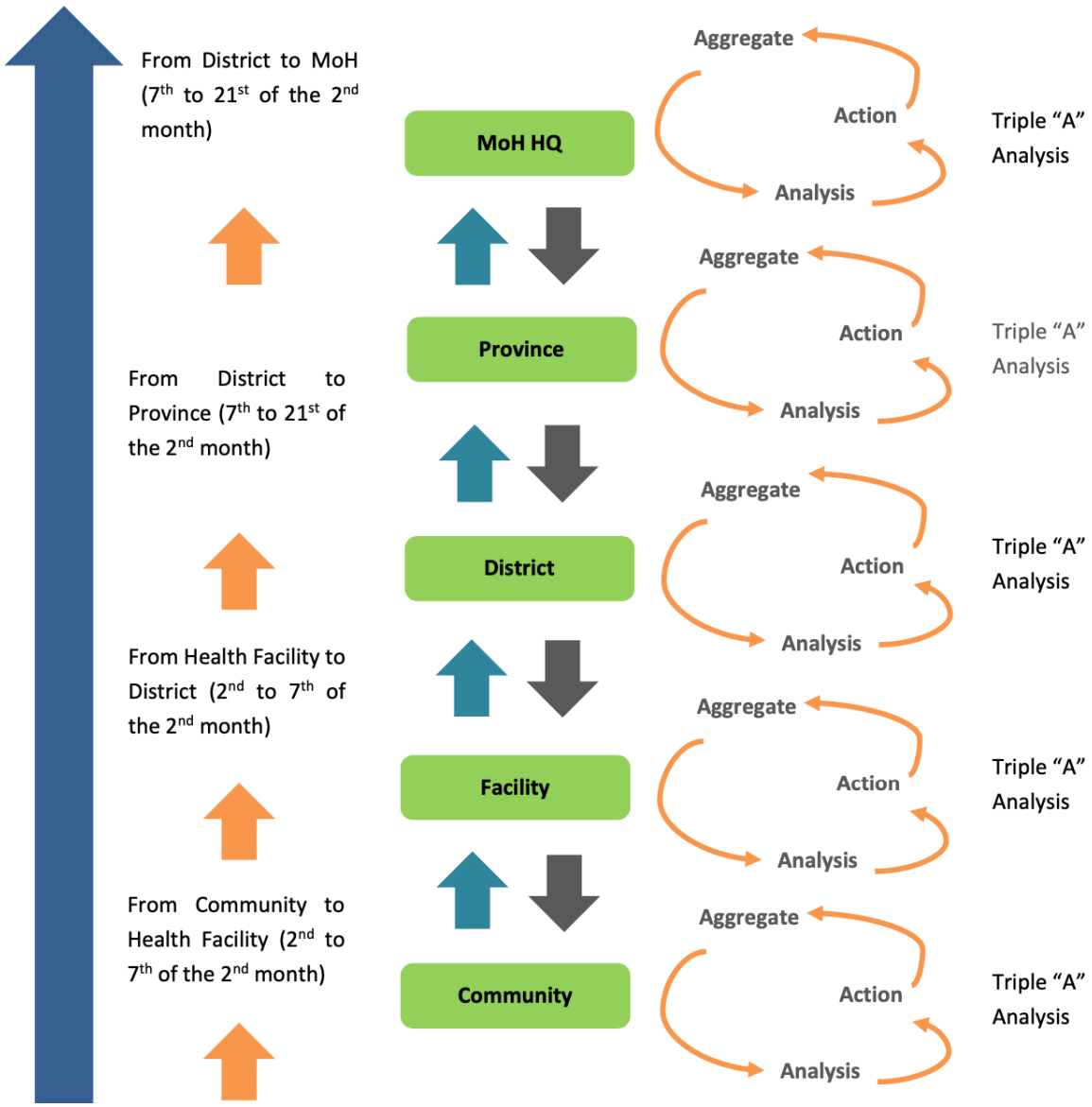

Figure 11: Data flow, Health Management Information System, Ministry of Health

Under the paper-based system, each month the facility staff compile the data and then send it to the District Health Office for entry into the District Health Information System (DHIS2). If the facility is using the electronic health record system, staff will enter clinical information straight into the electronic system known as SmartCare, funded by Centres for Disease Control and Prevention (CDC). SmartCare is an information management system designed for low resource settings with poor connectivity, initially designed to track HIV/AIDS data. It was later expanded to include other health services. It tracks patient data at the facility and district level and is intended to help with continuity of care for patients. District data is then aggregated at the provincial and national levels.[68]

1.2 MoH has made strides in using routine data to inform interventions, particularly with HIV/AIDS programmes.

This data system has also come into focus with COVID-19, where information systems were used to collate and inform government action. MoH has also streamlined its data collection methods by

[68] Zambia Consolidated Guidelines for Treatment and Prevention of HIV Infection

combining several survey tools into one major census, the Zambia Demographic Health Survey. Most surveys are also done using digital platforms.

1.3 MoH faces some challenges with its data systems that are perhaps unique amongst the other Ministries.

There are often multiple and competing health data sources alongside different M&E frameworks. There are data points that may be relevant to particular stakeholders and not others, with each stakeholder interested in a subset of data. Therefore, too much burden is placed on the limited amount of data producers to come up with a broad dataset that satisfies all stakeholders.

2. Education

2.1 The Ministry of General Education (MoGE) has partially implemented the Education Management Information System (EMIS), in 2016, which has received support from USAID and other funders.[69]

The initial stage of the EMIS was trialled in Namwala district. It is unclear whether this implementation has been extended to other districts and to what level this is operational. Before this EMIS was in place, schools provided annual reports to MoGE. School level data is collected using tools at a monthly, termly and annually. Data is then compiled by district education officers, and then aggregated at a provincial and national level. There were also plans to integrate the EMIS with the Payroll and Establishment Control System, so that teacher and school data are located on the same platform. The EMIS is used to monitor and incite action on indicators that illustrate system issues, including student-teacher ratios, teacher attrition, and teacher retraining. Interviewees have mentioned that school level data is still collected manually.

2.2 Major progress has been made with the implementation of the EMIS, despite it not being rolled out at a national level.

The previous system of yearly reporting was challenging, as data was not real-time and could not be reliably used on a periodic basis for resource allocation and monitoring of student learning. According to Akros's implementation of the system in Namwala district, data outputs have been simplified, moving from a 27-page report to 1 monthly report and 1 termly report. Certain data, like exam scores, are now available for government officials to access in real-time.[70]

2.3 Interviews with Ministry staff and the documentation review both point towards remaining challenges.

School staff members are often not comfortable with entering data digitally. They are often also at over-capacity as they participate in several other government and NGO trainings, whilst dealing with the already high student-teacher ratio. Sustaining these efforts so far has been a challenge. Staff turnover at MoGE has also been highlighted as another challenge, whereby skilled personnel turnover is frequent. Schools do not use the EMIS and still rely on paper-based collection forms, with data usually being digitised at district level. MoGE interviewees also indicated that schools still use paper-based systems, with data being manually entered into the system at a district level.

[69] Zambia Education Management System (EMIS), Akros
[70] Zambia Education Management System (EMIS), Akros

NEXT STEPS

1. Next steps for APHRC

1.1 We would suggest reviewing the literature in the document library to get a deeper sense of the data environment. In particular our recommendations would be:

- Kanyamuna, V., Mubita, A., & Kotzé, D. A. (2020). Is the policy environment for Zambia supportive of a thriving whole-of-government monitoring and evaluation system? *Advances in Social Sciences Research Journal*, 7(1) 542-554.
- Vincent, K., Aurick, M., Ng'andu Emily, M.C. and Ackson, M., 2018. An Assessment of the Demand-Side of the Monitoring and Evaluation System of the Health Sector in Zambia. *World Journal of Social Sciences and Humanities,* 4(2), pp.75-86.
- Kanyamuna, V., Katowa, T., Mubita, A., Kanenga, H., Simui, F. and Kotze, D.A., 2020. Analysis Of Structural And Organisational Arrangements Of Monitoring And Evaluation Status For The Public Sector In Zambia. *Advances in Social Sciences Research Journal*, 7(6), pp.504-527
- National Monitoring & Evaluation Policy, 2019-2023

1.2 Further research could be conducted by contacting the academics that have produced papers assessing the M&E sector in Zambia:

- Vincent Kanyamuna: vkanyamuna@unza.zm
- Aurick Mubita: mubita.aurick@unza.zm

1.3 Smart Zambia Institute could also be approached, in order to assess how they work with other government stakeholders to coordinate and monitor the use of data:

- Mr. Mailon Moono (Principal Systems Developer, Smart Zambia): mailonmunansangu@gmail.com

1.4 A sector-wise approach to partnerships would offer a starting point for partnerships in the Zambian context.

Monitoring in the health sector is currently relatively well developed; the Ministry of Health has well-established partnerships with large funders such as USAID and CDC. The Ministry of General Education is also already working with large donors to implement its information management system.

1.5 Resource direction towards Zambia Statistics Agency and the Ministry of National Development Planning may yield a higher impact for the per-dollar cost.

These institutions centrally set the standard for data development and have significant backing, seen in the flurry of policies and laws developed to strengthen their mandates. They also collaborate with all line ministries and a small increase in impact at these central institutions may reverberate across all statistics functions in all line ministries. They have also expressed interest in having discussions with stakeholders who may be open to partnerships.

1.6 Support would likely focus on addressing the challenges mentioned in the interviews, primarily around human resources.

Technical support could come in the form of training data analysts to use statistical software in order to produce data analysis for stakeholders. Other forms of capacity building such as impact measurement could also deepen the impact of these institutions. Embedded data analysts from the

partners' organisation may also be a route towards relieving the pressure on the staff at these institutions in responding to stakeholders' requests for data.

1.7 In-kind support could also be provided to overcome financial and data timeliness challenges.

For example, if the government could not complete surveys due to a lack of equipment, provision of tablets or mobile phones for the duration of the survey could help overcome this challenge. Similarly, if surveys are not carried out on time because of the implementation costs, then the partner institutions could facilitate elements of the data collection to help move the process along. These elements could be training, data quality checks or any such support.

2. Next steps for subnational decision makers

2.1 **Subnational decision makers are integral to the build of the national data system in Zambia. Ideally, these decision-makers would lobby to be included in all major policy consultations and dialogues.**

This would help determine what their role is in the establishment of the broader, more robust statistical system helmed by the Zambia Statistics Agency. Subnational decision makers should lobby to be plugged into the data systems as active users, rather than just producers of data. This means they can feed into the data system but also assist in data processing the way centralised staff do. This mandate can be legalised by documenting their role in national policies. The Zambia Statistics Agency did this type of lobbying successfully to pass the National Statistics Act.

2.2 Additionally, subnational decision makers should lobby for equipment to enable all units below provincial level to digitise data collection.

This can come in the form of proposing new, direct partnerships with donors that work one-to-one with the unit to make sure they have Internet access and appropriate equipment. This could also take the form of renewed, strengthened partnerships with headquarters to ensure that there is a budget line item for equipment for subnational offices.

2.3 Further, subnational decision makers should invest in capacity building for its information officers and data analysts.

If a user requests data at a subnational level, these officers can then respond. This can be done through online training from the Zambia Statistics Agency, or through local data institutions. This also relieves the pressure on the central data system analysts who are already overburdened with data requests. This in turn also promotes a culture of data production and use at a subnational level, which is currently lacking.

Visitation programmes can also be set-up, whereby district data officers conduct visits to the headquarters, in order to understand the overall data system, and how their contributions are processed.

3. Next steps for national decision makers

3.1 National decision makers have to contend with a plethora of data systems for each sector. These decision-makers should undertake a diagnostic exercise to map all the different data systems in existence.

This can be done for priority sectors or ministries first. By doing this landscaping exercise, all officials are clearly able to see what systems exist outside their department and how effective they are at meeting the government's policies. As the government is attempting to implement a government wide

M&E system, this exercise could be integrated with implementation of that national strategy. Using that as the end-goal, decision makers can then determine which systems would be the most useful to scale up and which to prioritise for funding. This would be done in close collaboration with the line ministries' statistical units and Zambia Statistics Agency.

3.2 National decision makers should also work on integrating the subnational officers as data users too, rather than just data producers.

Allocating resources to their capacity building, ensuring that each subunit has adequate equipment to digitise data collection, and actively consulting them as policy documents are created can do this. In some cases, it may also benefit both central and local governments if distinct or provincial officers are allowed to access national datasets. They can then relieve the pressure of data officers at the national level who have to respond to stakeholders' requests but are short on capacity.

3.3 National decision-makers should take advantage of current data partnerships, as there are a wide range of initiatives and policies being implemented.

Current partnerships are largely sector specific and result from collaborations with donors. Governments can leverage these existing data partnerships, many of which are successful, to expand data systems to other ministries that may be in need. For example, the Ministry of Education information management system was first based on the design of the health management information system.

SENEGAL

BACKGROUND

Senegal has created an enabling environment for its sustained economic growth over the past several years, having been the fastest growing economy in Africa between 2014 and 2018 (World Bank). Accompanying this growth was an improvement in socio-economic indicators, an illustration of which is shown in Table 4 below.

Table 4: Senegal at a glance: select development indicators from the 2020 Human Development Report

Indicator	Senegal	Sub-Saharan Africa
Life expectancy at birth (years)	67.9	61.5
Mortality rate, under-five (per 1,000 live births)	43.6	76.7
Expected years of schooling (years)	8.5	10
Government expenditure on education (% of GDP)	4.7	4.7
Literacy rate, adult (% ages 15 and older)	51.9	65.3
Gross national income (GNI) per capita (constant 2017 PPP$)	3,309	3,685
Antenatal care coverage, at least one visit (%)	97.1	84.1
Maternal mortality ratio (deaths per 100,000 live births)	315	535.2
Population in multidimensional poverty, headcount (%)	53.2	55
Population living below income poverty line, national poverty line (%)	46.7	43.4
Unemployment, total (% of labour force)	6.6	6.4
Unemployment, youth (% ages 15 - 24)	8.2	10.7
Internet users, total (% of population)	46.0	25.2
Mobile phone subscriptions (per 100 people)	104.5	76.6

The country's continued strategy towards development is guided by the Plan Sénégal Emergent, (PSE), a government "road map" for development goals between 2012 and 2035. The PSE centres on the development of new sectors, increasing the living conditions of the population and strengthening security and governance in Senegal. However, the recent Covid-19 pandemic and political unrest have presented challenges on Senegal's path to further development and growth.

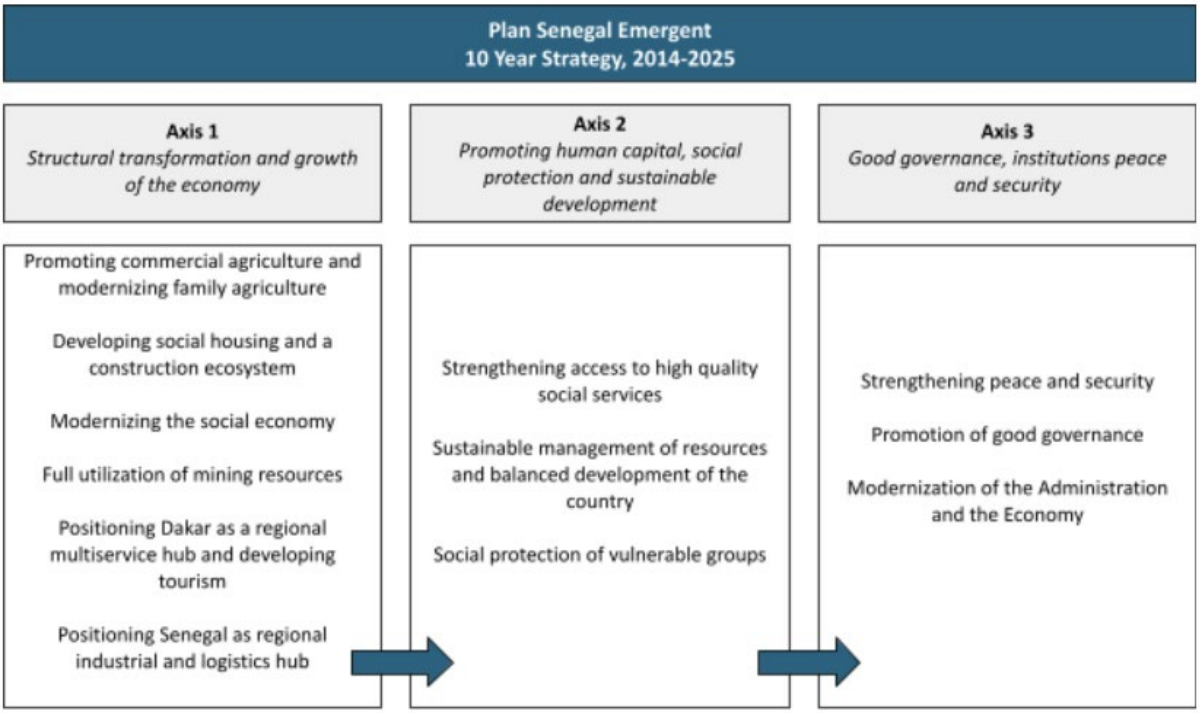

Figure 12: Plan Senegal Emergent

Senegal has a democratic political structure, structured around the executive, legislative, and judicial branches of government. Senegal's government is composed of an executive, legislative, and judicial branch. The President and National Assembly (executive and legislative branch, respectively) are democratically elected, while the President appoints the Supreme Court.

Senegal has made steady progress towards further decentralisation of government. The below figure shows the levels of disaggregation into subnational units within the country. Every region, department, and commune is administered by directly elected bodies. Launched in December 2013, the Decentralisation Policy (Act III de la Decentralisation) restructured the subnational government in order to decrease national disparities in demographic and economic development through empowering territories to harness their assets, opportunities, and potential. It increased the number of local governments from 172 to 557 (World Bank). Through Act III, the national government transfers significant control to the subnational levels.

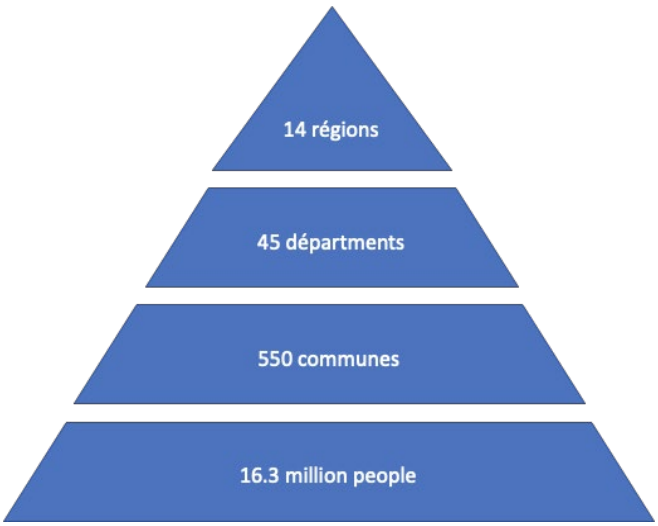

Figure 13: Level of disaggregation into subnational units

Act III organizes the territories, in increasing scope, into communes, departments, and regions. The communes are responsible for local management and grassroots development. The transfer of power to communes intends to attract development aid to the commune level. The department level captures "symbolic values that convey feelings of belonging and identity," as each department is more culturally and economically homogeneous than the regional level. The six regions are organized by similarity in eco-geography, history, culture, and economy. Act III eliminates the arrondissement level to delegate more administrative power to local authorities. Sub-prefects will be redeployed to the departmental or regional levels and pass their responsibilities to local executives.

Act III reorganizes subnational governance based on the following criteria: eco-geography, history, culture, coherence of functional character, scope, existence of a network of human settlements, and proximity and accessibility of services. The National Land Use Plan, Plan National d'Aménagement du Territoire (PNAT), divided Senegal into 21 zones according to their natural resources and economic potential so that each territory could develop according to its own resources. It also divided the country into six eco-geographic regions according to hydrographic, biophysical and socioeconomic criteria to centre development of the environmental sector.

Territories face challenges of low capacity, low and inconsistent funding, lack of coordination, and competing concerns which prevent Act III from achieving its goal. Financing to local governments was only 5.1 percent of total government expenditure between 2011-15, compared to 25.1 percent, the average for unitary decentralized countries (World Bank). The principal funding sources are the Decentralization Allocation Fund (F*onds de dotation de la décentralisation*), the Local Governments Capital Development Fund (*Fonds d'équipement des collectivités locales*), the Decentralized Consolidated Investment Budget *(Budget Consolide d'Investissement Decentralise*), and the Local Value Added Transfer Fund. The complexity of the fiscal transfer system leads to unpredictable funding and a disconnect between the amount of funding needed and received by local governments. The ongoing World Bank project "Municipal and Agglomerations Support Program" seeks to streamline this system.

APPROACH

We approached data collection by focusing on two key sources:

1. **Interviews with key stakeholders in Senegal's data landscape.** As part of our data collection, we conducted 11 interviews with respondents from a variety of governmental and non-governmental organizations. Specifically, we interviewed 2 officials from the Ministry of Education, and one official from each of the following stakeholder organisations: The Ministry of Health, the National Agency of Statistics and Demographics – Agence Nationale de la Statistique et de la Démographie (ANSD), the Regional Development Agency, the West African Science Service Center on Climate Change and Adapted Land Use (WASCAL) of the Université Cheikh Anta Diop de Dakar (UCAD), the Council for Non-government Organisations and Development Support, Agency for the Promotion of Population Activities Senegal, and the Jameel Poverty Lab. We solicited interviews from a wide range of stakeholders, but given the limited timeline of the project, we were only able to conduct interviews with those that responded to our invitations within the project timeline.
2. **Targeted document review of policies, studies, and laws regarding data governance, production, and use in Senegal.** This included reports on activity from ANSD, Senegal's central data production body, data system reforms by the Ministry of Health and Prevention, and

national laws committing to strengthen data governance and transparency, such as the Loi Modifiant et Complétant la Loi N° 2004-21 du 21 Juillet 2004· Portant Organisation des Activités Statistiques. We also reviewed strategic government policies, such as the aforementioned Plan Sénégal Emergent as well as Sénégal Numerique 2025, the government action plan regarding Senegal's digital economy, and Act III de la Decentralisation, the decentralization policy that restructured territories to better address local-level development. In addition to these government documents, we also read more general reports and studies from key collaborators, data producers, and data users, such as the Centres for Learning on Evaluation and Research (CLEAR), MEASURE Evaluation, the United Nations Development Programme, the World Bank, and the Collaboration on International ICT Policy in East and Southern Africa (CIPESA).

3. **Considerations on national versus subnational data systems in Senegal:** As we conducted interviews and reviewed literature, it became apparent that national data systems were the focus of policies and implementation. Subnational data systems were important in that they fed the national system, however, there was limited focus on these systems in their own right, as complete institutions. Therefore, in the following Senegal Country Report, APHRC will find a larger spotlight placed on national systems, to mirror the existing system. We have added comprehensive information about Senegal's fortification of local governments and insight on data demand by subnational political leadership to better infer the conditions of data systems on the subnational levels.

FINDINGS

A. Legal and Policy Framework

1. National Data Ecosystem

1.1 The key agencies and policies related to the production, use, and sharing of data in Senegal are:

- **National Agency of Statistics and Demographics (ANSD):** ANSD produces the data needed to track progress on the goals outlined in the PSE. They are also the single largest and most central producer and processor of national data.
- **National School of Statistics and Economic Analysis, L'École nationale de la Statistique et de l'analyse Économique (ENSEA)**: ANSD established ENSEA as an academic extension of the agency. The two-to-five year program intends for students to graduate from the two-to-five-year program and work for the National Statistical System and public and private companies to better integrate the multiple players in the national data system.
- **Plan Senegal Emergent (PSE):** The PSE is the principal guiding document for Senegal's development plan. Although this document does not put forward a defined data strategy, it does describe the key variables that need to be measured to assess progress towards development goals.
- **Strategie Senegal Numerique 2016-2025:** The Strategie Senegal Numerique provides the action plan for developing Senegal's digital economy, which includes plans for improvement in process for data storage and use.
- **La Loi N° 2004-21 du 21 Juillet 2004· Portant Organisation des Activités Statistiques**: This law amends the organization of statistical activities. It establishes Senegal's Fundamental Principles of Official Statistics, adopted in 1994 from the United Nations Statistical Commission, which articulate a commitment to openness, transparency, and mutually beneficial global exchanges. Additionally, the policy defines the components of the NSS: the National Council of Statistics, ANSD, and other public structures.

- **National Strategy for the Development of Statistics, 2019-2023 (SNDS):** This national strategy is updated every four years and identifies the key challenges in Senegal's data and statistical landscape and puts forward a detailed strategy to solve them.

Four Pillars of the National Strategy for the Development of Statistics (2019-2023)	
Strategic Pillar	**Goals**
Develop statistical production, taking into account gender and region, to better meet users' needs	• Improve the quality of statistical production • Expand the scope of data coverage to insufficiently covered regions • Develop and implement a better strategy for considering gender and region in data production and analysis
Improving data dissemination and promoting statistical literacy and the efficient use of statistics	• Develop a national policy for data diffusion • Facilitate easier access to data • Develop and implement a national communication strategy • Promote in-depth research and data analysis • Promote statistical literacy in schools and among policymakers
Modernizing statistical infrastructure, digital transformation, and data revolution	• Modernize IT infrastructure (websites, software, etc) and develop and implement a secure data storage policy • Adopt digital data collection as the standard
Strengthening regional and international cooperation in statistics	• Promote using new data sources • Promote collaboration with national statistical systems of other African countries • Support cooperation with international statistical institutions

Figure 14: National Strategy for the Development of Statistics, 2019 - 2023

1.2 As evidenced by the number of policies and strategies pertaining to the use and collection of data, there is potential for a rather robust data governance landscape, but in practice, the existing governance infrastructure is struggling to successfully and efficiently carry out its mandates.

Through the establishment of entities such as ANSD and to a lesser extent the CDP, Senegal was considered a regional trailblazer in the data governance space, however in reality there appears to the role that these organisations play in centralising data supply and facilitating data demand still appears low. Although ANSD have expanded their role in recent years, they still face constraints regarding capacity and data access. For example, in their 2019 report of activities, ANSD points out that they had to build a data server from scratch because CDP law prohibited them from storing on the World Bank server, although the World Bank offered their server to ANSD. Given ANSD's budgetary and human resource challenges (discussed later in this report), this points to a need for a more concerted discussion regarding how data producers can collaborate on data governance initiatives that allow data processors to maintain their necessary level of independence and agency.

1.3 Governance actors seem to be acutely aware of the existing challenges in Senegal's data governance, and there are already plans to revisit the existing governance structure.

The 2019-2023 iteration of the National Strategy for the Development of Statistics points out the lack of explicit relationships between public statistical structures (for example between ANSD and the Ministry of Health) as one of the primary weaknesses of the current data governance infrastructure and recommend a clearer delineation of the roles and responsibilities of each of these actors. Additionally, as of 2020, the Personal Data Protection Act was in the process of being reviewed, and a drafted replacement bill was being considered. The draft bill would dissolve the CDP and replace it with the Personal Data Protection Authority (APDP), and in a workshop to review this draft bill; it was recommended the APDP be allocated adequate resources to successfully enforce its regulations.

2. Subnational Data Ecosystem

2.1 The Regional Statistical System is not legally defined but can be considered as the public structures that produce statistical data related to specific geographical areas.

In some regions, governors have set up a body that is charged with data collection related to economic and social development in the region but have no decision-making power with regard to statistical matters. This power is deferred to the Regional Statistics and Demography Service of the region.

2.2 Each of the 14 administrative regions of Senegal has a Regional Statistics and Demography Service (SRSD), which acts as a regional representative of ANSD.

SRSDs are the main producers and processors of data on a subnational level. They are tasked with collecting region-specific data needed for national statistics and producing the statistics for the yearly Regional Economic and Social Situation report. SRSDs also collect regional data for certain national statistical reports, such as the National Consumer Price Index and the Consumer Cost Index. SRSDs are also integral to developing the National Strategy for the Development of Statistics, producing regional diagnostic reports to contribute to the recommendations provided in the final national report.

2.3 SRSDs are severely understaffed and lack technical training.

A representative from ANSD staffs each departmental office and is responsible for collecting data at the regional level. Oftentimes, the representatives are specialized in sectors relevant to the department in which they are located. Almost half of the permanent staff in SRSDs are assistants, support staff, or surveyors, and in general, the staff in these regional statistical offices do not have basic training in statistical techniques. According to the SNDS III, only 33% of regional statistical staff have taken a statistical training course.

2.4 Challenges with staffing, along with generally inconsistent surveys, have resulted in generally unreliable and insufficient data on the regional level.

Regional surveys are often not scheduled, or the schedules set by ANSD are not followed. SNDS III also indicates that essential regional surveys are simply not being carried out, so there is an overall lack of thematic studies on the regional level. Moreover, the lack of technically trained staff results in non-compliance with methodologies and weaknesses in statistical analysis.

2.5 Instead of organising themselves under one national data ecosystem, the largest sector data processors seem to be operating independently.

As discussed, the lack of an organisational framework across the NSS has created a fragmented national system. As a result, ministries, agencies, and departments determine their own data mandates and operate within their data systems to meet them. The Ministry of Education and The Ministry of Health are the largest producers of data outside of ANSD, and both have created thorough data systems within their ministries. Representatives from both ministries indicated that they do store their data with ANSD, but the extent of their collaboration with ANSD outside of storage is unclear.

B. Data Collection and Use

1. Key Stakeholders

1.1 The national-level data ecosystem in Senegal is referred to as the National Statistical System (NSS), and it is a network of various data producers and processors.

The National Statistical System is legally defined as "the partnership of providers, producers, and users of official statistics as well as coordinating bodies for statistical activities and national training institutions for statisticians." ANSD, charged with overseeing this system, describes it as being "decentralized". Data production responsibilities are shared between ANSD, ministerial departments, public or semi-public establishments, and in some cases private citizens producing data as part of public service missions, making all of these stakeholders members of the NSS network. ANSD is theoretically responsible for overseeing the coordination of statistics production, and the centralization, synthesis and distribution of the statistics produced by all actors, but more work needs to be done to ensure adequate organisational collaboration among them.

1.2 ANSD manages a wide array of regular data collection efforts.

Their biggest project is the general population census, which ANSD conducts every 10 years. In addition to the census, ANSD also oversees a business census, demographic and health surveys, surveys on specific themes such as gender-based violence, and surveys that measure the inflation of the economy. Because many of these collections happen on a schedule, the data is up to date according to ANSD standards.

1.3 ANSD acknowledges that the NSS is lacking a clear organisational framework.

At the moment, Senegal's NSS is a juxtaposition of various statistical producers, all of whom have very different resources and do not necessarily have to interact with one another. The key connection between them seems to be that all official statistical producers (i.e. ministries, government departments, etc.) are legally required to submit their data to ANSD. Representatives from the Ministry of Education, CONGAD, and ARD did mention that they store their data with ANSD, but it is unclear as to whether this is a widespread practice and unclear if there are any real repercussions if data producers do not do this. As a result, the NSS is fragmented and unintelligible from an organisational perspective. As a result, some members of the NSS, particularly the Ministries of Health and Education, appear to be operating almost independently from ANSD. In the 2019-2023 SNDS, ANSD describes this lack of organisation as an urgent issue and the one requiring the most attention, indicating that addressing these organisational challenges is a top priority for ANSD.

1.4 There is a lack of specificity with regard to which members of the NSS should be producing which data and statistics.

Due to the aforementioned organisational issues, ANSD and various sectorial data producers do not have an explicit understanding of who should be collecting and sharing data. One of the recommendations that ANSD puts forth is to specify the production mandates between ANSD and the other members of the NSS network as opposed to the current system, in which NSS stakeholders independently set and meet their own data mandates. Doing so would ensure that the data collected is thorough and could help avoid redundancy of work between ANSD and members of the NSS network.

1.5 Given the lack of clarity regarding the unique roles and responsibilities of various stakeholders in the data landscape, there is an overall lack of coordination and collaboration across the NSS.

ANSD and the Ministries of Health and Education are the largest producers and processors of data in the country, but they do not always collaborate on their data needs. Our data collection suggested that in addition to a lack of clarity regarding the distinct roles of these key players, this lack of collaboration could be due to high costs associated with collaborations with ANSD. ANSD reports that while they do offer some data for free, there is a cost associated with more specific data requests, although no specific data about these costs is provided. To facilitate stronger relationships between ANSD and other stakeholders, there needs to be more discussion of how they can work together in a way that is cost-efficient to all parties.

2. Data Demand and Use Culture

2.1 Data produced by government actors is used to inform policies and improve government decision-making.

ANSD, which is tasked with taking the results of the data collection of various ministries and processing it, stated that all public policies are informed by the insights they provide. The Ministry of Education also indicated that the data they collect is used to create "better quality policies". The external funders that fund the collection campaign also sometimes use data, but this will be discussed in the following section.

2.2 Academic institutions face significant bureaucratic hurdles to access public data.

A key informant from UCAD explained that his research lab must sign Memorandums of Understanding with research institutions, such as ANSD, the National Agency of Methodology (NSE), or the, Direction de l'Analyse, de la Prévision et des Statistiques Agricoles (DAPSA). Professors can access national-level data much easier than sub-national level data, with the process still involving multiple steps in order to obtain access to the data. International organizations often fill the gap in providing accessible data, particularly at the subnational level. Additionally, concerns were cited regarding the quality and reliability of data from national sources, driven by both capacity constraints and political involvement in data collection processes.

2.3 The Agricultural and Rural Agricultural Prospective, Initiative Prospective Agricole et Rurale (IPAR), often represents civil society in its advocacy for reliable data production.

IPAR partnered with the General Direction for Planning and Economic Policies (DGPPE) and ANSD for an international conference in 2016 about Senegal's progress on achieving the Sustainable Development Goals. There, ANSD Director Aboubacar Sédikh Bèye said "we want all decision-making by the authorities or the corporate world to be based on numbers." One of the three conference goals was to advocate for the use of statistics, scientific and reliable data in decision making.

2.4 On the subnational level, individual mayors differ on their political support to strengthen data systems for decision making in their commune.

Mayors with prior experience at universities or research institutions are more likely to value evidence-informed decision making. UCAD professor and interview respondent Assane Beye recalled an academic conference regarding regional-level issues, where policymakers were invited to use the newly disseminated research to inform policy. He noted that regional-level policymakers are less likely to attend than national-level policymakers.

3. Data Systems and Practices

3.1 Although data collection approaches are specific to independent sectors and ministries, all stakeholders indicated that they now incorporate digital collection processes.

Although methods of collection vary depending on the type of campaign and the information needed, stakeholders indicated that they made the move towards prioritising digital collection in recent years, a switch that was accelerated by the COVID-19 pandemic. Even in cases when data collection may require paper, the data is collated digitally for processing. This move towards digitization has made it easier and quicker for a wider range of stakeholders to access data, strengthening the data system overall.

3.2 A clearer framework surrounding the NSS is needed to optimize the operations of Senegal's data system.

At the moment, there seems to be a lot of confusion regarding how ANSD, CDP, various ministries, and other key data producers and processors should be interacting with each other. Until policymakers define these working relationships in an explicit way, Senegal's NSS will remain fragmented and organisationally unintelligible. This may result in redundancy in data production and difficulty implementing and enforcing data policies and laws.

3.3 Recruiting and retaining technically trained personnel is an issue occurring across sectors.

The National School of Statistics and Economic Analysis (ENSEA) recruits high performing students across West Africa and selects admits according to their entrance exam scores. ANSD created the School to address the challenge of low capacity to engage with data and the limited supply of statisticians in the country. Through its Statistics for Results (2014-2019) project in Senegal, the World Bank equipped ENSEA with laptops, computer software, furniture, school books, a minibus, and a modern language laboratory. It aimed to strengthen the teaching capacity of faculty and improve learning conditions, with an emphasis on increasing enrolment of female students. UCAD professor Assane Beye noted that most ENSEA graduates leave Senegal to work in Canada, America, or France, rather than funnel into ANSD, as intended. Despite concerted efforts by ANSD to train professionals in the skills they need to excel in technical positions, many organisations are still losing talented professionals to the private sector or large, international NGOs. Several respondents suggested that raising salaries for these roles could help reduce staff turnover, but this is difficult given funding challenges.

3.4 Stakeholders in Senegal's data landscape seem to be acutely aware of the issues holding it back from its utmost potential.

Those at the centre of the NSS understand in great detail exactly what needs to happen for them to improve their operations. This was evidenced in our interviews, but it was also very apparent in the several strategic and diagnostic reports regarding strengthening the NSS. Experts simply do not have the resources or infrastructure to remedy their challenges.

3.5 Increasing movement towards digitization, coupled with an overt awareness of challenges facing the NSS, the data landscape in Senegal has created an enabling environment for reforms in the system.

Respondents repeatedly mentioned movements toward digital tracking systems in recent years, and the National Digital Strategy indicated a plan to create a secure, national data centre to centralize digital data on a national level. Efforts for strengthening national digital infrastructure, coupled with awareness of what is needed to strengthen the NSS indicate that there could be an enabling environment for necessary reforms, but government officials must commit to investing more in the NSS and its institutions for these reforms to be successful.

4. Funding and Partnerships

4.1 ANSD regularly partners with a wide array of institutions to meet its internal data mandates, but it also established the Cellule de Gestion des Partenariats/Partnership Management Unit (CGP) so that they can take on contracts with external partners.

A 2005 law allowed ANSD to take on projects, for a fee or free of charge, with government, public, or private institutions to conduct studies related to statistics, economics, or social benefits. This work allows ANSD to increase its profitability and connect to more potential donors, allowing them to further supplement their budget. In 2019, ANSD had external contracts with the following partners:

- Central Bank of West African States
- Agency for the Development and Supervision of Small and Medium Businesses
- Delegation for Social Protection and National Solidarity
- Autonomous Port of Dakar
- The General Secretariat of the Biennale of Contemporary African Art
- Consortium of German Universities
- UNWOMEN
- The World Bank
- National Statistic Institutions of: Côte D'Ivoire, Mali, Congo, Guinea-Bissau, and Cape Verde

The services provided by ANSD included: technical assistance, carrying out statistical surveys, setting up databases, conducting impact evaluations, and statistical services such as census maps and samples of households.

4.2 The World Bank partnered with Senegal through the Statistics for Results (2014-2019) project which implemented the SNDS.

The Project Development Objective (PDO) was to "better inform public and private sector decision-makers by filling gaps in the statistical knowledge base in the areas of employment, tourism, construction and services, as identified in the SNDS, as well as build capacity for the production and dissemination of reliable and relevant data." The World Bank reports that Senegal's adoption of the SNDS shifts its approach of developing statistics from supply-driven to demand-driven. The project produced surveys on the target areas, the Construction Cost Index (CCI) and Services Price Index (SPI), and administrative data on education, labour, civil service workforce, justice, and security. It strengthened ENSEA and improved access to microdata on the ANSD website. As a result, the percentage of users who are overall satisfied by the official statistics products increased from 70 percent in 2015 to 90 percent in 2017.

4.3 Even with the additional revenue generated from external contracts, limited funding is an issue for ANSD and the National Statistics System overall.

ANSD's 2019 budget was approximately 7.7 billion XOF, 6.3 billion of which came directly from the State, while the remaining 1.4 billion came from external funders. While this is a large amount of funding, especially when considered in relation to the approximately 550 million XOF that the Ministry of Education receives for its census, ANSD officials state that they need more resources to operate at their full potential. Moreover, the MoE's smaller data budget amounts to approximately 1% of the MoE's overall budget. The most representative example of this underinvestment in the SNDS budget for developing the NSS. To achieve their key objectives in developing the statistical system, the SNDS estimates that approximately 118 billion XOF is needed. Of this number, the State provided 40.5 billion XOF (34% of estimated needs) and 11.5 billion XOF was sourced from external donors. This left a gap of 66.3 billion XOF that will need to be filled for the objectives of SNDS to be completed. For the NSS to perform optimally and address the aforementioned areas for improvement, investing more resources in the national data system will have to be a top priority.

4.4 A common way that funding issues are remediated is through external donors and partners.

For example, the entire 550 million XOF allocated to the MoE census was derived from external funders, demonstrating how integral external funding is to the national data system. In addition to providing monetary support, large external partners such as the World Bank or UNESCO, also offer more structural assistance. Several officials mentioned that external partners offered the use of their technical platform, and UNICEF and other organisations have offered to provide materials to school kids in more remote areas.

4.5 While relationships with external partners can help to fill important gaps that arise from insufficient funding, they can sometimes undermine the autonomy of the institutions they support.

We learned from a Ministry of Education official that donors funding a project are sometimes able to drive the methods of collection so that it best fits the needs of the donor organisation and not necessarily the needs of the operating institution. This undermines the initiatives of the NSS. To address this, there should first be efforts to internally fund data collection efforts, but in the case where that is not possible, it should be ensured that institutions are able to maintain their autonomy even when receiving external funding.

4.6 The NSDS budgets FCFA 1,333,300,000 between 2020-23 to its fourth pillar: the reinforcement of coordination between the regional and international levels on statistical matters.

The subnational system is more connected to the international level than the national level, as demonstrated by respondents' experiences accessing subnational level data, World Bank projects focused on the subnational level, and the prioritization of regional-international coordination through this fourth pillar. The NSDS introduced the regional statistics system through a budget of FCFA 14,000,000 in 2020.

4.7 Only 27 percent of regional structures have a designated budget for statistical activities.

The remaining 73 percent must resort to their line ministry (38.46 percent), development partners (3.85 percent), or other sources (57.69 percent).

C. Overview of the Data Systems in Key Sectors

1. Health

1.1 In recent years, the Ministry of Health began using the District Health Information System (DHIS2) software to manage its health information system after years of using a decentralized, paper-based system.

Prior to the introduction of DHIS2 software, medical providers would create paper reports on a regional or district level and later send them to the central level to be aggregated, creating a slow and inefficient information sharing system. DHIS2 was then introduced to Senegal in 2013 and was gradually implemented across the country until it was fully integrated at a national level in 2016. The Covid-19 Pandemic rapidly expanded the use of DHIS2 as health professionals used its Covid-19 case tracking dashboard daily. The DHIS2 tracker also publishes cases of HIV-positive patients and will soon include tuberculosis and epidemiological surveillance components. Now DHIS2 is used for management, coordination, and data entry and analysis in all parts of the Senegalese health system. It has become the main mechanism to collect and report health information on the subnational and national levels.

1.2 Healthcare providers from all over the country are now able to access shared data more quickly and efficiently thanks to the DHIS2 system.

Instead of having to send paper reports and wait for them to be centrally aggregated, health workers are able to access data from all parts of the country within 24 hours of when it is entered into the database. According to a representative from the Ministry of Health, these upgrades have resulted in "big steps" towards more complete and visible health data, but there is still much work left to do to ensure that the Ministry of Health's data system can operate at its fullest potential.

1.3 The Ministry of Health reports challenges with data quality and completeness in certain areas.

Due to high staff turnover in remote areas, and therefore the need to repeatedly train monitoring personnel, data from certain regions tends to be of lower quality and incomplete. As a result, data on certain diseases or treatments is almost completely missing in certain regions, despite an existing technical framework for thorough data collection. Without the necessary personnel, the health data system will continue to struggle.

1.4 The Ministry of Health and Prevention crafted a system of accessible health statistics for effective use in decision-making through the Senegal Health Information System Strategic Plan 2012-2016, Plan stratégique du Système d'Information Sanitaire (SIS) du Sénégal.

The revamped SIS provides a coherent and formal mechanism to coordinate health information across its various producers. Previously, the multiplicity of health data sources would produce contradictory information. For example, personal records (état civil) were poorly managed; documentation of deaths was irregular and not in accordance with the Classification Internationale des Maladies (CIM). The Plan addresses issues of low capacity, lack of coordination, and inaccessibility through five strategic foci: reinforcing the SIS institutional framework, harmonizing information across all levels, establishing a user-friendly data management system, producing quality information, and developing a sharing platform between users and producers of health information.

1.5 MEASURE Evaluation, with support from the United States Agency for International Development, partnered with the Ministry of Health between 2016 and 2019 to strengthen their information systems.

They targeted the areas of leadership, management, data sourcing and management, and information dissemination (see diagram below for information on main MEASURE Evaluation activities). These activities will better equip the Ministry of Health to meet their data needs in the years to come.

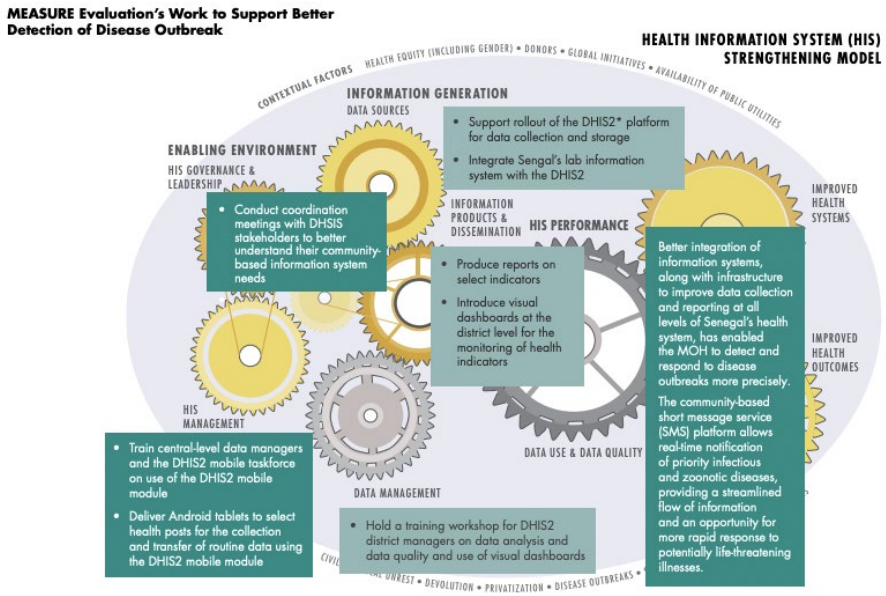

Figure 15: MEASURE Evaluation Fact Sheet on Strengthening Health Information Systems in Senegal

2. Education

2.1 The Ministry of Education data system is called the Système d'Information et de Management du Ministère de l'Éducation Nationale (SIMEN), and it is used to manage the information of approximately 3.8 million students, their parents, and 97 thousand teachers, making it one of the largest and most robust data systems in the country. SIMEN is a rather new information system, having been initiated in 2016 to address the Ministry's fragmented internal data system. The purpose of SIMEN is to strengthen the management and steering capacities of the education system, as well as improve teaching and learning through increased access to digital learning technology.

SIMEN and IEN Ecosystem

Figure 16: SIMEN and IEN, Ministry of Education

2.2 SIMEN tracks students, teachers, and schools through an identification system called the "Identifiant de l'Éducation Nationale" (IEN).

All students (as well as teachers and parents) have a unique identifier, which they can use to log in to the SIMEN ecosystem and access important information and resources such as the educational Wi-Fi network, emails, and other relevant digital resources and web services provided by the ministry. The diagram below indicates how the IEN functions within the education system.

2.3 SIMEN additionally allows for improved decision-making, digital learning, and interconnectedness within the Senegalese educational system.

With a digitized and centralized information system that tracks virtually all relevant educational data, policymakers are better positioned to make informed decisions. This is particularly important given

that education is central to the Plan Senegal Emergent. Furthermore, the Ministry of Education's efforts to digitize and centralize its information system using SIMEN proved particularly opportune given the switch to e-learning during the COVID-19 pandemic. Because much of this infrastructure existed prior to the onset of pandemic in Senegal, the educational system was able to adjust more quickly than other sectors.

3. Agriculture

3.1 While data demand in the agricultural sector is high, its supply of data is low in quality and inaccessible.

UCAD professor Assane Beye described the impossibility of receiving agricultural data from DAPSA. DAPSA does not make its data publicly available. Professor Beye speculates that political motivations prevent data supply, as DAPSA is headed by a politician, whereas ANSD is not. Abdou Aziz Badji, of the National Council for Collaboration and Cooperation of Rural People, Conseil national de Concertation et de Coopération des Ruraux (CNCR) echoes this perspective: "Even if you go to [DAPSA], they will honestly say that they do not have reliable agricultural data. They do [have data], but they are unreliable."

3.2 CNCR has partnered with the Food and Agriculture Organization (FAO) to improve the quality and accessibility of agricultural data.

They launched a trial run of the World Agriculture Watch (WAW) initiative in the region of Ziguinchor. WAW sought to improve the national capacity for monitoring, comprehension of agricultural transformation, and its impact on sustainable development.

Shared Challenges Across Sectors

Respondents from both ministries interviewed mentioned that recruiting and retaining staff that have the necessary technical skills to operate these systems is a challenge.

Stakeholders explain that many of the employees at these ministries are not particularly comfortable using digital tools. This is to be expected given the recent introduction of these computerized tools, and it is possible that the comfort will come with time. However, an even more alarming issue is the high rate of turnover of professionals in technical positions, a problem shared by representatives from both the Ministry of Health and Ministry of Education. Professionals will begin in technical civil service positions, but leave shortly after, attracted by the substantially higher salaries offered by international development and statistics organisations (i.e. the World Bank, UNICEF, etc). Despite concerted efforts within the NSS to nurture personnel with the technical ability to support data systems (such as the establishment of ENSEA), this "brain drain" is a substantial obstacle in the advancement of Senegal's national and sector-based data systems.

Additionally, both ministries indicated a need for more facilitation of data sharing between stakeholders in NSS.

The Ministry of Health indicated that the data that they are able to collect is sometimes insufficient to track their variables of interest and need data from other sectors before they can make informed decisions. For example, the Ministry of Health can generate data on who to treat for diarrhoea, but they don't have water data to determine whether diarrhoea cases are indeed water-borne. Or if they have a number of patients with respiratory illnesses, they do not have access to pollution-related data to study the relationship between the environment and the illnesses. A representative from the Ministry of Education also indicated that it is rather difficult to get a hold of data that comes from outside of your own department, even within the ministry. This indicates a need for stronger

infrastructure and policies regarding data sharing, both internal and external to independent agencies and ministries.

NEXT STEPS

1. Next Steps for APHRC

1.1 Continued research with subnational leaders, ANSD, and high-level government officials.

The statistical systems in Senegal are still predominantly organised at the sector or national level. Given this, APHRC needs to assess at what level it can have the most impact. A deeper understanding of the data systems within the country, and the types of support that can be provided to decision-makers, will be an important next step. Within the timelines of this engagement, we were unable to interview subnational officials, so more research must be done to gain a better understanding of the nuances of the subnational data system.

On a national level, more research is needed to understand how high-level government officials are prioritising the need for more precise policies regarding the NSS. We do not know if it is a priority among legislative officials nor do we know how they are thinking about policies. One way to gain an understanding of how legislators are approaching data system reforms is to seek out a copy of the draft bill that is to dissolve the CDP. This additional understanding can help paint a clearer picture of how enabling the governance environment might be towards these new systems.

1.2 Stakeholder expectation mapping with NSS institutions.

Additional interviews with NSS stakeholders could clarify how they understand their relationship to the other institutions in the system. For example, do ministries see themselves as part of the larger NSS, or do they understand themselves as being completely independent actors? Respondents in our interviews could clearly define how they imagined their role, but they did not clearly define their role as part of a coherent national data system, nor did they clarify their relationships with other institutions in that system, indicating that there is little engagement between NSS institutions. Moreover, few respondents mentioned CDP and ANSD, which begs the question: what are their expectations of and relationships with official data governance agencies such as ANSD and CDP and how can those relationships be strengthened? This additional stakeholder analysis should also shed some light on how subnational decision-makers see their role within this data ecosystem.

1.3 Exploring partnerships with key subnational leaders at the commune level

The Decentralisation policy (Act III) granted higher levels of autonomy to subnational decision-makers to make development initiatives more responsive to local issues. In particular, communes were intended to become more attractive to international aid. Interview respondents confirmed that individual mayors can be especially likely to partner with academics and utilize data in their policymaking. Professor Beye spotlighted the mayor of Ndiop, Oumar Ba, Vice President of the Economic, Social, and Environmental Council and President of the Network of the Green and Ecological Cities and Communes of Senegal, Réseau des Villes et Communes vertes et écologiques du Sénégal (REVES). The region of Ziguinchor also partnered with FAO in the WAW initiative for similar local-level experimentation with data system reform. APHRC may consider seeking partnerships with Mayor Oumar Ba of Ndiop and leadership of the Ziguinchor region as a starting point for implementing the project.

APHRC must consider the trade-offs in political autonomy, funding, and statistical capacity that differ between the national, regional, and commune levels. National-level statistical bodies such as ANSD and DAPSA have significant autonomy and statistical capacity, but they lack the political will to enhance transparency and integration of reliable data. On the regional level, SRSDs lack the human

resources and funding to carry out comprehensive systems reform. However, through its "Municipal and Agglomerations Support Program," the World Bank is currently streamlining funding to subnational governments which may present an opportunity for APHRC to encourage resource mobilization to SRSDs. Communes are intended to have more autonomy over localized initiatives and individual mayors may support data system reform, as described above. Present trends suggest that communes are the primary partners of international organizations in projects relevant to data systems.

2. Next steps for national leaders

2.1 Define the NSS on an institutional level, explicitly defining the roles and responsibilities of related institutions.

The National Statistical System lacks organisational guidelines. Although ANSD is charged with managing the NSS, the lack of an explicit institutional framework makes it nearly impossible for them to do this sufficiently. Clear definitions of roles, data mandates, and other data-related responsibilities are needed to improve the NSS's performance.

2.2 Commit to allocate more funding to NSS institutions and programs, taking leadership from experts in the field.

Funding was the most common setback that came up in our data collection. This not only refers to underinvestment in the ANSD and various ministries, but it also includes underinvestment in approving those systems, demonstrated by the budget deficit put forward in the SNDS. Sector leaders are well aware of what needs to be done to improve their operations, but they need investment from national leadership to move forward.

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APPENDIX 1: DETAILED EVALUATION FRAMEWORK

Table 5: Scoping review evaluation framework

Theme	Sub-category	Questions
Governance	National policy frameworks	1. What are the existing national data policies, and are they known and implemented?
		2. What resources exist to support data generation, use and regulation at the national level?
		3. Do national units have any budgetary autonomy on the generation, use and distribution of data?
	Sub-national policy frameworks	1. What are the existing sub-national data policies, and are they known and implemented?
		2. What resources exist to support data generation, use and regulation at the sub-national level?
		3. Do sub-national units have any budgetary autonomy on the generation, use and distribution of data?
	National statistical systems/IT agency	1. Are there single national statistical systems or IT agencies that govern the entire data landscape?
		2. Are there data stewards with specialized technical skills, and who are appointed and held accountable for data policies?
		3. Do statistical agencies have the budgetary autonomy to execute on their mandate?
	Communities and partnerships	1. What partnerships (if any) exist at both the national and sub-national units to facilitate the generation and use of data?
		2. What citizen participation mechanisms exist in data validation exercises such as spot checks and feedback?
Supply[71]	Data collection and processing	1. What are the policies governing how data is generated, stored, and by what process it is updated?
		2. Is data stored in machine-readable formats?
		3. Are there policies that govern whether or not data collection is streamlined to minimize the burden on collectors and prevent redundant data points from entering the system?
		1. Are laws and/or data quality teams within statistical agencies in place to create and sustain high quality data systems?

[71] It is important to note that for this phase of work, the supply side will focus qualitative interviews in select sectors. If a more intensive supply side scoping is recommended following this initial scoping review, it would require more detailed mapping and assessment of datasets, which would, in turn, require additional time.

	Data quality and relevance	2. What measures and checks are used at the point of entry to ensure data quality and completeness?
	Data protection	1. Are data protection policies defined and known by those who interact with the data?
		2. Is there a designated authority to monitor compliance with data protection policies?
		3. What mechanisms are used to secure data at the point of collection, transfer, storage, and sharing?
	Human resources	1. Who is responsible for generating data at both the national and sub-national levels?
		2. What levels of skills and training are required and facilitated for the data workforce?
Demand	Data use	1. Are user needs feeding back into what data gets generated, that is, does the data that is generated map to decision maker needs?
		2. Is data made available via user-friendly interfaces with adequate meta-data to help users understand what the indicators mean?
		3. Is data published in machine-readable formats?
		4. What are existing data grievance redressal mechanisms?
	Data accessibility	1. Who are the primary users of the data inside of the government (literacy level, sector, profession, language)?
		2. Are basic dashboards available for citizens to engage with the data?
	Interoperability	1. Is data being aggregated centrally in standard machine-readable formats to allow different systems and sectors to connect?
		2. Do data systems use common schemas for common entities like geographic regions or individuals?
	Data incentives	1. What policies exist to positively encourage and provide rewards for using data and utilizing findings for evidence-informed policy making (e.g. financial incentives)?
		2. Are there penalties that exist for failing to use generated data in evidence-informed decision and policy making?
		3. What high-level statements, documentation or legislation of endorsement and advocacy exist to raise awareness on the existence and importance of data, and to inform national and sub-national leaders on what's in it for them?

APPENDIX 2: COMPLEMENTARY ACTIVITIES - MEASURE EVALUATION (SENEGAL)

MEASURE Evaluation's Health Information System Strengthening Work in Senegal					
HIS areas	HIS subareas	Health information system strengthening activities			
		2016	2017	2018	2019
	Governance and Leadership		Convene stakeholders to develop community surveillance indicators	Establish a national high council to define the strategic directions of the Global Health Security Agenda	
	System Management	• Develop a user guide for the DHIS2 mobile module	Supply additional mobile devices to the MOH for community-level surveillance Establish a user support system at the district and regional levels Provide technical assistance for the development of an SMS platform for the collection of surveillance data at the community level	Conduct data analysis and data quality review trainings for district health managers Hold a community-surveillance training of trainers for district health management teams and health post nurses across four districts Adapt the mInfoSanté* platform to include zoonotic diseases and adapt the platform for expanded geographic scope and surveillance Create a data review meeting SOP	Create a training guide on community-based surveillance of priority and zoonotic diseases for nurses, livestock officers, and community health volunteers Conduct a qualitative study to identify the motivating and disincentive factors for community health actors and to make recommendations on how to strengthen their motivation in community-based monitoring activities
	Data Sources		Implement the DHIS2 mobile module for data collection without Internet connectivity	Introduce the mInfoSanté platform for SMS-based alerts in six districts	
	Information products			Develop community surveillance assessment reports	

	Data management	Support the training of health post managers and nurses on the use of Android tablets for routine data collection and transfer Support the training of health post managers and nurses on the use of Android tablets for routine data collection and transfer	Develop standard operating procedures (SOP) for routine data quality audits (RDQA) Organise supervision visits to support implementation of SOPs, including the use of RDQA tools Provide technical support for RDQA cascade trainings for district managers to provide trainings for facility health workers Train community health workers to use the SMS platform to transfer epidemiological surveillance data in real time to their head nurse	Conduct supervision visits to district health management teams Support data review meetings for district health management teams • Continue to support data review meetings	Complete supervision visits with district health management teams and the livestock service Hold data review meetings with district health management teams and the livestock service Collaborate with the Institute of Health and Development to hold a surveillance, monitoring, and evaluation workshop for participants from 19 health districts Train 3,377 community health volunteers, 150 nurses, 32 livestock officers, 6 environmental agents, and 5 veterinarians in community-based surveillance

Figure 12: MEASURE Evaluation Fact Sheet on Strengthening Health Information Systems in Senegal