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MINISTRY OF HEALTH · ETHIOPIA
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HEALTHIER CITIZENS FOR PROSPEROUS NATION!

Pathways to Improve HIS/Digital Health in Ethiopia

Analysis Report on the Stages of Continuous Improvement (SOCI) - Defining the Current Status, the Goal and Improvement Roadmap of the Digital Health Endeavors

Outline for the SOCI Assessment Report

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CHAPTER ONE: INTRODUCTION

Background

Cognizant of the huge benefit and positive impact of digital health information system for the health sector, the ministry of health of Ethiopia (FMoH) clearly identified digital transformation and digital health governance as the two major pillars of the health sector transformation plan(HSTP II, 2020-2025).

Based on the HSTP, the ministry has also developed the information revolution road map which aims "t*o maximize the availability, accessibility, quality, and use of health information for decision making processes through the appropriate use of ICTs to positively impact the access, quality, and equity of healthcare delivery at all levels*"

Implementing HIS is a resource intensive engagement and hence developing countries like Ethiopia should wisely implement these systems with priority based approach and devise a mechanism to regularly assess if these systems are performing as per their objectives and take managed actions to rectify problematic areas.

There should also be coordinated effort among all relevant stakeholders in the sector to identify the HIS priority areas which are aligned with the sector's strategic objectives to take advantage of the continuous advancement of information and communication technology (ICT).

The digital health should be adaptive and continuously evolving which enables stakeholders to clearly identify strengths and improvement points, and accordingly prioritize what to do in order to reach higher performance states or maturity

The ministry is currently developing various ehealth implementation guiding documents like the digital health blueprint and digital health strategy. These initiatives require inputs from assessments which show the current status of HIS implementation and its strong and weak sides.

Nowadays, the importance of assessing the maturity level of health information systems using maturity model-based digital health assessment tools have grown. These methods are useful to

to describe current maturity level of digital health systems in terms of human resources, business processes, technology, and organizational capabilities. The methods also facilitate users' ability to set goals for future levels of maturity and inform the development of improvement plans to realize the next maturity level toward a stronger digital health system for a country to meet its public health targets. The HIS maturity assessment gives due emphasis to the institutional maturity of the information system in its entirety (based on the concept of HIS Stages of Continuous Improvement) as well as the maturity of individual HIS components and interoperability maturity of those systems. Based on the current maturity status of the HIS and where we want to reach in the future, the assessment results will give information about the areas which need special attention by the different stakeholders.

In recent years, lower and middle income countries (LMIC) like Ghana and Uganda are using the health system maturity assessment to ensure effective delivery of healthcare data, to avoid duplications, to ensure high quality of the data and modernize the decision making processes - and it is very helpful for the ministry of health (MOH) of Ethiopia too to implement the same. The maturity model concept helps MOH to measure its ability to continuously improve the HIS/Digital Health until it reaches the desired level of development or maturity. The greater the maturity, the stronger the system and the more likely it is to withstand interruptions, such as changes in staff, fluctuation in funds, changing data needs, or the effects of rapidly evolving technology. The HIS maturity model assesses the Health information system and addresses the components that are critical to achieve the desired level of maturity such as interoperability, technology, the broad area of leadership and governance of the HIS, and human resources. This assessment, therefore, was conducted with the aim of generating a solid evidence on the maturity status of HIS for MOH and its strategic partners by assessing the digital HIS's landscape in the country through identifying the existing capacity, processes, and structures and the required levels of maturity.

Rationale: Why this Assessment?

The Ministry of health (MOH) along with its implementing partners has been implementing various digital health initiatives which aims to improve the access, quality and equity of health services. However, so far no attempt has been done to assess the status of the health information system as a whole in order to see where it stands and what are the major challenges *with respect to HIS Leadership and Governance, HIS management and workforce, HIS information and communication technologies (ICT) infrastructure, HIS standards and interoperability, and Data quality and use.*

Driven by the Information Revolution (IR) Agenda of the HSTP, FMOH is committed to ensure the availability of strong digital HIS in the country to achieve the strategic goals of the sector at federal and all applicable lower structures. This is not something MOH can ensure in one go, but it is a continuous improvement process that should be done incrementally and measured meticulously for its appropriateness. While a lot has already happened over the last few years regarding the implementation of different electronic HIS in the health system, the level of maturity of those systems and their level of interoperability hasn't been measured yet. That leaves MOH and its partners with very little or no evidence on where we are and what we need to do to get there. We need our electronic HIS diagnosed for their level of maturity – particularly stability of the systems components and their interoperability.

The HIS maturity assessment results can guide strategically linked continuous improvement processes. They are critical to obtaining a thorough understanding of MOH's current position and where it aims to be in the future. The maturity assessment enables to describe the process components that are believed to lead to better outputs and better outcomes. Obviously, a low level of maturity implies a lower probability of success in consistently meeting FMOH's IR objectives, and a higher level of maturity implies a higher probability of success. Such assessments can be a reference point for identifying the foundational elements needed to create an enabling environment for digital

HIS within a national HIS to become interoperable. If applied regularly, a maturity assessment results can drive improvements in an HIS, from current status to desired status. The results of such assessments can also serve as a roadmap for how to improve processes from one level to the next by helping to define the attributes of each level.

The digital HIS maturity assessment addresses three broad domains that are critical to HIS
interoperability: **Leadership and Governance** (Governance Structure, Interoperability Guidance Documents, Compliance with Data Exchange Standards, Data Ethics, HIS Interoperability Monitoring and Evaluation, Business Continuity, Financial Management, and Financial Resource Mobilization); **Human Resources** (Human Resources Policy, Human Resources Capacity – Skills and Numbers, and Human Resources Capacity Development *)* ; and **Technology** (National HIS Enterprise Architecture, Technical Standards, Data Management, HIS Subsystems, Operations and Maintenance, communication Network, and Hardware). The maturity model is designed to describe the evolutionary path of increasingly organized and systematically more mature processes. One of the strengths of this assessment model is that FMOH, regions, or woredas can use the results to determine the status of their digital HIS towards their ability to capture and exchange data, and use them to determine the desired HIS interoperability status. In other words, even if FMOH is not in a position to make its systems interoperable yet, the assessment can still help us identify what processes, structures, and capacity we should be building within our digital HIS work to enable FMOH to pursue interoperability in the future. The model contains attributes that allow for the monitoring and measurement of progress along the path to maturity. Using desired goals as the ultimate maturity level, FMOH can assess the status of their HIS interoperability at any time, and identify how far we are from our goals. The assessment results can be important inputs for planning appropriate activities or actions to achieve the desired results.

Goal and Objectives of the Assessment

Despite the strong commitment by the government towards HIS implementation and huge efforts done by various stakeholders to implement different digital health initiatives, there have been no coordinated effort made to assess the current status of the health information systems nationally and outline priority areas , set action items for improvement for better health outcomes.

The broader goal of this assessment is to measure the HIS maturity level based on major domains and subdomains by doing evaluation based on the HIS Stages of Continuous Improvement. In addition, the assessment shall put a clear roadmap for actions necessary to build a strong national HIS with attendant subsystems that are able to receive and share data (interoperable). By doing this, the assessment shall aim to identify the factors that are critical to achieving mature, interoperable HIS, and create a developmental path toward resilient systems.

The specific objectives of the assessment are the following:

1. To establish a systematic basis of measurement for describing HIS landscape in the sector by setting a baseline (2020) of HIS improvement in Ethiopia.
2. To set goals (2024) for all subcomponents of HIS to progress through HIS Stages of Continuous Improvement.
3. To set a roadmap toward resilient and interoperable systems, and prepare action plans for improvement.

CHAPTER TWO: ASSESSMENT APPROACH

Scope of the Assessment

This assessment is planned to deal with the overarching HIS maturity levels at national level based on the HIS domains and subdomains. Dealing with individual health information systems was not in the scope of this assessment. However, the HIS implemented and owned by the Ministry and Regional Health Bureaus were given due considerations during the rating exercise. Moreover, each domain was evaluated in light of the digital health enhancement efforts made from Service Delivery Points (SDPs) all the way to the national level.

The Assessment Tool - SOCI

There are various HIS maturity assessment tools which have been developed to measure the HIS maturity level of countries. The basic principle is that such assessment tools should enable auditing and benchmarking; measuring progress against objectives and giving an understanding of strengths, weaknesses and opportunities which can support decision making concerning strategy and project portfolio management(Diogo Proença et.al,2018).

After doing a thorough landscape analysis of the existing maturity assessment tools , the FMoH has decided to use the Measure Evaluation Stages of continuous assessment (SOCI) tool which is more suitable to assess the national health information system of developing countries like Ethiopia.

The Stages of Continuous Improvement (SOCI) tool that was jointly developed by the United States Centers for Disease Control and Prevention (CDC), the Health Data Collaborative (HDC) Digital Health and Interoperability Working Group, and the USAID-funded MEASURE Evaluation (Updated, 2019) was used for this assessment. The tool measures current and desired HIS status in five HIS core domains across 13 components and 39 subcomponents. The status is measured across five stages: Emerging, Defined, Repeatable, Managed, and Optimized. This method draws from the maturity model

approach developed in the business and information technologies industries and initially used for quality improvements related to software. This stage model offers a relatively simple way of describing the progression toward higher capabilities in terms of process, people, technology, and organizational capabilities. Progression through each stage is characterized by defined metrics across the domains and components. Table 1 and Table 2 below will unpack the HIS Maturity Stages and the Domains and Components of SOCI.

Table 1: Description of the five stages of continuous improvement

Stage	Description
1. Emerging/ad hoc	• Formal processes, capabilities, experience, or understanding of HIS issues/activities are limited or emerging • Formal processes are not documented, and functional capabilities are at the development stage • Success depends on individual effort
2. Repeatable	• Basic processes are in place based on previous activities or existing and accessible policies • The need for standardized processes and automated functional capabilities is known • There are efforts to document current processes
3. Defined	• There are approved, documented processes and guidelines tailored to HIS projects or activities • There is increased collaboration and knowledge sharing • Innovative methods and tools can be implemented and used to extend functional capabilities
4. Managed	• Activities are under control using established processes • Requirements/goals have been developed, and a feedback process is in place to ensure that they are met • Detailed measures for processes and products are being collected
5. Optimized	• Best practices are being applied, and the system is capable of learning and adapting • The system uses experiences and feedback to correct problems and continuously improve processes and capabilities • Future challenges are anticipated, and a plan is in place to address them through innovation and new technology • Processes are in place to ensure review and incorporation of relevant innovations

Table 2: SOCI Core domains and components

HIS Core Domain	Components	Subcomponents
HIS leadership and governance	HIS strategy	HIS strategic planning
		Monitoring and evaluation (M&E) plan

	Policy, legal, and regulatory framework, and compliance	Existence of HIS policies and legislation
		Policy compliance enforcement
	HIS leadership and governance organizational structures and functions	HIS leadership and coordination
		HIS organizational structure and function
HIS management and workforce	HIS workforce capacity and development	HIS competencies (knowledge, skills, and abilities)
		HIS training and education (includes continual professional development)
		HR policy
	Financial management	HIS financing plan
		Resource mobilization
HIS information and communication technologies (ICT) infrastructure	Operations and maintenance	Reliable power/electricity
		ICT business infrastructure
		Hardware
	Communication network (LAN and WAN)	Networks and internet connectivity
	Business continuity	Business continuity and processes and policies
HIS standards and interoperability	Standards and guidelines	HIS standard guidelines
		Data set definitions (clinical and indicator)
		Data exchange standards
	HIS core services	Master facility list
		Indicator registry
		Terminology management
		Unique person identity management
		Enterprise architecture
	Interoperability (data exchange)	Person data exchange
		Aggregate data exchange
		Commodity management data exchange
		Data security exchange
Data quality and use	Data quality assurance	Data quality assurance and quality control
		Data management
	Data Use	Data use availability strategy
		Information/data availability
		Data use competencies
		User/stakeholder engagement
		Data synthesis and communication
		Reporting and analytics features
		Data use impact
		Data collection alignment with workflow
		Decision support (clinical or other)

Assessment Process:

Assessing a national health information system needs to be a collaborative process and expected to involve all the relevant stakeholders.It should also start by clearly defining the scope and intended objectives to be achieved.

The maturity assessment was done in two phases. The first one is the current status assessment and goal setting using the selected tool which is conducted from January 30 – February 2, 2021 in a workshop setup.The second phase was the Write up of the future state and improvement road map setting which is conducted from March 4-6, 2021.

Prior to that process ,the MOH followed the following key steps in conducting the maturity assessment.

- **Step 1: Establishing the Assessment core team Team:** MOH's Health Information Technology Directorate (HITD) and the Policy, Plan and M&E Directorate (PPMED) jointly led the HIS/Digital Health Maturity Assessment. Senior experts from the two directorates took the overall technical and administrative leadership in the entire processes.

- **Step 2: Defining the Scope and Assessment Approach:** Since there was not such kind of effort done so far to see the national HIS maturity status it was agreed that the current assessment should be able to measure the overarching HIS maturity level based on major domains and subdomains by doing evaluation based on the HIS Stages of Continuous Improvement (SOCI). Measuring maturity of the individual HIS components was lined up for next phase after completing this task.

- **Step 3: Carry out Landscape Analysis and Document Reviews:** The assessment leadership team conducted the landscape analysis of the available maturity assessment reports of different countries – and reviewed the approaches and tools the counties/projects used for the assessment. Moreover, the leadership team collected and organized the majority of the relevant references (documents) sitting at Ethiopia's MOH and/or partners' offices to facilitate evidence generation during the assessment.

  Strategic Documents, publications and research papers, assessment reports/results which are published by the ministry, agencies under it and other relevant sector

organizations were analyzed and organized to be used as an input for the assessment.

Step 4: Stakeholders mapping : The assessment leadership team to include in this process all the relevant major stakeholders and engaged Directorates from the ministry, Agencies under the MOH, Regions (representatives); implementing & funding partners, and Universities which are incorporated in Capacity Building and Mentorship (CBMP) project.

- **Step 5: Organized a 4-day Assessment Workshop:** The assessment workshop was conducted with participation of a total of 41 senior experts from identified stakeholders. THe , MOH opted for a hybrid of self- and facilitator-administered approach for the assessment. During the workshop, the current status and future state of the HIS maturity were defined - and the improvement roadmap was prepared. The assessment tool was explained for the participants and common understanding on the domains, components and subcomponents was reached after a thorough discussion.
Brief presentations were made on the five domain areas to grasp the major initiatives done so far and on the current activities made by different stakeholders in HIS implementation in the country
Handy templates and platforms were prepared to ease the scoring and evidence generation process.
- **Step 6: Organized a Write-up Workshop:** After gathering and organizing the assessment results obtained from the assessment workshop the write-up workshop was organized , organized to analyze the assessment results and do the write up on the future maturity states targeted on each component and subcomponents. An improvement roadmap was also outlined to reach the setted targets

CHAPTER THREE: RESULTS OF THE HIS/DIGITAL HEALTH MATURITY ASSESMENT

PART I: CURRENT MATURITY STATUS (AS IS – 2020)

INTRODUCTION

Understanding the current status of the health information system will help policy makers, planners and implementers to understand the strength and weakness of the system so that the strong sides are maintained and concrete actions can be taken so that the weak sides are ameliorated.

The SOCI tool helps to measure HIS current status and expected HIS performance for achieving health goals over progreesive stages. It helps to characterize the HIS subcomponents and provides their details , in relation to health sector strategic goals.

The result of the current status of the five domain areas, thier components and subcomponents are presented in the next section

Leadership and Governance - CURRENT STATUS (AS IS - 2020)

Leadership and governance as one of the six interrelated health systems building blocks, ensures HIS strategic policy, legal and regulatory framework for compliance and accountability. To this end, the Leadership and Governance domain deals with improving the impact of quality deliverables and organizational efficiency towards building strong governance on data quality, data management, data sharing, and use, privacy and security, and business process continuity.

The domain is also expected to deliver operational certainty and stability focusing on HSTP- II goals which are crucial in terms of improving the endorsement of policies, legislation, strategies for eHealth and HIS, the alignment and implementation of M&E plan, the definition of the organizational structure, coordination, and functions of HIS, and setting the mechanism for HIS compliance, and law enforcement. While promising efforts are already there regarding drafting workable documents, engaging stakeholders,

establishing technical and administrative committees, etc, the sector still will have to strive to improve particular areas like endorsing draft documents, defining the career path, revising the HIS structure, and budgeting the M&E activities. The following matrix will provide some decent details regarding where the Ethiopian Health Sector is - as far as Leadership and Governance is concerned.

Domain Name	HIS Leadership and Governance	
Current Cumulative Score	**2.47 out of 5**	
	Areas of Strength	**Major Gaps and Loopholes(check gaps against the tool)**
	HIS strategy(HIS strategic planning) ● The HIS strategic plan prepared in the context of the health priorities of the country, ● The strategy has a vision for management and use of health information (electronic or other), ● Contains a plan of action for delivering the vision, and arrangements for M&E. ● have a draft digital Health strategy ***M&E Plan*** ● A draft framework prepared for regular evaluation (both formative and summative) of HIS activities ● The M&E plan is aligned with the HSTP ● Regularly reviewed ● Have health and health-related dissemination platform ***Policy, legal, and regulatory framework and compliance Existence of HIS policies and legislation*** ● There are **drafts** of HIS policies and legislation that guide decisions & achieve HIS outcomes. ***Policy compliance enforcement*** ● There are specific enforcing mechanisms in some settings. For example, data sharing policies in EPHI.	***HIS strategy(HIS strategic planning)*** ● Documented strategies for each (eHealth and HIS) are not endorsed. ● It lacks wider stakeholders/ partners involvement ● The HIS strategy is at the draft stage ● HIS strategyImplementation is not monitored, and there is no schedule for it ***M&E Plan*** ● alignment of HIS activities are not insured with HIS strategy ● M&E is not fully implemented, budgeted, not consistent, not scheduled to capture the desired impact on service delivery, health-related research. ● The M&E lacks check and balance across all HIS systems ***Policy, legal, and regulatory framework and compliance Existence of HIS policies and legislation*** ● All documents are not updated and endorsed and lack to oversee adherence to procedures and policies ● It lacks wider stakeholder engagement in the preparation of documents ● Duplication of policies and legislations example Data

	Organizational structures and functions **HIS leadership and coordination** ● Have established technical and administrative committee such as NAG, TWG, PMT, IR steering committee ● Had a meeting on the different committee such as JSC(Ministry with regional health bureau heads) to address political issues and manage national HIS affairs at all levels of a country's health system ● The governance structure consists of the mechanisms, processes, and institutions through which actors and stakeholders articulate their interests, by defining the roles and responsibilities with meeting schedule **HIS organizational structure and functions** ● Defined organizational structures and processes ● There are job titles and clear descriptions of duties and responsibilities.	sharing policy drafted by EPHI, MOH, Partners ● The policies developed are not comprehensive and results in a damaged reputation and weakened competitive position ● No national policies addressing data standards and interoperability, privacy and security, information and communication technologies (ICT) infrastructure, data stewardship, and data use agreements are widely available, used, and integrated in strategic HIS/health planning, and compliance is monitored by the designated government department/unit. **Policy compliance enforcement** ● No Specified mechanisms and regulatory agency to ensure adherence to organizational policies, procedures, and best practices related to HIS ● No approved document ● No law enforcement for any compliance ● No structured processes to address noncompliance ● No process to review, validate, and enforce implementation of policies, legislation, and regulations in HIS is followed regularly. ● No Metrics on compliance and noncompliance are collected, recorded, and reported. **Organizational structures and functions** **HIS leadership and coordination** ● Lack regularity to oversee the function and implementation of the HIS ● High turnover at the higher leadership level ● Weak coordinated national-level oversight is integrated in the HIS/health strategy as an institutional structure and

		facilitates the implementation of HIS strategy. ● Weak established process for sharing and reviewing HIS information with all HIS stakeholders. ***HIS organizational structure and functions*** ● the implementation process is not uniform across the sub-national level and not attached to an accountability framework ● There is no career path ● Weak process exists for review and updates of organizational structure ● There is no established plan for career training and retention for each job series/cadre.

HIS Management and Workforce

Current Status (AS IS - 2020)

HIS management and workforce is a key component for the health sector at large to rely on health information on the way of making evidence based decision making, health service planning and delivering quality patient care. It entails the availability of adequate personnel with characteristics, attributes, and capabilities to perform tasks to achieve the intended goals. In the Ethiopian health sector, there are well defined and documented competencies, roles, and responsibilities for HIS task forces at almost all levels, even though much work has to be done in making regular HIS capability assessments and analyses. The training, academic curricula, and processes for developing training and education programs to build HIS skills and competencies nationally are standardized to impart the desired knowledge and skills of the HIS workforce. It requires regular review of the training programs on a regular basis and adapting to changing requirements. There are strong HIS policies that avail hiring mechanisms, with documented roles and responsibilities and harmonized with the information revolution road map and other health sector plans, though the HRIS is not being used to manage the data of the health workforce at all levels. There is a multi-year HIS financing strategy aligned with healthcare and HIS strategic priorities, and financial sources are identified for sustained HIS activities of course requires setting priorities in allocating resources.

Domain Name	HIS Management and Workforce	
Current Cumulative Score		3.37 out of 5
Domain Name	1. HIS competencies (knowledge, skills, and abilities	
	Areas of Strength	Major Gaps and Loopholes(check gaps against the tool)

	● There are well defined and documented competencies, roles, and responsibilities for HIS task forces at almost at all levels ● The competencies for the HIS workforce are aligned and practiced with the HIS strategies ● HIS training program courses are aligned with established core competencies, to meet training needs ● An established career path is defined for HITs	● Informatics and project management concepts are used in limited settings (in some projects at national level) for developing, implementing, and managing HIS activities and projects ● Limited HIS capability assessments and analyses are conducted regularly at all levels ● There is no strong hiring mechanism of distributing HIS workforce to all health offices and facilities, and the workforce distribution varies from region to region even though there is demand
Domain Name	**2. HIS training and education (includes continuous professional development)**	
	Areas of Strength	**Major Gaps and Loopholes(check gaps against the tool)**
	● Training, academic curricula, and processes for developing training and education programs to build HIS skills and competencies nationally are standardized ● Training and education programs conducted periodically at government-designated institution. Clear and measurable learning outcomes are defined for training courses ● Training and education plans are integrated in HIS implementation plans and the results are measurable	● Training and education programs are not being reviewed on a regular basis by the designated authority to ensure alignment with HIS needs and technology
Domain name	**3. HR policy**	
	Areas of Strength	**Major Gaps and Loopholes(check gaps against the tool)**
	● There is a structured hiring mechanism that distribute staff to some subnational facilities ● HIS competencies, roles, & responsibilities of staff are clearly documented ● Human capacity needs are integrated in the HIS and/or health plan and monitored by a designated government authority ● HIS Workforce analysis/Labor Market Analysis(HLMA, is	● Numbers are not sufficient to meet HIS workforce needs at health offices and health facilities ● Data on vacancies and staffing needs are not collected and managed in the HRIS on a regular basis and used to inform hiring, distribution of staff, and training and education needs,

	conducted nationally to forecast **future demands.**	- and to advocate for budgets to meet HIS needs nationally - HIS competencies, roles, and responsibilities of staff performing HIS functions are not disseminated to the concerned staff - Region specific HIS Workforce analysis/Labor Market Analysis(HLMA), is not conducted to forecast future demands
Domain Name	**1. HIS financing plan**	
	Areas of Strength	**Major Gaps and Loopholes(check gaps against the tool)**
	- There is a multi-year HIS financing strategy aligned with healthcare and HIS strategic priorities, and sources are identified for sustained HIS activities - HIS implementation is funded using capital financing, revenue, and grants - Expenditure reports are shared with the relevant HIS team/unit - Financial audit processes are in place and regularly carried out to promote accountability in HIS spending - An established financial management system is owned, reviewed, tracked, and revised by the government using IFMIS	- Limited Private-public partnership(PPP) funding to the HIS implementation - There is lack of considering HIS investments for different healthcare priorities and goals and strategically invest in capabilities to support future initiatives - Financial planning is done in limited settings for the entire HIS implementation lifecycle and includes sustainability
Domain Name	**2. Resource mobilization**	
	Areas of Strength	**Major Gaps and Loopholes(check gaps against the tool)**
Areas of Strength	- The resource mobilization plan for HIS activities is integrated in the HIS and/or health plan at the appropriate level of implementation (national, regional) - Review processes are standard and happen regularly, and findings are shared with relevant stakeholders	The resource mobilization plan is not periodically reviewed/revised to accommodate financial requirements needed to support evolving HIS activities and emerging health sector needs at the appropriate level of implementation (national, subnational)

HIS ICT Infrastructure

CURRENT STATUS (AS IS - 2020)

HIS ICT infrastructure deals with the implementation of required technology by applying standard operating procedures to enhance the daily business of the ministry and its shareholders at the national and regional levels are running with less daily business disruption. Based on the HIS assessment on Dec 2020, the current stature of the health sector has its strong points and more areas that need consideration and improvement to realize its goals before the end of 2024. As of Sep 2019, more than 3600 sites have been connected with VPN and 207 sites with YAZMI satellite. The shortcomings are lack of securing backup power sources, lack of efficient hardware, outdated ICT infrastructure. Lack of proper documentation and business continuity plan are also weaknesses that were addressed from the assessment. Because of this and other critical reasons the ICT infrastructure has shown little progress and competency in meeting the growing demand to automate the daily business routines and make the health sector smarter.

Hence the ministry, agencies, regional bureaus, and relevant stakeholders need to shift gear to minimize this vast gap with priority.

Domain Name	HIS ICT Infrastructure	
Current Cumulative Score	2.29 out of 5	
	Areas of strength	**Major Gaps and Loopholes(check gaps against the tool)**
	Operation and Maintenance **Reliable power/electricity:** ● There is a responsible body within the Ministry that handles power disruption issues. ● There are backup powers installed at the national level (ministry Datacenter) , some regional health bureaus and agencies. **ICT business infrastructure** ● There is a draft ICT Standard Operating Procedure-SOP	● . **Operation and Maintenance** **Reliable power/electricity:** ● Lack of alternative power source provided at most healthcare facilities. ● Lack of a responsible body that will follow up on power failure issues upto healthcare facilities level . ● Lack of business continuity plan related to power supply in most of the health sectors. **ICT business infrastructure:**

	prepared at minister and agency levels. ● Although it is far from being sufficient there are plans to execute ICT activities by the minster and its agencies. ● There are needs and efforts for introducing new graduates as IT interns to arrange support and maintenance to the health facilities even though it is provided as adhoc. **Hardware:** ● There is a dedicated ICT infrastructure and virtual private network in the ministry, agencies as well as at regional level. **Communication Network (LAN and WAN)** **Networks and Internet connectivity:** ● The network and internet connectivity is already deployed in most health care facilities. ● The network and internet connectivity plan is included as part of the digital health strategy . ● Practices are there to identify challenges of connectivity (e.g. Service Availability and Readiness Assessment - SARA). **Business Continuity** **Business continuity and processes and policies:** ● To avoid business discontinuity, backup datacenter has been implemented at the national level. ● The initiative to secure data is there even though there are no documented BCP procedures	● Lack of collaboration between health facilities and small-scale enterprises to address support requirements at the facility level. ● There is gap between Internet Service Provider and health sector benefactors **Hardware** ● Poor plan for replacement of outdated/ damaged hardware's ● Inadequate followup and technical support from the ministry/health care facility for broken VPN connection ● Not meeting the increasing demand with sufficient hardware. **Communication Network (LAN and WAN)** **Networks and Internet connectivity:** ● Lack of regular network and internet connectivity assessment and reporting methods. ● No uniform network and internet connectivity platform on each health sector at national and regional level. ● Lack of redundant internet/WAN connection options. **Business Continuity** ● Business continuity and processes and policies. There are no business continuity standard procedures. ● Even Though there are BCP initiatives in some facilities they are not documented

HIS Standards and Interoperability

CURRENT STATUS (AS IS - 2020)

HIS standards and interoperability domain deal with the realization of health data exchange using nationally and internationally known and accepted standards. Data exchange serves as a means for efficient and effective collection, aggregation, and use of a single source of data. In Ethiopia, there is a recognized need for data standardization and interoperability. And efforts such as developing national eHealth Architecture, harmonized indicator reporting, and developing national health data dictionary(NHDD) have taken place. The use of standards is a driving factor to operationalize shared/core services. The development of a master facility registry, as part of the Ethiopian national eHealth Architecture, will serve as a single source of truth about a facility list and description was developed. Though those efforts are promising, there is still much work yet to be done. The following matrix will provide some descent details regarding where the Ethiopian Health Sector is - as far as HIS Standards and Interoperability is concerned.

Domain Name	HIS Standards and Interoperability
Current Cumulative Score	**2.47 out of 5**
Areas of Strength	**Major Gaps and Loopholes**

● **Standards and Guidelines**
  ○ All data sets are developed in line with national guidelines. The indicator set is integrated into the national health strategy.
  ○ Aggregated data sets are harmonized or mapped with those from internationally recognized standards.
  ○ Recognizing the need for harmonized data exchange of HIS, stakeholder initiatives are observed in an ad-hoc manner.
  ○ National Indicator Reference Guideline, a national health data dictionary(NHDD), MFR guideline, Data management guidelines, and centrally managed.
● **HIS Core Services**
  ○ MFR system is operational, though much effort is needed to scale up at a national level
  ○ The national digital health strategy has identified leading indicators to monitor progress and is being
	● **Standards and Guidelines**
	  ○ Foundational standards and guidelines have been developed but not endorsed by M0H which hinders the adoption and practicality of the standards.
	  ○ Clinical minimum data sets are not developed.
	  ○ Standards for data exchange are not prepared.
	● **HIS Core Services**
	  ○ Registry services are foundations for other health data exchange and harmonization but are very limited settings.
	  ○ There is a limitation in the regular update and feedback process of the implemented core services.
	  ○ a client registry is not developed and a national digital id has made it hard to do so.
	● **Interoperability (Data Exchange)**
	  ○ Some essential shared services such as unique person identification are

implemented using national HMIS/DHIS2 ○ NHDD terminology has been introduced using a mobile application for collection, dissemination, and use of the terminologies ○ Efforts to access metadata are consolidated and available from a single portal. ○ National health information architecture is up-to-date and being implemented and includes foundational interoperability tools required to perform HIS functions. ● **Interoperability (Data Exchange)** ○ Though data exchange implementations are not at a large scale, localized and ad hoc efforts are observed.	missing that are required to implement national-level person data exchange. ○ Aggregate data exchange practices exist but are on a limited scale. ○ There are no security standards for data exchange implemented. ○ National Interoperability LAB does not exist to test and there is no certification for implementers to stick with.

Data Quality and Use

CURRENT STATUS (AS IS - 2020)

The Data quality and use is one of the HIS domains which mainly address data quality issues and poor data use culture for informed decision through well organized systems, developed methods and techniques. Currently data quality and use systems have clear and defined procedures for data collection, processing, analysis, and use and implemented at all levels. A regular schedule is defined for conducting data quality reviews and audits. Despite the mentioned efforts It also emphasizes having a functional national data quality and use governing body with an established standardized process by engaging health data actors, developing data quality plans to be reviewed periodically by a coordinating body at all levels using defined standards and procedures. build data use culture through advocacy and promotion, building knowledge management centers to transfer knowledge and skill, recognition and incentives, tracking data use impact and monitoring data use culture improvements.

In this domain, the data quality status was assessed in light with the extent of applicability of data quality assurance techniques such as data review and auditing practices, and the existence and use of nationally defined data management procedures for collection processing and analysis. This endeavor also assessed the level of data use in terms of availability and extent of the implementation data use components for continuous improvement. The main components were availability of data use strategy and data/information, integration and continuous review of data use competencies, level of stakeholder engagement, the practice of synthesizing and communicating information products, reporting and analytics work, availability of data use impact measurement parameters, alignment of the process of data collection with the workflow, and existence and utilization of decision supporting tools.

Domain Name	Data quality and use	

	Areas of Strength	Major Gaps = Future state – Current state (the differences)
Current Cumulative Score	**2.99**	
DQ assurance and control	• Procedures for data collection, processing, analysis, and use are defined and implemented at all levels • A regular schedule is defined for conducting data quality reviews and audits • A national coordinating body (PMT) established to oversee data quality • There are procedures for documenting metadata(Indicators,data elements, data set, registers, tally sheets)	• A national coordinating body (PMT-at all level) to oversee data quality is established but not meet regularly • Data reviews and audits are not conducted on a regular schedule using automated and manual processes to ensure defined levels of quality • Metrics reported on data quality issues are not used for continuous improvement • DQA plan is not periodically reviewed by the coordinating body to meet the evolving data quality needs • Standards are not used national for data exchange nationally between systems (where possible) to avoid manual data re-entry • 3.2◻5
Data management	• Data management processes- on time collection, timely reporting,analytics and visualization) , are up-to-date, implemented, and monitored for compliance (to HMIS standards-DQ, DU guides, recording and reporting guide, Indicators reference guide-available both as electronic & manual formats)	• No Standard operating procedures for data management integrated with the national HIS plan. • Data quality is not actively monitored and shared with stakeholders • 3.4◻5
Data use strategy	• The data use strategy-Integrated DQ & DU PMT platform and governance body established and documented	• Implementation of the data use strategy is not monitored, reviewed, and overseen (PMT/PRM) by established governing body for data review • Data are not shared for stakeholders • The data use strategy is not adapted to meet emerging decision-making needs of program managers, policymakers, and providers interacting with HIS such as QI projects, equity indicators • 3.4◻5
Information/Data	• Data systems/Sources (routine, population based)are defined, designed and implemented to	• ? Data systems/sources (routine, population based)are not defined, designed and implemented to

availability	support longitudinal availability of health data	support longitudinal availability patient level data • The data systems/applications in use don't ensure reliable and appropriate access to data at all levels for authorized users • Changes in reporting requirements are not accommodated with minimal disruptions to data availability • Data availability is not monitored for continuous improvements and to meet emerging health sector needs • 2.8☐5
Data use competencies	• Data use competencies are defined, up-to-date, and integrated in training courses (both inservice and preservice)	• Data use competency development is not tracked by user type and not level based • There is no a standardized plan for tracking and measuring competencies • There is no an established feedback mechanism to make updates and address gaps • 2.6☐4
User/ Stakeholders Engagement	• Guidance - NAG-for HIS for stakeholders engagement is documented and available. • Guidance - PMT for users engagement is documented and available.	• Guidance for user engagement is not periodically reviewed and revised to address emerging and future decision-making needs of users • 3.4☐5
Data synthesis and communication	• ?Guidance on the design and use of information products such monthly analytical report, ARM report, JSC report, Annual Special bulletin, Dashboard to KPIs is documented and available	• Guidance on the design and use of information products is not up-to-date, implemented, and monitored for compliance by an established governing body • Guidance on the design and use of information products is not periodically reviewed and revised to ensure its applicability and relevance to emerging and future decision-making needs • ?No guidance is available for the design and use of advanced analytics (such as triangulation, further analysis on related) • 2.6☐5
Reporting and Analytics feature	• Established national systems and guidelines to support standardized routine reporting • Automated data reporting from point of service to national systems	• Metrics on reporting and analysis capabilities with feedback from users are not used for continuous improvement

	(DHIS2,eCHIS)have been implemented in limited settings. • Basic reporting and analysis features are available within applications (DHIS2,eCHIS)	• Automated data reporting from point of service to national systems have been implemented not in all settings • 3.2☐5
Data use impact	• Parameters on the measurement of the impact of data use are defined and documented	• Parameters on the measurement of the impact of data use are not up-to-date, implemented, monitored, and reviewed by a designated governing body • Parameters on the measurement of the impact of data use not are integrated in the HIS and/or health plans • Plans for process feedback are not documented and disseminated • 1.6☐4
Data collection alignment	• Some healthcare-related workflows are documented and are aligned with data collection processes. • Some capability to reuse collected data within a documented workflow exists locally	• Technology applications from different entities may not serve a common goal and are not linked and exchanging data • HIS applications are don't comply with the country's interoperability plan • Limited capabilities exist to reuse collected data and resources seamlessly within the workflows (not at facility level) • 2.8☐ 4
Decision support	• Decision supporting tools exists in some settings and is based on alerts and reminders to the program manager, care provider, and patients • There is a recognized need to establish standard procedures to support decision making	• No decision supporting tools that incorporate program and clinical guidelines • Condition-specific order sets and documentation templates are not defined • No Knowledge-based systems are implemented in some settings to support decision making • 1.6☐3

PART II: FUTURE MATURITY STATE (Goals - 2024)

Leadership and Governance

FUTURE STATE (Goals - 2024)

The need to identify relevant interventions to advance capability and improvements will address the identified gaps in the AS-IS, and helps to enforce tracking of overall progress toward already set HSTP-II goals. To meet the aspired goals of the Leadership and Governance domain, MOH and its key stakeholders/partners will have to deal with regular updating, endorsing, overseeing comprehensive HIS policies, legislations and strategic plan, and allocation of the required budget to capture the desired impact on HIS outcomes.

Moreover, the presence of structured processes and applying specific mechanisms is required to address noncompliance. The regulatory agencies will help to ensure adherence to compliance and law enforcement. Applying law enforcement for any compliance brings regularity of HIS leadership, coordination, function and implementation of the HIS. Additionally, having a comprehensive HIS organizational structure and functions will make the implementation process uniform across national and sub-national levels. It is worth noting that defining a clear career path will motivate the health workforce and contribute to the effective and efficient implementation of HIS. The following matrix will provide some crucial items to consider regarding where the Ethiopian Health Sector is expected to reach on the Leadership and Governance.

Domain Name	HIS Leadership and Governance
Current Cumulative Score	**2.47 (out of 5)**
Future Status (2024)	**4.33 (out of 5)**

Improvement Roadmap: HIS Leadership and Governance

Gaps to be addressed **#1: Both HIS strategy planning and M&E plan are not endorsed, not comprehensive (limited participation, document content is not holistic, not refined, not detailed, ...).**	
High-impact interventions identified to address the gap	● Develop and promote HIS accountability and transparency framework with clear defined roles and responsibility ● Strengthen/Establish a designated body responsible for taking corrective measures ● Strengthen key stakeholders/partners collaboration forum (including private sectors, academia, Civil society organization, professional association ...) ● Design a strategy for additional fund & resource mobilization for eHealth and HIS initiatives ● Promote a transparent M&E system by creating a public health information access platform(Portal, Forum).
Resources Required to get there (be clear, don't be generic)	● Commitment/allocation of appropriate time ● Enough skilled manpower in quantity and profession ● Allocate adequate budget according to the costing exercise
Primary Responsible Body (Directorate, Agency, etc.)	● MoH (PPMED, HITD and LSD), Regions health bureaus, sub regional health administration bodies and all agencies working on the health sector
Means of Verification	● Regular report review ● Inspection ● Conduct survey, where applicable. ● Technical working sessions ● M & E supportive supervision ● Review meetings
Timeline (From/To or definite period)	Before the end of HSTP II (2024)

Gaps to be addressed **#2: HIS policies and legislation are not comprehensive, are not up to date, and not approved. There is a lack of follow-up on the adherence to SOPs.**	
High-impact interventions identified to address the gap	● Develop comprehensive capacity building and mentorship strategy ● Strengthen/Establish a designated body responsible for checking the timely finalization, endorsement and implementation of HIS policies and legislations ● Strengthen key stakeholders/partners collaboration forum (including private sectors, academia, Civil society organization, professional association ...)
Resources Required to get there (be clear, don't be generic)	● Commitment/allocation of appropriate time ● Assign skilled manpower ● Allocate adequate budget according to the costing exercise
Primary Responsible Body (Directorate, Agency, etc.)	● MoH (PPMED, HITD, and LSD)
Means of Verification	● Inspection of implementation process and functions ● Conduct survey, where applicable. ● Technical working sessions ● M & E supportive supervision ● Review meetings

Timeline (From/To or definite period)	Annually , until end of HSTP II (2024) based on each plan of action

Gaps to be addressed **#3: there are no structure, no processes, no specific mechanisms to address noncompliance and no law enforcement to ensure adherence to organizational policies and procedures.**	
High-impact interventions identified to address the gap	● Create a defined body, process, and procedures to ensure compliance with SOPs. ● Create a structure for correction/remediation. ● Define standard measures or metrics of compliances (collected, recorded, reported, and verified)
Resources Required to get there (be clear, don't be generic)	● Commitment/allocation of appropriate time ● Assign skilled manpower ● Allocate adequate budget according to the costing exercise
Primary Responsible Body (Directorate, Agency, etc.)	● MoH (LSD), EFDA and Regions health bureaus and sub regional health administration bodies
Means of Verification	● Inspection of implementation process and functions ● Formal and informal report review ● Conduct survey, where applicable. ● Technical working sessions ● M & E supportive supervision ● Review meetings
Timeline (From/To or definite period)	Anytime, until the end of HSTP II (2024)

Gaps to be addressed **#4: Irregularity of follow-up on the coordination and implementation of HIS initiatives.**	
High-impact interventions identified to address the gap	● Establish a follow up mechanism/ platform to strengthen coordination of HIS initiative, stakeholder engagement to be applied across all sub-national levels. ● Design and implement the process of HIS initiatives at all levels in the health sector and inline with the national HIS and M&E plan
Resources Required to get there (be clear, don't be generic)	● Commitment/allocation of appropriate time ● assign skilled manpower ● allocate adequate budget according to the costing exercise
Primary Responsible Body (Directorate, Agency, etc.)	● MoH (PPMED, and HITD), Regional health bureaus, sub-regional health administration bodies, and all line agencies
Means of Verification	● Regular report review ● Conduct survey, where applicable. ● Technical working sessions ● M & E supportive supervision ● Review meetings
Timeline (From/To or definite period)	Monthly, Quarterly, Annually before end of HSTP II (2024)

Gaps to be addressed **#5: HIS organizational structure and functions are not uniform across national and sub-national levels with no clear career path.**	
High-impact interventions identified to address the gap	● Create a standardized and formal process for review and updates of organizational structure with JDs for HIS across all national and sub-national levels. ● Prepare and execute a national plan for career development training and retention for each HIS personnel. ● Develop capacity building and mentorship program/plan for continuous professional and career development.
Resources Required to get there (be clear, don't be generic)	● Commitment/allocation of appropriate time ● assign skilled manpower ● allocate adequate budget according to the costing exercise
Primary Responsible Body (Directorate, Agency, etc.)	● MoH (PPMED, and HITD), PSA, Regional health bureaus, sub-regional health administration bodies, and all line agencies
Means of Verification	● Inspection of implementation process and functions ● Regular report review ● Regularly review the job-description ● Conduct survey, where applicable. ● Technical working sessions ● M & E supportive supervision ● Review meetings
Timeline (From/To or definite period)	Before the end of HSTP II (2024)

HIS Management and Workforce - FUTURE STATE (Goals - 2024)

Gaps related to the HIS management and workforce have been identified in the current status assessment section of the domain. For each identified gap, major intervention mechanisms were proposed. In terms of training it is suggested to provide long and short term training for HIS workforce on project management and informatics concepts and on HR manual/guideline for the HR focal at all levels. In order to put mature HIS workforce in place, appropriate guidelines and standards including applying project management principles and informatics concepts should be prepared. Reviewing HIS training and education program as per HERQA/TVET, which clearly defines the engagement platform in HIS financing, and guide on review mechanisms on the financial requirements should be performed. With regards to HIS workforce assessment, there should be capability assessment and supportive supervision on recruitment. An assessment should also be done on hiring mechanisms, HIS workforce need, HIS financial need throughout HIS implementation lifecycle. Implementation of iHRIS should be performed at all levels. The conducted competencies, roles, and responsibilities should be disseminated to all concerned bodies. It is vital to review the existing HIS strategies regularly based on the assessments conducted within this domain.

Domain Name	HIS Management and Workforce
Current Cumulative Score	**3.37 (out of 5)**
Future Status (2024)	**4.67 (out of 5)**

Improvement Roadmap: HIS Management and Workforce

Gaps to be addressed **#1:** Informatics and project management concepts are used in limited settings (only in some projects at national level) for developing, implementing, and managing HIS activities and projects	
High-impact interventions identified to address the gap	● Develop Standards/guidelines/SOPs on how to apply project management principles and informatics concepts in HIS projects

	● Short and long term training, coaching, and mentoring on project management and informatics to HIS workforce at national and regional levels
Resources Required to get there (be clear, don't be generic)	● Training manual/multimedia training materials ● Trainer ● Training and workshop budget
Primary Responsible Body (Directorate, Agency, etc.)	HITD
Means of Verification	● Trained national and regional levels HIS Experts personnel on project management and informatics concepts ● Standard/Guideline/SOP prepared on informatics and project management ● Multimedia Training materials prepared
Timeline (From/To or definite period)	Until end of 2021

Gaps to be addressed **#2:** There is weak hiring mechanism of distributing HIS workforce to all health offices and facilities	
High-impact interventions identified to address the gap	● Train and coach on HR manual and guidelines focusing on hiring mechanisms to all HR officers at national and regional levels ● Conduct supportive supervision on recruitment, hiring and deployment of HIS workforce on regular basis
Resources Required to get there (be clear, don't be generic)	Civil service directive/HR manual Trainers/Experts Budget
Primary Responsible Body (Directorate, Agency, etc.)	HRA
Means of Verification	● Qualified HIS workforce at all levels ● Adequate HIS workforce at all levels
Timeline (From/To or definite period)	Until end of 2022

Gaps to be addressed **#3:** Training and education programs are not being reviewed on a regular basis by the designated authority to ensure alignment with HIS needs and technology	
High-impact interventions identified to address the gap	Prepare implementation guideline to review HIS training and education program as per HERQA/TVET training and education standard
Resources Required to get there (be clear, don't be generic)	HERQA/TVET training and education standard Experts Budget
Primary Responsible Body (Directorate, Agency, etc.)	HRD
Means of Verification	Reviewed HIS Training and education program
Timeline (From/To or definite period)	Until end of 2022

Gaps to be addressed **#4:** Insufficient HIS workforce at regions, health offices and health facilities and region specific HIS Workforce analysis/Labor Market Analysis(HLMA), and HIS capability assessment and analysis is not conducted to forecast future demands	
High-impact interventions identified to address the gap	Prepare/update a guideline/SOP to conduct HIS workforce need assessment, workforce analysis/Labor Market Analysis(HLMA) and HIS capability assessment Review and update HIS workforce structure based on the assessment result and enforce it at all levels
Resources Required to get there (be clear, don't be generic)	Expert to prepare the guideline and conduct the assessment Budget for the assessment
Primary Responsible Body (Directorate, Agency, etc.)	HITD/HRD in collaboration with regions
Means of Verification	Availability of sufficient HIS workforce at all levels
Timeline (From/To or definite period)	Until mid of 2022

Gaps to be addressed **#5:** Data on vacancies and staffing needs are not collected and managed in the HRIS on a regular basis and used to inform hiring, distribution of staff, and training and education needs, and to advocate for budgets to meet HIS needs nationally	
High-impact interventions identified to address the gap	Implement the iHRIS at all levels to inform hiring, distribution of staff, and training and education needs, and to advocate for budgets
Resources Required to get there (be clear, don't be generic)	iHRHIS application at all levels Budget for training/deployment and overall implementation of iHRIs as per the iHRIS implementation plan
Primary Responsible Body (Directorate, Agency, etc.)	HRA/HITD
Means of Verification	Number of facilities implemented HRIS to inform hiring, distribution of staff, and training and education needs, and to advocate for budgets
Timeline (From/To or definite period)	Until end of 2024

Gaps to be addressed **#:6** HIS competencies, roles, and responsibilities of staff performing HIS functions are **not disseminated** to the concerned staff	
High-impact interventions identified to address the gap	Disseminate the competencies, roles, and responsibilities to the concerned staff using all mechanisms
Resources Required to get there (be clear, don't be generic)	Printing resources Budget for dissemination, for training and awareness creation for HRA focals at all levels
Primary Responsible Body (Directorate, Agency, etc.)	HRA

Means of Verification	Number of health offices and facilities received HIS competencies, roles, and responsibilities document
Timeline (From/To or definite period)	Until end of 2022

Gaps to be addressed #7: Limited Private-public partnership(PPP) funding to the HIS implementation	
High-impact interventions identified to address the gap	Prepare guideline which clearly defines the engagement platform in HIS financing
Resources Required to get there (be clear, don't be generic)	Budget for awareness creation
Primary Responsible Body (Directorate, Agency, etc.)	Partnership and cooperation Directorate
Means of Verification	Engagement level of PPP for HIS financing
Timeline (From/To or definite period)	Until end of 2022

Gaps to be addressed #8: Financial planning is not done in a holistic way for the entire HIS implementation lifecycle and there is lack of considering HIS investments for different healthcare **priorities and** doesn't include sustainability. The resource mobilization plan is not periodically reviewed/revised to accommodate financial requirements needed to support evolving HIS activities and emerging health sector needs at the appropriate level of implementation (national, regional)	
High-impact interventions identified to address the gap	Conduct detailed study for the financial need of HIS implementation lifecycle with identification of health care priority areas and incorporating the study in the HIS strategy document. Prepare guideline/SOP document which guides on review mechanisms on the financial requirements and conducting the review regularly based on the guideline
Resources Required to get there (be clear, don't be generic)	Experts to conduct the study and prepare SOP Budget to conduct the study and
Primary Responsible Body (Directorate, Agency, etc.)	HITD
Means of Verification	Analysis result documenting financial need of HIS implementation lifecycle
Timeline (From/To or definite period)	Until end of 2022

HIS ICT Infrastructure - FUTURE STATE (Goals - 2024)

To meet the aspired goals of HIS ICT infrastructure domain, MOH and its stakeholders will have to deal with improving redundant power source options, distribute hardware, establish business continuity plan, provide technical support, establish redundant network and internet connection, develop network connectivity standards, create a regular reporting mechanism, and assign responsible bodies in all health facilities. Overall, to address certain gaps, developing harmonized and comprehensive plans is inevitable.

The following matrix will provide some crucial items to consider regarding where the Ethiopian Health Sector is expected to reach on the HIS ICT infrastructure by the end of 2024.

Domain Name	HIS ICT Infrastructure
Current Cumulative Score	**2.29 (out of 5)**
Future Status (2024)	**4 (out of 5)**

Improvement Roadmap: HIS Infrastructure

HIS Reliable power/electricity Subcomponent

Gaps to be addressed #1: Lack of alternative power source provided at most healthcare facilities.	
High-impact interventions identified to address the gap	Providing feasible solutions and interventions based on the current circumstances of the area where the facility is located.
Resources Required to get there (be clear, don't be generic)	Using power supply options such as generator, solar system, UPS, biogas, wind turbine, geothermal etc
Primary Responsible Body (Directorate, Agency, etc.)	Sequentially the health facility is responsible then if the issue is beyond their limit they could escalate it to the higher body hierarchically.
Means of Verification	Continues power supply with less business disruption
Timeline (From/To or definite period)	until the end of the (budget strategic fiscal year by 2024)

Gaps to be addressed #2: Lack of a responsible body that will follow up on power failure issues upto sub-national healthcare facilities level .	
High-impact interventions identified to address the gap	Assigning a responsible body within each facility or for a group of facilities located at sub-national level
Resources Required to get there (be clear, don't be generic)	recruiting and establishing(if there is none already) the required body.
Primary Responsible Body (Directorate, Agency, etc.)	the health facility at sub-national level

Means of Verification	requesting for a report with the organizational structure and manpower tally.
Timeline (From/To or definite period)	until the end of the (budget strategic fiscal year by 2024)

Gaps to be addressed #3: Lack of business continuity plan related to power supply in most of the health sectors.

High-impact interventions identified to address the gap	● Formulating national BCP ● Having a BCP approved document owned at sub-national level to follow when power related failures occur.
Resources Required to get there (be clear, don't be generic)	Comprehensive and approved BCP.
Primary Responsible Body (Directorate, Agency, etc.)	FMOH
Means of Verification	Clear business continuity plan
Timeline (From/To or definite period)	until the end of the (budget strategic fiscal year by 2024)

Improvement Roadmap: HIS ICT Infrastructure Subcomponent

Gaps to be addressed #4: Lack of collaboration between health facilities and small-scale enterprises to address support requirements at the facility level.

High-impact interventions identified to address the gap	● Asses the existing gap and prepare required action plan ● Engaging local small scale enterprises to provide IT support. ● Operating and maintenance services support plan
Resources Required to get there (be clear, don't be generic)	● skilled manpower and financial support ● support from senior management
Primary Responsible Body (Directorate, Agency, etc.)	Health Facility
Means of Verification	● Operations and maintenance services are included in the HIS plan or health plan. ● less business disruption.
Timeline (From/To or definite period)	until the end of the (budget-strategic fiscal year by 2024)

Gaps to be addressed #5: There is a gap between Internet Service Provider and health sector benefactors.

High-impact interventions identified to address the gap	● Holding regular meetings with stakeholders to minimize the gap concerning internet connection and VPN disruption. ● implemented consistente operations and maintenance SOPs
Resources Required to get there (be clear, don't be generic)	● contracting SLA ● creating discussion forums
Primary Responsible Body (Directorate, Agency, etc.)	FMOH
Means of Verification	● Regular progressive meeting, ● Monitoring and evaluation sessions ● developed SOPs
Timeline (From/To or definite period)	until the end of the (budget-strategic fiscal year by 2024)

Improvement Roadmap: HIS Hardware Subcomponent

Gaps to be addressed #6: Inadequate followup and technical support from the ministry/health care facility for broken VPN connection

High-impact interventions identified to address the gap	Implementing regular monitoring mechanisms so as to provide support on a timely base.
Resources Required to get there (be clear, don't be generic)	● Monitoring tool and dedicated technical support team that will oversee the VPN connection. ● Performing preventive maintenance regularly. ● A functional and always-staffed help desk exists at national and subnational levels.
Primary Responsible Body (Directorate, Agency, etc.)	FMOH , Agencies , regional health bureau and healthcare facilities.
Means of Verification	● uninterrupted VPN connection ● The hardware is working optimally to support operations.
Timeline (From/To or definite period)	until the end of the (budget-strategic fiscal year by 2024)

Gaps to be addressed #7: Poor plan for replacement of outdated/ damaged hardware's

High-impact interventions identified to address the gap	Performing hardware assessment on a regular basis and preparing replacement plans based on the assessment.
Resources Required to get there (be clear, don't be generic)	● have planned asset management strategy ● acquire financial support
Primary Responsible Body (Directorate, Agency, etc.)	FMOH , Agencies , regional health bureau and healthcare facilities.
Means of Verification	● Fully functional and updated hardware device
Timeline (From/To or definite period)	until the end of the (budget-strategic fiscal year by 2024)

Gaps to be addressed #8: Not meeting the increasing demand of hardware from health facilities sufficient supply.

High-impact interventions identified to address the gap	● asses the now stage to find out the needs of priority areas ● provides sufficient hardware that will assist in accessing/automating ehealth services. ● ensure procedures are in place at the facility level for continued support and hardware replacement from the ministry
Resources Required to get there (be clear, don't be generic)	● perform Information System audit ● perform gap assessment ● prepare a delivery plan based on the assessment. ● acquire financial support
Primary Responsible Body (Directorate, Agency, etc.)	FMOH , Agencies , regional health bureau and healthcare facilities.
Means of Verification	● Most of the health ministry's national and subnational offices have adequate hardware.
Timeline (From/To or definite period)	until the end of the (budget-strategic fiscal year by 2024)

Improvement Roadmap: HIS Network and Internet Connectivity Subcomponent

Gaps to be addressed #9: Lack of regular network and internet connectivity assessment and reporting methods.

High-impact interventions identified to address the gap	● develop/implement a monitoring tool with GPS locator and smart sensors to send alert messages incase of system health status change. ● inforce system failure reporting procedures ● integrate automated systems sending status change alert messages to responsible persons
Resources Required to get there (be clear, don't be generic)	● tools and solutions with the specified requirements to assess and report the network connectivity. ● procedures to follow incase of failure.
Primary Responsible Body (Directorate, Agency, etc.)	FMOH, national and subnational stakeholders
Means of Verification	● implementation of such tools and solutions ● frequent system status update reports ● Most national offices of the health ministry have a working network connection and about half of subnational offices have a strong and reliable network connection.
Timeline (From/To or definite period)	until the end of the (budget-strategic fiscal year by 2024)

Gaps to be addressed #10: No uniform network and internet connectivity platform on each health sector at national and regional level.

High-impact interventions identified to address the gap	create and establish a national network connection standard
Resources Required to get there (be clear, don't be generic)	● perform network and connectivity assessment on health facilities ● Comprehensive standard document for network connectivity.
Primary Responsible Body (Directorate, Agency, etc.)	FMOH, national and subnational stakeholders
Means of Verification	● Having a uniform network and connectivity platform at national and sub-national level. ● Ensure a dedicated network support team is in place.
Timeline (From/To or definite period)	until the end of the (budget-strategic fiscal year by 2024)

Gaps to be addressed #11: Lack of redundant internet/WAN connection options

High-impact interventions identified to address the gap	Establish multiple connection options to improve service uptime using the latest technological interventions.
Resources Required to get there (be clear, don't be generic)	● Technological options (Satellite, Fiber optics, ...) ● skilled and trained manpower ● Financial support from donors
Primary Responsible Body (Directorate, Agency, etc.)	FMOH, national and subnational stakeholders
Means of Verification	● Less service interruption. ● Gaps in connectivity are documented and addressed in standard processes.
Timeline (From/To or definite period)	until the end of the (budget-strategic fiscal year by 2024)

Improvement Roadmap: HIS Business Continuity Subcomponent

Gaps to be addressed #12: There are no standard business continuity plans.

High-impact interventions identified to address the gap	● Develop and establish business continuity plan ● Develop Standard Operating Procedures
Resources Required to get there (be clear, don't be generic)	Approved national Business continuity document
Primary Responsible Body (Directorate, Agency, etc.)	FMOH
Means of Verification	● Having a signed & sealed printout of the BCP and SOP. ● The HIS BCP is integrated in the HIS strategic plan and regularly managed by the government-designated authority to address goals and gaps in meeting HIS needs.
Timeline (From/To or definite period)	until the end of the (budget-strategic fiscal year by 2024)

Gaps to be addressed #13: Even though there are BCP initiatives in some facilities they are not documented.

High-impact interventions identified to address the gap	● Ensure proper documentation is in place ● Develop follow up checklist
Resources Required to get there (be clear, don't be generic)	having a business documentation process
Primary Responsible Body (Directorate, Agency, etc.)	national and subnational stakeholders
Means of Verification	regular reports with the status update
Timeline (From/To or definite period)	until the end of the (budget-strategic fiscal year by 2024)

HIS Standards and Interoperability - FUTURE STATE (Goals - 2024)

The HIS goal for 2024 aspires to address the below identified eight main HIS standards and interoperability gaps. A maximum effort from MOH and its stakeholders is needed to address the gaps in standards, guidelines, and minimum data set development, update, and maintenance. The need to develop client registry service and enhance other existing national registry services based on a formal feedback process is the second identified gap underpins the data exchange efforts. As interoperability and data exchange is the ultimate goal, unique person identification and aggregated, commodity and security data exchange practices and implementation are also enablers of the overall process. For this and other interoperability and data exchange practices, the development and preparation of a national interoperability LAB enables implementers to test their participating system and get certified for production and rollout. The table below outlines the identified gaps and their corresponding intervention, needed resources, responsible organization, and the key performance indicators to measure the results.

Domain Name	HIS Standards and Interoperability
Current Cumulative Score	**2.38 (out of 5)**
Future Status (2024)	**4.11 (out of 5)**

Improvement Roadmap: HIS Standards and Interoperability

Gaps to be addressed #1: HIS Data Standards and Guidelines are not endorsed	
High-impact interventions identified to address the gap	- Alignment of HIS standards and guidelines with existing practices, workflows and business needs. - Plan for regular review and continuous update of standards and guidelines. - Socializing and promoting prepared and updated standards and guidelines and endorsement of these documents by authorized bodies.
Resources Required to get there (be clear, don't be generic)	- Dedicated working group or committee of personnels to follow and maintain standards documents and implementations guidelines. - International experiences on standards and protocols continuity and followup. - Finance for events to update and socialize the standards and guidelines.

Primary Responsible Body (Directorate, Agency, etc.)	MOH(HITD, PPMED)
Means of Verification	● Number and type of endorsed domain specific HIS standard and guidelines ● Number of uploaded documents on a central location (e.g. MoH Knowledge Management System)
Timeline (From/To or definite period)	2024

Gaps to be addressed **#2: Minimum clinical data sets are not defined**	
High-impact interventions identified to address the gap	● Development of national minimum data sets, for clinical care, laboratory and pharmacy, that has the capability to centrally publish and expose resources. ● Preparing a plan for a regular review and update of minimum data set. ● Introduction of mapping possibility between prepared minimum data sets and internationally known codes sets.
Resources Required to get there (be clear, don't be generic)	● Financial resources to conduct workshops in preparing standards which accommodate minimum data sets. ● Human capital dedicated to prepare and follow the work. ● financial resource needed to cover cost implication endorsement any global standard, if any
Primary Responsible Body (Directorate, Agency, etc.)	MOH(HITD, PPMED)/Partners(Implementers, funders)/Health facilities/ universities
Means of Verification	Centrally hosted list of minimum data sets, for clinical, laboratory, pharmacy and related services, at the national health data dictionary depot.
Timeline (From/To or definite period)	2024

Gaps to be addressed **#3: Data exchange standards are not developed and integrated in the national HIS plan**	
High-impact interventions identified to address the gap	● Development of Industry based health data exchange and messaging standard. ● Approval, review and monitoring of health data exchange and messaging standard in a standardized operating procedure and integrate in the national health plan ● Preparation of interoperability LAB to test and certify onboard implementation activities.
Resources Required to get there (be clear, don't be generic)	● Cost related to the development and preparation of the national interoperability LAB which serves as testing and certification environment for clearinghouse to production mode. ● Skilled human capital who manages the interoperability LAB. ● Cost related to workshop and training on development / preparation and use of data exchange and messaging standards.
Primary Responsible Body (Directorate, Agency, etc.)	MOH(HITD, PPMED)/Partners(Implementers, funders)/Health facilities/ universities

Means of Verification	A nationally defining interoperability and messaging standards which address the need for data exchange among eHA components and ancillary systems, if any.
Timeline (From/To or definite period)	2024

Gaps to be addressed **#4: Limited implementation and utilization of core registry services**	
High-impact interventions identified to address the gap	● Periodic update of registry services inline with HIS strategic plan. ● Establishment of a feedback process to review and address gaps of the registry services. ● A central registry for facility, indicator and terminology services and own the possibility of instant exposure of resources to implementing systems.
Resources Required to get there (be clear, don't be generic)	● cost related to the development of the central registry portal. ● necessary human resources to monitor and maintain the registry service and manage the update process
Primary Responsible Body (Directorate, Agency, etc.)	● MOH(HITD, PPMED)/Partners(Implementers, funders)/RHB/ universities
Means of Verification	● Capability of Interoperability with other systems using central terminology, facility and indicator registries. ● Registry Maturity and Governance document ● Digital health projects inventory report on the existing status of eHA components. ● The maturity level of a shared health record as a service.
Timeline (From/To or definite period)	2024

Gaps to be addressed **#5: Lack of unique person identification system**	
High-impact interventions identified to address the gap	● Develop client registry to share unique identifiers developed and assigned by other programs/systems ● Enable participating systems to share personal unique identifiers.
Resources Required to get there (be clear, don't be generic)	● financial resource to support the initiative of digital ID. ● cost implication in development of client registry ● workshop and training cost in socializing and familiarizing client registry and the digital ID
Primary Responsible Body (Directorate, Agency, etc.)	● MOH(HITD, PPMED)/Partners(Implementers, funders)/RHB/ universities
Means of Verification	● A functional client registry ● an implementation guide which depict the procedure how implementers should handle issue of client identification
Timeline (From/To or definite period)	2024

Gaps to be addressed **#6: Limited aggregate data exchange practices and scale up implementations**

High-impact interventions identified to address the gap	● Automatic reporting of aggregated data using defined standards at all levels. ● Localization and contextualization of global data standards and giving feedback when necessary.
Resources Required to get there (be clear, don't be generic)	● Development/test cost of different aggregated data exchange use cases. ● Cost implications related to the profiling and adoption of globally known exchange data standards ● Human resource to maintain the development, feedback and update process.
Primary Responsible Body (Directorate, Agency, etc.)	● MOH(HITD, PPMED)/Partners(Implementers, funders)/RHB/ universities
Means of Verification	● Messaging and aggregated data exchange standard document ● number of participating components and systems that have the capability of exchanging aggregated data automatically at a regional or national level
Timeline (From/To or definite period)	2024

Gaps to be addressed **#7: lack of capability to exchange data between commodity management and health information systems**	
High-impact interventions identified to address the gap	● Define peer to peer basic data exchange between systems across the entire supply chain ● Prepare standardized exchange and messaging standards for commodity data exchange
Resources Required to get there (be clear, don't be generic)	● Cost implication related to the development or customization of existing supply chain applications to fit into the concept of data exchange. ● Cost implication related to the development of standard aggregated commodity data exchange and messaging documents.
Primary Responsible Body (Directorate, Agency, etc.)	● MOH(HITD, PPMED)/Partners(Implementers, funders)/RHB/ universities
Means of Verification	● Messaging and commodity data exchange standard document. ● number of participating components and systems that have the capability of exchanging commodity data automatically at all levels
Timeline (From/To or definite period)	2024

Gaps to be addressed **#8: There are no security standards for data exchange and enforcement procedures**	
High-impact interventions identified to address the gap	● Define security requirements for preparation of data, application and network infrastructure to support data exchange ● design a robust review and update processes to ensure privacy, confidentiality and compliance of health data exchange

Resources Required to get there (be clear, don't be generic)	● human resource, in the area of security, responsible for the administrative, technical and physical safeguard operations. ● cost implication related with preparation or adoption of security, privacy and data ownership standard.
Primary Responsible Body (Directorate, Agency, etc.)	● MOH(HITD, PPMED)/Partners(Implementers, funders)/RHB/ universities
Means of Verification	● number security, privacy and data ownership standard documents ● establishment of a formal body to ensure review processes and enforce data security standards ● security, privacy and data ownership test results of participating components
Timeline (From/To or definite period)	2024

Data quality and use - FUTURE STATE (Goals - 2024)

The MOH defined IR as a priority agenda in the health sector transformation plan phase two -HSTP2. A high level of data quality and practice of informed decisions for better health outcomes are one of the pillars of IR to which the MoH identified major bottlenecks and proposed high impact interventions in the coming five years. To complement, this maturity assessment was conducted focusing on five domains of HIS and tried to describe the current status to a certain level of detail, major gaps and determined the future state or targets to each sub component. This section describes the future state of data quality and use, Identified interventions, resource required, implementing body and time period. It also indicates the appropriate means of verification for each proposed intervention.

Domain Name	**HIS Data quality and use**
Current Cumulative Score	**2.99 (out of 5)**
Future Status (2024)	**4.72 (out of 5)**

Improvement Roadmap: HIS Data quality and use

Gaps to be addressed #1: Data reviews and audits are not conducted on a regular schedule using automated and manual DQA processes to ensure defined levels of quality, Limited use of metrics reported on data quality issues for continuous improvement ; DQA plan is not periodically reviewed by the coordinating body to meet the evolving data quality needs	
Data quality assurance & control	
High-impact interventions identified to address the gap	**Develop periodic data Quality improvement initiative** (it primarily identifies data quality issues, planning, conducting, monitoring , using the metrics for continuous improvement and sharing the results for all actors.

Resources Required to get there (be clear, don't be generic)	Budget for capacity building,Reviewing tools, Preparing M&E framework, Conducting national and sub nationals DQA activities, Workshops on DQ...etc.
Primary Responsible Body (Directorate, Agency, etc.)	All data actors (Facilities, Administrative health offices, MOH, Partners,Donors, other stakeholders)
Means of Verification	External data quality audit
Timeline (From/To or definite period)	Hamile/July 2021- Sene June/2025

Gaps to be addressed #2: No Standard operating procedures for data management integrated with the national HIS plan	
Data Management	
High-impact interventions identified to address the gap	**Adopt and implement SOPs' for Data Management (For** collection,reporting,analytics data quality assurance techniques and information use)
Resources Required to get there (be clear, don't be generic)	Budget for workshops
Primary Responsible Body (Directorate, Agency, etc.)	Facilities, Administrative health offices, MOH, HIS Partners
Means of Verification	Developed and Executed SOP's
Timeline (From/To or definite period)	Hamile/July 2021- Sene June/2025

Gaps to be addressed #3: The data use strategy is not adapted to meet emerging decision-making needs of program managers, policymakers, and providers interacting with HIS, Condition-specific order sets and documentation templates are not defined; No Knowledge-based systems are implemented in some settings to support decision making	
Data Use Strategy, Decision Support	
High-impact interventions identified to address the gap	**Adopt and implement data use strategies** to accommodate the emerging needs of data use for care providers and program managers
Resources Required to get there (be clear, don't be generic)	Budget for Workshop for developing & reviewing standards and procedures for PMT(Performance Monitoring team) QIT (Quality improvement team), Clinical forms, Clinical Audit, incentive mechanisms, and condition-specific clinical documentation templates
Primary Responsible Body (Directorate, Agency, etc.)	MoH (PPMED, Clinical Directorate), Regions, Hospitals, Partners and other stakeholders.
Means of Verification	Adopted and implemented data use strategies (PMT, QIT, Clinical forms,...)
Timeline (From/To or definite period)	Hamile/July 2021- Sene June/2025

Gaps to be addressed #4: The data systems/applications in use don't ensure reliable and appropriate access data at all levels for authorized users; Changes in reporting requirements are not accommodated with minimal disruptions to data availability; Data availability is not monitored for continuous improvements and to meet emerging health sector needs	
Information/Data Availability	

High-impact interventions identified to address the gap	**Develop and Manage Data repositories and Warehouse** (to ensure data availability for authorized users: Data from routine(individual & aggregate) and population based sources).
Resources Required to get there (be clear, don't be generic)	Budget to build & manage the data repositories and data warehouse
Primary Responsible Body (Directorate, Agency, etc.)	MOH (PPMED, HITD, Clinical Directorate), Partners
Means of Verification	Built and managed data repositories and warehouse
Timeline (From/To or definite period)	Hamile/July 2021- Sene June/2025

Gaps to be addressed #5: Data availability for individual based data to meet emerging health sector needs	
Information/Data Availability	
High-impact interventions identified to address the gap	**Automating point of care/service information systems (EMR,eCHIS....)**
Resources Required to get there (be clear, don't be generic)	Budget for development and implementation of EMR systems/EHR or Shared health records
Primary Responsible Body (Directorate, Agency, etc.)	MOH, Regional health Bureaus,Facilities and partners
Means of Verification	Individuals health data captured in electronic format
Timeline (From/To or definite period)	Hamile/July 2021- Sene June/2025

Gaps to be addressed #6: Data use competency development is not tracked by user type and not level based	
Data Competencies	
High-impact interventions identified to address the gap	**Develop/Review and implement data quality** and use training guide based on different level of competencies
Resources Required to get there (be clear, don't be generic)	Budget for revision & development workshops, trainings
Primary Responsible Body (Directorate, Agency, etc.)	MOH, Regions & Partners
Means of Verification	Developed or revised data quality training guides (both facilitator and participant) Developed or revised data use training guides (both facilitator and participant)
Timeline (From/To or definite period)	Hamile/July 2021- Sene June/2025

Gaps to be addressed #7: There is no a standardized plan for tracking and measuring competencies; There is no an established feedback mechanism to make updates and address gaps	
Data Competencies	
High-impact interventions identified to address the gap	**Develop data and implement competencies measurement, tracking and feedback platform**
Resources Required to get there (be clear, don't be generic)	Budget for workshops, trainings
Primary Responsible Body (Directorate, Agency, etc.)	MOH, Regions & Partners

Means of Verification	Developed and implemented data competencies measurement,tracking and feedback platform
Timeline (From/To or definite period)	Hamile/July 2021- Sene June/2025

Gaps to be addressed # 8: Guidance on the design and use of information products is not up-to-date, implemented, and monitored for compliance by an established governing body; Guidance on the design and use of information products is not periodically reviewed and revised to ensure its applicability and relevance to emerging and future decision-making needs; No guidance is available for the design and use of advanced analytics (such as triangulation, further analysis on related)

Data Synthesis and Communication	
High-impact interventions identified to address the gap	**Develop and implement information product generation,dissemination and compliance guide**
Resources Required to get there (be clear, don't be generic)	Budget for workshops, trainings
Primary Responsible Body (Directorate, Agency, etc.)	MOH-PPMED, Agencies, other stakeholders such as CSA
Means of Verification	Information product generation, dissemination and compliance guide
Timeline (From/To or definite period)	Hamile/July 2021- Sene June/2025

Gaps to be addressed #9: Parameters on the measurement of the impact of data use are not up-to-date, implemented, monitored, and reviewed by a designated governing body; Parameters on the measurement of the impact of data use not are integrated in the HIS and/or health plans; Plans for process feedback are not documented and disseminated

Data Use Impact	
High-impact interventions identified to address the gap	**Develop strategic guide (defining the metrics, monitoring and measuring data use impact)**
Resources Required to get there (be clear, don't be generic)	budget for workshops and training
Primary Responsible Body (Directorate, Agency, etc.)	All data actors
Means of Verification	Data use impact strategic guide developed
Timeline (From/To or definite period)	Hamile/July 2021- Sene June/2025

Gaps to be addressed #10: Metrics on reporting and analysis capabilities with feedback from users are not used for continuous improvement;

Reporting and Analysis Features	
High-impact interventions identified to address the gap	**Capacity building for data analytics**
Resources Required to get there (be clear, don't be generic)	Budget for Trainings
Primary Responsible Body (Directorate, Agency, etc.)	MOH, Regions and Partners
Means of Verification	Data analytics training provided cascaded
Timeline (From/To or definite period)	Hamile/July 2021- Sene June/2025

Gaps to be addressed #11: Limited capabilities exist to reuse collected data and resources seamlessly within the workflows	
Data collection alignment	
High-impact interventions identified to address the gap	**Capacity building on data collection process and workflow analysis**
Resources Required to get there (be clear, don't be generic)	Budget for workshop and trainings
Primary Responsible Body (Directorate, Agency, etc.)	MOH, Regions and partners
Means of Verification	Training on Workflow analysis and data collection process
Timeline (From/To or definite period)	Hamile/July 2021- Sene June/2025