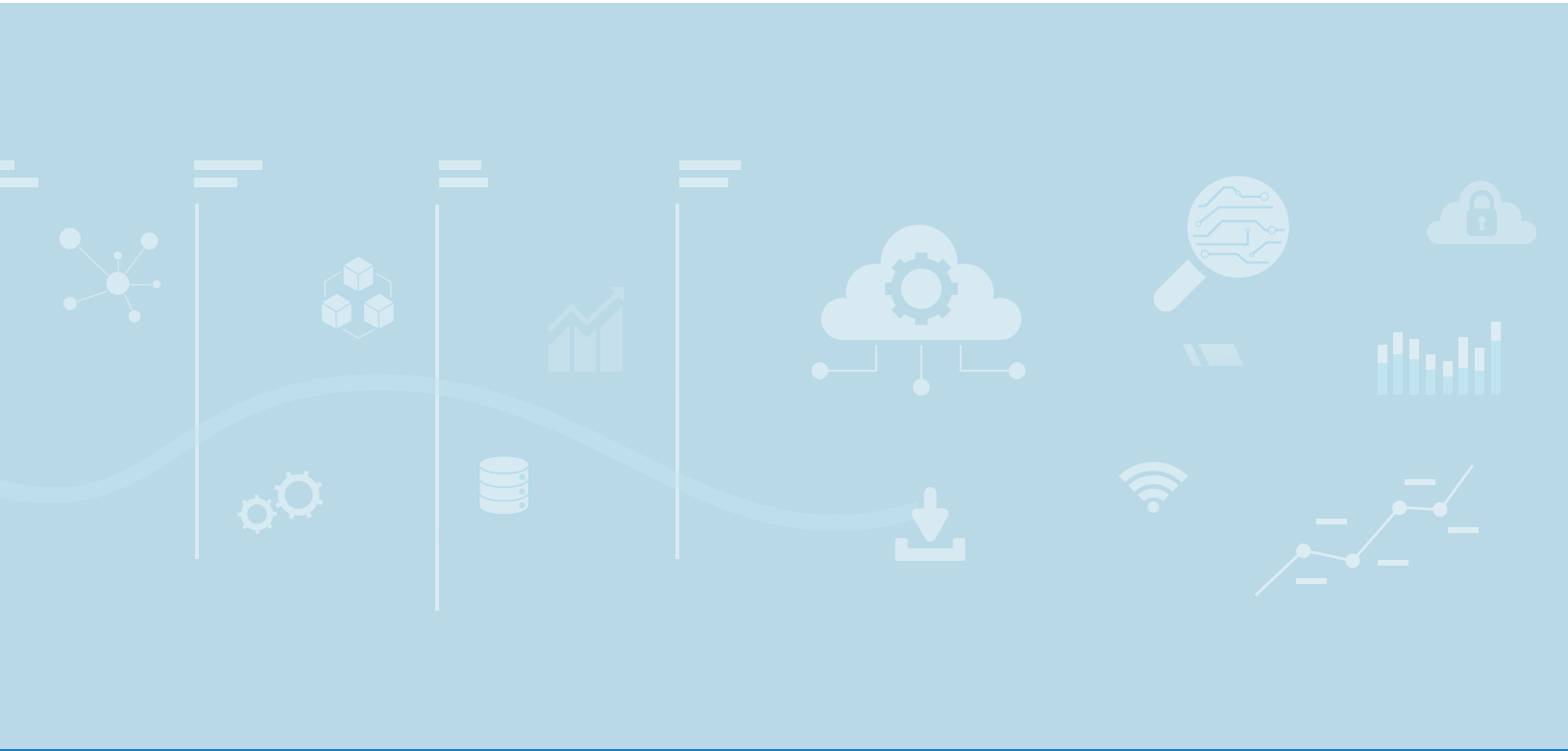


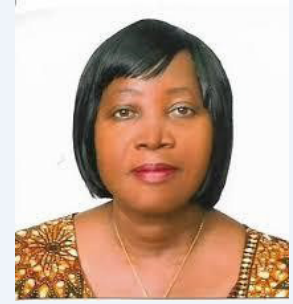


# DATA QUALITY IMPROVEMENT PLAN (DQIP)



June 2022–2027





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## Foreword

The Health Information System (HIS) of the Liberia Ministry of Health was established in 2009. Its management is currently guided by the Liberia HIS and ICT Strategic Plan which was developed in 2015. Many reviews of the HIS – e.g. desk review, field/systems assessment, data quality review (DQR) – have identified factors that contribute to challenges in the performance of the HIS. Progress towards achievement of set HIS targets, as well as critical issues that constrain data availability, data quality and data use have been identified many times over. Overall however, there has been progress in the various dimensions of data quality (e.g., completeness, timeliness and accuracy of reporting) indicating some degree of success in the implementation of the HIS, Monitoring and Evaluation and Research policies and plans.

The MOH recognizes the importance of quality data for program planning, monitoring, and evaluation, and acknowledges the challenges of data availability, data quality and data use across all program areas. With that in mind, the MOH took the decision to develop a DQIP to assure a more integrated data improvement approach across the MOH units/ departments and implementing partners.

This DQIP defines the strategic direction and targeted interventions for addressing the influencers of data availability, quality and use, including strengthening of structures, systems and capacities. The goal is to achieve greater quality and more effective management of the HIS, for achievement of the overall goal of substantial improvements in health outcomes of the country. We extend sincere thanks and appreciation to our partners who have worked with us to develop the first DQIP for Liberia. It is hoped that we can continue to work with our partners in the successful implementation of this historic national document, to achieve our vision of a HIS that ensures evidence-based decision making for improved health status of individuals, families and community members in Liberia. The Government of Liberia commits to working with its development partners and all key stakeholders to ensure this DQIP is implemented. The Ministry will galvanize political will nationally and globally, as it adopts the best strategies for implementation of the DQIP through a coordinated country response.



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**A. Vaifée Tulay, BSc., BPharm, MSc.**  
**Deputy Minister for Policy, Planning and Monitoring & Evaluation**

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# Acronyms and Abbreviations

<b>CBIS</b>	Community-based Information System
<b>CEBS</b>	Community Event-based surveillance
<b>CDC</b>	Centers for Disease Control
<b>CHAI</b>	Clinton Health Access Initiative
<b>CHO</b>	County Health Officer
<b>CHSWT</b>	County Health and Social Welfare Team
<b>CHT</b>	County Health Team
<b>CHW</b>	Community Health Worker
<b>CMO</b>	Chief Medical Officer
<b>CSH</b>	Collaborative Support for Health
<b>DHIS2</b>	District Health Information Software Version 2
<b>DHO</b>	District Health Officer
<b>DSIS</b>	Disease Surveillance Information System
<b>DSO</b>	District Surveillance Officer
<b>eDEWS</b>	Electronic Disease Early Warning System
<b>EOC</b>	Emergency Operation Center
<b>EVD</b>	Ebola Viral Disease
<b>EPR</b>	Epidemic Preparedness and Response
<b>ETU</b>	Ebola Treatment Unit
<b>EWARN</b>	Early Warning and Alert Response Network
<b>FMIS</b>	Financial Management Information System
<b>gCHV</b>	General Community Health Volunteer
<b>GDL</b>	Global Development Lab
<b>GIS</b>	Geographical Information System
<b>GOL</b>	Government of Liberia
<b>GPS</b>	Global Positioning System
<b>HF</b>	Health Facility
<b>HHF</b>	Harmonized Health Facilities Assessment
<b>HIS</b>	Health information system
<b>HIV</b>	Human immunodeficiency virus
<b>HMER</b>	HMIS, M&E, and Research
<b>HMIS</b>	Health Management Information System
<b>HMN</b>	Health Metrics Network

# Acronyms and Abbreviations

<b>HRIS</b>	Human Resource Information System
<b>HSCC</b>	Health Sector Coordination Committee
<b>ICD</b>	International Classification of Diseases
<b>ICT</b>	Information and Communication Technologies
<b>IDSR</b>	Integrated Disease Surveillance and Response
<b>IHR</b>	International Health Regulations (2005)
<b>IMC</b>	International Medical Corps
<b>IMS</b>	Incident Management System
<b>IPC</b>	Infection Prevention and control
<b>ITU</b>	Information Technology Unit
<b>iHRIS</b>	Integrated Human Resource Information System
<b>LAN</b>	Local Area Network
<b>LISGIS</b>	Liberia Institute of Statistics and Geo-Information Services
<b>LSMIS</b>	Logistics and Supply-chain Management Information System
<b>M&amp;E</b>	Monitoring and Evaluation
<b>LMIS</b>	Liberia Malaria Indicator survey
<b>MOHSW</b>	Ministry of Health and Social Welfare
<b>MTOT</b>	Master Training of Trainers
<b>NGO</b>	Nongovernmental Organization
<b>NHP</b>	National Health Policy, National Health Plan
<b>SARA</b>	Service Availability, Readiness Assessment
<b>PAMIS</b>	Physical Assets Management Information System
<b>PRS</b>	Poverty Reduction Strategy
<b>TWG</b>	Technical Working Group

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## EXECUTIVE SUMMARY

**I**ntroduction: The Health Information System (HIS) of the Liberia Ministry of Health was established in 2009. Its management is currently guided by the Liberia HIS and ICT Strategic Plan, which was developed in 2015 and covers the period 2016 to 2021.

Previously, there was a National HIS Strategy and Implementation Plan of 2009. However, based on lessons learned from the Ebola crisis of 2014 to 2015, such as challenges posed by a fragmented HIS, the Ministry of Health (MOH) developed a comprehensive HIS Strategic and Operational Plan, as a key intervention to support Pillar Four (Information, Research and Communication) of the Investment Plan for Building a Resilient Health System in Liberia.

The MOH recognizes the importance of quality data for program planning, monitoring, and evaluation, and acknowledges the challenges of data availability, quality and use across all program areas. Given this consideration, the MOH took the decision to undertake the develop of a Data Quality Improvement Plan (DQIP), to assure a more integrated data improvement approach across the MOH units/departments and implementing partners.

### DQIP Development Process

The development of the DQIP for the Liberia Ministry of Health involved five major processes (see Figure 1). The activity commenced with Step 1 (system assessment) and Step 2 (desk review). The system assessment considers the people, tools, processes and governance of the HIS, Monitoring and Evaluation and Research (HMER) at national, counties, districts and health facilities levels.

While a desk review of the data that has been reported to the national level including intermediate data aggregation levels from monthly reports submitted through the routine HMIS and priority programs, looking at the period January 2019 to December 2019 was carried out. The desk review noted issues such as (a) completeness and timeliness of reporting, (b) internal consistencies of data (c) analysis of trends, (d) challenges posed by the denominators and numerators (or the coefficients) used for planning and reporting, and (e) triangulation of Liberia's HIS data with external data sources.

Further, Step 3, field assessment at health facilities, districts and counties levels was conducted for data verification and an evaluation of the capacity of the information system to produce quality data. It focused on gaining an understanding of the underlying causes on data availability, data quality and data use. The field assessment provide a detailed assessment of the Liberia HIS, and looked at the (a) quality and quantity

of people/human resource that manages or operates the HIS at all levels of the health system, (b) data tools including guidelines, (c) processes of the HIS including data analysis and information use, (d) leadership and governance, (e) flow of data from the point of generation at the community and health facility levels to the national level, including supervision and feedback mechanisms.

The Step 4 (improvement planning) of the DQIP emphasized the conduct of root cause analysis of problems identified at all levels of the HIS from Step 1 through 3 and prioritized these problems for action plan development including monitoring and evaluation plan. This step produced the final Data Improvement. Lastly, Step 5 was to implement and monitor the DQIP and conduct evaluation of the DQIP.

### Key Results/Findings

Multiple strengths and weaknesses were identified in the HIS of the Ministry of Health (MOH). In summary, aspects of the HIS that seem to be strong and commendable across the country include the availability of HIS structure, policy documents/guidelines, and strategic plan. Additionally, other key areas of strengths include the existence of an integrated data platform that captures data from all disease prevention and control programs as well as set of dedicated staff at the central level for data analysis/processing.

However, components of strong concern include limited supplies and equipment such as computers, their accessories and IT software to make data management effective (Table 4 – SWOT analysis). Other key areas of weakness include limited HR capacity for data management especially at the subnational levels and late and incomplete data reporting due to lack of HIS tools at some health facilities. Also, the lack of support for regular supervision, monitoring and mentoring of staff working on HIS data was key gaps among others. There is a major challenge from the private sector on their use of outdated data tools. These and other critical challenges present major constraining factors for data availability, data quality and data use for planning and decision-making.

### Components of the Data Quality Improvement

Under the leadership of the health monitoring, evaluation and research (HMER) unit of the MOH, a five-year DQIP has been developed for the period 2022 to 2027. The DQIP has been elaborated under strategic directions, strategic objectives, strategic interventions and detailed activities. There are five strategic directions – (1) HMER leadership and governance; (2) human resource capacity and development; (3) infrastructure



and logistics; (4) communication and feedback; and (5) research, monitoring, supervision and evaluation.

The budget for the five years is estimated at \$7.3 million USD with a Year One budget of \$2.2 million USD. The DQIP comes with an M&E framework to allow for the monitoring of progress in its implementation.

The mobilization of resources and support for the DQIP will be one of the primary activities to roll out the DQIP. This will set into motion the priority that HMER has placed on partnership and coordination of HIS stakeholders, in order to achieve synergy in the outcome of their respective investments.

## 1. INTRODUCTION

### 1.1. BACKGROUND

Liberia's Health Information System (HIS) was established in 2009 with the development of a national HIS Strategy to support the implementation of the National Health Policy and Plan. However, based on lessons learned from the Ebola crisis of 2014 to 2015, the Ministry of Health (MOH) developed a comprehensive HIS Strategic and Operational Plan as a key intervention to support the Investment Plan for Building a Resilient Health System in Liberia

The MOH recognizes the importance of quality data for program planning, monitoring, and evaluation. It also acknowledged the challenges of data availability, quality, and use, across all program areas. Given this consideration, the MOH developed a Data Quality Improvement Plan (DQIP) to assure an integrated data improvement approach across units/departments within the MOH and implementing partners. Data availability, quality and use for health programs is a critical component in decisions to improve health program coverage and management, as well as health outcomes.

The MOH has an integrated health management information system that collects and reports all disease conditions and health service delivery statistics on one reporting form and platform. The service data are managed in a single database using the district health information software (DHIS-2). This integrated system is being implemented in both public and private health facilities throughout the country.

Tools of the health management information system (HMIS) including facility-based ledgers and monthly reporting tools were revised in 2015. This strategic move was taken to reflect developmental and structural changes in the health system at all levels including post Ebola changes in the health system. The change was also necessitated by the transition from the millennium development goals (MDGs) to the sustainable development goals (SDGs). The health facility data is the primary source for assessing the health sector performance in service

delivery. It also provides a frame of reference for decision-making, planning and program management. The critical importance of health facility data therefore, requires regular monitoring of data quality and support systems to ensure availability of data that is of high quality and therefore trustworthy. To that effect, in 2020, the MOH with support of partners conducted a comprehensive assessment of data quality and data management systems, using a set of core tracer indicators to generate current information that will serve as evidence for strategic, technical, and managerial actions to improve the HIS.

### 1.2. COUNTRY CONTEXT

The Republic of Liberia, a West African country has an estimated population of five million people. The population growth rate is 2.1%, and the literacy rate is 67%. Liberia's neighbors are Republic of Ivory Coast on the east, Republic of Sierra Leone on the west, and Republic of Guinea on the north. Liberia is bounded on the south by the Atlantic Ocean (HIES 2016). The country occupies a land space of 43,000 square miles or 110,080 square kilometers. The capital city, Monrovia, accounts for one third of the nation's population and experiences a high level of population migration. Annually, Liberia has two climatic seasons, namely: rainy season which runs from May to October and dry season which occurs from November to April.

Liberia is subdivided into five regions, with 15 counties and 93 health districts. The official language is English and there are 16 local languages. The population density is estimated at 93 per square mile, with four counties - Montserrado, Nimba, Bong and Lofa - hosting 70% of the total population. Liberia has a democratic system of government that is headed by a president. Each county is headed by a superintendent; the counties are further divided into districts, clans and towns/villages.

Liberia endured a 14-year civil war during which many of its health facilities were destroyed, and a 2014 to 2015 Ebola epidemic that resulted in more than 10,000 cases and close to 5,000 deaths.

Table 1: Liberia Health Status Indicators (2000–2020)

Indicators	2000	2007	2009	2013	2020
<b>% Children under five who are underweight</b>	23%	19%	-*	15%	-*
<b>Infant mortality rate per 1,000 live births</b>	117	71	73	54	63
<b>Under-five mortality rate per 1,000 live births</b>	194	110	114	94	93
<b>% of children (12-23 months) vaccinated for measles</b>	33%	53%	60%	74%	-*
<b>Maternal mortality ratio per 100,000 live births</b>	578	994	-*	1,042	742
<b>% of births attended by skilled personnel</b>	51%	46%	46%	61%	84.4%

In the post-war period, the government recognized the need to improve the health status of its populace, and prioritized development of the health infrastructure to increase access to quality and affordable health care.

In 2011, the MOH developed a Ten-Year National Health Policy and Plan (NHPP 2011to2021) which highlighted the need to have an integrated HIS that captures all programs.. Following the EVD outbreak, Liberia revised its HIS policies and strategic plans to address HIS gaps exposed by the outbreak. The strategic response, among other things, was intended to broaden the scope of existent information system and build an interoperable HIS. Since then, strides have been made to improve the Human Resource Information System (HRIS), the Logistics Management Information System (LMIS), the Integrated Disease Surveillance Information System (IDSIS), among others.

According to the Household Income and Expenditure Survey (HIES 2016), 59% of Liberians have only primary education, 44% have secondary education, and 16% pursue post-secondary education. While the national literacy rate stands at 65%, it is highest among youth aged 15-19 (88%) and lowest among those 65 years and above (17.5%). Literacy has a huge bearing on the quality and the reporting of data that is generated at the health facility level. The Health facility assessment reported that arithmetic and transcription errors overwhelmingly contribute to discrepancies between available data from the source documents and what was reported.

### 1.3. HEALTH AND SOCIO-ECONOMIC CONTEXT

In 2021, the MOH developed a Ten-Year National Health Policy (NHP 2022-2031) and a five year National Health Strategy (NHS 2022 to 2026). These national policy documents emphasize the need for an integrated HIS that promotes sustainable, integrated information and communication infrastructure, research, monitoring and evaluation for all programs in the health sector. The strategic objective for HIS, among others, is to broaden the scope of existent information system and ensure interoperability of HIS subsystem.

Health outcome has been improving significantly since the end of the civil war in 2003. Despite the gains, Liberia continues to face challenges in improving health care services, especially reproductive, maternal, newborn, child and adolescent health including nutrition as well as other health-related Sustainable Development Goals (SDGs) outcomes. Maternal mortality ratio dropped from 1072 death per 100,000 live birth in 2013 to 742 death per 100,000 live birth in 2020 (see Table 1 below). Efforts toward achieving universal health coverage in Liberia will facilitate the achievement of the other health targets from the SDGs, by 2030. The National Health Policy (NPH 2022-2031) has set primary health care as the foundation of the health system and a model for improving health care delivery in Liberia. This goal can only be achieved with an efficient integrated health information management system that generates credible data for planning and decision making.

## 2. HEALTH INFORMATION SYSTEM (HIS) SITUATION ANALYSIS

### 2.1. HIS IN LIBERIA

The HIS of Liberia is characterized by frequent delays in deployment and distribution of standardized data tools. This situation ultimately triggers stockout of tools, thereby making facility staff to innovate by reverting to self-designed data tools as alternatives. According to the MOH Data Quality Review (DQR) Summary Report, 2021, many health workers do not use the reference guidelines that are printed at the back of the reporting tools to enhance their work. This alone impedes good data quality and depicts that most of the personnel are not trained on data quality and reporting.

These perspectives are described under three subtitles: stakeholder analysis, SWOT analysis, and content analysis. The following Table 2 below summarizes the performance of HIS strategic plan and its related indicators covering the period 2016 to 2021.

#### 2.1.1. Data Availability

Data availability is a major proponent in any functional HIS procedures. The current system at both community and health

facility levels is marred by interruptions in services due to stock out of essential data tools and relevant logistics to collect data for reporting. Additionally, limited human resource capacity, in quantity and quality, to capture, record and interpret data undermines data availability. Data availability at district level is further compromised by the inadequacy of both human resources and infrastructure. This situation often results in delays in collection of reports from health facilities and communities.

At the county level, there are problems with estimates/denominators of cohorts of target populations. This situation introduces a distortion and lack of confidence in data. At the national level, there is a leadership challenge in coordinating activities and resources from partners couple with limited targeted financing from the Government of Liberia.

#### 2.1.2. Strategies to improve data quality

Liberia has employed several strategies in the different policies and strategic plans documents designed to improve quality of routine programs data. Some of the interventions implemented to improve data quality include, trainings and Counter Data

Table 2: Summary of performance of Key HIS indicators

Indicator/Performance measure	Baseline	Target	Performance
1. Percent of report completeness	88.4	100	95
2. Percent of report timeliness	80	90	84.2
3. Percent of data accuracy	85	90	80
4. Percent of HIV report completeness	76	90	77.6
5. Percent of HIV report timeliness	70	90	66.1
6. Percent of HIV data accuracy	70	90	55
7. Percent of TB report completeness	72.2	90	78.8
8. Percent of TB report timeliness	49.1	90	43.3
9. Percent of TB data accuracy	50	90	70
10. Percent of Malaria report completeness	77.6	90	90.3
11. Percent of Malaria report timeliness	70.1	90	74.9
12. Percent of Malaria data accuracy	80	90	82
13. Percent of EPI report completeness	80	100	88
14. Percent of EPI report timeliness	69	90	80
15. Percent of EPI data accuracy	80	90	87
16. Percent of maternal health report completeness	90	90	86
17. Percent of Maternal health report timeliness	81	90	79
18. Percent of Maternal health data accuracy	90	90	89

verification exercises undertaken by both central and county levels. However, it is unclear how effective these interventions have been given the results from DQR and DQIP assessment. These activities were supported by national programs and partners. A serious drawback to the anticipated gain is that the bulk of these strategies were implemented in a fragmented manner. Although some of these interventions have not been very effective due to some of the issues outlined above, they helped one way or the other to move a step forward in improving data quality. They also have the potential to change the dynamics, if implemented properly with a more coordinated and integrated manner.

Consequently, the Ministry of Health has developed a DQIP to be implemented as a roadmap. This will facilitate a coordinated and integrated process to improve routine health data management. The process has been guided by review of several assessments and observational reports, including the HIS strategic plan, cMYP, JRF, DQS, EPI coverage survey, SARA reports.

### 2.1.3. Data Use

In Liberia, data use at both community and health facility levels are hampered by limited HR capacity using data to inform decision, coupled with poor feedback from upper levels on program performance. There is no capacity development framework or a functional merit-based system for elevation, promotion and recognition of staff performance within the health system. Moreover, the lack of standard supervisory checklist to identify strengths and weaknesses related to staff

and system performance at all levels. According to the 2021 DQR Report, there are challenges at the district level including limited capacity to synthesize summary reports and charts. The lack of tools, equipment, supplies and a well-coordinated peer review at sub-national level are part of key challenges.

The HIS Unit is the national repository of all health data. The HIS Unit provides leadership and direction on:

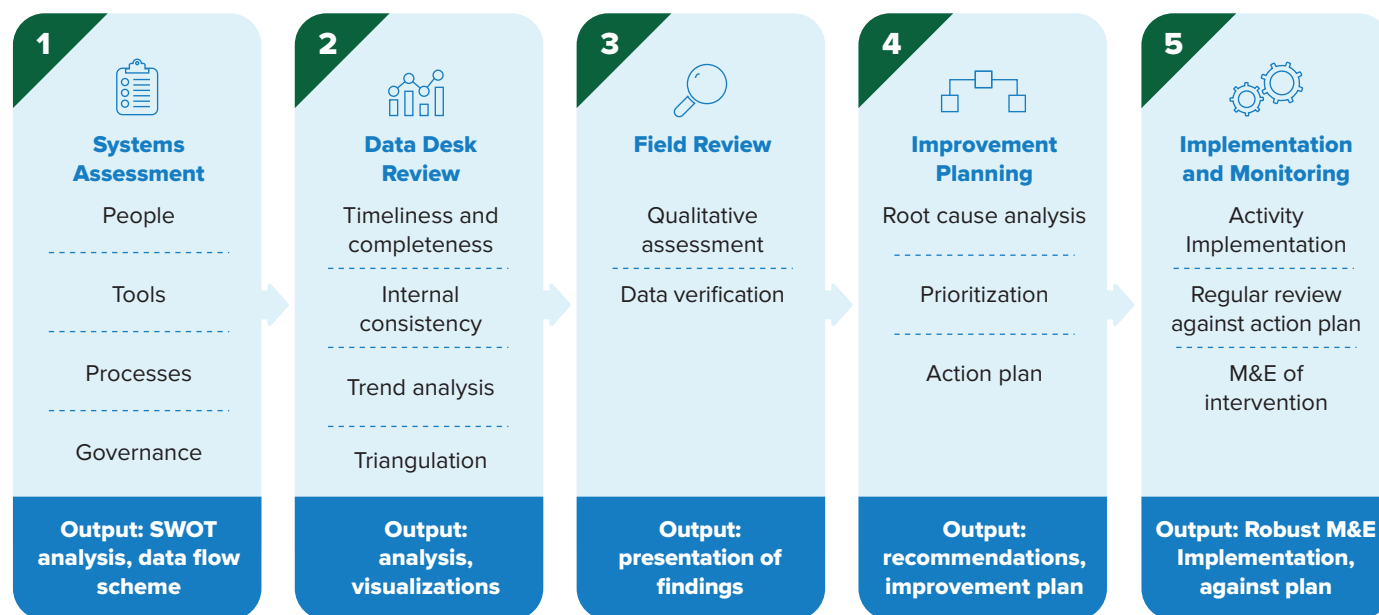
- Developing and maintaining all health information subsystems
- Leading the development of standard data collection and reporting tools
- Leading routine data collection processes
- Implementing measures to improve health data quality
- Archiving all health data

## 2.2. BACKGROUND OF DATA QUALITY IMPROVEMENT PLAN IN LIBERIA

Data management in Liberia has been faced with several challenges including incomplete, inconsistent, and late reporting observed from communities, Health facilities, Districts, Counties and National level.

The Liberia DQIP development utilized processes as described below in Figure 1. The proposed framework contains five phases: It starts with a review of the design and organization of the information system (phase one), and a review of the collected data (phase two). These two activities helped the reviewer understand

Figure 1: Five-phase framework for a data quality review



Source: <https://www.technet-21.org/fr/library/main/6634-who-handbook-on-the-use,-collection,-and-improvement-of-immunization-data>

potential issues with systems and data, and fine-tune the objectives of a field review (phase three). The combined findings were then used to draft recommendations and an improvement plan (phase four). Finally, this plan will need to be implemented, and its outcomes will need to be monitored (phase 5).

### 2.2.1. System Assessment

A systems assessment of the Liberia HIS was conducted through a field assessment that also served as a DQR exercise. The systems assessment was organized to measure the capacity of the data management and reporting functions of the MOH to produce good quality data. It was also organized to measure the extent to which the key elements of the system adhere to a set of minimum acceptable standards. The findings are used to determine the causes of data quality issues, which it intends to address through the development of a DQIP. The system assessment focused on five key components of the data management and reporting system including (1) availability of human resource with a focus on trained staff, (2) availability of guidelines, (3) stock out of tools and reporting forms, (4) supervision and feedback, and (5) data analysis and information use. Health worker perception on organizational, technical, and behavioral factors were assessed and used as input for plan preparation. Information obtained on the supervision and feedback components gave insights into issues of leadership and governance of the HIS, while a critical review of the data flow scheme provided valuable insights into challenges with data analysis and information use at all level of the health system.

### 2.2.2. Desk Review

The desk review provides insight into various aspects of the data quality issues faced with the HIS of Liberia. It also sought

to gather information on actions that were taken based on recommendations previously made to improve the Liberia routine health information (data) system (RHIS). The Desk Review looked at five elements, namely: (1) completeness and timeliness of reporting, (2) internal consistency of data, (3) analysis of trends, (4) denominator and numerator issues/ concerns, and (5) triangulation of Liberia’s HIS data with external data sources.

The desk review assessed data quality for a core set of tracer indicators, selected from priority programs. It included an assessment of the indicators aggregated at the national level, and the performance of the county level. The data used for the desk review was obtained retrospectively from monthly reports submitted through the routine HMIS and priority programs, for over five years period 2015 to 2019.

#### Completeness and Timeliness of Reporting

The MOH target for completeness is 90% and refers to the completeness of a given data set. The target for timeliness is also 90%. Improvements have been progressively registered over the last five years in completeness of reporting. However, the timeliness of reporting remains below the required threshold of 90% as shown below in Figure 2.

#### Internal Consistency of Data

Consistency is assured when the relevant data reflects the same information across all systems and are in synchrony with each other. Consistency adds credibility to the data. In the Liberian HIS, consistency in data at the various levels of reporting remains a challenge. The MCH data on deliveries is an area of

Figure 2: Analysis of Completeness and Timeliness of Report Rate (National)

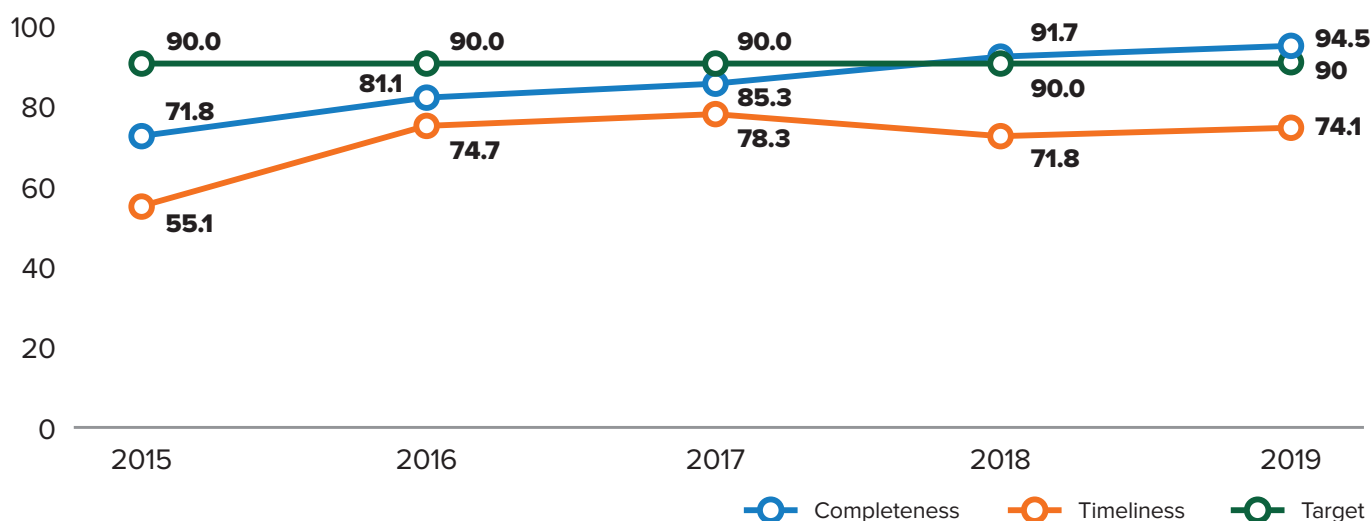
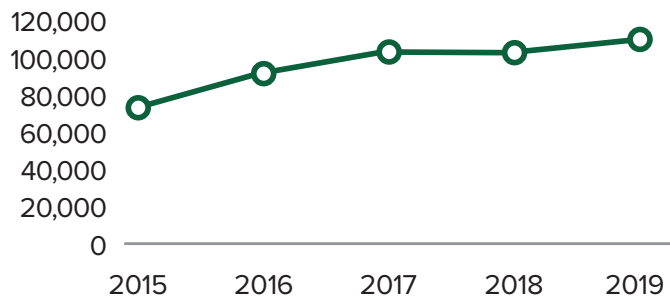


Figure 3: Time Trends for Facility based deliveries by Skilled Birth Attendants: 2015-2019



highest (best) consistency. Discrepancies or inconsistencies are largely noted in HMIS reporting and documentation between the various tools (e.g. ledgers and tally sheets, ledger and HIS Monthly Reporting form, etc.).

Program areas where inconsistencies remain a major challenge include the following:

- Number of facility-based deliveries vs. number of mosquito nets issued to mothers
- HMIS data vs. source documents from the HFs e.g. tally sheets, ledgers
- EPI stock management data, e.g. monthly ending and starting balances of various commodities
- The MCH data on consumption of Family Planning commodities; this is an area of high level of inconsistency
- Vaccine utilization in DHIS2 is not consistent with stock balances. The consumption report is usually higher than available stock for the reporting period.

### 2.3.2.3 Analysis of trends

Health data serves as a tool for Ministries of Health to improve their public health systems and programs. Data provides evidence or proof of investments in time, energy and other resources for health service delivery, through various programs that are being implemented by a given health system. Figure 3 below shows a trend analysis at the national level, for facility-based deliveries conducted by skilled birth attendants, from 2015 to 2019. This national data shows a steady increase in facility-based deliveries.

### 2.3.2.4 Denominator and Numerator Issues

An analysis of numerators and denominators for a given population can provide an understanding to data quality problems created by either of the two parameters. An area of concern for health programs in Liberia is the inaccurate target populations currently being used for planning. The denominators that are used by the Government of Liberia for its programs are generated by the Liberia Institute for Statistics and Geo-Information Services (LISGIS). The LISGIS figures are usually lower than those used by the United Nations systems.

Using the LISGIS figures, the national coefficient (e.g. annual growth rate, surviving infants, women of childbearing age, expected deliveries, etc.) is applied for programming at all levels of the health system. This situation leads to achievement of questionable results such as the achievement of over 100% for a given cohort. Conversely, health teams may be repeatedly rated as underperforming, simply due to the use of the wrong population figures. Figure 4 below shows a comparison of the Liberia population from 2015 to 2020, from two data sources.

Figure 4: Liberia's Population Projection from 2015 to 2020 by Two Data Sources

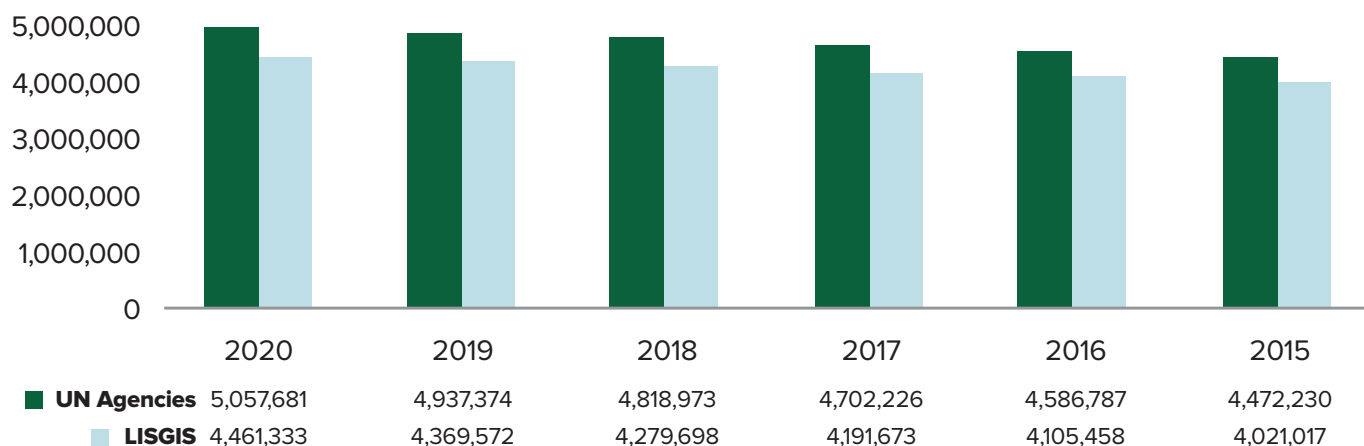
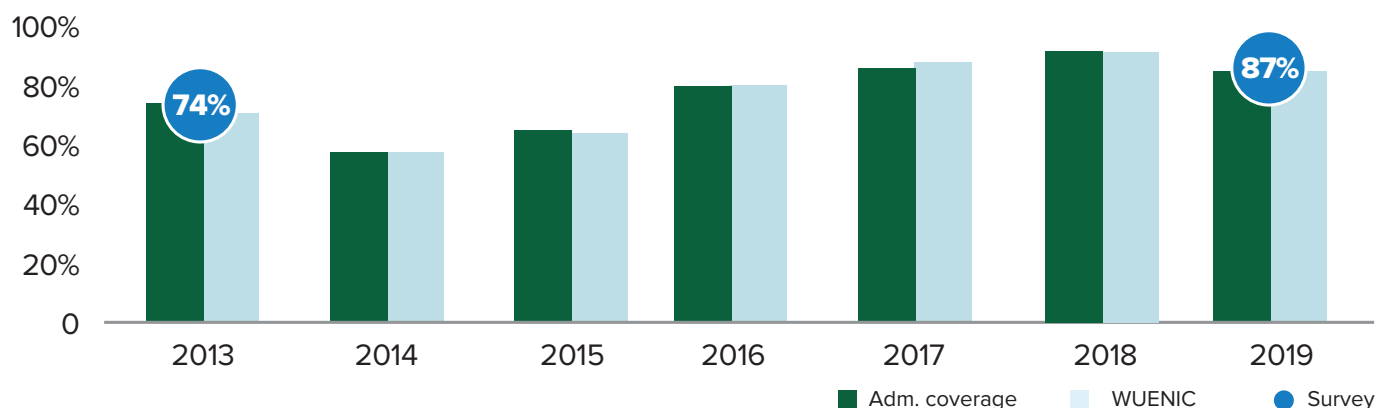


Figure 5: Comparison of Administrative, Survey and WUENIC MCV1 Coverage Liberia 2013 to 2019



Sources: (a) LDHS for Coverage Survey Data, (b) DHIS2 for Administrative Coverage Data, (c) WHO/UNICEF for WUENIC



### Triangulation of Liberia HIS Data with External Data Sources

Triangulation of data is usually done to compare similar data obtained from different sources, for the purpose of establishing confidence in the data. For example, a three-way triangulation below in Figure 5 shows a comparison of EPI administrative coverage data with that of WHO and UNICEF Estimates for National Immunization Coverage (WUENIC) for Liberia, from 2013 to 2019. The EPI coverage obtained from the

administrative data source and that of the survey data shows very negligible differences for the five years period from 2015 to 2019, for MCV1. There seems to be some degree of consistency in the data from the two different sources, thus lending it credence. Triangulation with the WUENIC also shows little or no serious variation.

### Summary of gaps identified during Desk Review and System Assessment

Table 3: Gaps Identified During DQIP Desk Reviews and Assessment Reports

 GAPS	 RECOMMENDATIONS
<ol style="list-style-type: none"> <li>1. Limited number of trained staff responsible for data management, especially at the sub-national level;</li> <li>2. Stock-out of master registers and data collection tools;</li> <li>3. Recurring data inconsistency between sources (e.g. ledger and DHIS2);</li> <li>4. Lack of onboarding training for newly recruited data clerks on data management and the use of DHIS2;</li> <li>5. Lack of equipment (e.g. internet, computers etc.) to implement HIS activities in a sustained manner;</li> <li>6. Frequent modification of the data elements based on program request; this poses confusion for some users of the data collection tools;</li> <li>7. Lack of a standard definition for indicators: numerator and denominators;</li> <li>8. Low salaries/ remuneration of HIS staff managing data at all levels, in the public health system that is operated by MOH;</li> <li>9. Poor coordination between donor-supported programs on HIS activities and the persistence of constraints that could be addressed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Conduct data management training for counties and health facilities data managers;</li> <li>2. Print and disseminate master register and data collection tools to health facilities;</li> <li>3. Conduct quarterly data audit and supervision on health facilities ledger and DHIS2 to ensure consistency;</li> <li>4. Provide onboarding training for newly recruited data clerks on data management and use of DHIS2;</li> <li>5. Provide logistics and supplies (Internet, Computers etc.) to facilitate implementation of HIS activities at national, county and district levels;</li> <li>6. Develop a standardize and integrated format for data element and data collection tools;</li> <li>7. Develop a harmonized definition for all indicators to avoid inconsistency in definition of numerator and denominators;</li> <li>8. Provide motivational package for HIS staff at all levels of the health system;</li> <li>9. Establish or reactivate HIS Technical Working Group to strengthen coordination between HIS stakeholders.</li> </ol>

### 2.2.3. Facility Assessment

The facility assessment focused on underlying causes on data availability, data quality and data use at health facility, district and county levels. An evaluation of practices in 243 health facilities (HFs) was conducted through mixed methods of qualitative and quantitative interviews, respectively using key informants and standardized questionnaire. The facility assessment included a verification of indicator values for specific reporting periods (April to June 2020), as well as an evaluation of the completeness of reporting and required data collection. The intent was to measure the extent to which the information in the source documents of the HFs or service delivery sites had been transcribed accurately in the reports to the next reporting level (district, county and central MOH).

Data from source documents (registers and tally sheets) were compared to data reported through the HMIS in order to verify numbers reported from the source documents. The facility survey also collected information on the completeness of reporting. Data from the three recent consecutive months (April to June 2020) were cited for collection and analysis using standardized data collection tools (both electronic and paper formats). Results were compared with the findings in the desk review component of the DQR.

The questionnaire assessment domains used included data recording practices, reporting practices, health worker motivation, knowledge, and training, as well as the use of target estimates, and overall data use. Triangulating the data collected from the field review with the desk review were used to corroborate findings to form a strong foundation for development of the DQIP.

The assessment reveals that more than 75% of HIS designated staff were high school graduates. Surprisingly, most health facilities do not have full-time dedicated HMIS staff. Even though there are little difference in the composition of HMIS staff qualifications at all levels, none of them are trained in

health informatics, statistics or system development and programming (GIS, etc) Presently, the attrition rate is very high, particularly in the counties and districts. The shortage is caused by high disparities in salary at national and counties, poor motivation and lack of retention strategy. Liberia has only few health facilities with access to power supply and internet connectivity, according to the HIS system assessment.

Regarding infrastructure for patient records storage, at least 51.9% of health facilities did not have adequate number of shelves, tables, and boxes. An additional 53.6% of health facilities medical record rooms have inadequate space to separate patient records, patient waiting area, and outpatient room.

The HIS system assessment report revealed that patient chart were stocked out since 2016, which is expected to be a source of information for routine health data. The problem is further worsened by additional findings from the same assessment showing 70.4% of health facilities lacking computer/tablet/ internet.

The health facility assessment also focused on services such as antenatal care, deliveries, immunization, ART, TB and malaria. The assessment reveals that almost all health facility had source data of over 95% except for TB source data with 69%. Similarly, the completeness of facility reporting across these services was 95% and above, except for TB. Further analyses showed that 81% of facilities have a designated person to record data and prepare reports. There is no system in place to capture unstructured/ semi-structured data and information (documents, emails, videos, audios), among others.

### 2.3. HIS SWOT ANALYSIS (ASSESSMENTS FINDINGS)

A review of data management systems identified the following strengths, weaknesses, opportunities and threat (SWOT) classified them by levels (national, district and health facility) as listed below including opportunities and threats.



Table 4: Summary SWOT Analysis for Data Management at National Level



## S | STRENGTH

- Establishment of data management units with standardized data reporting tools;
- Availability of data management policies, guidelines and strategic plan;
- Existence of trained, qualified and competent staffs to manage data systems;
- Existence of integrated data platform to routinely capture health data from all programs;
- Established feedback system between national and sub-national levels.



## W | WEAKNESS

- Lack of key essential staff for data management (i.e. biostatisticians, demographers, anthropologists, etc.);
- The integrated data platform to routinely capture health data from all programs is not comprehensive and does not include other critical data component (i.e. IDSR, etc.);
- Limited supplies and equipment (laptops and IT software to make data management effective);
- The current reporting tool is based only on essential indicators list and does not capture all needed data elements and disaggregation;
- Some key policies and guidelines on data management are outdated;
- MOH structures such as technical working group (TWG) not functional to give technical guidance as well as lobby for resources or HMER;
- Limited stock of master registers and other tools for data collection;
- Recurring data inconsistency between sources e.g. ledger and DHIS2;
- Limited stock of master registers and other tools for data collection.



## O | OPPORTUNITIES

- Existence of health development partners with technical support and resources to improve HIS systems and subsystems;
- An existing One Health Platform at national levels;
- The use of MOH routine data by partners for decision making.



## T | THREATS

- Donor dependency;
- Unsustainable storage of data in the cloud;
- Inadequate capacity to keep up with rapidly changing technological advancement;
- Unstable and poor internet infrastructure at national levels
- Data staff are not on Government paid roll due to limited fiscal space.

Table 5: Summary SWOT Analysis for Data Management at County Level



## **S** | STRENGTH

- There are established data management teams and data reporting tools;
- There are trained staffs to manage data systems;
- An integrated data platform to routinely capture health data from all programs;
- Decentralized and clearly defined data management roles and responsibilities
- An established feedback system between national and sub-national levels.



## **W** | WEAKNESS

- Limited logistics – motorbikes, cars, computer and accessories, etc. - for retrieval of data from district level;
- There is consistent staff attrition of data officers;
- Limited HR capacity to process and make data user-friendly;
- There are limited supplies and equipment (i.e. laptops and printers) to make data management effective;
- Late and incomplete Data reporting;
- Reluctance of most private facilities to use standardized data collection tools and submit report;
- Consistent stock out of data collection reporting tools;
- Unstable power supply.



## **O** | OPPORTUNITIES

- The use of MOH routine data by partners for decision making;
- Existence of health development partners with technical support and resources to improve HIS subsystems.



## **T** | THREATS

- Unsustainable storage of data in the cloud;
- Health workers strikes and “go-slow” actions.

Table 6: Summary of SWOT Analysis Data Management at District Level



## **S** | STRENGTH

- Established district data management teams visible in seven of the fifteen counties (Montserrado, Margibi, Bong, Lofa, Nimba, Grand Gedeh and Bassa),
- Monthly data collection and reporting;
- Routine review meetings with health facilities OIC;
- An established feedback system between national and sub-national levels.
- Availability of trained Field Epidemiology Training Program (FETP) personnel.



## **W** | WEAKNESS

- Lack of district data management teams in eight of the fifteen counties (Bomi, Grand Cape Mount, Gbarpolu, Grand Kru, Maryland River Gee, Rivercess and Sinoe)
- Poorly organized district structure,
- No functional data teams in place in some health districts;
- Delay in collection of reports from HF due to limited mobility;
- Lack of logistics, e.g. motorbikes and accessories, computers and accessories to routinely collect and process data;
- Little to no targeted mentoring from upper levels on data management;
- Consistent stock out of data collection reporting tools;
- Unstable power supply.



## **O** | OPPORTUNITIES

- The use of MOH routine data by partners for decision making;
- Existence of health development partners.



## **T** | THREATS

- Health workers strikes and “go-slow” actions;
- Lack of financial infrastructures (e.g. banks and money transfers system).

Table 7: Summary SWOT Analysis for Data Management at Health Facility and Community Levels



## S | STRENGTH

- Availability of staff responsible for data collection at health facilities and community levels;
- There are established data management teams and data reporting tools;
- Display of some programs performance monitoring charts;
- Availability of health facility patient registers;
- Availability of Community Based Information System (CBIS);
- Availability Community Health Assistants (CHAs) and Community Health Volunteers (CHVs)
- An established feedback system between national and sub-national levels.



## W | WEAKNESS

- Stock out of data tools (e.g., ledgers, registers);
- Limited HR capacity in quantity and quality to capture and record data;
- Poor handling of poorly designed, delicate data tools resulting in missing pages;
- Lack of facility performance review team for routine data review;
- There are limited supplies and equipment (i.e., laptops and printers) to make data management effective;
- Late and incomplete Data reporting;
- Stock out of some data collection tools at health facilities (Under-fives cards, registers, tally books, etc.);
- Weak supervision and feedback system for community structures (CHAs and CHVs);
- Poor recording and irregular reporting at the community level;
- Lack of performance review at health facilities;
- Lack of training on data quality reporting and review
- Little mentoring on data quality reporting and review;
- Staff lack capacity to make sense out of data or do minimum analysis of data; no documentation or feedback from upper levels on program performance to use for planning.



## O | OPPORTUNITIES

- Existing and willing local authorities in communities;
- The use of MOH routine data by partners for decision making;
- Existence of health development partners with technical support and resources to improve HIS subsystems.



## T | THREATS

- Lack of financial infrastructures (e.g., banks and money transfers system)
- Health workers strikes and “go-slow” actions;
- Rainy season and bad road hamper movement.

### 2.3.1 Improvement Planning

The Step 4 (Improvement Planning) of the DQIP emphasized the conduct of root cause analysis of problems identified at all levels of the HIS from Step 1 through 3 and prioritized these

problems for action plan development including monitoring and evaluation plan. This step produced the final Data Improvement. The below table summarizes gaps and key areas of concern as per the findings from Step 1, 2 & 3.

Table 8: Summary of Gaps and Possible Solutions from Step1-3



## NATIONAL LEVEL

Problem	Causes	Possible solution
Weak coordination among HMER stakeholders	<ul style="list-style-type: none"> <li>• Infrequent meetings and information sharing; and implementation of HMER activities among stakeholders</li> <li>• Weak leadership and coordination of HMER activities</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthen HMER technical working groups</li> <li>• Regularize the HMER TWG meetings</li> <li>• Map HMER stakeholders to determine who's doing what and where for HMER activities in the sector</li> </ul>
Irregular supportive supervision and monitoring	<ul style="list-style-type: none"> <li>• Irregular Joint Supportive Supervision</li> <li>• Lack of Program specific coaching and mentorship at subnational level</li> <li>• Inadequate HMER specific mentorship activity at sub-national level</li> <li>• In adequate funding for HMER regular/ routine supervision</li> <li>• Lack (limited volume) of supervisory tools/standardized checklist, reminder cards, etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct properly planned joint supportive supervision</li> <li>• Conduct program specific biannual coaching and mentorship at subnational level</li> <li>• Conduct HMER specific mentorship activity at sub-national level</li> <li>• Develop budget for routine supervision – coaching, mentorship</li> <li>• Develop standardized basic/simple monitoring tools with built-in training and feedback component (e.g., reminder cards)</li> <li>• Regularly review, update, print and distribute ledgers, tools, etc. at the last mile</li> <li>• Conduct regular data management and quality related exercises (VOI, DQR, OSDV)</li> </ul>
Lack of conduct of annual monitoring studies	<ul style="list-style-type: none"> <li>• Limited or no funding to conduct annual studies (HHFA, DQR, Coverage studies, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct annual DQR</li> <li>• Conduct annual SARA/HHFA</li> <li>• Conduct annual coverage surveys (EPI, etc.)</li> </ul>
Under-utilization of findings, recommendations and results for previous assessments and reports	<ul style="list-style-type: none"> <li>• Lack of ownership for program performance and leadership to seek improvement in program performance or the consistent use of best practice.</li> <li>• Lack of dedicated platform for information dissemination</li> <li>• Lack of structure for the development of costed plan to incorporate new findings and recommendations from assessments and reports into existing implementation frameworks</li> </ul>	<ul style="list-style-type: none"> <li>• Convene annual operational planning sessions to capture/ prioritize/plan and budget for the implementation of priority/ critical recommendations from findings and reports to strengthen current systems</li> <li>• Develop implementation plan to address gaps identify from reports and findings</li> <li>• Regularize the HMER TWG meetings</li> <li>• Establish dedicated platform for information distribution (SIA room)</li> </ul>



## NATIONAL LEVEL cont'd

Problem	Causes	Possible solution
Inadequate support for procurement and maintenance of data management equipment (including computers, printers, backup drives, Antivirus, internet data, up to date soft wares, etc.)	<ul style="list-style-type: none"> <li>• Donor reliance for procurement and maintenance</li> <li>• Lack of budget lines for HMER in Public Budget or MOH/GOL counterpart funding for HMER</li> <li>• Lack of a comprehensive budget for HMER with maintenance and replacement component for logistics, commodities and other accessories</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and maintain a comprehensive budget for HMER with maintenance and replacement component for logistics, commodities and other accessories</li> <li>• Provide fiscal support for HMER to facilitate procurement and maintenance</li> <li>• Mobilize additional resources for HMER logistics</li> <li>• Procurement of computer accessories (Antivirus, backup system, softwares, etc.)</li> <li>• Increase MOH hosting capacity to accommodate other data sub-systems</li> </ul>
Limited capacity of HMER personnel to perform various tasks	<ul style="list-style-type: none"> <li>• Lack of capacity assessment framework for all levels</li> <li>• Lack of capacity development plan</li> <li>• Infrequent training and mentorship to enhance implementation of HMER activities</li> </ul>	<ul style="list-style-type: none"> <li>• Develop capacity assessment framework for all levels</li> <li>• Conduct capacity assessments</li> <li>• Develop a capacity development plan</li> <li>• Conduct regular needs base HMER related training (DHIS2, data analysis and use, etc.)</li> </ul>



## COUNTY LEVEL

Problem	Causes	Possible solution
Inadequate support for routine supervision and monitoring	<ul style="list-style-type: none"> <li>• Total reliance on partners' support for supervision</li> <li>• Support and logistics for supervision (vehicles, motorbikes, fuel, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Provide fiscal support for subnational level supervision</li> <li>• Mobilize resources for routine supervision</li> </ul>
Late and incomplete data reporting	<ul style="list-style-type: none"> <li>• Weak supportive supervision from counties, districts to facilities and communities</li> <li>• Unreliable internet connectivity,</li> <li>• Unreliable electricity</li> <li>• In frequent supply of reporting forms for data collection and reporting</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthen and intensify supportive supervision</li> <li>• Follow-up by providing feedback on reporting with stringent measures of ensuring report submission on time</li> <li>• Provide sustainable internet connectivity</li> <li>• Provide solar panel at CHT/DHT levels</li> <li>• Make reporting and recording tools at both health facility and county level</li> </ul>
Limited use of data for action	<ul style="list-style-type: none"> <li>• Inadequate capacity to analyze, and interpret data</li> <li>• Lack of data ownership among stakeholders</li> <li>• Infrequent data reviews at county, district and health facilities levels</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct training on data analysis and interpretation for county, district and health facilities levels</li> <li>• Provide support for regular periodic data review and information dissemination</li> </ul>
Limited capacity to use data collection and processing tools by staff at county, district and health facility levels	<ul style="list-style-type: none"> <li>• Inadequate training of new staff</li> <li>• Irregular refresher training for health workers</li> <li>• Irregular coaching and mentorship</li> </ul>	<ul style="list-style-type: none"> <li>• Develop training plan to train new staff</li> <li>• Provide refresher training for health workers, and county HMER staffs</li> <li>• Conduct onsite coaching and mentorship</li> </ul>
Inadequate equipment to manage data	<ul style="list-style-type: none"> <li>• Donor reliance for procurement of logistics and equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Provide fiscal support for procurement and maintenance of equipment and logistics</li> </ul>



## HEALTH FACILITY LEVEL

Problem	Causes	Possible solution
Stock out of data collection tools at health facilities (Under-fives and above five ledgers, etc.)	<ul style="list-style-type: none"> <li>Irregular fiscal support for production of tools at MOH</li> <li>Irregular or delays in the distribution of tools, ledgers, etc. at county and health facility levels</li> </ul>	<ul style="list-style-type: none"> <li>Mobilize resources to replenish data collection tools regularly</li> <li>Print and distribute tools, ledgers, etc. at county and health facility level regularly</li> </ul>
Limited capacity to properly compile routine reports	<ul style="list-style-type: none"> <li>Frequent staff attrition at health facility level</li> <li>Irregular refresher training for health workers</li> <li>Inadequate supervision and onsite mentorship for data collection and reporting</li> <li>Poor motivation of staff</li> <li>MOH staff moving to the private sector due to higher salaries</li> </ul>	<ul style="list-style-type: none"> <li>Conduct regular in service training for existent and new staffs</li> <li>Support coaching and mentorship for data collection and reporting</li> </ul>

### 2.3.2. DQIP Targets

The target setting for the HIS – input, process, output, and outcome indicators – are based on available baselines, previous trends, national and international standards while considering the availability of resources and capacity. Desk review and system assessment results were used during the target setting process. The baseline were considered for the year of 2021 and the targets are set for year of 2026. The performance of the DQIP will be measured against these targets.

#### I. Enhance HMER leadership and governance

- Increase HIS leadership, management, and governance index from 25% to 80%
- Increase proportion of functional HIS leadership, management and governance capability and functionality at national & county levels from 25% to 100%

#### II. Build the capacity of the HMER personnel and health care providers in data management and quality assurance

- Proportion of health institutions with adequate number of HIS health workforce from 1% to 50%
- Increase level of motivation to perform HIS tasks from 68.8% to 90%
- Increase health workers HIS core competency index from 71% to 90%
- Increase designated staff knowledge on indicators calculation from 17.9% to 90%
- Increase designated staff knowledge on recording and reporting procedure from 17.9% to 90%

#### III. Improve HIS Infrastructure

- Increase proportion of health facilities (hospitals and health centers) that have adequate number of shelves, table and boxes from 46.4% to 90%

- Increase proportion of health facilities that have internet connectivity, computer to 28.6% to 75%

#### IV. Improve Routine Data Management and Quality

- Increase percent of reports received on time from 80% to 100% at public health facilities
- Increase percent of service delivery report completeness of public health facilities from 88.4% to 100%
- Increase proportion of health facilities which conduct LQAS from 0% to 50%
- Increase proportion of counties/districts Health team which conducted data verification aspects of Routine Data quality assessments (RDQA) annually from 0% to 50%
- Increase percent of HIV report completeness from 86% to 90% at health facilities
- Increase percent of HIV report timeliness from 72% to 90% at health facilities
- Increase percent of HIV report accuracy from 80% to 90% at health facilities
- Increase percent of TB report completeness from 72% to 90% at health facilities
- Increase percent of TB report timeliness from 43% to 90% at health facilities
- Increase percent of TB report accuracy from 70% to 90% at health facilities
- Increase percent of Malaria report completeness from 79% to 90% at health facilities
- Increase percent of Malaria report timeliness from 71% to 90% at health facilities
- Increase percent of Malaria report accuracy from 80% to 90% at health facilities
- Increase percent of EPI report completeness from 85% to 90% at health facilities
- Increase percent of EPI report timeliness from 80% to 90% at health facilities
- Increase percent of EPI report accuracy from 83% to 90% at health facilities

17. Increase percent of Maternal Health report completeness from 88% to 90% at health facilities
18. Increase percent of Maternal health report timeliness from 81% to 90% at health facilities
19. Increase percent of Maternal health report accuracy from 80% to 90% at health facilities
20. Increase proportion of administrative health units (national, counties and districts) that implement HRIS 40% to 50%
21. Increases data collection tools availability index at health facilities from 45.2% to 90%
22. Increases data management index at health facilities from 63.8% to 90%
23. Increase proportion of counties which conduct HIS specific review meetings at least once per year from 25% to 100%

## 3. VISION, MISSION AND OBJECTIVES OF THE PLAN

### 3.1. VISION

An efficient HIS that ensures evidence-based decision making for improved health status of Liberia.

### 3.2. MISSION

To produce accurate, complete, timely, and reliable data that will inform service providers and policy makers, quality of care, evidence-based decisions, and resource allocation for health care at all levels.

### 3.3. HIS GOAL STATEMENT:

By 2026 the National HIS of Liberia will produce quality data and information that are used in support of the HIS functions at all levels with a solid governance and management structure, using appropriate information and communication technology including data confidentiality and security at an affordable cost to the government of Liberia.

### 3.4: OBJECTIVES

#### 3.4.1 General Objectives

To operate (establish) a dynamic HIS that identifies issues and their causes, explore the implications on the quality of data generated at all levels of the health delivery system and develop comprehensive targeted interventions for the improvement of the quality of service.

The main objective and strategic interventions of the data quality improvement plan is ensuring credible data at all levels for evidence-based decision making.

#### 3.4.2 Specific Objectives

1. Enhance HMER leadership and governance
2. Build the capacity of the HMER personnel and health care providers in data management and quality assurance
3. Improve routine information system performance through availability of accurate, reliable complete and timely data
4. Strengthen data management practices through the provision of appropriate data collection and reporting tools, SOPs and Guidelines
5. Improve the availability of HIS infrastructures to enhance data capturing, archiving, analysis, interpretation and use at all levels
6. Strengthen information sharing, feedback and data dissemination mechanism
7. Strengthen supportive supervision and monitoring at all levels



## 4. HIS LEADERSHIP, MANAGEMENT AND GOVERNANCE

Leadership for the HIS flows from the community level to the national level through a series of supervisors who ensure that data is correctly generated, collected, processed and used at various levels of the national health system. Leadership is provided by individuals including the community health services supervisor (CHSS), officer in charge (OIC) of the health facility, district health officers (DHO), county data managers and various directors of the health monitoring evaluation and research (HMER) Unit at the national level.

The HIS falls within the Division of Vital Statistics of the Department of Policy, Planning and Development of the MOH. Governance for the operation of the health management information system (HMIS) is provided by a team of directors who run the HMER Unit. Operational decisions that relate to the daily management of the HIS such as those relating to the quality of data from the counties (e.g. internal checks for the addressing inconsistencies, incomplete data sets, delay in reporting, etc.) are taken by the HMER Unit. Decisions that relate to policy changes or introduction of regulations are discussed by an interagency technical working group and lifted to the MOH senior management team (SMT) through the Assistant Minister for Vital Statistics. The Health Services Coordinating Committee

(HSCC) gets involved for validation purposes. The membership of the HSCC includes major health development partners such as donors, NGOs and sectoral ministries such as Finance and Development Planning, among others.

The HMER plans to revise HIS policy, strategies, legislation, and regulatory documents to ensure the functionality of the HIS and to enhance standardization, integration, legitimacy, data security and confidentiality. Further, the DQIP seeks to harmonize the HIS governance frameworks at national and sub-national levels, as well as strengthen harmonization and alignment among stakeholders. This section proposes approaches for the mitigation of potential challenges identified in the DQIP situational analysis.

### STRATEGIC INITIATIVES AND MAJOR ACTIVITIES

#### SI 1: Enhance HMER leadership and governance

- Strengthen stakeholders coordination, collaboration and partnership
- Strengthen HIS planning, governance and budgeting

## 5. HUMAN RESOURCES AND CAPACITY DEVELOPMENT

The Liberia HIS is currently managed through a structure that consists of 26 positions that operate at five levels of the health system. The levels are: (1) community level, (2) health facility level (3) district level, (4) county level, and (5) national level. The roles and responsibilities of the people that manage and operate the HIS in Liberia, per the five levels of the health system are clearly defined.

The goal of the DQIP is to provide HIS with the right skill mix, quality, and numbers. The process involves the development and implementation of the HIS human resource plan based on the needs of the health system, strengthening the HIS health workforce structure at all levels, facilitating continuous capacity building, and creating motivation and retention mechanisms. Additionally, it provides for close monitoring of the HIS workforce using iHRIS. There will be continual capacity building both in-service and pre-service through training, mentorship, supervision, sharing of experiences, and continuous professional development (CPD) to deal with the lack of some

requisite analytical skills at every level that. Through intensive capacity building, the DQIP seeks to create ownership at all levels and enable data quality and persistent use of information. Through activities that have been identified, the DQIP aims to narrow understanding gaps among HIS professionals, health program managers, and health care providers. Having competent, motivated, accountable, and empowered HIS workforce and health care workers will result in improved HIS functions and performance at all levels of the health system.

### STRATEGIC INITIATIVES AND MAJOR ACTIVITIES

#### SI 2: Build the capacity of the HMER personnel and health care providers in data management and quality assurance

- Capacity development for data collection, analysis, interpretation and use at all levels.

## 6. IMPROVE ROUTINE DATA MANAGEMENT AND QUALITY

By following this direction, we ensure data integrity and quality, enabling data to be used for appropriate decision-making. It is therefore evident that more focus must be placed on assessing and implementing a strategic approach to improve data quality and mitigate the risks associated with poor data recording, reporting and use. To strengthen the data management and quality, it is essential to provide adequate logistic supplies, standardize indicators, record and report tools and procedures. In this direction, also include the selection, development, operation, and management of system with a digital solution to support the integration and standardization of HIS through the application of digital technologies, standards, and procedures that enable HIS subsystems to interact.

Monitoring the quality of data at health facilities, health administrative units, and community levels will be conducted using different data quality dimensions and assessment tools.

A Desk Review was conducted to among others, get insight into various aspects of the quality of the outputs of the HIS.

### STRATEGIC INITIATIVES AND MAJOR ACTIVITIES

**SI 3: Improve routine information system performance through availability of accurate, reliable complete and timely data.**

- HMIS reporting timeliness and completeness

**SI 4: Strengthen data management practices through the provision of appropriate data collection and reporting tools, SOPs and Guidelines**

- HIS SOPs and guidelines development

## 7. HIS INFRASTRUCTURE AND LOGISTICS

Infrastructure for HIS is a key factor for promoting data security, however, poor storage for archiving data, limited or no storage facilities to maintain data management equipment, and other problems were identified as issues surrounding the HIS infrastructure across all levels. Infrastructure is the physical and virtual resources that support the flow, storage, processing, and analysis of data in a HIS system. Infrastructures will be built centrally within MOH and sub-nationally decentralized, across a variety of data centers managed by counties. In addition, it encompasses the communication and networking infrastructures for digital data access and/or device sharing.

These challenges underscore the need to provide potential solutions to the problems highlighted, which are listed below.

### STRATEGIC INITIATIVES AND MAJOR ACTIVITIES

**SI 5: Improve the availability of HIS infrastructures to enhance data capturing, archiving, analysis, interpretation and use at all levels**

- Improve HMER data collection and management capacity

## 8. COMMUNICATION, FEEDBACK AND DATA DISSEMINATION

### STRATEGIC INITIATIVES AND MAJOR ACTIVITIES

**SI 6: Strengthen information sharing, feedback and data dissemination mechanism**

- Improve feedback mechanism on gaps identified during data verification, collection and reporting
- Improve data visualization and dissemination

## 9. RESEARCH, SUPERVISION, MONITORING & EVALUATION

### STRATEGIC INITIATIVES AND MAJOR ACTIVITIES

#### SI 7: Strengthen supportive supervision and monitoring at all levels

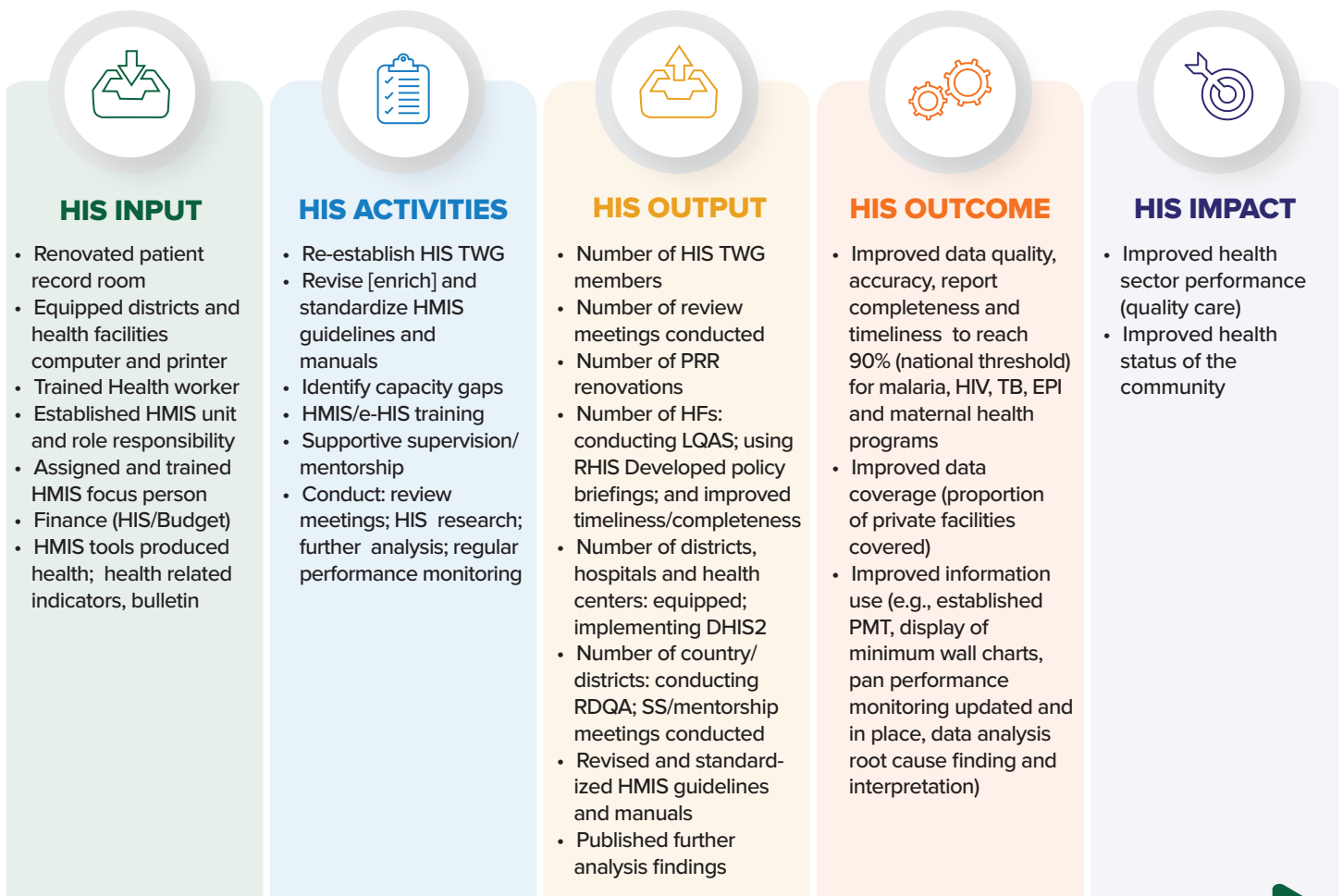
- Enhance Health Sector monitoring, evaluation and Supervision

The HMER is considered as the pillar of the DQIP implementation, which will be used to generate data for tracking progresses and ensure the progresses to lead towards achieving the envisaged objectives of the plan. The process of the DQIP will be periodically monitored to provide information on the plan implementation fidelity, progress and performance to all stakeholders in the formal or format requested to meet the

information needs. Performance indicators have been developed through the participation of all stakeholders that will be measurement overtime (see annex). The monitoring framework clearly states intervention and activities with measurable indicators to flag performance of the plan implementation. Figure 6 below shows the theoretical overview of the logic model of the data quality and improvement plan. It links the project inputs (i.e., resources) and activities to project outputs (i.e., products) and outcomes (i.e., goals) while clearly depicting the logic behind the plan and its rationale for implementation.

Figure 6 below shows the details of the logic model of the data quality and use improvement plan proposed interventions. It

Figure 6: Overview of DQIP logic model



#### CONTEXTUAL/MEDIATING FACTORS

- General behavior of health workers towards data collection, collation, data analysis and information use
- Supportive supervision and mentorship from DHO
- Health facility infrastructure
- DHIS2/HMIS implementation start date

focuses on the activities and outputs of the plan. The monitoring of the inputs and outputs of the plan in accordance with the stated expected results to evaluate the effectiveness of the plan implementation and to ensure accountability. The DQIP plan outcomes are partly described in Table 9 in the Annex, but the impact component, which is related to improved health status of the population, is left out since it is a long-term effect that could be beyond the scope of this work.

## COSTING OF DQIP

The Cost of DQIP was determined based on Key strategic direction, strategic initiative, and major activities. The DQIP cost using functional domain estimate is based on the key assumptions that basic infrastructure and minimum required HIS related staffs are all in place. National protocols/guideline and expert opinion were used during the costing exercise. Accordingly, the total estimated cost of the implementation of DQIP for the five years (2022 – 2027) is 7,118,087.5 million USD with the average yearly total estimated cost is around 2,207,929.75million USD per year.

## 10. IMPLEMENTATION ARRANGEMENT

### ROLES AND RESPONSIBILITIES



#### Ministry of health (all program and HMER team)

- Leading the overall project (technical, administrative, and financial)
- Mobile resource in collaboration with partners for implementation of DQIP
- Develop of TOT and Basic training manuals
- Monitoring of overall activities in cooperation with counties health team
- Development of Health Informatics curriculum for post-basic training program in collaboration with higher training institution
- Opening and creating career development opportunity for Designated HIS staff professionals in the counties
- Conducting mentoring and supportive supervision of counties district and health facilities in collaboration with partners in biannual
- Capacity building of health personnel through continuous-training and mentorship
- Conducting and hosting review meetings with counties on the implementation of DQIP
- Evaluating program outcomes
- Facilitation of experience sharing of best practices of health facilities
- Strengthening in-service training centers
- Experience sharing between counties health team and their respective counties health team
- Support in dissemination of short communications and publication of health data
- Involving community representatives in monitoring and evaluation
- Coordinate and implement research activities



#### Partners

- Support DQIP implementation activities
- Participate on develop guidelines and tools
- Provide resource (technical and financial) support for implementation
- Coordination and supervision of overall DQIP implementation
- Linking the leading partners with counties health team
- Organize annual and bi-annual review meetings
- Support counties health team to facilitate the implementation of DQIP
- Provide support on infrastructure



### County Health Teams

- Facilitate the implementation of HIS
- Mobilize resources in collaboration with county partners
- Technical support to DHO and HF
- Monitoring of activities of DQIP in their respective county
- Involve in capacity building through training, mentoring and supervision
- Identifying opportunities and challenges in the implementation of the DQIP
- Involving in review meetings in collaboration with DHO
- Involve in evaluating program outcomes of DQIP
- Ensure the availability of basic infrastructure for the success of the DQIP implementation
- Support DHO and HF in infrastructure and logistics including vehicles to facilitate the implementation of DQIP



### District Health Offices

- Technical support to HF
- Supportive supervision to health institutions
- Linking the County health team with the HF
- Facilitation in the implementation of the DQIP
- Capacity building and mentorship of their health facilities
- Facilitation in experience sharing between health facilities
- Ensuring continuous supply of materials for HMIS to health facilities



### Health Facilities

- Buy-in and participation
- Actual implementation of the DQIP initiatives
- Selecting and sending trainees
- Collecting and reporting data timely
- Supportive and mentorship for lower-level health facilities
- Ensuring presence of data collection tools
- Ensuring collection of health and health related data



### Community

- Buy-in and participation in the project
- Providing valid information
- Attending various meetings on HIS
- Involving in the review meeting of DQIP

# Annex 1: Strategic Direction, Initiative, and Major Activities

Table 9: DQIP Strategic Objective, Interventions, and Detailed Activities

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Yearly Target					Responsible body	Estimated cost	Assumptions for costing activities		
				Y1	Y2	Y3	Y4	Y5					
HMER leadership and governance	Enhance HMER leadership and governance	Stakeholders coordination, collaboration and partnership	Develop HMER leadership and governance framework document	X					HMER	\$5,000.00	Conduct in 5 days meeting in Monrovia for 50 participants. During this meeting, feeding (15.00) and transportation (10.00) will be provided		
			Establish HMER National Advisory Committee (NAC)	X					HMER	\$-	Funding not require for this activity		
			Reactivate HMER TWG at national and county levels	X					HMER	\$-	Funding not require for this activity		
			Map HMER stakeholders at national and county levels	X	X				HMER	\$-	Funding not require for this activity		
			Reactivate program specific TWG meetings (NMCP, NACP, NLTCP)	X					HMER	\$-	Funding not require for this activity		
			Conduct monthly program specific TWG meetings (NMCP, NACP, NLTCP) on data quality	X	X	X	X	X	Disease control programs (NACP, NMCP, NLTCP)	\$12,000.00	Provide a day lunch for 20 participants from HMER Unit at the rate of 10 per persons		
			Conduct quarterly HMER TWG meetings at the national and sub-national levels	X	X	X	X	X	HMER	\$9,000.00	Provide a day lunch for 30 participants from HMER Unit at the rate of 10 per persons		
			Organize HMER semi-annual NAC meetings	X	X	X	X	X	HMER	\$600.00	Provide a day lunch for 40 participants from HMER Unit at the rate of 15 per persons. This meeting held at central		
		HMER planning, governance and budgeting	Revise, print and distribute HIS Policy and Strategic Plan	X					HMER	\$23,978.00	1. 3 days Policy review workshop in Monrovia (35 persons, feeding (15.00), hall (400.00), printing Five Hundred copies of HIS Policy (20.00) 2. 2 days validation workshop in Monrovia (40 persons, feeding (15.00), hall & (400.00)		
			Revise, print and distribute M&E Policy and Strategic Plan	X					HMER	\$13,978.00	1. 3 days Policy review workshop in Monrovia (35 persons, feeding (15.00), hall (400.00), printing Five Hundred copies of HIS Policy (20.00)		
			Revise, print and distribute Research Policy and Plan	X					HMER	\$25,000.00	1. 3 days Policy review workshop in Monrovia (35 persons, feeding (15.00), hall (400), printing)		
			Revise and publish health indicators reference book	X						\$60,000.00	Print 2000 copies of the national indicator reference book at the rate of 30 per copy		
			Develop and publish technical guidelines for health system research	X						\$15,000.00	Print 500 copies Research guideline at the rate of 30 per copy		
			Mobilize and align resources across programs and partners to replenish data collection tools regularly	X	X	X	X	X	HMER	\$-	Print 1000 copies of Monitoring & Supervision Framework @ the rate of 25 per copies		
			Organize resource mobilization meetings	X	X					\$810.00	Provide a day feeding (15.00) and transportation (10.00) for 50 participants. This meeting take place at the central Ministry of Health		
			Advocate for specific budget lines for HIS, Research and M&E	X	X	X	X	X		\$-	This activity does not require funding		
			<b>Sub-Total</b>									<b>\$165,366.00</b>	

Table 9: DQIP Strategic Objective, Interventions, and Detailed Activities cont'd.

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Yearly Target					Responsible body	Estimated cost	Assumptions for costing activities
				Y1	Y2	Y3	Y4	Y5			
Human Resources Capacity and Development	Build the capacity of the HMER personnel and health care providers in data management and quality assurance	Capacity development for data collection, analysis, interpretation and use at all levels	Develop capacity assessment framework for all levels	X					HMER/HR	\$1,200.00	Conduct in 3 days meeting in Monrovia for 20 participants. During this meeting, feeding (15.00) and transportation (10.00) will be provided
			Conduct HMER capacity needs assessments		X				HMER/HR	\$18,270.00	Provide 15 Days DSA (80.00) for 10 Field Accessors, 5 Drivers (50.00) and Fuel (600 Gallons) for filed work
			Develop HMER capacity development plan		X				HMER/HR	\$1,600.00	Conduct in 4 days meeting in Monrovia for 15 participants. During this meeting, feeding (15.00) and transportation (10.00) will be provided
			Conduct data management trainings for service providers (eg. M&E, Data officers, registrars, OICs, etc) at all levels (on job trainings/retraining) in data management with emphasis on tools (master registry, etc), archiving practices and use of data for action		X		X		HMER	\$383,650.00	Conduct training for 1934 Facility staff, 123 County, District and 23 National Level Staff. For three day, Feeding (15.00), DSA (60.00), Hall & Transportation (50.00)
			Train MOH program managers on basic use of the DHIS2/eLMIS		X				HMER	\$5,400.00	Conduct three days training fro 12 Program Managers on the use of HIS Sub-systems. Hall rental (400.00), Feeding (15), Transportation (10.00). Training venue Monrovia central MOH
			Train MOH HMER Staff in Bio-statistics, Epidemiology, System Delopment & GIS		X	X	X	X	HMER	\$400,000.00	Train 4 staff from MOH at the master level at cost of 100,000 per person
			Develop HIS in-service training guidelines and establish online self-guided training modules on basic HMIS manipulation, data management, and computer use		X				HMER/ICT	\$825.00	Conduct in 3 days meeting in Monrovia for 15 participants. During this meeting, feeding (15.00) and transportation (10.00) will be provided
			Conduct training for HMER personnel on data capturing and analysis soft wares (Micros software, SPSS, Kobocollect, STATA, CSPro, etc), databases and sub-systems (DHIS2, eLMIS, eIDSR, etc) for national, counties and districts levels		X				HMER/ICT	\$7,280.00	Conduct two weeks training in Monrovia for 20 HMER Staffs. During the training, feeding (15.00), transportation (10.00) will be provided.
<b>Sub-Total</b>									<b>\$818,225.00</b>		

Table 9: DQIP Strategic Objective, Interventions, and Detailed Activities cont'd.

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Yearly Target					Responsible body	Estimated cost	Assumptions for costing activities	
				Y1	Y2	Y3	Y4	Y5				
Routine Data Management and Quality Improvement	Improve routine information system performance through availability of accurate reliable complete and timely data	HMIS reporting timeliness and completeness	Review, update and disseminate indicator reference sheet/data dictionary					X	HMER	\$3,000.00	Conduct in 5 days meeting in Monrovia for 50 participants. During this meeting, feeding (15.00) and transportation (10.00) will be provided	
			National level to analyze and provide monthly feedback on data quality, timeliness and completeness of indicators to counties	X	X	X	X	X	HMER	\$-	This is activity does not require funding	
			Conduct data collection, management and reporting coaching and mentorship at sub-national level	X	X	X	X	X	HMER/Programs	\$27,180.00	Conduct in 15 days mentorship in all fifteen counties, 24 persons to participate, 900 gallons of fuel to purchased. DSA will be provided	
			Conduct quarterly data verification exercise	X	X	X	X	X	HMER/Programs	\$22,380.00	Conduct in 14 days VOI in all fifteen counties, 25 persons to participate, 900 gallons of fuel to purchased. DSA will be provided	
			Conduct quarterly Data Quality self-assessment and make recommendations in order to improve data quality	X	X	X	X	X	HMER/CHTs	\$256,680.00	Conduct in 7 days District level data quality in all facility, 3 persons to participate per district, 50 gallons of fuel per district. DSA will be provided	
			Conduct quarterly data review meetings at county, district and facility levels	X	X	X	X	X	CHTS	\$97,875.00	DSA for (93 DHOs + 967 OICs); feeding for (93 DHOs, 967 OICs, 11CHTS member *15 counties)	
			County level to conduct monthly supportive supervision to districts and health facilities	X	X	X	X	X	HMER/CHTs	\$26,800.00	Conduct in 7 days District level data quality in all facility, 3 persons to participate per district, 50 gallons of fuel per district. DSA will be provided	
		HIS SOPs and guidelines development	Print and distribute HMIS tools such as a patient chart, recording registrars/ledgers, tally sheets, HMIS monthly reporting forms, eLMIS quarterly reporting forms			X			HMER	\$478,100.00	ANC ledgers (950), FP ledgers (200), general IP ledgers (145), under-five ledgers (1784), normal delivery ledgers (2400), master register (1500), maternity IP (145), abovefive (1900), PNC ledger (2400), Nutrition ledger (1000), NTDs ledger (900), TB ledger (800), EPI ledger (1900), Mental Health ledger (500), PMTCT (900), ART (700)	
			Review and update SOPs/Guidelines for program specific requirements					X	HMER	\$17,750.00	5 days workshop at MOH, County level participants (30 OICs & clinical supervisors), National (15 persons), Partners (15), HMER team (20), feeding	
			Regularly print and distribute specific data management SOPs, revised policies and guidelines			X			HMER/CHTs	\$77,120.00	ANC ledgers, FF ledgers, general IP ledgers, under-five ledgers, normal delivery ledger, master register, maternity IP, abovefive ledger, PNC ledger, Nutrition ledger, NTDs ledger, TB ledger, EPI ledger, Mental Health ledger, PMTCT ledger, ART ledger	
			Provide standardized patient charts at all facilities		X			X	HMER	\$1,789,061.50	head counts per year is 3578123*.25 cent*2 years	
			Develop standardized operating procedure (SOP) for DHIS2 & e-LMIS platform, print and distribute same to every level		X					\$2,250.00	Revision at MOH for 5 days, 30 persons, feeding	
			Procure 4 vehicles for HMER supportive supervision and field monitoring exercise		X					\$180,000.00	Purchase of 4 ToyotaLancruisers vehicles to be used by the HMER Unit for data related activities	
			<b>Sub-Total</b>									<b>\$2,978,196.50</b>



Table 9: DQIP Strategic Objective, Interventions, and Detailed Activities cont'd.

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Yearly Target					Responsible body	Estimated cost	Assumptions for costing activities
				Y1	Y2	Y3	Y4	Y5			
	Improve the availability of HIS infrastructures to enhance data capturing, archiving, analysis, interpretation and use at all levels	Improve HMER data collection and management capacity	Procure data capturing and analysis softwares licenses (eg. SPSS, GIS, etc) for central level data management staff	X	X	X	X	X	HMER	\$54,000.00	SPSS 24, 6 liscnses*1200 per year; GIS 6 licenses 600 per year
			Procure antivirus (150 licenses), micro software packages for National, Counties and Districts data officers (150 licenses)	X	X	X	X	X	HMER/ICT	\$38,250.00	153 antivirus licenses*50*5 years
			Procure computer, backup system and pen-drive for National, Counties and Districts data officers	X					HMER/ICT	\$267,750.00	153 laptops for 153 HMER staff at national, county and district level
			Procure modems for internet connectivity for counties and districts level	X					HMER/ICT	\$4,860.00	Procure modems for 15 counties, 93 districts X 45
			Provide monthly internet subscription for county and district levels	X	X	X	X	X	HMER/ICT	\$64,800.00	Procure monthly subscription for 15 counties, 93 districts X 10 usd
			Procure solar panel to improve electricity for data management and reporting			X			HMER/ICT	\$93,000.00	3kw invertors (700 usd)*15, 6 *350 kw panel (200usd)*15, *4 batteries X 350usd X 15 counties, others including workmanship (2500usd X 15)
			Increase MOH hosting capacity to accommodate other data sub-systems		X				HMER/ICT	\$32,400.00	two time the current price (16,200 ud)
			Provide data storage capacity (storage space, box files, cabinets, shelves, etc) at counties, districts and health facilities level				X		HMER/CHTS	\$-	box files (12 pieces * 967 health facilities), cabinets (1 per 967 health facilities) for health facilities; box files (12 pieces *93 districts), box files (60 pieces for 15 counties); Cabinets (1 per 93 districts); cabinets (1 per 15 counties)
			Establish a national data warehouse with clear roadmap and store data from different research, surveillance, surveys and other resources into a central data repository		X				HMER/ICT	\$40,000.00	Hire consultant to lead the process of establishment
<b>Sub-Total</b>									<b>\$595,060.00</b>		

Table 9: DQIP Strategic Objective, Interventions, and Detailed Activities cont'd.

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Yearly Target					Responsible body	Estimated cost	Assumptions for costing activities
				Y1	Y2	Y3	Y4	Y5			
Communication and Feedback	Strengthen information sharing, feedback and data dissemination mechanism	Improve feedback mechanism on gaps identified during data verification, collection and reporting	Provide monthly feedback with data producers (eg. Data officers, OICs, county M&E and data officers, etc) on the quality of HMIS data	X	X	X	X	X	HMER/CHTs	\$-	Internet support required (already captured)
			Analyze and provide monthly feedback on data quality, timeliness and completeness of indicators to counties	X	X	X	X	X	HMER/CHTS	\$-	
			Provide timely reports on supervisions, assessments, etc with stakeholders at all levels	X	X	X	X	X	HMER	\$-	
			Establish dedicated platform for information distribution (SIA room)	X					HMER	\$13,020.00	3 Screen, 3 Tumb Cards, Communication Cards for the 3 machines for 12 months by 5 years
			Develop and disseminate quarterly bulletin for key indicators (eg. Malaria, TB, EPI, HIV, MCH, etc)	X	X	X	X	X	HMER/Programs	\$-	10000 copies of bulletin for national programs and county staff at the cost of 5 per copy for 20 quarter during the five years period
			Develop HIS dashboard of key indicators for all programs and display on screens	X	X	X	X	X	HMER/Programs	\$-	No funding is required for this activity
			Establish a social media chatroom to enhance data sharing	X					HMER	\$-	No funding is required for this activity
<b>Sub-Total</b>									<b>\$13,020.00</b>		

Table 9: DQIP Strategic Objective, Interventions, and Detailed Activities cont'd.

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Yearly Target					Responsible body	Estimated cost	Assumptions for costing activities
				Y1	Y2	Y3	Y4	Y5			
Research, Monitoring, Supervision & Evaluation	Strengthen supportive supervision and monitoring at all levels	Enhance Health Sector monitoring, evaluation and Supervision	Conduct periodic SARA/HHFA	X	X				HMER	\$539,300.00	Conduct in 5 days training in Monrovia for 60 participants, 7 coordinators, 5 partners. During this meeting, feeding (20.00), 5 days hall and transportation (10.00), internet for programming of gadgets, will be provided. 25 days field work for 60 person, Drivers (10), coordinators (7), 15 Vehicles rental (200.00 for 25 Days). Fuel for assessors cars (15 cars*7usd*25 days), fuel for coordinators cars (7cars*7usd*25 days), report writing and printing, This will be conducted twice in 5 years
			Conduct periodic immunization coverage surveys	X					HMER/EPI	\$197,325.00	Conduct in 5 days training in Monrovia for 50 participants. During this meeting, feeding (15.00) and transportation (15.00) will be provided. 25 days field work for 60 person, Drivers (10), 15 Vehicles rental (200.00 for 25 Days).
			Conduct quarterly EPI data verification across all levels	X	X	X	X	X	HMER/EPI	\$525,350.00	Two days training, feeding for 25 persons at 20usd, DSA for 20 assessors at 60 usd per person, DSA for 3 coordinators at 80usd, DSA for 10 drivers at 50 usd, printing of reports (1000usd)
			Conduct quarterly supportive supervision at all levels	X	X	X	X	X	HMER	\$142,500.00	500 per county X 15 counties
			Procure 4 vehicles for HMER supportive supervision and field monitoring exercise	X					HMER	\$220,000.00	Four vehicle (Toyota Hiluks Pickup) for 50,000-60,000 usd
			Provide quarterly fuel Supply for Vehicles	X	X	X	X	X	HMER	\$168,000.00	100 gal per car X 4 cars X 5 years
			Provide GPS subscription for vehicles	X	X	X	X	X	HMER	\$6,800.00	GPS procurement and subscription for four cars
			Provide quarterly maintenance for vehicles	X	X	X	X	X	HMER	\$20,000.00	250 per quarter per car
			Conduct DQR and use findings to update the DIP	X	X				HMER	\$344,122.00	Conduct 5 days training in Monrovia for 40 participants. During this meeting, feeding (20.00) 5 days hall and transportation (10.00), internet for programming of gadgets, 21 days field work for 40 person, Drivers (5), coordinators (5), 8 Vehicles rental (200.00 for 21 Days), 5 cars for coordinators, fuel for 13 cars at 7 usd, report writing and printing report. The activity is twice a year
			Conduct mid-term evaluation of the DQIP implementation at all levels	X					HMER	\$188,075.00	Conduct in 5 days training in Monrovia for 60 participants. During this meeting, feeding (15.00) and transportation (15.00) will be provided. 25 days field work for 60 person, Drivers (10), Vehicles rental (200.00 for 25 Days).
<b>Sub-Total</b>									<b>\$2,351,472.00</b>		
<b>Grand Total</b>									<b>\$7,312,887.50</b>		

# Annex 2: DQIP Year One Activities

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Y1	Responsible body	Estimated cost	Assumptions for costing activities				
HMER leadership and governance	Enhance HMER leadership and governance	Stakeholders coordination, collaboration and partnership	Review and revised HMER leadership and governance framework document	X	HMER	\$5,000.00	Conduct in 5 days meeting in Monrovia for 50 participants. During this meeting, feeding (15.00) and transporation (10.00) will be provided				
			Reactivate HMER TWG at national and county levels	X	HMER	\$-	Funding not require for this activity				
			Map HMER stakeholders at national and county levels	X	HMER	\$-	Funding not require for this activity				
			Reactivate program specific TWG meet-ings (NMCP, NACP, NLTCP)	X	HMER	\$-	Funding not require for this activity				
			Conduct monthly program specific TWG meetings (NMCP, NACP, NLTCP) on data quality	X	Disease control programs (NACP, NMCP, NLTCP)	\$2,400.00	Provide a day lunch for 20 participants from HMER Unit at the rate of 10 per persons every month				
			Conduct quartely HMER TWG meetings at the national and sub-national levels	X	HMER	\$1,800.00	Provide a day lunch for 30 participants from HMER Unit at the rate of 10 per persons				
	HMER planning, governance and budgeting			Revise, print and distribute HIS Policy and Strategic Plan	X	HMER/Policy & Planning	\$11,753.00	1. 3 days Policy review workshop in Monrovia (35 persons, feeding (15.00), hall (400.00), printing One Thousand copies of HIS Policy (20.00) 2. 2 days validation workshop in Monrovia (40 persons,feeding (15.00), hall & (400.00)			
				Revise, print and distribute M&E Policy and Strategic Plan	X	HMER/Policy & Planning	\$11,753.00	1. 3 days Policy review workshop in Monrovia (35 persons, feeding (15.00), hall (400.00), printing Five Hundred copies of HIS Policy (20.00) 2. 2 days validation workshop in Monrovia (40 persons,feeding (15.00), hall & (400.00)			
				Revise, print and distributeResearch Policy and Plan	X	HMER/Policy & Planning	\$11,753.00	1. 3 days Policy review workshop in Monrovia (35 persons, feeding (15.00), hall (400), printing) 2. 2 days validation workshop in Monrovia (40 persons,feeding, hall, printing)			
				Revise and publish health indicators reference book	X	HMER	\$60,000.00	Print 2000 copies of the national indicator reference book at the rate of 30 per copy.			
				Develop and publish technical guidelines for health system research	X	HMER/Policy & Planning	\$15,000.00	Print 500 copies Research guideline at the rate of 30 per copy.			
				Mobilize and align resources across programs and partners to replenish data collection tools regularly	X	HMER	\$-	Print 1000 copies of Monitoring & Supervision Framework @ the rate of 25 per copies			
				Organize resource mobilization meetings	X	Dept of Planning	\$-	No fund require			
				Advocate for specific budget lines for HIS, Research and M&E	X	Dept of Planning	\$-	This activity does not require funding			
				<b>Sub-Total</b>						<b>\$119,459.00</b>	

## Annex 2: DQIP Year One Activities cont'd.

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Y1	Responsible body	Estimated cost	Assumptions for costing activities
Human Resources Capacity and Development	Build the capacity of the HMER personnel and health care providers in data management and quality assurance	Capacity development for data collection, analysis, interpretation and use at all levels	Develop capacity assessment framework for all levels	X	HMER/HR	\$1,200.00	Conduct in 3 days meeting in Monrovia for 20 participants. During this meeting, feeding (15.00) and transportation (10.00) will be provided
			Conduct data management trainings for service providers (eg. M&E, Data officers, registrars, OICs, etc) at all levels (on job trainings/retraining) in data management with emphasis on tools (master registry, etc), archiving practices and use of data for action	X	HMER	\$191,825.00	Conduct training for 1934 Facility staff, 123 County, District and 23 National Level Staff. For three day, Feeding (15.00), DSA (60.00), Hall & Transportation (50.00)
			Train MOH program managers on basic use of the DHIS2/eLMIS	X	HMER	\$5,400.00	Conduct three days training for 12 Program Managers on the use of HIS Sub-systems. Hall rental (400.00), Feeding (15), Transportation (10.00). Training venue Monrovia central MOH. Training will be twice every 2 years
			Explore and utilize online self-guided training modules on basic HMIS manipulation, data management, and computer use at national level	X	HMER/ICT	\$3,600.00	Internet subscriptions for 15 HMER staffs every year
			Conduct training for HMER personnel on data capturing and analysis soft wares (Micros software, SPSS, Kobocollect, STATA, CSPro, etc), databases and sub-systems (DHIS2, eLMIS, eIDSR, etc) for national, counties and districts levels	X	HMER/ICT	\$25,200.00	Conduct two weeks training in Monrovia for 30 HMER Staffs. During the training, feeding (15.00), transportation (10.00) will be provided.
			<b>Sub-Total</b>				

## Annex 2: DQIP Year One Activities cont'd.

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Y1	Responsible body	Estimated cost	Assumptions for costing activities
	Strengthen data management practices through the provision of appropriate data collection and reporting tools, SOPs and guidelines	HIS SOPs and guidelines development	National level to analyze and provide monthly feedback on data quality, timeliness and completeness of indicators to counties	X	HMER	\$-	This activity does not require funding
Conduct quarterly data verification exercise			X	HMER/Programs	\$121,200.00	Conduct in 14 days VOI in all fifteen counties, 25 persons to participate, 900 gallons of fuel to purchased. DSA will be provided, 200 per county	
Conduct quarterly Data Quality self-assessment and make recommendations in order to improve data quality			X	HMER/Programs	\$52,080.00	Conduct in 7 days District level data quality in all facility, 3 persons to participate per district, 50 gallons of fuel per district. DSA will be provided	
Conduct quarterly data review meetings at county, district and facility levels			X	HMER/CHTs	\$19,575.00	DSA for (93 DHOs + 967 OICs); feeding for (93 DHOs, 967 OICs, 11CHTS member *15 counties)	
Conduct monthly supportive supervision at districts and health facilities			X	CHTS	\$28,000.00	Conduct in 7 days District level data quality in all facility, 3 persons to participate per district, 50 gallons of fuel per district. DSA will be provided	
Provide standardized patient charts at all facilities			X	HMER/CHTs	\$894,530.75	head counts per year is 3578123*.25 cent*2 years	
Develop standardized operating procedure (SOP) for DHIS2 & e-LMIS platform, print and distribute same to every level			X	HMER	\$2,250.00	Revision at MOH for 5 days, 30 persons, feeding	
<b>Sub-Total</b>						<b>\$1,117,635.75</b>	

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Y1	Responsible body	Estimated cost	Assumptions for costing activities
Infrastructure and Logistics	Improve the availability of HIS infrastructures to enhance data capturing, archiving, analysis, interpretation and use at all levels	Improve HMER data collection and management capacity	Procure data capturing and analysis softwares licenses (eg. SPSS, GIS, etc) for central level data management staff	X	HMER	\$10,800.00	SPSS 24, 6 liscenses*1200 per year; GIS 6 licenses 600 per year
			Procure antivirus (150 licenses), micro software packages for National, Counties and Districts data officers (150 licenses)	X	HMER/ICT	\$7,650.00	153 antivirus licenses*50*5 years
			Procure computer, backup system and pen-drive for National, Counties and Districts data officers	X	HMER/ICT	\$267,750.00	153 laptops for 153 HMER staff at national, county and district level
			Procure modems for internet connectivity for counties and districts level	X	HMER/ICT	\$4,860.00	Procure modems for 15 counties, 93 districts X 45
			Provide monthly internet subscription for county and district levels	X	HMER/ICT	\$12,960.00	Procure monthly subscription for 15 counties, 93 districts X 10 usd
			Procure solar system to improve electricity for data management and reporting	X	HMER/ICT	\$93,000.00	3kw invertors (700 usd)*15, 6 *350 kw panel (200usd)*15, *4 batteries X 350usd X 15 counties, others including workmanship (2500usd X 15)
<b>Sub-Total</b>						<b>\$397,020.00</b>	

## Annex 2: DQIP Year One Activities cont'd.

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Y1	Responsible body	Estimated cost	Assumptions for costing activities
Communication and Feedback	Strengthen information sharing, feedback and data dissemination mechanism	Improve feedback mechanism on gaps identified during data verification, collection and reporting	Provide monthly feedback with data producers (eg. Data officers, OICs, county M&E and data officers, etc) on the quality of HMIS data	X	HMER/CHTs	\$-	Internet support required (already captured)
			Analyze and provide monthly feedback on data quality, timeliness and completeness of indicators to counties	X	HMER/CHTS	\$-	No funding is required for this activity
			Provide timely reports on supervisions, assessments, etc with stakeholders at all levels	X	HMER	\$-	No funding is required for this activity
			Establish dedicated platform for information distribution (SIA room)		HMER	\$13,020.00	3 Screen, 3 Tumb Cards, Communication Cards for the 3 machines for 12 months by 5 years
			Develop and disseminate quarterly bulletin for key indicators (eg. Malaria, TB, EPI, HIV, MCH, etc)	X	HMER/Programs	\$-	no funding is required for this activity
			Develop HIS dashboard of key indicators for all programs and display on screens	X	HMER/Programs	\$-	No funding is required for this activity
			<b>Sub-Total</b>				

Strategic Direction	Strategic Objectives	Strategic Interventions	Activities	Y1	Responsible body	Estimated cost	Assumptions for costing activities
Research, Monitoring, Supervision & Evaluation	Strengthen supportive supervision and monitoring at all levels	Enhance Health Sector monitoring, evaluation and Supervision	Conduct quarterly EPI data verification across all levels	X	HMER/EPI	\$105,070.00	Two days training, feeding for 25 persons at 20usd, DSA for 20 assessors at 60 usd per person, DSA for 3 coordinators at 80usd, DSA for 10 drivers at 50 usd, printing of reports (1000usd)
			Conduct quarterly supportive supervision at all levels	X	HMER	\$28,500.00	500 per county X 15 counties
			Procure 4 vehicles for HMER supportive supervision and field monitoring exercise	X	HMER	\$200,000.00	Four vehicle (Toyotal Hiluks Pickup) for 50,000-60,000 usd
			Provide quarterly fuel Supply for Vehicles	X	HMER	\$33,600.00	
			Provide GPS subscription for vehicles	X	HMER	\$2,000.00	
			Provide quarterly maintenance for vehicles	X	HMER	\$4,000.00	
			<b>Sub-Total</b>				
<b>Grand Total</b>						<b>\$2,247,529.75</b>	

# Annex 3: DQIP Monitoring Framework

Strategic Objectives	Indicators	Yearly Target					Data source/means of verification	Frequency of data collection	Responsibility	Baseline	Year 5 target
		Y1	Y2	Y3	Y4	Y5					
Enhance HMER leadership and governance	HMER leadership and governance framework document revised	X					Copy of revised framework document available	Once	HMER	75%	100%
	Number of HMER TWG meetings held at national and county levels	X	X	X	X	X	Meeting minutes/supportive supervision	Quarterly	HMER/CHTs	0	20
	Mapping of HMER stakeholders at national and county levels conducted	X		X			Directory of HMER stakeholders available	Every 2 years	HMER/CHTs	50%	100%
	Number of programs (NMCP, NACP, NLTCP, EPI, etc) TWG meetings held	X	X	X	X	X	TWG meeting reports	Monthly	Programs (NMCP, NACP, NLTCP, EPI)	0	60
	HMER (HIS, M&E and Resc) policy and strategies revised, printed and distributed	X	X				Printed Copies of revised HMER policies and strategies available at all levels	Once	HMER/Policy & Planning	80%	100%
	The national health indicators reference book revised and distributed	X					Printed Copies of revised national health reference book available at all levels	Once	HMER	80%	100%
	Percent of HIS tool printing cost mobilized across GOL, partners and programs	X	X	X	X	X	Amount available for HIS tool printing	Every year	HMER	60%	100%
	Number of HMER resource mobilization meetings held	X	X	X	X	X	Copies of meetings minutes	Yearly	HMER	0	5

Strategic Objectives	Indicators	Yearly Target					Data source/means of verification	Frequency of data collection	Responsibility	Baseline	Year 5 target
		Y1	Y2	Y3	Y4	Y5					
Build the capacity of the HMER personnel and health care providers in data management and quality assurance	HMER capacity assessment framework developed for national, county and health facility levels	X					Copies of framework	Once	HMER/HR	0	1
	HMER inservice training guidelines developed		X				Copy of guidelines available	Once	HMER/HR	0	1
	Percent of health professionals (eg. M&E, Data officers, registrars, OICs, etc) trained in data management		X			X	Training report/RDQA	Once every 2 years	HMER/CHTs	60%	100%
	Percent of MOH program managers trained in the used of the DHIS2/eLMIS	X		X			Training report/RDQA	Once every 2 years	HMER/CHTs	10%	100%
	Number of HMER staff with degree in Bio-statisticis Number of HMER staff with speciality in GIS Number of HMER staff with speciality in system development and programming		X		X		Degree/speciality within Bio-statistics (2 persons), system development (one person) or GIS (one person)	Twice in five years	Department of planning/Partners	0	4
	Number of HMER staff who completed online open source data management training as recommended by superiors	X	X	X	X	X	Certificates/decrees availability	Annually	HMER	10%	100%
	Number of HMER personnel trained on data capturing and analysis soft wares (Micros software, SPSS, CPro, Kobocollect)	X			X		Training report/RDQA	Twice in five years	HMER	5%	50%



# Annex 3: DQIP Monitoring Framework cont'd.

Strategic Objectives	Indicators	Yearly Target					Data source/means of verification	Frequency of data collection	Responsibility	Baseline	Year 5 target
		Y1	Y2	Y3	Y4	Y5					
Enhance HMER leadership and governance	Number of quarterly data verification carried out	X	X	X	X	X	Counter data verification report	Quarterly	HMER	20%	100%
	Number of Data Quality self-assessment conducted at district level.	X	X	X	X	X	Data Quality self-assessment conducted at district level report	Quarterly	DHT	10%	100%
	Number of quarterly data review meetings conducted at county, district and facility levels	X	X	X	X	X	Review meeting report	Quarterly	CHT	0%	100%
	Number of supportive supervision conducted monthly at districts and health facilities.	X	X	X	X	X	Supervision report	Monthly	CHT	0%	100%
Strengthen data management practices through the provision of appropriate data collection and reporting tools, SOPs and guidelines	Number of health facilities timely replenish with HMIS tools		X				Printed copies of HMIS tools are available at all levels	Once every five years	HMER	80%	100%
	Number of health facilities with up to date programs specific SOPs/guidelines	X					Printed copies of programs SOPs/guidelines are available at all levels	Once every five years	Programs/HMER	20%	100%
	Number of health facilities provided with standardized patient charts	X			X		Copies of standardized patient charts available	Twice every five years	HMER/CHTs	10%	100%
	Standardized operating procedure (SOP) for DHIS2 & e-LMIS platform are developed, printed and distributed at national, county and district level	X					Copies of SOP for DHIS2/e-LMIS available	Once every five years	HMER	0	1

Strategic Objectives	Indicators	Yearly Target					Data source/means of verification	Frequency of data collection	Responsibility	Baseline	Year 5 target
		Y1	Y2	Y3	Y4	Y5					
Improve the availability of HIS infrastructures to enhance data capturing, archiving, analysis, interpretation and use at all levels	Number of central level data management staff with SPSS and GIS licenses	X	X	X	X	X	Copies of licenses installed on 6 HMER laptops	Every year	HMER	0	12
	Number of HMER staff at national and district levels with updated antivirus and micro software packages procured and installed	X	X	X	X	X	Copies of licenses installed on 150 HMER Staff computers	Every year	HMER	0	150
	Number of HMER staff at national and district levels with computers, backup systems and pen-drives assigned	X					HMER staffs with computers	Once	HMER	0	153
	Number of counties and districts with assigned modems for internet connectivity for counties and districts level	X					Counties and Districts offices with modems	Once	HMER	0	108
	Number of counties and districts provided with monthly internet subscription	X	X	X	X	X	Records of monthly subscriptions	Annually	HMER	0	108
	Number of counties and districts provided with solar systems to improve electricity for data management and reporting			X			Evidence of solar system installed	Once	HMER	0	15
	Percent of health facilities, districts and counties provided with data storage capacity (storage space, box files, cabinets, shelves, etc)				X		Evidence of data storage capacity	Once	HMER	50%	100%

## Annex 3: DQIP Monitoring Framework cont'd.

### Yearly Target

Strategic Objectives	Indicators	Y1	Y2	Y3	Y4	Y5	Data source/means of verification	Frequency of data collection	Responsibility	Baseline	Year 5 target
Strengthen information sharing, feedback and data dissemination mechanism	Number of counties and districts receiving monthly feedback on the quality of HMIS data	X	X	X	X	X	Copies of feedback to counties and districts	Monthly	HMER	80%	100%
	Number of counties receiving timely reports on supervisions, assessments conducted at county or districts levels	X	X	X	X	X	Copies of supervision/ assessments reports	Regularly	HMER/Partners	0	100%
	Number of programs with quarterly bulletin for key indicators (eg. Malaria, TB, EPI, HIV, MCH, etc) produced	X	X	X	X	X	Soft copies of bulletin	Quarterly	HMER/Programs	10%	100%
	HIS dashboard of key indicators for all programs are displayed on screens	X	X	X	X	X	Copies of dashboard for key indicators	Quarterly	HMER/Programs	10%	100%

### Yearly Target

Strategic Objectives	Indicators	Y1	Y2	Y3	Y4	Y5	Data source/means of verification	Frequency of data collection	Responsibility	Baseline	Year 5 target
Strengthen supportive supervision and monitoring and research at all levels	Number of HHFA conducted during the period		X		X		HHFA report	Every 2 years	HMER	0	2
	Number of EPI coverage surveys conducted during the period	X					Survey report	Once in 5 years	HMER/EPI	0	1
	Number of EPI quarterly data verification conducted	X	X	X	X	X	Verification report	Quarterly	HMER/EPI	0	20
	Number of supportive supervision conducted quarterly	X	X	X	X	X	Supervision report	Quarterly	HMER	0	20
	Four (4) vehicles are procured for HMER supportive supervision and field monitoring exercises	X					Four (4) vehicles are procured and assigned to HMER	Once	HMER	0	4
	Number of DQR assessment conducted	X			X		Report of DQR	Once in 2 years	HMER	1	2

## Annex 4: DQIP Development: Ministry of Health Participants

No.	Name	Position
1	A. Vaifée Tulay	Deputy Minister
2	C. Sanford Wesseh	Asst. Minister
3	George P. Jacobs	Asst. Minister
4	Luke Bawo	Coor/HMER
5	Nelson Dunbar	Research Director
6	John T. Harris	Chief Pharmacist
7	Patrick K. Konwloh	HIS Director
8	M. Mike Mulbah	M&E Director
9	Adolphus Clarke	EPI Manager
10	Ernest Gonyon	Acting Director/HFU
11	G. Martin Dumoe	Director/MOH
12	Momolu Massaquoi	Program Officer/MOH
13	D. Levi Hinneh	Deputy Program Manager
14	David Koiboi	Data Manager
15	Nicholas N.C. Blidi	EPI Deputy Program Manager
16	Moses Camue	HIS Officer
17	Tijli Tyee	HSS Officer
18	Emmanuel Pelham	HIS Officer
19	Dikena G. Jackson	Deputy Director/MOH
20	Joe Kerkula	M&E Officer
21	Joseph Yokie	EPI Manager
22	Josephus Kilikpo	Research Officer
23	James S. Momo Jr.	Research Officer
24	Garfee Williams	Technical Assistant

No.	Name	Position
25	Nyanquoi S. Urey	M&E Officer Bong
26	William S. Teage Sr.	M&E Officer G.Bassa
27	Cyrus F. Kamba	MONT. Data Manager
28	Solomon G. Worbey	M&E Officer G. Gedeh
29	J. Gonleyen Dahn	M&E Officer Nimba
30	Pauline Hilton Doe	Project Manager/GF
31	Albertha Konneh	Health Financing Officer/MOH
32	Helen Barney	HMIS Data officer
33	Dr. Siana T. Jackson-Mentoe	Bomi County Health Officer
34	Dr. Jonathan Flomo	Bong County Health Officer
35	Dr. Sevester Q. Wheh	Grand Bassa County Health Officer
36	Dr. Joseph N. Topor	River Cess County Health Officer
37	Dr. Yatta Wapoe	Montserrat County Health Officer
38	Dr. Netty Joe	Nimba County Health Officer
39	Dr. Augustine Fannieh	Margibi County Health Officer
<b>Partners</b>		
1	K. Margaret Korkpor	JSI Consultant
2	Napoleon Bennela	STAIP
3	Wondimu Ayele	UNDP
4	Richard Fatorma Ngafuan	LMH
5	Philip Bemah	NPHIL
6	Mohammed Kromah	WHO
7	Stephen Korvah	UNICEF
8	Stephen Gbanyan	USAID

## Annex 5: References

1. Liberia Demography and Health Survey , 2013, 2019.
2. Liberia Indicators Reference Sheet, 2021.
3. WHO Handbook on the use, collection and implementation of immunization data, 2018.
4. Liberia District Health Information System for Routine Data Version 2.38
5. Liberia Health Information System Strategic Plan 2016-2021
6. Sustainable Development Goals Agenda 2030. United Nations 2015.
7. Liberia Data Quality Assessment Report, 2017.
8. Liberia Data Quality Assessment Report, 2021.

