Government of the Republic of Malawi

Ministry of Health and Population

Monitoring, Evaluation and Health Information Systems Strategy

(MEHIS)

2017–2022

September 2018

The Monitoring, Evaluation and Health Information Systems Strategy was developed in partnership with:

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FOREWORD

I am delighted to present the Monitoring, Evaluation and Health Information Systems (MEHIS) Strategy 2017–2022.This provides the strategic vision and the targets to help monitor and evaluate the implementation of HSSP II. Additionally, the strategy aims to strengthen health information systems to enable the use of data in decision making. The MEHIS strategy compliments HSSP II, a strategy that will deliver universal health coverage in Malawi and ensure that all people are able to enjoy a healthy and productive life.

Through the development of the strategy, we have had the opportunity to look at the successes within the previous strategy, 2011-2016. This has allowed us to determine a clear vision and agree the future goals that will be achieved through the implementation of the MEHIS strategy. The outcome-based approach of the operational plan reflects our commitment to achieving excellence through tangible results. The four outcomes highlighted within the MEHIS strategy reflect the strategic themes that are the basis of evaluating HSSP II while improving our capacity to use data over the next five years.

The key outcomes include ensuring that effective and well-functioning data sources are in place to monitor HSSP II programmes; ensuring that high-quality data is available and used in decision making and policy development; ensuring that MOHP has the managerial capacity and leadership to plan, coordinate and implement a well-functioning and Health Information System with adequate inputs (HR, ICT, and financing) to implement the system.

The MEHIS strategy represents the concerted efforts of all stakeholders, whose valued input has been incorporated in this document. Let me take this opportunity to thank all stakeholders for giving us so much food for thought during the process of drafting the strategy. I am sure that, with the continued support of all, the objectives we aspire to accomplish will in time translate into milestones of which we can be proud of - and which will be evident through real development of our health care system.

Honourable Atupele A. Muluzi, MP
MINISTER OF HEALTH AND POPULATION

ACKNOWLEDGMENTS

The Monitoring and Evaluation and Health Information Systems Strategy is a result of a fruitful process of internal and external consultations, drafting, and review involving Ministry of Health and Population (MoHP) departments and programs, development partners and other government ministries, departments, and institutions.

The ministry expresses its profound gratitude to all departments and programs who contributed technical inputs leading to the successful completion of this document, especially the efforts of the Central Monitoring and Evaluation Division (CMED) who, with overall guidance from the Department of Planning and Policy Development, ensured that the objectives of the strategy aligned to the priorities of the Malawi Health Sector Strategic Plan covering the 2017–2022 period.

We also would like to acknowledge and thank all development partners that provided funds and technical support towards this process. Specifically, we wish to thank the United States Agency for International Development (USAID) through the Health Policy Plus (HP+) project (www.healthpolicyplus.com) implemented by the Palladium Group; Bloomberg Philanthropies through the Bloomberg Data for Health Initiative (www.bloomberg.org) implemented by Vital Strategies; the Bill and Melinda Gates Foundation through the Kuunika Data Project and Cooper and Smith; GIZ through the Malawi German Health Programme; the Global Fund to Fight AIDS, Tuberculosis and Malaria and the Centers for Disease Control and Prevention through the Elizabeth Glazer Pediatric AIDS Foundation for spearheading the work of reviewing the previous strategy, identifying gaps, outlining new strategic objectives, facilitating discussions, and drafting the new strategy. Furthermore, we acknowledge support of the World Health Organization in guiding the alignment of the strategic components and outcomes to the Health Metrics Network framework, and the members of the Monitoring and Evaluation Technical Working Group and the Health Data Collaborative Group for providing technical inputs.

Finally, the ministry would like to acknowledge with gratitude, the support it receives from other partners and donors, too numerous to mention, who provide financial and technical support for the improvement of the health status of the people of Malawi.

Dr. Dan Namarika
SECRETARY FOR HEALTH AND POPULATION

ABBREVIATIONS

ANC	antenatal care
ART	anti-retroviral therapy
BHT	Baobab Health Trust
CMED	Central Monitoring and Evaluation Division
CPD	continuing professional development
CRVS	civil registration and vital statistics
DDPD	Department of Planning and Policy Development
DHAMIS	Department of HIV and AIDS Management Information System
DHIS2	District Health Information System 2
DHMT	district health management teams
DHPI	district health performance improvement
DHS	Demographic and Health Survey
DIP	district implementation plan
DQA	data quality assessment
eBRS	electronic birth registration system
eDRS	electronic death registration system
EHP	essential health package
EMR	electronic medical record
EP&D	economic planning and development
FP	family planning
GIS	geographic information systems
GoM	Government of Malawi
HDC	Health Data Collaborative
HEAT	health equity assessment tool
HIS	health information system
HMIS	health management information system
HSSP II	Health Sector Strategic Plan II
ICT	information and communication technology
IDSR	integrated disease and surveillance response
iHRIS	human resource information system
IL	interoperability layer
IMR	infant mortality rate
ITN	insecticide treated nets
JHU	Johns Hopkins University
LIMS	laboratory information management system
LMIC	low and middle-income countries
LMIS	logistics management information system
M&E	monitoring and evaluation
MCCOD	medical certification of death and cause of death
MDG	Millennium Development Goals
MDRTB	multi-drug resistant tuberculosis

MEHIS	monitoring, evaluation, and health information systems
MFR	master facility registry
MICS	Multiple Indicator Cluster Survey
MLGRD	Ministry of Local Government and Rural Development
MNO	mobile network operators
MoH	Ministry of Health
MoHP	Ministry of Health and Population
NCHS	National Community Health Strategy
NEP	National Evaluation Platform
NHI	National Health Indicators
NHP	National Health Policy
NSO	National Statistical Office
OPD	outpatient department
OpenHIE	Open Health Information Exchange
OR	operational research
ORS	oral rehydration salt
PAS	performance appraisal system
SAVVY	Sample Vital Registration with Verbal Autopsy
SDG	Sustainable Development Goals
SOP	standard operating procedures
SWOT	strengths, weaknesses, opportunities and threats
TNA	training needs assessment
TOR	terms of reference
TOT	training of trainer
TWG	technical working group
U5MR	under-5 mortality rate
UHC	universal health coverage
UN	United Nations
WAN	Wide Area Network
WASH	water, sanitation and hygiene
WHO	World Health Organization

1.0 EXECUTIVE SUMMARY

In July 2017, the Ministry of Health and Population (MoHP) published the Health Sector Strategic Plan II 2017–2022 (HSSP II). The HSSP II is the health sector's medium-term strategic plan, outlining objectives, strategies, and activities, and is intended to guide investments over the period 2017–2022. The HSSP II recognizes the Central Monitoring and Evaluation Division (CMED) within the MoHP as the primary stakeholder responsible for monitoring and evaluation (M&E). CMED is also the coordinating authority and steward of Malawi health data and information systems. To ensure alignment, continuity, and harmonization of M&E activities and information systems, CMED developed this unified Monitoring, Evaluation, and Health Information Systems (MEHIS) strategy, which will serve as both the M&E plan for the HSSP II and an action plan for strengthening HIS in Malawi. To achieve the two major objectives of the Strategy and the four stated outcomes, Malawi will need a total of **MWK 36,329,703,672** (**US$50,109,936**) between the 2017/2018 and 2021/2022 fiscal years. This translates to roughly **MWK 7.2 billion** (**US$10 million**) per year.

The development of the MEHIS strategy was a consultative process led by CMED. Both government and development partners provided input through various channels, including the M&E technical working group (TWG) and its subgroups. To ensure alignment with the HSSP II, the development process considered the key principles and objectives outlined in the HSSP II, existing policies, and international reporting commitments.

A situational analysis was conducted in 2017 to summarize achievements against the 2011–2016 HIS Strategic Plan objectives. The analysis compiled and collated evidence from recent assessments and operational research and defined key gaps and challenges that need to be addressed over the next five years. The following persistent challenges were identified:

- vertical/parallel reporting structures
- lack of HIS subsystem interoperability
- poor data quality
- intermittent supply of data collection and reporting tools
- over-reliance on (and too many) manual data collection tools
- lack of capacity and alignment of research activities
- inadequate human resources for MEHIS
- lack of coordination in MEHIS activity implementation
- inadequate use of data for decision making

This MEHIS strategy and detailed operational plan (Annex 3) have been carefully designed to focus on these challenges The vision is to maintain **a sustainable, integrated national health information system capable of generating and managing quality health information for supporting evidence-based decision making by all stakeholders at all levels of the health system**. The MEHIS strategy has two primary objectives:

OBJECTIVE 1. **To ensure that HSSP II is adequately monitored with high-quality data that are routinely reported, analyzed, and disseminated**

OBJECTIVE 2. **To strengthen the health sector's capacity to use data for decision making**

To effectively achieve **Objective 1**, the eight objectives of the HSSP II must be monitored with high-quality data that are routinely reported, analyzed, and disseminated. These data fall into three major categories: national (or core) health indicators, program-level indicators, and process/progress indicators (intermediate outputs). This strategy outlines the indicators currently available and plans for developing and monitoring those that are lacking in each of the three main channels.

To accomplish **Objective 2**, CMED has defined a set of four program outcomes, which should guide all current and future MEHIS activities undertaken in Malawi:

OUTCOME 1. Effective and well-functioning data sources are in place to monitor HSSP II programs
OUTCOME 2. High-quality data is available and used in decision making and policy development
OUTCOME 3. MOHP has the managerial capabilities and leadership to plan, coordinate, and implement a well-functioning HIS
OUTCOME 4. Adequate inputs are available to implement a robust HIS

A detailed list of activities, outputs, and timelines in line with the above outcomes are included in the operational work plan **(Annex 3).**

In terms of governance, the HSSP II outlines main roles and responsibilities to monitor the health sector. CMED are responsible for setting guidelines and indicators, collating and analyzing data, monitoring implementation and progress, and disseminating findings. In addition, CMED will work closely with other government departments and external partners to ensure that MEHIS activities are effectively coordinated and that the activities address the needs outlined in this strategy. The M&E TWG and its sub-TWGs are considered the main consultation forums between government and development partners. This strategy will be implemented under the key principles of national ownership and harmonization of effort towards a single country-led MEHIS.

The HSSP II implementation, performance and progress will be monitored quarterly through performance assessments of key programs, annually by joint annual reviews, and at mid- and end-term though an evaluation process. Based on the evidence gathered through these processes, overall progress and performance will be determined and corrective action taken on problems identified. The full results framework used to monitor the HSSP II implementation will be comprised of the national health indicators (NHIs) (**Annex 4**), program indicators, and process monitoring of the outputs included in the detailed operational work plan **(Annex 3).** Similarly, implementation of the MEHIS will be integrated in the HSSP II monitoring processes. In addition, the MEHIS results framework included in **Annex 1** will be used to track specific indicators.

Recognizing that challenges often arise, CMED has identified a list of potential risks to successful implementation and proposed potential mitigation strategies. In addition, the MoHP will work to improve tracking, coordination, and alignment of MEHIS activities through an enhanced resource tracking platform. Funders and implementers will be asked to provide data on MEHIS planned investments (through resource mapping) and actual expenditures (through expenditure analysis) at least annually.

2.0 INTRODUCTION

2.1 BACKGROUND

In July 2017 the Ministry of Health and Population (MoHP) published the Health Sector Strategic Plan II 2017–2022 (HSSP II), which is the health sector's medium-term strategic plan outlining objectives, strategies, and activities intended to guide investments over the period 2017–2022. The HSSP II aims to improve health outcomes through provision of a revised essential health package (EHP) and health systems strengthening for efficient delivery of the EHP. The goal of the HSSP II is to move towards universal health coverage (UHC) of quality, equitable, and affordable healthcare, with the aim of improving health status, financial risk protection, and client satisfaction.

HSSP II builds on the successes achieved under the previous plan (HSSP I), while addressing areas where targets were not met, or progress was slow. Understanding progress towards achieving HSSP II objectives requires a well-functioning health information system (HIS), including efficient data production, commonly understood definitions, high-quality data reporting, and clear policies and procedures to ensure alignment of inputs. Further, achieving the goals of the HSSP II will require enhanced use of data for decision making at all levels of the health system. Strengthening health worker access to data and capacity for monitoring and evaluation (M&E) will ensure programs are adaptively managed and resources are optimally used.

The HSSP II "highlights the need for M&E to take place at every stage so as to help the MoHP to continuously improve current and future programmed planning, implementation, and decision making." To operationalize this mandate, a detailed M&E plan is needed in alignment with the HSSP II. In addition, health data systems must be configured and managed to properly monitor sector priorities.

The MoHP's Central Monitoring and Evaluation Division (CMED) has the primary responsibility for monitoring and evaluation of the HSSP II. CMED is also the coordinating authority and steward of health data and information systems in Malawi. To ensure alignment, continuity, and harmonization of M&E activities and information systems, CMED developed this unified Monitoring and Evaluation and Health Information Systems (MEHIS) Strategy. This strategy will serve as both the M&E plan for the HSSP II and an action plan for strengthening HIS in Malawi, building on activities of the Health Information Systems (HIS) Strategic Plan 2011–2016.

This MEHIS Strategy accomplishes several goals. First, it builds on key existing policies and guidelines, while articulating the vision and outcomes for M&E and HIS through 2022. Second, it outlines a roadmap and activities necessary to monitor progress and performance of the HSSP II. Finally, it provides an operational work plan to strengthen data sources and the overall HIS in accordance with the Malawi National HIS Policy (2015). This operational work plan is a guide for all investments and activities related to MEHIS until 2022.

2.2 DEVELOPMENT OF MEHIS STRATEGY

The MEHIS Strategy was developed by CMED with extensive technical input and consultation from other departments and offices within MoHP, across the Government of Malawi (GoM), and external partners,

implementers, and stakeholders. The strategy is fully aligned with all relevant Malawian regulatory frameworks, policies, and guidelines; core international data standards and principles; and is consistent with MoHP's vision to improve use of high-quality data at all levels of the health system.

The specific vision, mission, objectives, and approach to developing the strategy are described below.

2.2.1 VISION

A sustainable, integrated national health information system capable of generating and managing quality health information for supporting evidence-based decision making by all stakeholders at all levels of the health system.

2.2.2 MISSION

To improve the availability and use of reliable, complete, timely, and consistent health and health-related information for monitoring and evaluation of health policies, plans and programs. The strategy also seeks to disseminate, advocate for, and facilitate the use of information in decision making.

2.2.3 OBJECTIVES

Two primary objectives are central to the development and execution of this strategy.

OBJECTIVE 1. To ensure that HSSP II is adequately monitored with high-quality data that are routinely reported, analyzed, and disseminated

OBJECTIVE 2. To strengthen the health sector's capacity to use data for decision making

2.2.4 APPROACH

The development of the MEHIS Strategy was aligned with the HSSP II 2017–2022. The process considered the key principles and objectives outlined in the HSSP II, existing policies, and international reporting commitments.

CMED led the drafting and coordination of the strategy. The approach was to define the key objectives and requirements, catalogue prior policies and frameworks that should guide development, complete the situation analysis (including use of all recent evidence), define primary outcomes, and detail key activities needed to achieve HSSP II objectives. This information was synthesized and shared with key stakeholders for feedback. Valuable inputs were provided by several stakeholders, including the Malawi Health Data Collaborative working group, a sub-group of the M&E Technical Working Group (TWG). These inputs informed the final version of the strategy and supporting materials.

2.2.5 GUIDING POLICIES AND PRINCIPLES

The MEHIS Strategy was developed in line with key policies, guidelines, and standards, both within Malawi and internationally. These resources provided context for the vision, mission, goals, and objectives for the MEHIS Strategy.

At a national level, the following documents were taken into consideration: the **Malawi Growth and Development Strategy III**, which sets the vision for government services in the next five years; the national **Master M&E Plan** developed by the Department for Economic Planning and Development (EP&D) which provides guidance to departments and line ministries on how to monitor progress towards the **Malawi Growth and Development Strategy**; the **National Statistics Act** which mandates the National Statistical Office (NSO) to coordinate and monitor statistical activities in all government ministries and departments in the collection, compilation, analysis, publication, and dissemination of statistical information, including statistics derived from the activities of any ministry or department; and the **National ICT Policy** which aims to provide direction on how Malawi will turn the ICT potential into benefits for its people and putting in place appropriate institutional, regulatory, and legal frameworks to effectively support successful deployment and use of ICT in all sectors of the economy.

Within the health sector, the MEHIS Strategy has taken into consideration the following documents: the previous **Health Information Systems (HIS) Strategic Plan 2011–2016** provided the foundation for the current strategy; the **Malawi National Health Policy 2017 (Draft)**, which presents a framework that articulates the development of health services in Malawi to achieve UHC and the alignment of stakeholders towards achievement of a well-functioning health system; the **National Health Information Systems Policy 2015,** which aims to generate quality information (accurate, complete, timely, relevant, and reliable) and make it accessible to all intended users through standardized and harmonized tools across all programs; the **National Health Indicators (NHIs) Handbook,** which forms core health metrics used to monitor outcomes and impact of the HSSP II; the **National Health Research Agenda**, which is aimed at guiding researchers, policymakers, program implementers, academic institutions, health development partners, and other stakeholders on health research priorities for Malawi; and the **National Community Health Strategy (NCHS) 2017–2022** which defines a new community health system for Malawi, including the package of essential health care services to be delivered at the community level by community health workers. The **Health Sector Strategic Plan II 2017–2022** is the key document that has guided the development of the MEHIS Strategy. The HSSP II provides a vision for the delivery of health services in Malawi for the next five years.

From the global perspective, the development of the MEHIS Strategy has taken into consideration the following international standards: the **Sustainable Development Goals (SDGs)** targeted at eradication of extreme poverty, providing universal primary education, gender equality and promoting health, among others; the **World Health Organization 5-Point Call to Action for Measurement and Accountability in Health,** which outlines a shared strategic approach and priority actions and targets that countries and development partners can use to put effective health monitoring plans in place to strengthen health information systems; and the **Open Health Information Exchange (OpenHIE)**, a global, mission-driven community of practice aimed at improving the health of the underserved through open and collaborative ICT development, standards, and practices; the **Principles for Digital Development** which are nine living guidelines designed to integrate best practices into technology-enabled programs.

Based on these key policies and standards, a set of guiding principles were derived to provide a foundation for implementation of the MEHIS Strategy. The principles underpin fundamental values that will guide decision making and coordination over the life of the strategy. These guiding principles are as follows:

- **National ownership and leadership:** The MEHIS Strategy is a national health sector document with the MoHP leading implementation. The roles of each key stakeholder are highlighted in Section 5. All partners in the health sector shall respect national ownership, and government leadership will remain central in guiding implementation of the MEHIS Strategy.
- **Harmonization of effort towards a single country-led MEHIS**: All stakeholders shall implement M&E and HIS activities guided by this strategy cognizant that effort should be towards strengthening a national system rather than parallel systems, while creating room for innovation.
- **Efficiency and effectiveness**: All resources available are expected to be used to maximize effectiveness and efficiency. This means that any new investments and effort should focus on strengthening existing systems, starting with the national MEHIS platform.
- **Human rights-based approach and equity:** MEHIS shall be integrated in the health sector without discrimination on the basis of ethnicity, gender, disability, religion, political belief, economic and social condition or geographical location of the target population or health service delivery unit; priority beneficiaries will be vulnerable members of society.
- **Privacy and confidentiality:** MEHIS are meant to collect diverse amounts of data, some of which describe details of individual beneficiaries. The implementation of any system in support of the MEHIS Strategy shall ensure that the privacy of beneficiaries is respected and observed.
- **Sustainability:** Implementation of this strategy is expected to complement and support the delivery of health services. Stakeholders shall ensure that effort towards updating or introducing MEHIS reflect the tenet of sustainability. Project-specific MEHIS activities shall be designed without affecting the performance and sustainability of the national MEHIS.

3.0 MALAWI MEHIS SITUATIONAL ANALYSIS

Malawi has made great strides in the last five years to improve and integrate HIS. The Ministry of Health (MoH) took inventory of existing information systems in 1999, and in early 2000 endorsed a strategy to establish an integrated and comprehensive routine health management information system. This led to the development and implementation of a routine data collection and reporting platform—Health Management Information System (HMIS)—owned by and rooted in the GoM system. Additionally, the Malawi HIS has reinforced governance processes through development and implementation of key strategic documents including the HIS Policy (2015), HIS Strategy (2011–2016), eHealth Strategy, and a draft handbook of national health indicators (NHI). Further, the HIS decision process has been strengthened by reconvening the M&E TWG and its subgroups, including the Malawi Health Data Collaborative, the National Data Standards sub-TWG, the mHealth sub-TWG and the Equity and Access sub-TWG.

3.1 PROGRESS AGAINST THE 2011–2016 HIS STRATEGY

While reflecting on the current situation, this strategy continues necessary activities that were set forth in the previous strategy, strengthening and expanding on activities that were achieved in the 2011–2016 period and targeting areas that have yet to be fully realized. The Health Information Systems (HIS) Strategic Plan 2011–2016 had 10 objectives, focusing on the legal framework for the development of HIS, resource mobilization, improvement of data use, development of ICT infrastructure, HR capacity, improving data quality, governance, and vital statistics. These objectives and key achievements are summarized in **Table 1** below.

Table 1 HIS Strategy 2011-2016 Achievements

2011-2016 HIS STRATEGY OBJECTIVE	ACHIEVEMENTS
OBJECTIVE 1: **To create the necessary and enabling legal, policy, and regulatory framework for HIS**	• National HIS Policy developed, approved, disseminated, and in use • Malawi eHealth Strategy (2011–2016) • Drafted key HIS SOPs
OBJECTIVE 2: **To mobilize and increase resources for a financially sustainable HIS**	• Increased partner resource commitment towards HIS from 2015 (Global Fund, GAVI, USAID, CDC, UNICEF, UNFAP, Norway, DFID, Bill and Melinda Gates Kuunika Project, GIZ, UN Agencies
OBJECTIVE 3: **To develop the necessary ICT infrastructure and to promote adoption and use of ICT in health**	• DHIS2 adopted by MoH and rolled out to all districts • Electronic medical record (EMR) systems for outpatient department (OPD) and antiretroviral therapy (ART) rolled out to over 120 high-volume health facilities • mHealth solutions (C-Stock, Chipatala cha pa foni)

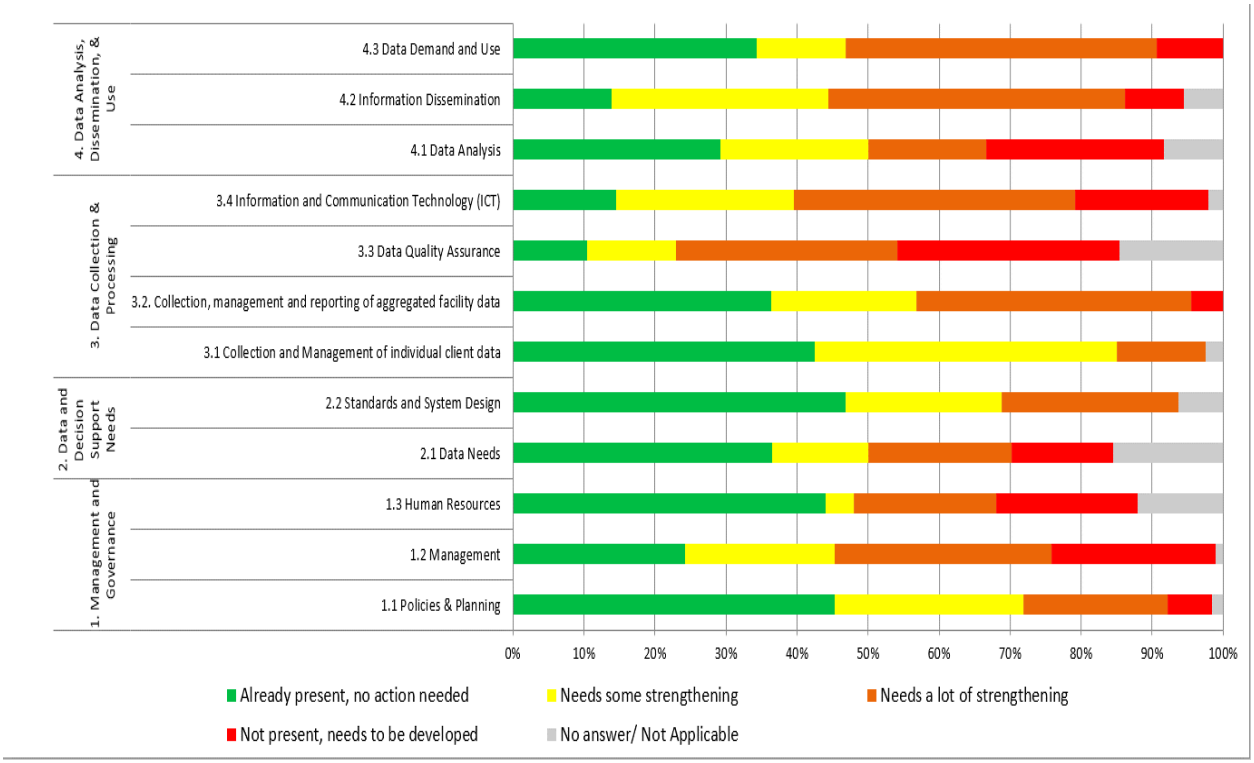
sector	• Laboratory management information systems (LMIS) rolled out • Integrated human resources system (HRIMS) and logistics information management systems (LIMS) in place		
OBJECTIVE 4: **To strengthen monitoring and evaluation within the health sector**	• Periodic program data reviews conducted at district, zonal, and national levels • NHIs developed • Monitoring Framework for HSSP II developed	Program-specific surveys implemented and disseminated: • Service Provision Assessment • Malaria Indicator Survey • MDG end-line survey	Revision of facility-level registers: • OPD • Maternity • Antenatal care (ANC) • In-patient • Family planning • Under 2
OBJECTIVE 5: **To enhance capacity and skills of HIS staff at all levels**	• Placement of ICT staff in district and central hospitals by e-government • All current HMIS officers trained on district health information		
OBJECTIVE 6: **To design and implement an integrated national HIS which includes health sector data from all sources**	• DHIS 2 adopted as National HMIS platform • DHIS 2 reconfigured and updated with servers housed in MoH • Assessment on systems sub-systems interoperability conducted		
OBJECTIVE 7: **To improve availability, quality, management and analysis of data and information at the national and district levels**	• DHIS 2 rolled out to all districts • Standard data quality assessment (DQA) customized and adopted by MoH • Comprehensive DQA conducted		
OBJECTIVE 8: **To promote and improve the dissemination of information and its use for decision-making by stakeholders in the health sector**	• Quantity and availability of data has improved • 2 annual HMIS bulletins developed and disseminated in 2015 and 2016 • Health sector data and program reports developed and disseminated during national zonal reviews • HIS Data has also been used during district DIP development and quarterly reviews		
OBJECTIVE 9: **To strengthen governance,**	• Convening and strengthening of key coordination mechanisms: • M&E TWG		

partnership, collaboration and stakeholder participation at the national level	○ Health Data Collaborative sub-TGW ○ National Health Data Standards sub-TWG ○ mHealth sub-TWG ○ Access and Equity sub-TWG
OBJECTIVE 10: **To support the implementation of a national civil registration system and utilization of resulting vital statistics**	• Launch of compulsory birth registration in all facilities nationally • First cadres of 305 medical certifiers of death and causes of death and ICD coders trained (completed 2017)

3.2 GAPS AND CHALLENGES

Despite significant strides, key challenges persist. In 2016, the MoHP conducted a participatory assessment of the HIS in Malawi. The results (**Figure. 1**) show that all of the elements of the HIS were below 50 percent. The situation therefore required urgent and comprehensive strengthening efforts.

Figure 1 Participatory Assessment of HIS Malawi in 2016



The MEHIS Strategy seeks to tangibly address these challenges in the next five years and position Malawi as a center of excellence and leader for MEHIS in the region.

3.2.1. INADEQUATE MEHIS HUMAN RESOURCES

A significant gap in MEHIS is understaffing at national and subnational levels. At the national level, CMED has only nine established positions, and these do not necessarily reflect the required skills for managing a complex M&E system (e.g., ICT and epidemiology). Further, at this time, many of the positions remain vacant and are filled by long-term technical assistants embedded in CMED. A report assessing current gaps and barriers impeding achievement of a unified platform[1] highlighted that CMED's current staffing footprint comprises mostly of statisticians.

Additionally, there are high vacancy rates for statistical clerks at lower levels. Newly appointed HMIS staff at the district level (including clerks) lack basic training, supervision, and mentorship on data management, despite various training efforts. For example, the recent NEP/JHU DQA found that only 58 percent of staff members in health centers had received HMIS-related training (**Table 2**).

Table 2. Key Findings for Systems Assessment

Functional Area	Indicator	No. (%)	No. (%)	No. (%)
Staff responsibilities	Staff members have received training for HMIS-related functions	52 (58)	13 (81)	15 (94)
Indicator definitions	Written definitions for all 4 indicators of interest (ANC, FP, HTC, ARI) available in facility or DHO	39 (43)	12 (75)	9 (56)
Reporting guidelines	Reporting guidelines available at facility that describe what should be reported, how reports are to be submitted, to whom, and when	90 (34)	8 (50)	6 (38)
Data use	Regularly use data to calculate indicators	48 (53)	12 (75)	12 (75)
Registers and reporting forms	No stock-outs of any registers or reporting forms during the past 12 months	23 (26)	6 (38)	-
Registers and reporting forms	Sufficient copies of data collection tools available in the DHO to meet the needs of all health facilities in the district	-	-	7 (44)
Display of routine data	One or more information displays present at time of assessment[a]	83 (92)	15 (94)	13 (81)
Internal data quality checks	Consistency checks of collected data routinely conducted	37 (41)	7 (44)	7 (44)
Supervision	Regular supervisory visits from district	47 (52)	10 (63)	4 (25)
Computerized registers	Facility uses computerized registers	9 (10)	15 (94)	-

Abbreviations: ANC, antenatal care; ARI, acute respiratory infection; DHO, district health office; FP, family planning; HMIS, health management information system, HTC, HIV testing and counseling.
[a] Evaluated the following displays: maternal health, child health, facility utilization, disease surveillance, map of catchment area, summary of demographic data.

3.2.2 OVER-RELIANCE ON AND TOO MANY MANUAL DATA COLLECTION TOOLS

MoHP registers and other data collection tools are both paper-based and electronic. Paper-based data collection accounts for over 90 percent of data collection efforts. The overreliance on manual processes

[1] Achieving a Unified System for Monitoring and Evaluation of the Health Sector in Malawi (2015)

for data management makes it difficult to record, extract, share, and use data. Inadequate HMIS personnel at the facility level makes this problem worse.

A recent study identified 64 unique, paper data collection tools across 16 health facilities. The study also found that only two of these tools were found in all facilities, and 15 were found in half of the sites.

Continued reliance on paper systems is inefficient. Paper tools must be printed, delivered to all health facilities, and the results must be captured on paper reports and delivered to district offices. However, transitioning to electronic platforms requires substantial, catalytic investments in ICT infrastructure, most notably stable power sources and connectivity. Typically, these investments are not possible in health budgets, limiting the adoption of electronic platforms.

3.2.3 Intermittent Supply of Data Collection and Reporting Tools

The main tools for collecting routine HMIS data are paper registers. The ministry has more than 25 different registers, most of which are needed in all health facilities. Further, the ministry is responsible for printing and distributing these registers to all public facilities. However, it has been unable to ensure continuous availability of registers to all facilities, with periods of acute shortage, at times leaving facilities without the key registers needed to collect primary source data.

3.2.4 Lack of Coordination in MEHIS Activity Implementation

Misaligned efforts for key M&E activities result in inefficient use of resources and duplication. A key challenge has been the lack of harmonization of data sources, such as surveys, used to monitor implementation of the HSSP I. For example, the DHS and the MDG Endline Survey cover much of the same information and could have been timed to provide key inputs to the evaluation of the HSSPs at the middle and end of the five-year period. However, due to lack of coordination, the surveys occurred within a year of each other, missing this opportunity. Further, due to differences in methods and implementation, results sometimes differ, leading to limitations on comparability or trend analysis.

Supervision and performance reviews are vital for an M&E system. Supportive supervision entails supervising and providing feedback to staff to improve both M&E and service delivery processes. Performance reviews allow teams to reflect on their progress as evidenced through data. Both provide opportunities to identify weaknesses in the delivery of services. While at the national level, health sector reviews are harmonized, at district and zonal levels this is not the case. Multiple teams have been separately organizing supportive supervision and performance reviews, sometimes within a short period of each other. This has resulted in teams at subnational levels spending most of their productive time responding to these activities instead of other equally important operational needs. Though guidelines exist, their implementation has been weak.

3.2.5 Vertical and Parallel Reporting Structures

Despite recent efforts to harmonize systems, the major weakness of the Malawi HIS is the existence of vertical/parallel reporting systems. Supported by development partners, the systems concentrate HIS resources in individual programs, weakening the national HMIS. While effective, they each rely on

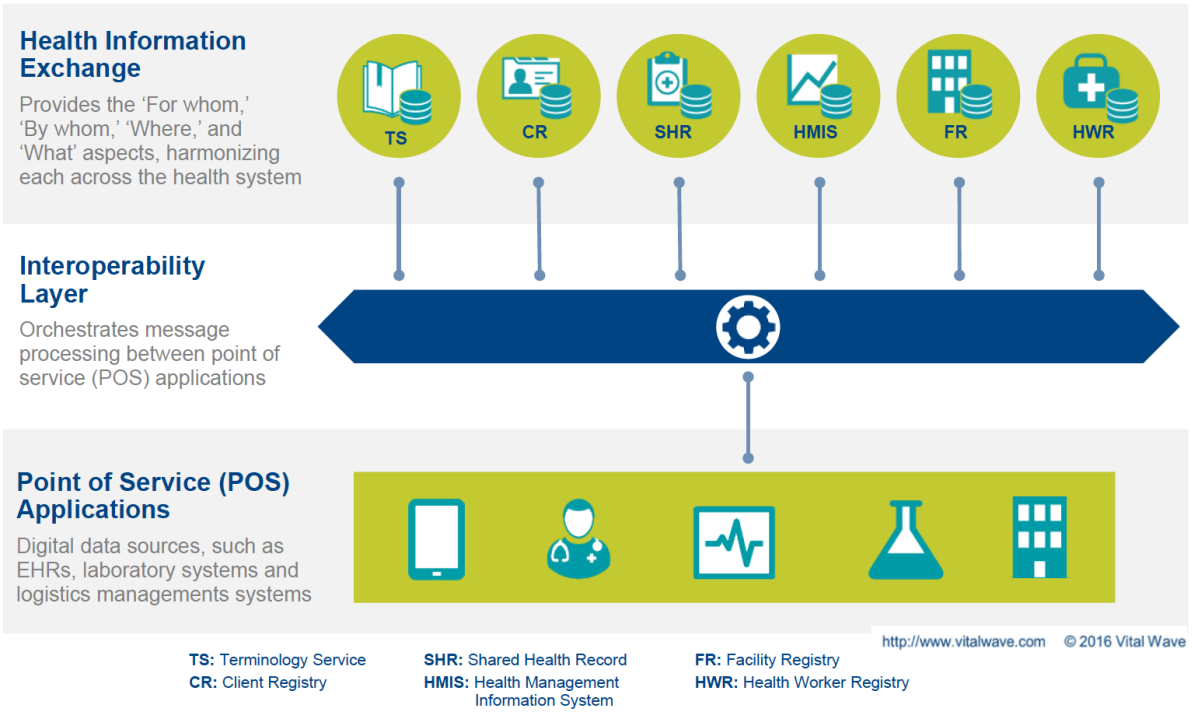
substantial financial investment and make it difficult to achieve economies of scale. Duplication of data collection efforts at all levels and difficulties sharing data across systems are common.

3.2.6 Lack of Interoperability of HIS Subsystems

The benefits that can be generated from the health information system is limited by lack of interoperability and/or data exchange between the multiple electronic subsystems and the national central repository for aggregate data, DHIS2.

In addition, Malawi lacks the core components of an interoperability layer necessary for data to be accurately linked and analyzed across systems (**Figure 2**). These include a facility registry, client registry (for shared health record), and terminology service. Though progress has been made, these core components must be developed and maintained before interoperability and efficient data exchange are possible.

Figure 2 Open HIE Elements and Interoperability Layer



3.2.7 Poor Data Quality

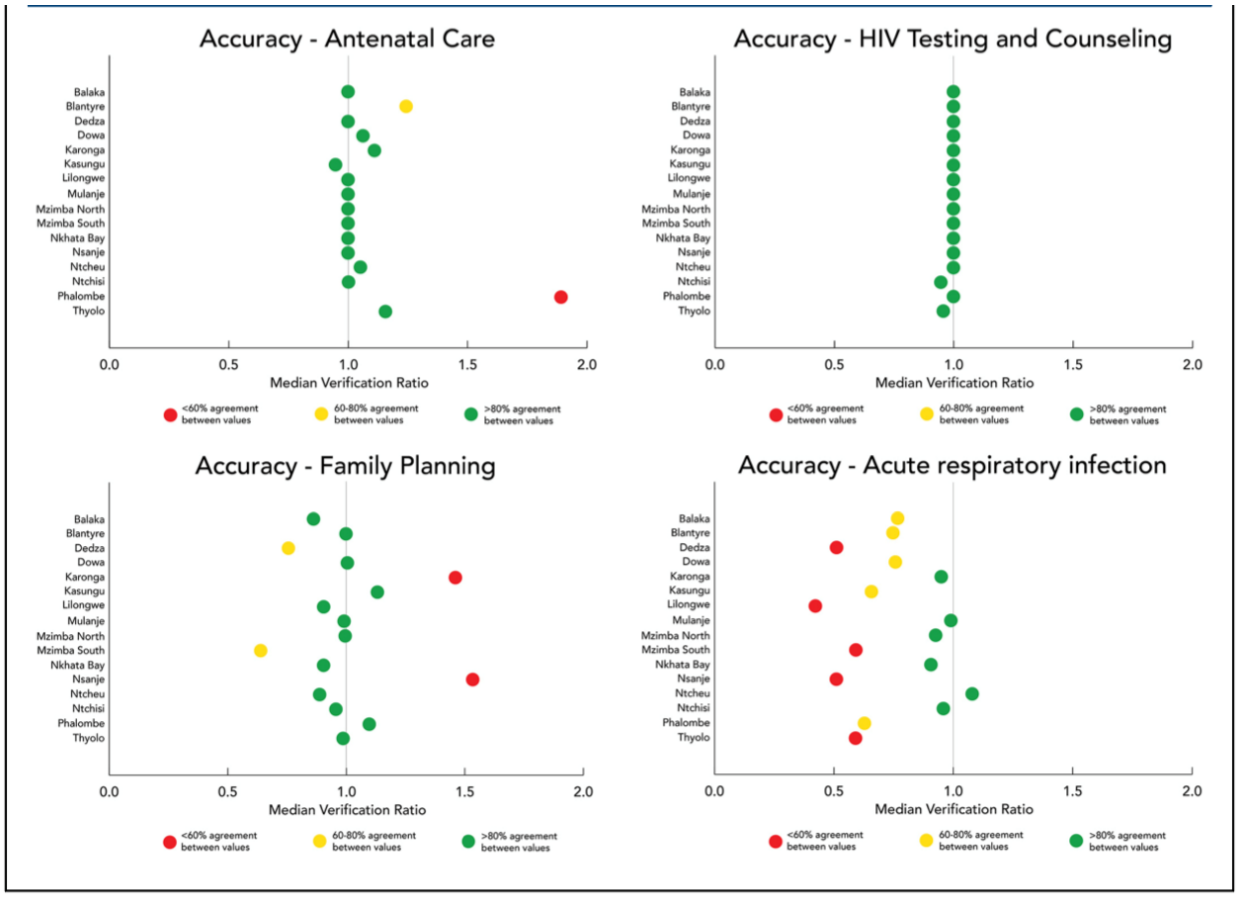
Poor data quality is another weakness of the Malawi HIS architecture, particularly within the HMIS. On average, the reporting rate of most programs is below 80 percent, and reporting by deadline is below 65 percent. These low rates are due to cumbersome manual systems and gaps in availability and general use of data collection and reporting tools.

In addition, the accuracy of reported data is also a challenge; data quality assessments show discrepancies between data in registries, reporting forms, and DHIS2. For example, a recent DQA conducted by the National Evaluation Platform (NEP) and Johns Hopkins University (JHU) across 106 health facilities in 16

districts showed that data agreement between source documents (registers and reports) and the HMIS were highly variable. Substantial differences in accuracy exist across health programs, as well as within facilities and districts (**Figure 3**). While inadequate understanding of indicators/data elements by data collection staff has been highlighted in almost all DQAs, follow-up training or mentorship to correct the situation has been limited.

Further, external partner support for strengthening HMIS and a recent supervision visit were found to be associated with better completeness of data.

Figure 3 Data Accuracy Verification Rations for Antenatal Care, HIV Testing and Counseling, Family Planning, and Acute Respiratory Infection by District, Malawi, 2016



3.2.8 Inadequate Use of Data for Decision-making

A key weakness is that data collected is often not used as part of decision-making and planning. This is due to multiple factors, including a lack of regular information products or other documents that make data readily available, limited systems to make incorporating data into decision-making easy, and finally, a lack of trust in the data available.

The Global Fund report on unifying M&E systems in Malawi[2] found that principle barriers to data use included a lack of actionable data at point of service, a lack of data analysis and interpretation skills, disjointed planning processes with asymmetrical access to data, and perceived data quality. Achieving measurable gains in data use for decision-making will require innovative interventions that are linked to incentives and performance.

3.2.9 Lack of Data to Monitor MEHIS Investments

Currently, Malawi lacks routine data to monitor and evaluate effectiveness and efficiency in allocation of resources. Achieving optimization and increases in efficiency require the ability to link actual resource use to desired program outputs and health outcomes. Budgets are not an accurate proxy; empirical data on program expenditures are required. Though some resource tracking-related activities have been implemented in Malawi (e.g., resource mapping, National AIDS Spending Assessment, National Health Accounts), there is no platform, mechanism, or process to routinely collect expenditure data from all funders and implementers, link it to outputs in a meaningful way, and use results to make allocation decisions and build fully evidenced-based budgets.

Additionally, routine processes to monitor investments—such as the resource mapping exercise—do not capture data on MEHIS in sufficient detail to better align partners and funding streams to key gaps and priorities.

[2] Achieving a Unified System for Monitoring and Evaluation of the Health Sector in Malawi (2015)

3.3 Strengths, Weaknesses, Opportunities, and Threats

As part of situation analysis, CMED undertook a strengths, weaknesses, opportunities and threats (SWOT) analysis to highlight areas for continued strengthening and needed attention. The results of this analysis are summarized in **Table 3**.

Table 3 MEHIS Strengths, Weaknesses, Opportunities, and Threats

INTERNAL FACTORS	
Strengths	**Weaknesses**
• Routine system for HIS data collection and reporting already established • Adoption of DHIS2 as the main country platform for reporting • Availability of basic documents including the HIS Policy, HIS Strategy, eHealth Strategy and updated indicator handbook • Availability of governance structures including TWGs and sub-TWGs • Commitment by MoH leadership to ensure support towards HIS/M&E goals	• Deficit in human resources (quality and quantity) especially at district and facility levels • High HIS staff turnover at all levels • Poor data quality and inadequate evidence-based decision making • Inadequate Government budgetary support towards M&E • Inadequate documentation and effective use of existing procedures (e.g. SOPs) and system components (e.g. HMIS register content and coverage) • Some subsystems not able to provide required data in appropriate formats • Vertical programmes continue to promote parallel reporting systems • HIS relies to a great extent on manual data collection and reporting processes • Lack of interoperability between electronic systems • Research activities undertaken in the country are commissioned, conducted and funded externally and do not align with national health priorities included in the HSSP • Existing systems not fully developed and operationalized to enable the regular use of HMIS, research, and survey data • Challenges in data reporting completeness and quality, limiting users' utilization of HIS data • Lack of tracking or coordination of HIS-related trainings
EXTERNAL FACTORS	
Opportunities	**Threats**
• Willingness by local and international partners to support HIS • Numerous active local HIS organizations • Availability of modern global standards to support structured strengthening of national health information systems • Support from global development partners to harmonize parallel M&E data systems into the national HIS • Support from Global Health Data Collaborative	• Strong dependence on development partners' funding for HIS/M&E • Insufficient investment in HIS strengthening, due to underestimation of the value of the current system • Introduction of parallel systems which divert human and financial resources and reduce quality of data in central repository

4.0 MEHIS STRATEGY 2017–2022

Based on the situation analysis and priorities outlined in the HSSP II, the MoHP has developed a comprehensive MEHIS Strategy for the next five years (GOM fiscal years 2017/2018–2021/2022). The strategy includes a clear vision, a roadmap to monitor the HSSP II, and primary outcomes and sub-strategies that should guide all investments and activities in MEHIS.

4.1 OBJECTIVE 1: PROVIDE A ROADMAP TO EFFECTIVELY MONITOR AND EVALUATE HSSPII IMPLEMENTATION

The MoHP has defined two outcomes for this objective. A detailed list of activities, outputs, and timelines can be found in the operational work plan (**Annex 3**).

4.1.1 OUTCOME 1.1: ADEQUATE FUNCTIONALITY OF DATA SOURCES TO EFFECTIVELY MONITOR AND EVALUATE HSSP II

The MoHP will strengthen the HMIS as the central data repository by expanding the functionality of DHIS2 to include more features, such as the geographic information systems (GIS) and the DHIS2 patient tracker, to include health-related data such as climate change; water, sanitation, and hygiene (WASH); education; road traffic accidents; mobile network operators (MNOs); and civil registration and vital statistic (CRVS), among others. Further, MoHP will increase data access by extending DHIS2 to all central hospitals and high-burden health facilities and offering a mobile version of HMIS to lower volume facilities.

CMED will conduct an analysis of current HIS data elements (across systems and paper tools) to determine potential data duplication, overlap, documentation gaps, and congruence of operational definitions and guidelines. This analysis will assist MoHP to improve the efficiency and reduce burden of data production by rationalizing data collection tools (e.g., patient registers), streamlining facility and district reporting requirements, enforcing policies and standards for MEHIS harmonization, and approving all new data collection activities.

HMIS data elements will also be analyzed in detail and elements standardized in accordance with a set of approved terminology and disaggregates. This standardization will enable cross-program and cross-platform analysis of data and enhance reporting options and visualization capabilities. Programs are expected to work with CMED to harmonize elements according to set standards.

The MoHP will facilitate interoperability of HIS subsystems through the establishment of an interoperability layer (IL). The IL will provide the technical mechanism to allow data to be linked and shared across all relevant systems via the HMIS. Systems to be linked include (but are not limited to) the CRVS data system, LMIS, LIMS, the Baobab Health Trust (BHT) EMRs, the Department of HIV and AIDS Management Information System (DHAMIS), and the Integrated Disease and Surveillance Response (IDSR) System. The MoHP and partners will complete development and implementation of the essential building blocks of the IL, including the master facility registry (MFR), the client registry (for unique health IDs), and the terminology service.
The MoHP and partners will strengthen facility health information systems by defining standards for EMRs and substantially expanding the electronic management of patient data.

Finally, the MoHP will work with the NSO and other departments to strengthen the implementation of key health-related surveys by aligning the national census, survey content, and periodicity (DHS, Integrated House Hold Survey, Multiple Indicator Cluster Survey (MICS), SAVVY) with National health and program indicators.

4.1.2 Outcome 1.2: High-Quality Data Is Available and Used in Decision-Making, Policy Development, and for Monitoring and Evaluation of Programs at All Levels of the MoHP

In accordance with plans described in **Section 4.1.3**, CMED will strengthen process monitoring of HSSP II through analysis of implementation progress of annual work plans and continue support to finalize program-level indicators. The full set of indicators – NHI and program-level indicators – will be finalized and disseminated. MoHP will establish and train M&E focal persons in each MoHP department to effectively monitor and report on these indicators. In addition, CMED will revise the format for the annual work plans, based on HSSP II activities, and strengthen performance reporting tools and processes to ensure progress is routinely tracked and reported to senior management.

To improve the MoHP's ability to measure investment coordination, financial accountability, and program efficiency, the Department of Planning and Policy Development (DDPD) will develop and institutionalize an enhanced resource-monitoring platform. This new platform will ensure resource mapping and the National Health Accounts are completed in a timely manner and introduce an expenditure analysis module for tracking empirical cost data. These systems will be aligned and harmonized to reduce reporting burden and will comprehensively capture both GoM and external partner resources. Funders and implementers are expected to provide data routinely and in a standard format to expedite use of these data for planning and coordination.

The MoHP will also improve social accountability of health systems through implementation of community scorecards and by building the capacity of health facility advisory committees to monitor and verify key aspects of service delivery, particularly provision of drugs and commodities.

To improve the quality of health data at all levels, CMED will develop an SOP for data quality assurance, including a standard approach to data validation and quality review. The MOHP will ensure that comprehensive biennial and quarterly data quality reviews are conducted with program and partner staff. The ministry will also conduct quarterly data analysis and regular supervision/mentorship visits to ensure adherence to relevant SOPs.

The MOHP will work diligently to increase use of data for analysis and decision-making in several ways. First, district use of data will be promoted through the rollout of the District Health Performance Improvement (DHPI) tool, participation in national and district-level health sector reviews, support to HMIS officers to conduct semiannual facility-data reviews, creation of key district-level electronic dashboards, and the production of district-level HMIS bulletins.

Second, facility use of data will be promoted through monthly facility-data review meetings, dissemination of facility information products (up-to-date charts, graphics, etc.), support for original analysis and use of innovative, paper-based decision-support tools, and facilitating increased operational research and adaptive management. Ultimately, MOHP will transition from paper-based to

electronic systems at the point of care to leverage the power of ICT in the generation of real-time decision support data in the form of alerts and reminders.

Third, the MoHP will develop best practice guidelines for use of data in regular review meetings, and support HMIS officers to package information to be discussed in most program and management meetings. Fourth, the MoHP will ensure that analysis at all levels includes health equity UHC by training CMED officials on the Health Equity Assessment Tool (HEAT), integrating health equity analysis in annual HMIS bulletins and reports, and including age- and sex-disaggregated analysis into all data products (where possible).

Fifth, the capacity of actors at all levels of the health system will be built to use and interpret data. To ensure training is targeted to need, a detailed training needs assessment (TNA) will be completed. Continuing professional development (CPD) workshops will be conducted for staff at national and zonal levels, while more tailored workshops and mentoring will be rolled out to districts and facilities. MoHP will coordinate partner support for capacity development to ensure gaps are filled across districts and skills.

Finally, dissemination of information, products, and resources will be institutionalized, internally and externally, to enhance exposure to MoHP data and tools. This will be accomplished by estimating and collating information needs across GoM and partners and developing dissemination plans, publishing a web portal for data and information access, linking HMIS with the MoHP website, and leveraging an annual forum for disseminating health research throughout the sector.

4.1.3 HSSP II MONITORING CHANNELS

During the HSSP II implementation, performance and progress will be monitored quarterly through performance assessments, annually by conducting a joint annual review, and at mid- and end-term. Based on the evidence gathered through M&E processes, reviews will be used to assess overall progress and performance, identify problems, and take corrective actions. Results of the reviews should inform prioritization, resource allocation, and policy dialogue. **Table 4**, included in the HSSP II, summarizes the outputs, focus, and level of monitoring and review.

Table 4 Performance review methods

Methodology	Frequency	Output	Focus	Level of Monitoring and Review
Performance Assessment	Quarterly	Quarterly progress reports made available to stakeholders and senior management	To involve a review of progress against targets and planned activities. To be done through the HIS/M&E TWG and the Sector Wide TWG	Inputs, process, output and outcome (indicator trends in coverage) levels
Joint Annual Review and Planning	Semi-annual, Annual	Annual/semi-annual progress reports submitted to key stakeholders through the MoH Senior Management. To include league tables focused at various levels of reporting.	To involve a review of progress against targets and outcomes. To be done through the HIS/M&E TWG and the Sector Wide TWG	Input, process, output, and outcome levels
Mid Term Review	Midway through HSSP II implementation	Mid-term analysis report	Done through sector review process against target impact guided by HIS/M&E TWG and the Sector Wide TWG.	Input, process, output, outcome and impact levels
End Term Review	At end of HSSP II	End term analysis report	Independent review of progress, against planned impact.	Input, output, outcome and impact levels.

The Department of Planning and Policy Development leads the review and evaluation process. Stakeholders, including policymakers, program managers and planners, civil society, and development partners will be engaged in the process to ensure transparency and increased accountability. Measures of progress and methods of measurement will be documented and the results made available for public review.

The MoHP, under the coordination of the CMED, will ensure that specific programmatic reviews (i.e., reviews of disease-specific programs) are not conducted as parallel activities but integrated into the monitoring, evaluation, and review cycle. Other monitoring processes, such as the Performance Appraisal System (PAS) and the annual performance contracts will be also integral to the performance assessments and the Joint Annual Health Reviews. Accomplishing this integration will mean indicators will be established for the next fiscal year immediately after budgets have been approved, allowing departments to set realistic targets.

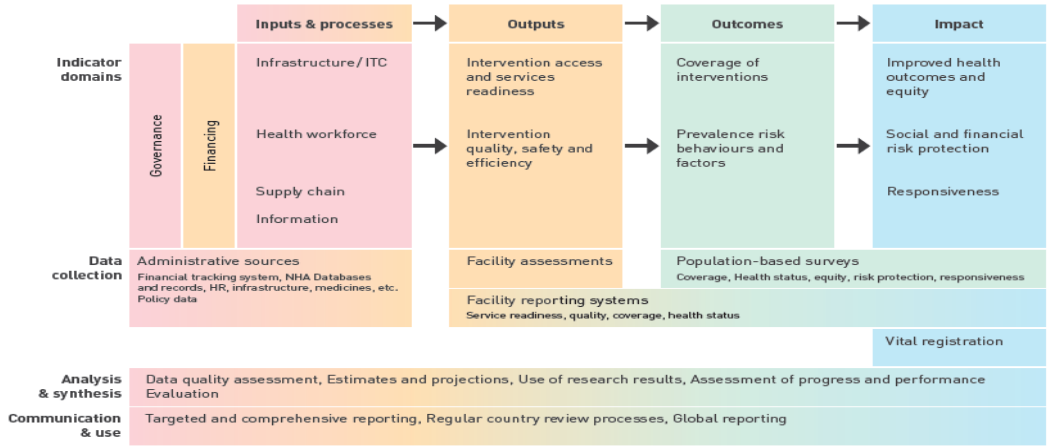
Effectively monitoring the eight objectives of the HSSP II, and the health sector more broadly, requires a set of high-quality data that are routinely reported, analyzed, and disseminated. These data fall into three major categories: national (core) health indicators, program-level indicators, and process monitoring through analysis of implementation progress of annual work plans. Some of these indicators are final, while others (program level indicators) have not been finalized. This strategy outlines the indicators currently available and plans for developing and monitoring those that are lacking in each of the three main channels.

4.1.3.1 MONITORING CHANNEL 1: NATIONAL HEALTH INDICATORS

The HSSP II includes an M&E framework for the health sector with a range of indicators, sources of information, baselines, targets, periodicity of reporting, disaggregation, level of reporting (facility, district, national), responsibility of data collection, and alignment of indicators with international standards and commitments. The HSSP II M&E framework is based on the steps of the International Health Partnership (IHP) Common M&E Logical Framework[3] (**Figure 4**). This framework illustrates how inputs into the health system and processes may be reflected in outputs and eventual outcomes, such as increased intervention coverage and impact. The indicators included in the HSSP II M&E framework are purposely slanted toward the outcomes and impact side of the results chain. The full set of national indicators are included in **Annex 4,** and the indicator reference sheet that is completed for all national- and program-level indicators is presented in **Annex 5**

CMED led the effort to develop the Malawi national health indicators. The process started with 195 indicators from the 2003 NHI list, which was progressively reduced and strengthened based on a participatory dialogue with health programs, partners, and other stakeholders. The national health indicators were also developed, accounting for programmatic preferences and national and global reporting requirements to ensure alignment with other reporting obligations, and included metrics to track newly emerging health problems, and multisectoral issues. The indicators developed were compared against and aligned to the list of core indicators in the HSSP I, the Malawi Handbook of Health Indicators (2003), the World Health Organization (WHO) list of 100 global health indicators, the SDG list of health indicators, and numerous other technical guides and references. This resulted in a list of core health indicators to monitor the HSSP II, which will focus efforts and will facilitate the analysis and dissemination of progress of the country's health priorities.

Figure 4 International Health Partnership Plus (IHP+) common M&E logical framework



Many of the key data sources needed to monitor progress toward the HSSP II are in place or are planned. Surveys such as the Demographic and Health Survey, the Service Provision Assessment and the Malaria

[3] Strategizing national health in the 21st century: a handbook. Geneva: World Health Organization; 2016.

Indicator Survey were conducted within the last five-year period and will serve as baseline indicators for the National Health Indicators. The routine data systems, despite their limitations, also provided data that could be used to monitor progress.

4.1.3.2 MONITORING CHANNEL 2: PROGRAM-LEVEL INDICATORS

CMED has been actively engaging with MoHP program and departments to update, harmonize, and finalize program-level indicators. These indicators are in addition to the NHIs but more useful for tracking and reporting on program implementation, performance, and outputs. Unlike the NHIs, program-level indicators are oriented towards implementation monitoring at input, process, and output levels. Most indicators are from routine sources, though some will be from surveys and external sources. These indicators will be comprehensively warehoused in the HMIS and DHIS2 and disseminated annually.

In the current scenario, most programs and departments do not have strategic plans or well-defined M&E frameworks that guide the implementation of interventions and monitoring of results. In their absence, it becomes difficult to set targets and monitor their achievements systematically. Documentation of program-level indicators will provide an opportunity to address this gap and move towards a systematic way of measuring performance of programs and departments. Performance and progress will be monitored through quarterly and annual review meetings at district level, and through the joint annual reviews at national level. The evidence gathered through these M&E processes will assess overall progress and performance and identify problems and corrective actions.

4.1.3.3 MONITORING CHANNEL 3: PROCESS MONITORING

Process monitoring is the monitoring of either annual activities or progress toward intermediate targets and goals. Accountability is needed to determine if activities planned are executed and verify whether these plans are helping to achieve the stated HSSP II objectives. Lack of a clear process-monitoring framework made it difficult to monitor progress towards achievement of HSSP I objectives.

To rectify this gap, the Department of Planning and Policy Development through CMED and the Budget Unit will take the lead in monitoring implementation progress of activities outlined in the annual HSSP II work plan. This will be done through process monitoring of immediate outputs developed by MoHP directorates in their annual work plans where they incorporate outputs they intend to achieve in a particular year with government and partner funding. Similarly, the monitoring of the MEHIS Strategy will be integrated in the Channel 3 of the HSSPII monitoring. In addition, the indicators included in Annex 1 will also be used to track the MEHIS Strategy. Implementing partners will be required to report these immediate outputs to their relevant Departments, in turn, will report harmonized outputs regardless of funding source.

4.2 OBJECTIVE 2: STRENGTHEN THE HEALTH SECTOR'S CAPACITY TO USE DATA FOR DECISION-MAKING

To accomplish this objective, the MoHP has outlined two primary outcomes that should frame all MEHIS investments and activities. As indicated, the detailed list of activities, outputs, and timelines are presented in **Annex 3**.

4.2.1 Outcome 2.1: The MoHP Has the Managerial Capabilities and Leadership to Plan, Coordinate and Implement a Well-Functioning HIS

As part of strengthening MoHP capabilities to plan and execute HIS and address vertical/parallel data systems, CMED will implement three main strategies focusing on the development of the HIS enterprise architecture, interoperability requirements, harmonization of data elements and systems, and data exchange:

1. CMED will work with programs/departments and development partners to develop and disseminate crucial policies and guidelines, including an updated, five-year eHealth strategy and a set of SOPs (**Table 5**) to fully implement the HIS Policy (2015).
2. Continually engage SH and other members of senior management on the outstanding issues as regards to continued efforts on data/systems harmonization and interoperability.
3. Spearhead the data harmonization agenda through HDC members meetings where CMED and partners/programs can discuss emerging issues.

Table 5 SOPs to be developed

LIST OF SOPs TO BE DEVELOPED
• Guideline on Development and revision of HMIS SOPs
• HMIS Security Guidelines (includes IT Security checklist)
• Revision of health indicators and data collection tools
• Data Access and Release
• HMIS Data management
• Data analysis, interpretation and use
• Maintenance of master health facility list
• Coding cause of death
• Data quality assurance
• User support
• User account management
• Data breach
• Introduction of new systems
• Interoperability of systems
• Disaster Recovery

In addition, the MoHP will strengthen the M&E TWG and sub-TWGs, including revising the terms of reference (TORs) and developing an annual schedule to ensure sufficiently frequent collaboration.

Finally, the MoHP will ensure partner activities align to MEHIS priorities by strengthening investment monitoring and coordination. This will be accomplished through a routine inventory of MEHIS partners, a common investment framework, periodic reporting on expected investments against the MEHIS operational plan, and quarterly joint partner/MoHP work plan reviews. The investment monitoring will be integrated into the annual MoHP-led resource mapping activity. All funders and technical partners will be required to report comprehensive MEHIS investments per the established framework and categories.

4.2.2 Outcome 2.2: Adequate Inputs (HR, ICT, and Financing) to Implement a Robust HIS

The MoHP will ensure that adequate human resources are in place to achieve MEHIS objectives through improved staff recruitment and retention practices, including better training and advancement opportunities for existing staff, inclusion of MEHIS curriculum in all pre-service health worker programs, enhanced mentoring and supervision programs, and testing of financial and non-financial incentives.

MoHP will work to expand ICT infrastructure through developing a costed ICT infrastructure plan guided by the National eHealth Strategy (forthcoming). Key ICT infrastructure issues include connectivity, power access, and availability of end-user computing devices. Though often not in control of these resources directly, the MoHP will collaborate and advocate strongly with the ministry of Information and Communications technology and other GoM partners for improved access to equipment and to link health facilities with national data hubs.

Finally, the MoHP will advocate for earmarked provision of M&E and research funding to a minimum of 2 percent of MoHP total budget to increase resources available for MEHIS priorities.

5.0 IMPLEMENTATION

5.1 GOM ROLES AND RESPONSIBILITIES

The HSSP II outlines main roles and responsibilities to monitor the health sector, outlined in the **Table 6** below.

Table 6 Roles and responsibilities to monitor the health sector

Stakeholder	Responsibility
DPPD/CMED	• Primarily responsible for M&E of the HSSP II • Sets M&E guidelines, including indicators and cadence of data collection • Collates data nationally • Conducts data analysis • Sets M&E guidelines, including indicators and cadence of data collection • Conducts data analysis at national level • Conducts annual review of the HSSP II • Conducts Mid Term evaluation of HSSP II • Conducts End Term evaluation of HSSP II • Coordinates M&E efforts with MoH and partners • Disseminate findings to all levels
DHOs	• Collects, collates, and analyses district-level data • Submits high-quality data to MoH
Partners	• Assist in M&E activities as requested

In addition to these activities, CMED will work closely with programs and directorates in the MoHP and external partners to:

1. Develop SOPs to define HIS requirements and systems
2. Develop a set of indicators that will monitor HSSP II planned activities on an annual basis. These indicators will be taken from both the National Indicators list and the program-level indicators.
3. Define, harmonize, and streamline program-level indicators for inclusion in HMIS
4. Provide support for NHI, program indicators, and intermediate outputs reporting
5. Ensure coordination mechanisms are functional and meet routinely
6. Coordinate data collection activities and provide guidance for M&E and HIS plans

5.2 PARTNER ROLES AND RESPONSIBILITIES

Many of the activities undertaken to operationalize this plan will be implemented by external organizations supporting the MoHP, districts, sites, or specific programs. GoM relies on these partners to help execute the vision for health sector and MEHIS in Malawi. As such, some expectations are listed below. It is critical the GoM and all partners move with a consistent approach to fully realize the stated vision.

Funders and implementers of MEHIS activities in Malawi are expected to:

1. Abide by the policies and guidelines set forth in this strategy
2. Use the operational work plan and results framework to target and align investments to GoM-specified priorities
3. Report data as formally requested to better improve coordination, accountability, and efficiency of health programs
4. Routinely participate in coordinating mechanisms, such as the M&E TWG and Health Data Collaborative (HDC)
5. Communicate MEHIS plans to MoHP focal points early and often to avoid duplication and improve coordination of activities
6. Communicate any challenges or constructive feedback on M&E and HIS to MoHP focal points so that processes may improve

5.3 GOVERNANCE AND COLLABORATION STRUCTURES

CMED is responsible for executing monitoring and evaluation for the MoHP. Placed within the Department of Planning and Policy Development, CMED is headed by the Deputy Director, who reports to the Director of Planning and Policy Development (DPPD). The DPPD reports to the Chief Director responsible for Administration (CDA). In turn the CDA reports to the Secretary for Health and Population (SH). The SH chairs the senior management meeting and provides strategic oversight of the ministry.

To integrate sector input into the executive decision-making process for the MoHP a number of TWGs were instituted. The HIS/M&E TWG is responsible for coordinating and consolidating issues related to M&E. As such, CMED is the secretariat. Participation to the M&E TWG includes government and development partners. The M&E TWG has four sub-TWGs:

- National Data Standards Sub-TWG
- Health Data Collaborative Sub-TWG
- mHealth Sub-TWG
- Equity & Access Sub-TWG

Decision and implementation processes for the MEHIS Strategy shall observe consultation processes through the TWG and sub-TWGs. Recommendations from these consultations will be submitted to the Deputy Director responsible for CMED, who will take them through the executive decision processes within the MoHP, including the senior management.

Over the implementation of the HSSP I, the ministry has experienced a number of challenges that need to be addressed through the implementation of HSSP II and this MEHIS Strategy. The following issues shall be prioritized as they have been affecting the implementation of M&E and HIS and they need to be addressed with urgency:

1. Addressing the issues of partners setting up parallel systems beside those implemented by the government and collecting primary data through their own structures.
2. Aligning vertical program reporting systems within the MoHP to the national HMIS to address the principle of moving to a single national M&E platform.
3. Harmonizing reporting and data elements and reducing the number of data elements across programs to reduce the burden of reporting.
4. Collaborating on ensuring that data demands exerted by stakeholders on the national system are realistic.

At district and facility levels the HMIS officers or their proxies shall be responsible for the data management and the function of monitoring and evaluation. Subject to the functional review process that the government has been undergoing, from the perspective of MoHP, the HMIS Officer shall be the overall responsible for health data management and M&E at the district level. Notably, HMIS officers shall also report to the officers responsible for M&E at the district council. The MEHIS Strategy shall therefore be implemented in collaboration with other government ministries and departments, including the Ministry of Local Government and Rural Development; the Ministry of Finance, Economic Planning, and Development; and the National Statistical Office.

5.4 DETAILED WORK PLAN

The detailed work plan for the MEHIS Strategy provides a blueprint for achieving its two stated goals: (1) provide a roadmap to effectively monitor the HSSP II and (2) enhance use of data for decision-making at all levels of the health system. The strategies, activities, and outputs/deliverables are grouped by the four stated outcomes for MEHIS in Malawi 2017–2022:

OUTCOME 1. Effective and well-functioning data sources are in place to monitor HSSP II programs
OUTCOME 2. High-quality data is available and used in decision-making and policy development
OUTCOME 3. MOHP has the managerial capabilities and leadership to plan, coordinate, and implement a well-functioning HIS
OUTCOME 4. Adequate inputs (HR, ICT, and financing) are available to implement robust HIS

A table outlining the detailed work plan and all planned activities is available in **Annex 3**.

6.0 MONITORING AND EVALUATION OF THE STRATEGY

6.1 RESULTS FRAMEWORK

The MEHIS Strategy-specific results framework that will be used to monitor the strategy implementation is included in **Annex 1**. In addition, MEHIS achievements will be monitored using the outputs found in the detailed work plan (**Annex 3**) as described in Channel 3.

6.2 MONITORING INVESTMENTS AND ALIGNMENT

As described in Outcome 1 (**Section 4.2.1**), the MoHP will work to improve the tracking, coordination, and alignment of MEHIS activities. Through an enhanced resource tracking platform, funders and implementers will be asked to provide data on MEHIS planned investments (through resource mapping) and actual expenditures (through expenditure analysis) at least annually.

CMED will work with DPPD to refine categories for reporting both investments and expenditures so a routine analysis of alignment and execution can be completed. Standard reporting templates and tools will be developed and disseminated to funders and implementers to provide data. The results of this analysis will be used in discussion with partners about work plans and to review overall progress in semiannual joint review meetings and evaluations of HSSP II implementation.

6.3 Potential Risks and Mitigation Strategies

Recognizing that challenges often arise, CMED has identified a list of potential risks to the successful implementation of the MEHIS Strategy and proposed potential mitigation strategies (**Table 7**).

Table 7 MEHIS Strategy Potential Risks and Mitigation Strategies

POTENTIAL RISK	MITIGATION STRATEGIES
• Gaps in funding exist for priority activities needed to achieve MEHIS outputs	• Detailed and routine investment mapping through the annual Resource Mapping exercise • Gaps identified and communicated to partners with clear requests
• MEHIS implementing partners do not align activities with MEHIS Strategy and priorities	• Partners are encouraged to clearly communicate plans and progress with MoH focal points and CMED • Partners are encouraged to complete investment mapping and expenditure analysis reporting requirements comprehensively and on time • MoH routinely shares information with partners about MEHIS activities and plans • Regular coordination meetings are held through coordination mechanisms (e.g., M&E TWG)
• Data requirements and systems are developed with non-standard terminology and not linked to the country interoperability layer	• Obtain short-term technical assistance to rapidly produce high-quality SOPs and disseminate them broadly • Require all data to be documented and linked to terminology service • Require consultation with MoH and CMED when proposing new data streams or systems • Steering Committee established to define binding policies and procedures
• ICT infrastructure is inadequate to achieve goals and reduce reliance on paper-based data collection	• A feasibility assessment will be completed, outlining infrastructure needs for health, including power, connectivity, and internet access • MoH will work with Ministry of ICT and development partners to clearly communicate needs and articulate benefits to the system • Development partners and other GoM entities will provide additional clarity on what ICT investments are currently planned and implemented • MoH will explore ways to partner with the private sector, including mobile network operators
• MEHIS plans are highly dependent on donor resources and commitments are short-term	• DPPD/CMED will advocate for increase in earmarked funds for M&E and research to 2% of total MoH budget • DPPD/CMED will advocate with funders for a joint investment mechanism to increase support for key priorities and staff positions to reduce gaps and limited TORs
• Decentralization creates challenges with coordinating activities and defining roles and responsibilities	• Work closely with Ministry of Local Government and Rural Development (MLGRD) to ensure MEHIS Strategy is factored into decentralization plans
• Human resources challenges, such as turnover of statistical clerks, prevents facilities and districts from building local capacity and adequately using data	• Invest in continuing professional development for statistical clerks and attractive training options • Develop and test incentive packages for data use • Review professional growth strategy for statistical clerks and provide better opportunities for advancement
• CMED doesn't obtain the full complement of skills necessary to support national, district, facility, and community staff with implementing MEHIS plans and building capacity for data use	• Build capacity of existing staff by requesting support for short-courses in M&E, data analysis, statistics and epidemiology • Request support for software programs that enable quick and robust analysis of data • Develop sub-TWG for analytics to leverage existing technical experts across GoM and partners for competing rapid, ad hoc analysis
• The lack of filled CMED positions stretches existing staff and limits ability to be fully effective	• Complete internal functional review of CMED deliverables, roles, communication methods, and approach • Identify tools and methods for easing workload, enhancing communication, planning support, and monitoring time and effort
• CMED is not able to travel to support districts, facilities, and communities due to lack of routine transportation	• Define schedule for field support and communicate travel needs to implementing partners with available vehicles • Leverage the District Harmonisation Task Force to coordinate district support and pool vehicles across GoM and partners when possible

7.0 FINANCING

7.1 REQUIRED RESOURCES TO ACHIEVE OUTCOMES

To achieve the strategy's two major objectives and four outcomes, Malawi will need a total of **MWK 36,329,703,672** (**US$50,109,936**) between 2017/2018 and 2021/2022 fiscal years. This translates to roughly **MWK 7.2 billion MWK** (**US$10 million**) per year. **Figure 5** charts the total required resources each year, with the amount needed for each of the four primary outcomes:

OUTCOME 1.1 Effective and well-functioning data sources are in place to monitor HSSP II programs
OUTCOME 1.2 High-quality data is available and used in decision-making, policy development, and for M&E of programs at all levels of the MoHP
OUTCOME 2.1 The MOHP has the managerial capabilities and leadership to plan, coordinate, and Implement a well-functioning HIS
OUTCOME 2.2 There are adequate inputs (HR, ICT, and financing) to implement a robust HIS

Figure 5 Total Resources by Desired Outcome

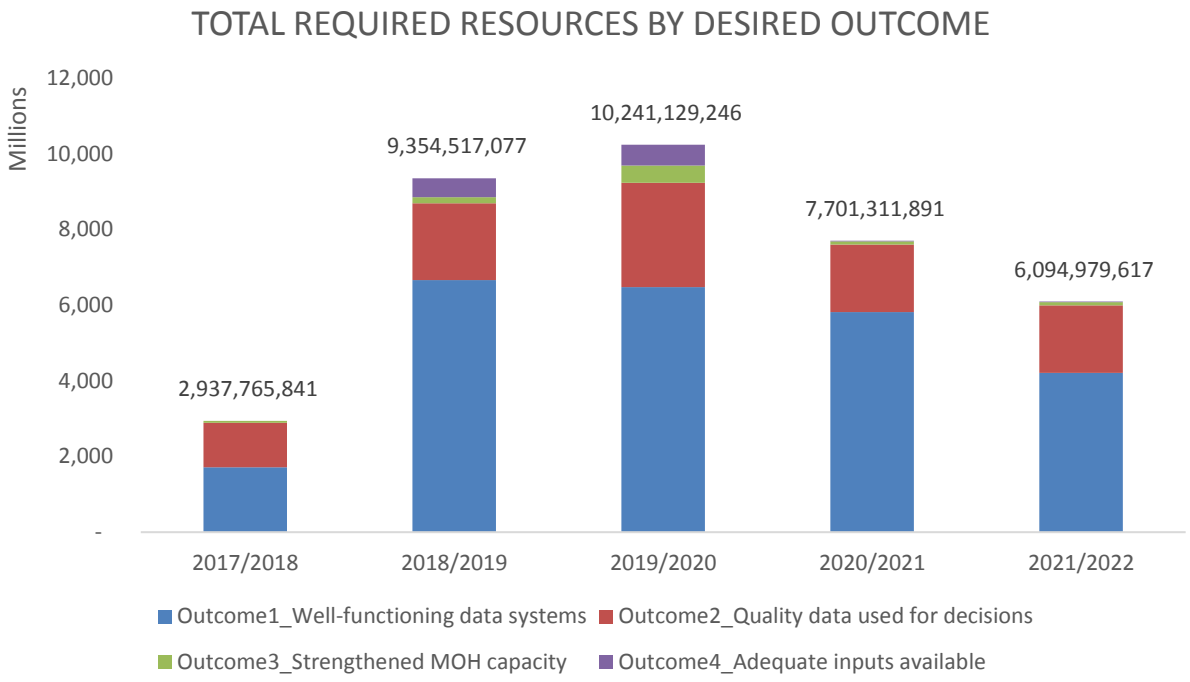


Figure 6 shows the proportion of total resources needed by activity group. These include human resources, indicators, dissemination & use, policy and planning, information products, data sources, data management, capacity building, and HIS infrastructure.

Figure 6 Required Resources by Activity

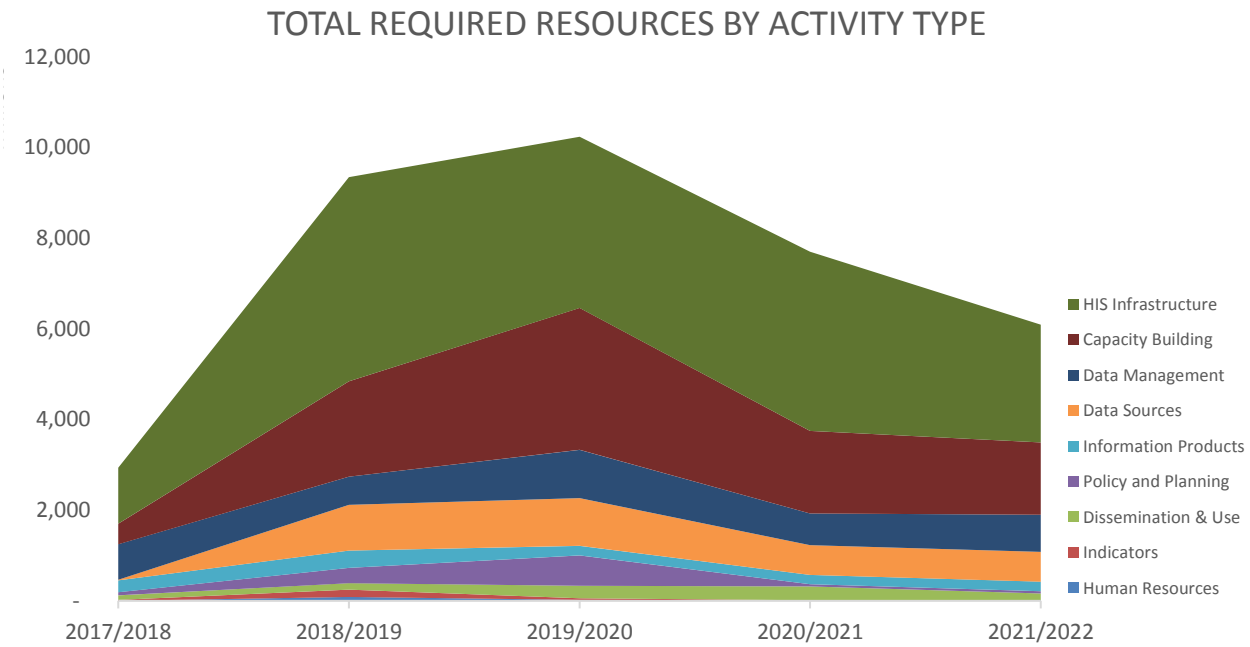


Fig11: Total resources required by activity

With respect to primary outcomes, the bulk of resources (**69 percent**) are allocated for effective and well-functioning data sources. Fewer resources are allocated for data use (Outcome 2, **26 percent**), strengthening MOHP capacity (Outcome 3, **2 percent**) and ensuring adequate HR, ICT and financing are available (Outcome 4, **3 percent**).

With respect to activity type, the majority of resources are allocated to HIS infrastructure (**44 percent**), capacity building (**25 percent**), data management (**11 percent**), and data sources (**9 percent**). Fewer resources were needed or devoted to information products (**4 percent**), policy and planning (**3 percent**), dissemination and use (**3 percent**), indicators (**1 percent**), and human resources (**less than 1 percent**).

Each activity in the operational plan is driven by a set of required inputs. These inputs have been consolidated into major cost drivers. **Figure 14** below shows the proportion of each cost driver to total required resources each year. The most significant are meetings and consultants, **26 percent** and **24 percent** of total resource needs. Other cost drivers include in-country travel (**15 percent**), equipment (**15 percent**), printing (**10 percent**), connectivity (**3 percent**), and other (**3 percent**). The proportions are similar for each year.

7.2 MOHP HUMAN RESOURCE NEEDS

Human resources typically represent a major cost driver for any activity. Understanding the MOHP human resources required to successfully implement the MEHIS Strategy is critical. As such, the costing estimates include both the CMED and other MOHP staffing needs to fully execute the operational plan. The number of staff and staff days required for each activity were estimated by CMED staff, and total person days calculated.

Figure 7, below plots the total number of MOHP person-days required to implement the strategy by year. A total of **2,295,602 person days** are needed between 2017 and 2022. This includes staff at each level of the health system: MOHP programs and departments, district managers and officers, health facility staff, and community health surveillance assistants (HSAs).

Figure 7 Total MoH Staff Days Needed to implement Strategy by Year

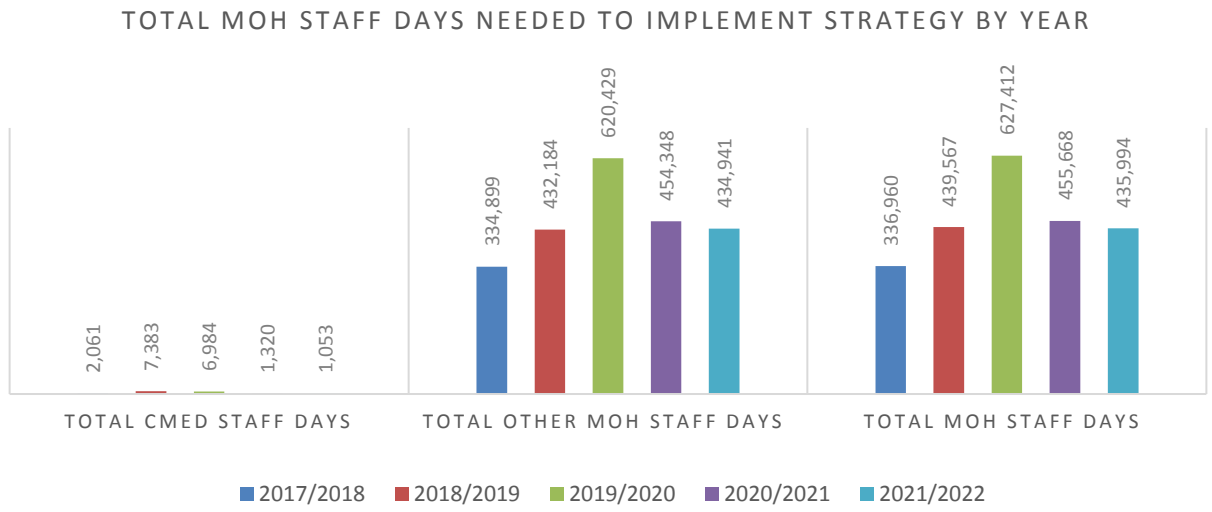


Figure 12: Total MoH staff days needed to implement strategy by year

Based on activities and associated outputs in the detailed operational plan, a total of **18,801 CMED person days** are required to fully implement the strategy. With its current staffing footprint, CMED has only **16,350** person days available[4], a **deficit of 2,451 person-days**.

Given the current list of outputs and level of effort required, CMED would need to add an **additional 12 full-time staff** to meet the time commitments outlined in the operational plan. A proposal to expand the establishment to include the new full-time staff was made to the Department of Human Resources in the Office of the President and Cabinet. **There is need to follow up on the proposal to ensure that the approval is expedited. In the interim, MoHP will continue to rely on partners to avail long-term technical assistance embedded in the CMED.**

[4] Assumes 15 current staff and 218 working days in Malawi.

7.3 RESOURCE PROJECTION INPUTS AND METHODS

A dynamic resource projection model was built to estimate the required resources needed to fully fund the MEHIS Strategy. Substantial consultation took place with the CMED team, technical partners, and a costing expert. Steps for constructing the model, obtaining inputs, and running projections included:

1. Outlining cost drivers and inputs for each activity in the detailed operational plan (**Annex 2)**
2. Identifying common cost categories and building data capture inputs into cost model
3. Reviewing existing budgets for larger activities and extracting pertinent cost data
4. Consulting existing sources for unit cost data, including the 2017 Harmonized Daily Subsistence, Fuel, and Transport Allowances (DSA), UNDP guidelines, and current rates of reimbursement for services
5. Estimating activity progress and resource use by Malawi fiscal years
6. Coding activities by activity type and major activity category
7. Calculating summary cost for each output, activity, activity category, outcome, cost category/driver, and year
8. Calculating required CMED and MOHP person days to needed to execute operational plan

Additional notes on calculations:

1. A health system perspective is taken to estimate required resource needs and assumes resources will be contributed by both the GOM and external sources
2. Only resources spent in country are included in the model, i.e., administrative cost of doing business for international organizations is not included
3. An input- or “ingredient-based” method was used to estimate resource needs for activities without empirical or historical data
4. Activities with historical, detailed budget data were costed at the macro level by cost category

ANNEX 1. RESULTS FRAMEWOK

Goal: A sustainable, integrated national HIS capable of generating and managing quality health information for supporting evidence-based decision-making by all stakeholders at all levels of the health system.	
OBJECTIVE 1: To ensure that HSSP II is adequately monitored with high-quality data that are routinely reported, analyzed, and disseminated	
OUTCOMES	**KEY INDICATORS**
OUTCOME 1. Effective and well-functioning data sources are in place to monitor HSSP II programs	• Percentage of facilities with 100% tracer data management tools • Percentage of facilities with stock outs of tracer data management tools
OUTCOME 2. High quality data is available and used in decision-making and policy development	• Reporting rates (Percentage of specific data sets submitted through DHIS2) • Reporting timeliness (Percentage of specific data sets submitted into DHIS2 on time • Percentage of DHIS2 specific data sets that are 95% complete (intra data set) • Number of HMIS data bulletins developed and disseminated • Proportion of programs that developed and disseminated data bulletins • Proportion of districts that developed and disseminated data bulletins • Proportion of districts that conducted quarterly reviews • Proportion of programs that conducted quarterly reviews
OBJECTIVE 2:To strengthen the health sector's capacity to use data for decision-making	
OUTCOME 3. MOHP has the managerial capabilities and leadership to plan, coordinate and implement a well-functioning HIS	• Number of MEHIS strategic meetings conducted with departments, programs and partners • Number of M&E and sub-TWG meetings conducted
OUTCOME 4. Adequate inputs (HR, ICT, and financing) are available to implement a robust HIS	• Percentage of facilities using mHealth tools • Percentage of new facilities installed with DHIS2 • Percentage of facilities that have electronic medical records • Vacancy rates for data management staff

ANNEX 2. DETAILED OPERATIONAL PLAN

OUTCOME	STRATEGY	ACTIVITY	2017/18	2018/19	2019/20	2020/21	2021/22	TOTAL(US$)
OUTCOME 1: Well-functioning data sources are in place to monitor HSSP II	1.1. Rationalize and harmonize routine data collection and reporting systems	1.1.1 Rationalize data collection and reporting tools	-	59,053	31,901	-	-	90,953
		1.1.2 Country-wide rollout of updated data collection tools	-	1,487,551	900,541	900,541	900,541	4,189,173
	1.10. Strengthen implementation of community information systems	1.10.1 Identify potential tools for community HISs for national scale-up as per Community Health Strategy	55,746	-	-	-	-	55,746
	1.11. Align research to MOH priorities	1.10.2 Facilitate identification of key information needs use	2,077	-	-	-	-	2,077
		1.10.3 Build capacity for CMED staff and HMIS officers to conduct research	2,918	10,677	10,677	10,677	10,677	45,627
		1.10.4 Conduct and disseminate operational research	-	-	-	-	-	-
	1.2. Finalize configuration and expand functionality of DHIS2 (GIS, climate change,	1.2.1 Configure NHIs and program-level indicators in DHIS2	2,537	2,537	5,074	-	-	10,148
		1.2.1 Configure NHIs and program-level indicators in DHIS3	3,506	3,506	10,517	-	-	17,528

	DHIS 2 tracker and CRVS)	1.2.2 Implement data quality application including validation rules	6,400	29,043	42,328	10,328	10,328	98,427
		1.2.3 Implement ticketing system for user support in line with SOP	-	-	-	14,000	-	14,000
		1.2.4 Expand functionality of DHIS2, including use of dashboards, GIS module, climate change, patient tracker	6,055	7,910	37,294	-	-	51,259
	1.3. Expand DHIS 2 to cover additional systems	1.3.1 Scale up DHIS2 data sets to central hospitals	728	180,487	95,263	728	728	277,935
		1.3.2 Scale up DHIS 2 Desktop and mobile for health facilities	-	2,296,552	999,690	3,330,293	292,146	6,918,680
	1.4. Strengthen the interoperability of health information subsystems around a single country led platform	1.4.1 Establish linkages between subsystems (e.g., NRB's CRVS data system and other related data systems, such as IDSR, MDSR, and National ID with DHIS 2)	-	214,194	52,500	52,500	-	319,194
		1.4.2 Operationalize master health facility list	-	229,700	-	-	-	229,700
		1.4.3 Operationalize terminology registry	-	117,930	115,025	-	-	232,955
		1.4.4 Operationalize shared health record (patient-level central data repository)	-	157,453	157,453	-	-	314,907

		1.4.5 Conduct migration of data from subsystems (e.g., logistics MIS and DHAMIS) into DHIS 2 while waiting for interoperability interface to be available	-	152,600	-	-	-	152,600
	1.5. Strengthen facility information systems including the scale-up of electronic medical record (EMR) systems that cover all elements of the EHP to all high burden systems with a central master patient index (MPI) for the different EMRs	1.5.1 Define minimum standards and guidelines for EMRs including the development of a costed plan to roll-out EMR at facility level including master patient index	-	51,564	-	-	-	51,564
		1.5.2 Scale EMR to additional sites	1,760,448	2,939,677	2,939,677	2,939,677	4,118,906	14,698,385
		1.5.3 Develop a comprehensive EMR for integrated services	-	480,713	1,443,103	-	-	1,923,816
		1.5.4 Implement and expand comprehensive EMR according to needs	-	-	429,289	286,996	18,207	734,492

	1.6. Strengthen implementation of a national civil registration system and the generation of vital statistics	1.6.1 Collaborate with clinical services, RHD, and nursing services to implement birth notification in all health facilities with maternity services, utilizing the electronic birth registration system (eBRS) in secondary and tertiary facilities, and ensure birth reports are submitted to civil registration authorities	403,907	-	-	-	-	403,907
		1.6.2 Collaborate with clinical services and nursing services to implement death notification, and medical certification of death and cause of death, utilizing the electronic death registration system (e-DRS) in secondary and tertiary facilities, in all health facilities and ensure death reports are submitted to civil registration authorities	22,982	22,982	22,982	22,982	22,982	114,910

		1.6.3 Adopt standard procedures, guidelines and tools for assessing and improving CRVS system (for birth registration, death registration, medical certification of death and COD, and coding of COD)	8,334	8,334	-	-	-	16,667
		1.6.4 Introduce and implement community-based birth and death notification and registration	-	472,603	1,044,419	407,953	381,279	2,306,254
		1.6.5 Establish and implement preservice and in-service training package on certification of death and cause of death (MCCOD)	48,054	154,271	314,204	17,792	13,344	547,666
		1.6.6 Establish a central coding unit overseen by CMED for ICD coding of medically-certified causes of death according to WHO standards	-	48,015	-	-	-	48,015
		1.6.7 Develop data sharing agreements with NRB to ensure data is regularly (automatically) shared with MOH/CMED	-	-	-	-	-	-

		1.6.8 Conduct national comprehensive evaluation of the civil registration and vital statistics (CRVS) in collaboration with NRB	-	-	196,190	-	-	196,190
	1.7. Strengthen the implementation of key health related surveys	1.7.1 Coordinate with NSO and programs to align the national census and survey content and time (DHS, Integrated Household Survey, MICS, SAVVY) with national health and program indicators	3,419	3,419	3,419	3,419	3,419	17,094
	1.8. Improve the population data used as denominators in indicators	1.8.1 Consult NSO on best way forward to develop high-quality denominators	-	3,562	9,034	-	-	12,596
		1.8.2 Regular review of facility boundaries and catchment areas	-	19,732	30,248	-	-	49,980
	1.9. Strengthen disease surveillance through identification and reporting of notifiable diseases	1.9.1 Introduce a comprehensive M-health IDSR system that can communicate with EMRs and DHIS2	8,400	8,400	8,400	8,400	8,400	42,000
		1.9.1 Introduce a comprehensive M-health IDSR system that can communicate with EMRs and DHIS3	38,229	38,229	38,229	38,229	38,229	191,145

		1.9.1 Introduce a comprehensive mHealth IDSR system that can communicate with EMRs and DHIS4	-	-	-	-	-	-
OUTCOME 2: High-quality data is available and used in decision-making, policy development, and for monitoring and evaluation of programs at all levels of the MOH	2.1. Ensure timely tracking of priority HSSP2 Indicators	2.1.1 Define and document national and program level indicators	21,639	69,990	5,250	5,250	10,500	112,628
	2.10. Strengthen social accountability systems through participatory community performance monitoring and evaluation systems	2.10.1 Facilitate implementation of the community score card method for evaluation	-	10,443	1,022,054	10,443	10,443	1,053,382
	2.2. Implement coordinated approach to routine data validation	2.2.1 Train CMED and HMIS staff in DHIS2 DQR application	-	38,960	-	-	-	38,960
		2.2.10 Implement district-specific dashboards	-	14,283	14,283	-	-	28,566
		2.2.11 Support (prepare reporting templates, printouts) HMIS officers to conduct semiannual facility-level data reviews	-	1,055,526	1,055,526	1,055,526	1,055,526	4,222,103
		2.2.12 Produce and disseminate district- level HMIS bulletins	-	11,331	11,331	11,331	11,331	45,323

		2.2.2 Conduct routine data validation in line with SOP on data quality assurance	-	-	-	-	-	-
		2.2.3 Conduct a comprehensive biennial data quality review	300,000	-	300,000	-	-	600,000
		2.2.4 Conduct biannual data quality review meetings	257,312	257,312	257,312	257,312	257,312	1,286,559
		2.2.5 Conduct quarterly data quality review meetings	449,155	449,155	449,155	449,155	449,155	2,245,777
		2.2.6 Conduct district- level semiannual supervision/mentorship and on-the-job training to ensure adherence to relevant SOPs (see objective 1.2)	12,024	12,024	12,024	12,024	12,024	60,120
		2.2.7 Conduct facility- level quarterly supervision/mentorship and on-the-job training to ensure adherence to relevant SOPs (see objective 1.2)	-	18,931	18,931	18,931	18,931	75,724
		2.2.8 Conduct national-level health sector reviews	22,322	22,322	22,322	22,322	22,322	111,608
		2.2.9 Conduct semiannual zonal health sector reviews	-	-	-	-	-	-
	2.3. Promote the use of data for decision-making	2.3.1 Conduct monthly facility-level data review meetings	137,357	137,357	137,357	137,357	137,357	686,784

	at health facility level	2.3.2 Support facilities to prepare data products (graphs, tables, action plans)	-	-	-	-	-	-
		2.3.3 Implement innovative approaches to use paper-based systems for decision support at the point of care	-	9,000	9,000	9,000	9,000	36,000
	2.4. Institutionalize the systematic use of data in regular review meetings at all levels	2.4.1 Conduct health information symposiums to showcase data use best practices	-	1,139	1,139	1,139	1,139	4,555
	2.5. Ensure that analysis of all data sources evaluates health equity and universal health coverage (age, sex, rural/urban location)	2.5.1 Train CMED Officials on use of Health Equity Assessment Tool (HEAT) tool	-	-	15,379	-	-	15,379
		2.5.2 Monitor health indicators with the largest equity disparities	-	-	-	-	-	-
		2.5.3 Integrate equity analysis reporting into the annual data bulletins and reports	-	-	-	-	-	-
		2.5.4 Conduct annual age-sex disaggregation exercise	-	-	29,806	28,929	28,929	87,664
	2.6. Build capacity of actors across all levels	2.6.1 Conduct a detailed training needs assessment (TNA) for CMED (national,	121,148	-	-	-	-	121,148

	on data analysis, interpretation, and use	central hospitals and districts)						
		2.6.2 Conduct CPD training activities for HMIS staff at all levels	-	25,237	25,237	25,237	25,237	100,946
		2.6.3 Hold training and workshops at all levels to improve data analysis, interpretation, and use, including dissemination of information products	3,005	111,298	111,298	111,298	111,298	448,196
	2.7. Institutionalize dissemination of information, products and resources both internally and externally	2.7.1 Develop and implement dissemination plan for MOH	8,278	12,765	12,765	12,765	12,765	59,338
		2.7.2 Design web portal for dissemination of resources and information (repository for sharing resources and information with MOH and external partners)	11,741	-	-	-	-	11,741
		2.7.3 Design and develop DHIS 2 link to MOH website	-	1,241	8,050	-	-	9,291
	2.8. Strengthen process monitoring of HSSP2 implementation	2.8.1 Designate M&E focal persons in departments/programs	-	-	-	-	-	-
		2.8.2 Develop tools for process monitoring	15,193	7,491	-	-	-	22,684

	and annual Implementation plans	2.8.3 Prepare monthly, quarterly, semiannual, and annual health sector performance reports and disseminate to stakeholders	-	-	-	-	-	-
		2.8.4 Coordinate implementation of regular review meetings across departments/programs and adequate documentation of meetings' minutes	-	-	-	-	-	-
		2.8.5 Contribute health sector performance report for compilation of the MGDS periodic reports	-	-	-	-	-	-
	2.9. Strengthen Expenditure analysis at national and subnational levels to monitor effective allocation of resources	2.9.1 Conduct public expenditure tracking exercises semi-annually	221,012	503,975	261,436	261,436	261,436	1,509,295
		2.9.2 Complete and disseminate National Health Account Report	13,111	13,111	13,111	13,111	13,111	65,555
		2.9.3 Complete and disseminate Resource Mapping Report	18,738	18,738	18,738	18,738	18,738	93,692
OUTCOME 3: The MOH has the managerial capabilities and leadership to plan, coordinate, and	3.1 Update eHealth strategy for next 5 years within the framework of national ICT policy	3.1.1 Conduct a review of the 2011–2016 eHealth strategy to inform development of the new strategy	441	-	-	-	-	441
		3.1.2 Develop eHealth strategy	15,561	3,039	-	-	-	18,600

implement a well-functioning HIS		3.1.2 Track implementation of the eHealth strategy	-	-	-	-	-	-
	3.2 Implement the HIS Policy	3.2.1 Disseminate the HIS policy at national and district levels	-	19,852	19,852	19,852	19,852	79,408
		3.2.2 Revise and develop HIS SOPs	53,732	98,931	-	-	-	152,663
		3.2.3 Disseminate the SOPs to DHMTs and data management personnel	-	-	-	-	-	-
		3.2.4 Provide training and mentoring on SOPs at facility national and district level	-	49,550	566,957	60,504	60,504	737,515
	3.3 Strengthen M&E TWG and its sub-TWGs	3.3.1 Functional M&E TWGs	-	38,385	38,385	38,385	38,385	153,541
	3.4. Ensure alignment of partner activities to the MoH HIS/M&E strategies and annual implementation plans	3.4.1 Review and regularly update HIS needs and investments from partners and government	-	2,625	2,625	2,625	2,625	10,500
OUTCOME 4: There are adequate inputs (HR, ICT and financing) to implement a robust HIS	4.1. Recruit HIS staff for vacant position in accordance with existing staffing norms for HIS at all levels	4.1.1 Recruit HIS staff for vacant position in accordance with existing staffing norms for HIS at all levels	-	16,527	16,527	16,527	16,527	66,107

	4.2. Create and redefine HIS positions based on need	4.2.1 MOH to propose a functional review to DHRMD in consultation with relevant MDAs, i.e. EP&D, NSO, DHRMD, Local governmentt	-	-	13,726	-	-	13,726
	4.3. Improve retention of HIS staff	4.3.1 Develop a system to retain HIS staff through financial and non-financial incentives	-	17,860	-	-	-	17,860
	4.4. Institute regular capacity building activities	4.3.5 Implement the new HIS curriculum based on the training guide	-	71,553	-	-	-	71,553
		4.3.6 Incorporate HIS curriculum in preservice training	-	7,332	-	-	-	7,332
		4.3.7 Monitor and review progress of implementation of new HIS curriculum	-	-	661,405	-	-	661,405
		4.3.8 Revise HMIS manuals	-	101,506	-	-	-	101,506
		4.3.8.1 Disseminate HMIS Manuals	-	96,529	-	-	-	96,529
		4.4.3 Develop HIS training guide (linked to training needs assessment -	-	85,126	-	-	-	85,126
		4.4.4 Develop a national HIS curriculum	-	220,552	-	-	-	220,552
	4.5. Develop and implement mentoring and supervision strategies to	4.5.1 Develop tools for performance assessments	-	1,750	-	-	-	1,750

	improve HIS worker performance at all levels							
	4.6. Advocate for earmarked provision of M&E and research funding to a minimum 2% of MoH budget allocation	4.6.1 Engage with the MoH budgeting team on the allocation of the stipulated amount	-	-	-	-	-	-
	4.7. Develop an inventory of eHealth solutions	4.7.1 Map existing eHealth interventions	-	77,211	-	-	-	77,211
	4.8. Strengthen ICT infrastructure and connectivity to support implementation of HIS activities	4.8.1 Assess existing connectivity and develop infrastructure architecture	-	-	58,733	-	-	58,733
		4.9.2. Develop a costed ICT infrastructure and connectivity plan for resource allocation and mobilization	-	-	10,842	-	-	10,842
Grand Total			**4,055,510**	**2,910,649**	**14,138,010**	**10,643,710**	**8,423,631**	**50,171,511**

ANNEX 3. MEHIS STRATEGY KEY DELIVERABLES AND OUTPUTS

STRATEGY	ACTIVITY	SUB-ACTIVITIES	OUTPUTS AND DELIVERABLES
1.1. Rationalize and harmonize routine data collection and reporting systems	1.1.1 Rationalize data collection and reporting tools (assessment, development of approach, meta data navigator)	1.1.1.1 Assess tools to determine which will require revision to harmonize and remove duplication	Assessment of data collection and reporting tools conducted
		1.1.1.2 Revise identified data collection and reporting tools	Data collection and reporting tools revised
		1.1.1.3 Pilot revised data collection and reporting tools	Pilot of data collection and reporting tools conducted
		1.1.1.4 Conduct feedback meeting with stakeholders	Feedback from pilot incorporated into revised data collection and reporting tools
		1.1.1.5 Conduct TWG meeting to adopt revised data collection tools	Final revised data collection and reporting tools adopted
	1.1.2 Country-wide roll-out of updated data collection tools	1.1.1..6 Print and distribute existing and revised data collection and reporting tools	Data collection and reporting tools printed
		1.1.1.7 Distribute revised and existing tools	Tools distributed
		1.1.2.1. Produce a complete list of data collection tools (registers and reporting forms) and their contents, responsible individuals, etc.	An inventory of data collection and reporting tools published on CMED portal
		1.1.2.2 Train all district and facility staff on updated tools and revised registers	# of training sessions on revised data collection and reporting tools conducted for district level staff and central hospitals

		1.1.2.3 Train facility level staff on updated tools and registers	# of training sessions on revised data collection and reporting tools conducted for facility staff
		1.1.2.4 Enforce policies on introduction of new tools and use of approved data collection and reporting tools only	List of endorsed tools for data collection and reporting in place and communicated to all health facilities
1.2. Finalize configuration and expand functionality of DHIS2 (GIS, climate change, DHIS 2 tracker and CRVS)	1.2.1 Configure NHIs and program-level indicators in DHIS2	1.2.2.1 Programmed NHIs into DHIS2	NHIs configured in DHIS2
		1.2.2.2 Routinely enter program indicators as they are developed	Program indicators configured in DHIS2
	1.2.2 Implement data quality application including validation rules	1.1.2.3 Configure validation rules for all data sets	Data validation rules configured for all data sets
		1.2.2.4 Fully implement quality application in DHIS 2	Quality application reports reviewed on monthly basis
	1.2.3 Implement ticketing system for user support in line with SOP	1.2.3.1 Customize ticketing system software	Software is configured and accessible to users
	1.2.4 Expand functionality of DHIS 2 (CRVS module dashboards, GIS module, climate change, patient tracker)	1.2.4.1 Finalize GIS module in DHIS2 (shapefiles)	GIS module in DHIS2 fully functional
		1.2.3.2 Introduce climate data into DHIS2	Climate data introduced into DHIS2
		1.2.3.3 Explore use of DHIS 2 tracker for individual data	Develop a viable use case for DHIS2 tracker
		1.2.3.4 Define MoH CRVS data needs for incorporation into DHIS2	CRVS Data Needs defined and shared with NRB
		1.2.3.5 Incorporate CRVS data into DHIS2 for CRVS-specific data	CRVS data incorporated into DHIS2

		1.2.3.6 Create CRVS dashboards in DHIS2	CRVS dashboards developed in DHIS2
1.3. Expand DHIS 2 to cover additional systems	1.3.1 Scale up DHIS2 data sets to central hospitals	1.3.1.1 Harmonization of central hospital organizational structure	Organizational structure for central hospitals harmonized
		1.3.1.2 Develop central hospital indicators on service delivery	Indicators for central hospitals developed
		1.3.1.3 Revise existing CH forms in collaboration central hospital Staff	Existing CH forms revised
		1.3.1.4 Program revised CH forms into DHIS2	Revised CH forms programmed in DHIS2
		1.3.1.5 Training of data clerks in revised CH forms	Clerks for CH trained
		1.3.1.6 Procure hardware for CH to implement DHIS 2	Hardware for central hospitals and high burden facilities (in terms of patient volume) procured and deployed
		1.3.1.7 Conduct Training for central hospital staff on the use of the DHIS2	DHIS2 trainings for central hospitals conducted
		1.3.1.8 Procure internet bundles for CH reporting into DHIS2	Central hospitals directly reporting data into DHIS 2
	1.3.2 Scale up DHIS 2 desktop and mobile for health facilities	1.3.2.1 Procure hardware for DHIS2 Mobile	
		1.3.2.2 Phase 1 scale up of DHIS2 mobile to 5 districts to include training, supportive supervision, and evaluation	HMIS officers and statistical clerks in 5 districts trained to deliver training in district
		1.3.2.3 Train HSAs in 5 phase 1 districts	HSAs in 5 phase1 districts trained
		1.3.2.4 Conduct supportive supervision on DHIS 2 Mobile in Phase 5 districts	DHIS2 Phase 1 supportive supervision conducted in 5 districts
		1.3.2.5 Evaluate Phase 1 DHIS 2 mobile implementation	DHIS 2 mobile Phase 1 evaluated

		1.3.2.6 Scale-up phase for DHIS 2 mobile, including training HSAs and other staff on use	HMIS officers and statistical clerks in 24 districts trained to deliver training in districts
		1.3.2.7 Conduct district-level training for HSAs in DHIS 2 Mobile	Staff trained on use of DHIS 2 Mobile in all districts
		1.3.2.8 Provide Airtime to 8000 HSAs and other appropriate staff trained on the use of DHIS2 Mobile	Airtime to 8000 HSAs and other appropriate staff trained on the use of DHIS2 Mobile provided
1.4. Strengthen the interoperability of health information subsystems around a single country-led platform	1.4.1 Establish linkages between subsystems (e.g., NRB's CRVS data system and other related data systems, such as IDSR, MDSR, and national ID with DHIS 2)	1.4.1.1 Conduct analysis on interoperability, including subsystems that need to be linked	Assessment on interoperability conducted
		1.4.1.2 Develop implementation plan for a pilot based on a detailed assessment	Interoperability plan developed
		1.4.1.3 Develop interoperability layer/Interface	Interoperability interface developed
		1.4.1.4 Test and pilot interface for 2 sub-systems	Interoperability Interface implemented on test phase
		1.4.1.5 Establish linkages between DHIS2 and HIS subsystems (e.g., CRVS, OpenLMIS, DHAMIS, HR, QMU (ISS) etc.)	Data is efficiently exchanged between subsystems and DHIS2.
	1.4.2 Operationalize master health facility list	1.4.2.1 Develop guidelines for the management of master health facility registry	Guidelines for the management of master health facility registry developed
		1.4.2.2 Develop web-based tool for the Management of Master Health Facility List	Management of master health facility list web tool developed
	1.4.3 Operationalize terminology registry	1.4.3.1 Develop guidelines for the terminology registry	Guidelines for the terminology registry developed
		1.4.3.2 Develop web-based tool for the Terminology Registry	Terminology registry developed

	1.4.4 Operationalize Shared Health Record (Patient level central data repository)	1.4.3.3 Develop Guidelines for the Shared Health Record (Patient level central data repository)	Guidelines for the shared health record (patient-level central data repository)
		1.4.3.4 Develop web-based tool for the shared health record (patient-level central data repository; expanded demographic data exchange)	Shared health record (patient-level central data repository; expanded demographic data exchange) developed
	1.4.5 Conduct migration of data from subsystems (e.g., logistics MIS and DHAMIS) into DHIS 2 while waiting for interoperability interface to be available	1.4.5.1 Conduct migration of data from LMIS and DAMIS into DHIS 2 while waiting for interoperability interface to be available	Migration of data from LMIS and DAMIS into DHIS 2 completed
1.5. Strengthen facility information systems, including scale-up of electronic medical record (EMR) systems that cover all elements of the EHP to all high-burden systems with a central master patient index (MPI) for the different EMRs	1.5.1 Define minimum standards and guidelines for EMRs including the development of a costed plan to roll out EMR at facility level, including master patient index	1.5.1.1 Gather information and requirements, develop recommended requirements	Minimum standards and guidelines for EMRs and specifications available
		1.5.1.2 Review current EMR, including the need and capacity of facilities to implement and manage EMRs, by conducting a gap analysis (needs assessment) in collaboration with partners implementing EMRs to identify facilities that merit basic ICT infrastructure: - Infrastructure required - Costs involved - Districts involved - Number of health facilities	EMRs and facility assessment conducted and gaps identified for strengthening

		1.5.1.3 Alignment of existing EMR minimum standards	EMRs aligned
	1.5.2 Scale EMR to additional sites	1.5.1.3 Work with sponsoring partners to roll out EMR to 400 sites	EMR installed and functional in 400 sites
		1.5.1.4 Train staff at facilities on EMR	Staff trained in all sites on EMRs
		1.5.1.5 Maintenance and systems support of ICT infrastructure for EMRs	Functional ICT systems (95% uptime)
	1.5.3 Develop a comprehensive EMR for integrated services	1.5.3.1. Identify vendors/developers to develop/expand current EMRs	TORs for EMR development produced
			Tender for development of EMR advertised and firms shortlisted
			Contract for EMR development awarded to identified vendors
			Vendor for development of master patient index identified
		1.5.3.2 Develop a comprehensive EMR for integrated services	A comprehensive EMR covering for integrated services is developed
	1.5.4 Implement and expand comprehensive EMR according to needs	1.5.4.1 Procure hardware for comprehensive EMR	Hardware and infrastructure procured
		1.5.4.2 Install hardware for comprehensive EMR	Hardware installed in 50 sites
		1.5.4.3 Train staff on comprehensive EMR	Staff training conducted and ongoing mentorship in 50 sites
		1.5.4.4 Procure internet bundles for 50 sites	50 facilities are implementing expanded EMRs
		1.5.4.5 Develop/adapt guidelines for the use of biometrics for unique identification in the health sector	Guidelines for the use of biometrics for unique identification in the health developed

1.6. Strengthen implementation of a national civil registration system and the generation of vital statistics	1.6.1 Collaborate with clinical services, RHD, and nursing services to implement birth notification in all health facilities with maternity services, utilizing the electronic birth registration system (eBRS) in secondary and tertiary facilities, and ensure birth reports are submitted to civil registration authorities	1.6.1.1 Birth notification training sessions conducted	Number of training sessions complete, number of health workers trained
		1.6.1.2 Facilitate submission of birth reports to the civil registration authorities	# of health facilities submitting birth reports to the civil registration authorities
		1.6.1.3 Implement eBRS in secondary and tertiary facilities	eBRS implemented in secondary and tertiary facilities
	1.6.2 Collaborate with clinical services and nursing services to implement death notification, and medical certification of death and cause of death, utilizing the electronic death registration system (e-DRS) in secondary and tertiary facilities, in all health facilities and ensure death reports are submitted to civil registration authorities	1.6.2.1 Conduct death notification training sessions	Death notification training sessions conducted
		1.6.2.2 Follow up on submission of death reports from facilities	# of health facilities submitting death reports to the civil registration authorities

		1.6.2.3 Procure hardware and IT equipment	Electronic death registration system (eDRS) implemented in secondary and tertiary facilities,
		1.6.2.3 Conduct registration of deaths through eDRS in Health Facilities	Death notifications registered in the eDRS as a percentage of all deaths at the health facility
	1.6.3 Adopt standard procedures, guidelines and tools for assessing and improving CRVS system (for birth registration, death registration, medical certification of death and COD, and coding of COD)	1.6.3.4 Conduct workshops with NRB and MOHP to develop standard procedures and guidelines.	Standard procedures, guidelines and tools for assessing and improving CRVS system adopted and in place
	1.6.4 Introduce and implement community-based birth and death notification and registration	1.6.4.5 Print and distribute birth registration tools (NR8 form) to HSAs through health facility catchment area	Community-based birth notification implemented in collaboration with Community Health Section and NRB
		1.6.4.6 Train all HSAs on use of birth registration process and use of tools	Number of HSAs trained
		1.6.4.7 Sensitize community leaders through district council meetings	All DCOs receive information
		1.6.4.8 Print and distribute death registration tools (NR10 form) to HSAs through health facility catchment area	Community-based death notification implemented in collaboration with Community Health Section and NRB
		1.6.4.9 Train all HSAs on use of death registration process and use of tools	Number of HSAs trained
	1.6.5 Establish and implement preservice and in-service training package on	1.6.5.1 Develop training materials for medical certification of death and cause of death (MCCOD) in	Training materials for medical certification of death (MCCOD) developed

	certification of death and cause of death (MCCOD)	collaboration with clinical services department	# training sessions of clinicians on medical certification of death and cause of death (MCCOD) conducted
			Percentage of eligible health facilities/hospitals with at least one clinician trained on MCCOD
		1.6.5.2 Get approval from medical council of Malawi in the introduction of medical certification of death and cause of death (MCCOD) into clinical training curriculums	MCCOD training modules approved
			Percentage of eligible training institutions with at least one lecturer trained on MCCOD
			Percentage of eligible institutions that have introduced MCCOD into clinical training
	1.6.6 Establish a central coding unit overseen by CMED for ICD coding of medically certified causes of death according to WHO standards	1.6.6.1 Refurbishing room at KCH, to include renovations, furniture and IT equipment	Central coding unit established
		1.6.6.2 Develop TOR for coders	TOR for coders developed
		1.6.6.3 Train staff in ICD 10 coding	Staff in unit trained on ICD 10 coding
		1.6.6.4 Develop tools for monitoring quality of coding of causes of death for medically certified deaths	Tools for monitoring quality of coding of causes of death for medically certified deaths developed and in use

		1.6.6.5 Code and tabulate causes of death from all medically certified deaths	Percentage of eligible health facilities/hospitals coding and tabulating causes of death from medically certified deaths
	1.6.7 Develop data sharing agreements with NRB to ensure data is regularly (automatically) shared with MOH/CMED	1.6.7.1 Develop data sharing agreements with NRB to ensure data is regularly (automatically) shared with MOH/CMED	MoU on data sharing with NRB developed and signed
	1.6.8 Conduct national comprehensive evaluation of the civil registration and vital statistics (CRVS) in collaboration with NRB	1.6.8.1 Conduct national comprehensive evaluation of the civil registration and vital statistics (CRVS) in collaboration with NRB	National comprehensive evaluation of CRVS conducted in collaboration with NRB
1.7. Strengthen implementation of key health-related surveys	1.7.1 Coordinate with NSO and programs to align the national census and survey content and time (DHS, Integrated House Hold Survey, MICS, SAVVY) with National health and program indicators	1.7.1.1 Participate and advocate for timely design and implementation of key surveys in partnership with NSO and external partners including DHS, Integrated Household Survey, MICS, SARA, SAVVY, Malaria Indicator Survey, MPHIA, EMOC, STEPS, HIV ANC Seroprevalence survey, BBSS, TB prevalence survey)	CMED annual implementation plan includes calendar for key surveys implemented during the year
			M&E TWG agenda and minutes reflect discussions on design, planning and implementation of key surveys in line with the key survey calendar
1.8. Improve the population data used as	1.8.1 Consult NSO on best way forward to develop high quality denominators	1.8.1.1 Establish denominator gaps that need to be addressed with NSO (depart from the list of national and program level health indicators)	Population data denominator gaps are addressed

denominators in indicators		1.8.1.2 Conduct Consultation meetings with stakeholders on denominator gaps	CMED/NSO consultation meetings conducted to agree on how to address gaps
	1.8.2 Regular review of facility boundaries and catchment areas	1.8.1.3 Revise health facility catchment area maps and population	Revised maps of health facilities boundaries and their catchment population developed
		1.8.1.4 Integrate facility catchment area shape files into DHIS2 GIS	Facility catchment area shapes files developed and integrated into DHIS2 GIS
		1.8.1.5 Train HSAs and HMIS officers on how to estimate demographics and geography of catchment area	HMIS Officers trained on catchment population estimation
1.9. Strengthen disease surveillance through identification and reporting of notifiable diseases	1.9.1 Introduce a comprehensive M-health IDSR system that can communicate with EMRs and DHIS2	1.9.1.1 Customize eIDSR sofware	eIDSR Software adapted
		1.9.1.2 Procure mobile devices for e-IDSR	Hardware for eIDSR procured, configured, and distributed
		1.9.1.3 Scale up eIDSR solution to all districts	e-IDSR solution piloted in selected districts
1.10. Strengthen implementation of community information systems	1.10.1 Identify potential tools for community Health Information systems for national scale up as per Community Health Strategy (see also 2.8)	1.10.1.1 Conduct assessment of community health (mHealth) information systems tools	Assessment on existing community health information tools conducted
1.11. Align research to MOH priorities	1.10.2 Facilitate identification of key information needs (operational research questions) related to data management and information use	1.10.2.1 Conduct consultation meetings with stakeholders on research needs related to data management and use	Information needs identified

	1.10.3 Build capacity for CMED staff and HMIS officers to conduct research	1.10.3.2 Facilitate participation of CMED and HMIS officers in research fora	Health systems research training conducted
		1.10.3.3 Facilitate attendance of CMED and HMIS Officers in Research trainings	CMED and HMIS officers participated in research training
	1.10.4 Conduct and disseminate operational research	1.10.4.1 Conduct and disseminate operational research	Operational research conducted and disseminated
2.1. Ensure timely tracking of priority HSSP2 Indicators	2.1.1 Define and document national and program level indicators	2.1.2 Define and develop meta data dictionary for DHIS2	Meta data dictionary for DHIS2 developed and in place
		2.1.3 Define and document national health-level indicators	National health indicator handbook published
		2.1.4 Define and document program level indicators	Program-level indicator handbook published
		2.1.5 Develop online indicator documentation tool	Online indicator documentation tool functional and in use
2.2. Implement coordinated approach to routine data validation	2.2.1 Train CMED and HMIS staff in DHIS2 DQR application	2.2.1.1 Train CMED and HMIS staff in DHIS2 DQR application	40 Officers training in DHIS2 DQR application
	2.2.2 Conduct routine data validation in line with SOP on data quality assurance	2.2.2.1 Conduct routine data validation in line with SOP on data quality assurance	Monthly reports on data validation
	2.2.3 Conduct a comprehensive biannual data quality review	2.2.3.2 Conduct a comprehensive biennial data quality review	DQR report prepared
	2.2.4 Conduct biannual data quality review meetings	2.2.4.1 Conduct biannual data quality review meetings	Biannual data quality review meetings held at zonal level

	2.2.5 Conduct quarterly data quality review meetings	2.2.5.1 Conduct quarterly data quality review meetings	Quarterly data quality review meetings held at district level
	2.2.6 Conduct district-level semiannual supervision/mentorship and on-the-job training to ensure adherence to relevant SOPs (see Objective 1.2)	2.2.6.1 Conduct district level semiannual supervision/mentorship and on-job training to ensure adherence to relevant SOPs (see Objective 1.2)	29 districts and 5 CH data management staff supervised, mentored and provided with on-the-job training
	2.2.7 Conduct facility level quarterly supervision/mentorship and on-job training to ensure adherence to relevant SOPs (see Objective 1.2)	2.2.7.1 Conduct district-level semiannual supervision/mentorship and on-the-job training to ensure adherence to relevant SOPs (see Objective 1.2)	Data management staff at 900 facilities supervised, mentored, and provided with on-the-job training
	2.2.8 Conduct national-level health sector reviews	2.2.8.1 Conduct National Health Sector Joint Annual Review Meetings	National health sector joint annual review meetings conducted
	2.2.9 Conduct semiannual zonal health sector reviews	2.2.9.1 Conduct Semi-Annual Zonal Health Sector Reviews	Semi-Annual zonal health sector review meetings conducted
	2.2.10 Implement district-specific dashboards	2.2.10.1 Define and deploy district-specific dashboards	District specific dashboards deployed
		2.2.10.2 Train and empower district staff on data analysis, interpretation and use, including the use of district-specific dashboards	District staff trained on use of dashboards
	2.2.11 Support (prepare reporting templates, print outs) HMIS officers to conduct semiannual facility-level data reviews	2.2.11.1 Support (prepare reporting templates, print outs) HMIS officers to conduct semiannual facility-level data reviews	Semiannual facility-level data reviews conducted

	2.2.12 Produce and disseminate district-level HMIS bulletins	2.2.12.1 Produce and disseminate district-level HMIS bulletins	District level HMIS bulletins disseminated annually
2.3. Promote the use of data for decision-making at health facility level	2.3.1 Conduct monthly facility-level data review meetings	2.3.1.1 Conduct monthly facility level data review meetings	Monthly facility-level data reviews conducted
	2.3.2 Support facilities to prepare data products (graphs, tables, action plans)	2.3.2.1 Support facilities to prepare data products (graphs, tables, action plans)	Facility-level information products developed
	2.3.3 Implement innovative approaches to use paper-based systems for decision support at the point of care	2.3.3.1 Implement innovative approaches to use paper-based systems for decision support at the point of care	Report with proposed solutions and analysis tools in place
2.4. Institutionalize systematic use of data in regular review meetings at all levels	2.4.1 Conduct health information symposiums to showcase data use best practices	2.4.1 .1 Conduct health information symposiums to showcase data use best practices	Data use best practices symposiums conducted
2.5. Ensure that analysis of all data sources evaluates health equity and universal health coverage (age, sex, rural/urban location)	2.5.1 Train CMED Officials on how to use the HEAT tool	2.5.1.1 Train CMED officials on how to use the HEAT tool	HEAT training for CMED officials conducted
	2.5.2 Monitor health indicators with the largest equity disparities	2.5.2.1 Identify health indicators with largest equity disparity	Health indicators for equity analysis and reporting identified
		2.5.2.2 For identified indicators, define and report on health equity targets with recommendations that would inform budget priorities	Targets and recommendations defined for national health indicators with largest equity disparity;

	2.5.3 Integrate equity analysis reporting into the annual data bulletins and reports	2.5.3.1 Integrate equity analysis reporting into the annual data bulletins and reports	Equity analysis reporting integrated in the annual data bulletin for the period 2019–2020
	2.5.4 Conduct annual age-sex disaggregation exercise	2.5.4.1 Conduct annual age-sex disaggregation exercise	Annual age and sex disaggregation exercise report produced
2.6. Build capacity of actors across all levels on data analysis, interpretation, and use	2.6.1 Conduct a detailed training needs assessment (TNA) for CMED (national, central hospitals, and districts)	2.6.1.1 Conduct a detailed training needs assessment (TNA) for CMED (national, central hospitals, and districts)	Training needs assessment conducted and disseminated to relevant partners
	2.6.2 Conduct CPD training activities for HMIS staff at all levels	2.6.2.1 Conduct annual CMED (national) continuing professional development (CPD) workshops based on the TNA recommendations, with a focus on data analysis, interpretation and use, including data triangulation	Annual CPD CMED workshops conducted
	2.6.3 Hold training and workshops at all levels to improve data analysis, interpretation, and use, including dissemination of information products	2.6.3.1 Train MOH Departments, zonal and Programmes on data literacy, data analysis, interpretation and use	Workshop sessions conducted
		2.6.3.2 Train DHMT on data literacy, data analysis, interpretation, and use	Workshop sessions conducted
		2.6.3.3 Train health facility staff on data literacy, data analysis, interpretation, and use, including in vital statistics	Workshop sessions conducted

2.7. Institutionalize dissemination of information, products, and resources, both internally and externally	2.7.1 Develop and implement dissemination plan for MOH	2.7.1.1 Determine need for information products across MOH and partners (products, schedule, audience, and communication channels)	Stakeholder information needs assessment conducted and results shared with relevant stakeholders
		2.7.1.2 Develop disseminating plan for information products (products, schedule, audience, and communication channels)	Information dissemination plan developed
		2.7.1.3 Develop and publish new information products as based on dissemination plan	HMIS bulletin prepared and published quarterly, semiannually, and annually
			Birth and death statistics published on regular basis
			Senior management HMIS indicator briefs, quarterly
			Annual health sector performance reports prepared and disseminated
			Develop and roll out standard template for district data bulletins
			District data bulletins prepared and published quarterly
			Program-level quarterly, semiannual, and annual reports prepared and disseminated
	2.7.2 Design web portal for dissemination of resources and information (repository for sharing resources and information with MOH and external partners)	2.7.2.1 Define concept (high-level requirements and specifications of the web portal content)	Concept and specifications for the web portal developed
		2.7.2.2 Develop TORs, advertise and hire consultant	ToRs developed, consultant hired
		2.7.2.2 Design web portal	Web portal developed

	2.7.3 Design and develop DHIS 2 link to MOH website	2.7.2.1 Define concept (high-level requirements specifications) of how DHIS 2 will interact with the MOH website in collaboration with ICT dept. of MOH	DHIS 2 linked to MOHP website
		2.7.2.2 Develop TORs, advertise and hire consultant	Consultant hired
		2.7.2.3 Develop DHIS 2 links to MOH website	DHIS 2 links to MOH website fully functional
2.8. Strengthen process monitoring of HSSP2 implementation and annual Implementation Plans	2.8.1 Designate M&E focal persons in departments/programs	2.8.1.1 Designate M&E focal persons in departments/programs	M&E focal persons designated
	2.8.2 Develop tools for process monitoring	2.8.2.1 Develop tools for process monitoring	Tools and templates for activity tracking and monitoring developed
		2.8.2 .2 Orientation of M&E focal persons on data requirements and tools for process monitoring	M&E focal personas for each Department oriented
	2.8.3 prepare monthly, quarterly, semiannual and annual health sector performance reports and disseminate to stakeholders	2.8.3.1 Prepare monthly, quarterly, semiannual, and annual health sector performance reports and disseminate to stakeholders	Regular performance reports prepared and disseminated
	2.8.4 Coordinate implementation of regular review meetings across departments/programs and adequately document meeting minutes	2.8.4.1 Coordinate implementation of regular review meetings across departments/programs and adequately document meeting minutes	Departmental review reports submitted

	2.8.5 Contribute health sector performance report for compilation of the MGDS periodic Reports	2.8.5.1 Contribute health sector performance report for compilation of the MGDS periodic reports	Health sector performance reports prepared and shared with EP&D
2.9. Strengthen expenditure analysis at national and subnational levels to monitor effective allocation of resources	2.9.1 Conduct public expenditure tracking exercises semiannually	2.9.1.1 Conduct desk analysis of financial tracking systems for GoM and implementers and make recommendations for a minimum dataset of expenditures linked to HSSPII outcomes and objectives	Desk analysis and recommendations report delivered to MoHP
		2.9.1.2 Develop electronic tool for routine aggregation and analysis of GoM and implementer expenditure data	
	2.9.2 Complete and disseminate national health account report	2.9.2.3 Conduct national health accounts	National health accounts surveys conducted
		2.9.2.4 Disseminate national health accounts report	National health accounts surveys report written and disseminated
	2.9.3 Complete and disseminate resource mapping report	2.9.3.5 Conduct resource Mapping Surveys	Resource mapping surveys conducted
		2.9.3.6 Disseminate Resource Mapping report	Resource mapping surveys report written and disseminated
2.10. Strengthen social accountability systems through participatory community performance monitoring and evaluation systems	2.10.1 Facilitate implementation of the community score card method for evaluation	2.10.1.1 TOT training for community scorecard	TOT training conducted
		2.10.1.2 Conduct training for HSAs on community scorecard	Community scorecard training implemented

3.1 Update eHealth strategy for next 5 years within the framework of national ICT policy	3.1.1 Conduct a review of the 2011–2016 eHealth strategy to inform the development of the new strategy	3.1.1.1 Conduct a review of the 2011-2016 E-health strategy to inform the development of the new strategy	Review report produced and disseminated
	3.1.2 Develop of eHealth strategy	3.1.2.1 Conduct situation analysis on eHealth	Situation analysis report
		3.1.2.2 Draft the eHealth strategy	Draft eHealth strategy document
		3.1.2.3 Conduct a stakeholders' meeting to review the draft eHealth strategy	Stakeholders meeting to review draft eHealth strategy conducted
		3.1.2.4 Present final eHealth draft to senior management for review and approval	Revised eHealth strategy presented to Senior management and approved
		3.1.2.5 Print and disseminate the eHealth strategy	200 copies of revised and updated eHealth Strategy printed and disseminated to all stakeholders
	3.1.2 Track implementation of the eHealth strategy	3.1.2.1 Include eHealth activities in CMED Annual Implementation Plan	* CMED Annual Implementation plan includes eHealth activities
		3.1.2.2 Include eHealth on TWG agenda	* M&E TWG, mHealth and national data standards sub-groups agenda and meeting minutes reflect implementation of the E-health Strategy
3.2 Implement the HIS Policy	3.2.1 Disseminate HIS policy at national and district level	3.2.1.1 Disseminate the HIS policy at national and district level	HIS policy presentations conducted at national and district level

	3.2.2 Revise and develop HIS SOPs	3.2.2.1 Revise and develop HIS SOPs: - Revision of health indicators and data collection tools - Data access and release - HMIS data management - Data analysis, interpretation, and use - Maintenance of master health facility list - Coding cause of death - Data quality assurance - User support - User account management - Data breach - Introduction of new systems - Interoperability of systems - Disaster recovery	The following SOPs revised and ready for piloting: - Revision of health indicators and data collection tools - Data access and release - HMIS Data management - Data analysis, interpretation, and use - Maintenance of master health facility list - Coding cause of death - Data quality assurance - User support - User account management - Data breach - Introduction of new systems - Interoperability of systems - Disaster recovery
		3.2.2.2 Test the revised SOPs	The revised SOPs tested in select sites and adjusted accordingly
		3.2.2.3 Review piloted SOPs	Final SOPs approved and ready for printing
		3.2.2.4 Print revised SOPs	1000 copies of each revised SOP printed
	3.2.3 Disseminate the SOPs to DHMTs and data management personnel	3.2.3.1 Conduct SOP dissemination sessions for DHMTs and data management personnel (national, zonal, and district level)	35 SOP dissemination sessions held (national, zonal, and district level)
	3.2.4 Provide training and mentoring on SOPs at facility national and district level	3.2.4.1 Train appropriate personnel at national and district level on SOPs	750 health facilities, 28 districts, and national level departments trained in the use of select SOPs
		3.2.4.2 Provide ongoing mentorship to ensure SOP implementation	750 health facility teams, 28 district teams and select national programs regularly mentored

3.3 Strengthen M&E TWG and its sub-TWGs	3.3.1 Functional M&E TWG/Working groups	3.3.1.1 Revise TORs for the M&E TWG and its subgroups (including merging with the Health Data Collaborative)	TORs for the M&E TWG and its subgroup revised and in place
		3.3.1.2 Participate in the CRVS TWG, MCCoD Task Force, and eBRS/eDRS Task Forces	Report from Ministry of Health listed on CRVS TWG agenda and in meeting minutes
		3.3.1.3 Develop annual schedule of meetings for the M&E TWG and its subgroups (mHealth, data standards, access and equity)	Schedule for M&E TWG and its subgroups developed annually
		3.3.1.4 Conduct quarterly M&E TWG and sub-TWG meetings (HDC, mHealth, National Data Standards, equity and access)	Four M&E TWG meetings and 2 HDC meetings conducted annually
3.4. Ensure alignment of partner activities to the MoH HIS/M&E strategies and annual implementation Plans	3.4.1 To review and update regularly HIS needs and investments from partners and government	3.4.1.1 Update the list of key HIS/M&E partners	Updated list of key HIS/M&E partners in place
		3.4.1.2 Facilitate development of joint annual HIS/M&E annual implementation plan	Joint Annual HIS/M&E plan for the health sector in place
		3.4.1.3 Finalize common investment framework and update annually	Common investment framework in place and updated annually
		3.4.1.4 Conduct joint MoH M&E/HIS work plan review sessions with key stakeholders at the M&E TWG	Quarterly joint review sessions conducted with key stakeholders
4.1. Recruit HIS staff for vacant position in accordance with existing staffing	4.1.1 Recruit HIS staff for vacant position in accordance with existing staffing norms for HIS at all levels.	4.1.1.1 Identify existing vacant HIS staff posts	Vacancy analysis report produced and # of vacant posts identified
		4.1.1.2 Seek authority from DHRMD to fill vacant posts	Authority to recruit obtained from DHRMD

norms for HIS at all levels.		4.1.1.3 Recruit staff to fill vacancies based on available budget	HMIS vacancies filled
4.2. Create and redefine HIS positions based on need	4.2.1 MOH to propose a functional review to DHRMD in consultation with relevant MDAs, i.e. EP&D, NSO, DHRMD, L Govt	4.2.1 .1 Functional review report produced and disseminated	Functional review report produced and disseminated
		4.2.1.2 Review and redefine existing and new job descriptions	Job descriptions developed and disseminated
		4.2.1.3.Create new CMED organogram based on results of functional review approved by DHRMD	New CMED organogram based on results of functional review approved by DHRMD
4.3. Improve retention of HIS staff	4.3.1 Develop a system to retain HIS staff through financial and non-financial incentives	4.3.1.1 Develop guidelines non-monetary incentives (system where social incentives i.e. certificates and celebrations)	Guidelines for non-monetary incentives developed
		4.3.1.2 Implement guidelines for non-monetary incentives in phased approach	Guidelines for non-monetary incentives implemented in phased approach
4.4. Institute regular capacity building activities	4.4.3 Develop HIS training guide (linked to training needs assessment - 4.7)	4.4.3.1 Develop HIS training guide (linked to training needs assessment - 4.7)	HIS Capacity building guidelines developed and implemented
	4.4.4 Develop a national HIS curriculum	4.4.4.1 Develop HIS curriculum outline	HIS curriculum outline developed and approved
		4.4.4.2 Develop content for HIS Curriculum based of the approved outline	HIS Curriculum content developed and approved
	4.3.5 Implement the new HIS curriculum based on the training guide	4.3.5.1 Conduct ToT on new curriculum, collect feedback, and revise	ToTs conducted based on new HIS curricula
		4.3.5.2 Conduct meetings to disseminate HIS curriculum	Dissemination meetings conducted

	4.3.6 Incorporate HIS curriculum in preservice training	4.3.6.1 Conduct stakeholder meetings with training institutions to incorporate new HIS curriculum	Number of institutions using the curriculum/ total institutions
	4.3.7 Monitor and review progress of implementation the new HIS curriculum	4.3.7.1 Develop and implement a tool to track HMIS-related training at national and district levels	Training tracker operational with all training and capacity building activities recorded in it
	4.3.8 Revise HMIS manuals	4.3.8.1 Update/develop HMIS Manuals	HMIS manuals drafted/develop
	4.3.8.1 Disseminate HMIS manuals	4.3.8.2 Print and disseminate revised HMIS manuals to all districts and facilities	Revised HMIS training manual printed and disseminated to all districts and facilities
4.5. Develop and implement mentoring and supervision strategies to improve HIS worker performance at all levels	4.5.1 Develop tools for performance assessments	4.5.1.2 Develop standardized HMIS supervisory checklist	Standard HMIS supervisory checklist in place and distributed
4.6. Advocate for earmarked provision of M&E and research funding to a minimum of 2% of MoH total budget allocation	4.6.1 Engage with the MoH budgeting team on the allocation of the stipulated amount	4.6.1.1 Hold meetings with MoH budgeting team on allocation of stipulated amount	Dedicated HIS budget line to cost center (district) level established in MOH budget
			At least 2% of total MoH budget allocated to M&E and Research starting fiscal year 2019–2020
4.7. Develop an inventory of eHealth solutions	4.7.1 Map existing eHealth interventions	4.7.1.1 Conduct a mapping of existing eHealth interventions	Mapping of existing eHealth interventions produced

4.8. Strengthen ICT infrastructure and connectivity to support implementation of HIS activities	4.8.1 Conduct assessment of existing connectivity and develop infrastructure architecture	4.8.1.2 Conduct situation analysis of existing connectivity	Report on internet connectivity of health facilities to GWAN, Baobab WAN, and/or commercial providers completed
		4.8.1.3 Develop Infrastructure architecture	Infrastructure architecture developed and adopted
	4.9.2. Develop a costed ICT infrastructure and connectivity plan for resource allocation and mobilization	4.9.2.1 Develop costed ICT infrastructure and connectivity plan for resource allocation and mobilization	An ICT infrastructure plan developed and costed (also see common investment framework – 1.4)

ANNEX 4. MALAWI NATIONAL HEALTH INDICATORS AND TARGETS

HSSP thematic area	Indicator	Baseline	Year	Source	Target (2018)	Target (2020)	Target (2022)
Impact indicators							
Services	Maternal mortality ratio	439/ 100,000 live births	2015	DHS	439	400	350
	Neonatal mortality rate	27 per 1,000 live births	2015	DHS	26	24	22
	Infant mortality rate (IMR)	42 per 1,000 live births	2015	DHS	40	37	34
	Under-5 mortality rate (U5MR)	64 per 1,000 live births	2015	DHS	64	55	48
	HIV Incidence (15–49 years old)	4.1/1000 person/years	2015	JAHR	2.6	2.2	2.0
	TB case notification rate	121 per 100,000	Tbc	Tb plan	191	196	196
	Malaria incidence rate	304 per 1,000	2015	DHIS-2	300	260	200
	Malaria parasite prevalence among children 6–59 months	33%	2014	MIS	28%	24%	20%
	Mortality rate from CV diseases, cancer, diabetes, chronic respiratory diseases	19%	Tbc	NCD profile	15.2%	11.4%	7.6%
	Suicide mortality rate	0.3 per 100,000	2015	HMIS	14	12	10
	Road traffic accident mortality rate	1.1 per 100,000	2015	HMIS	5.4	4.9	4.1
	Adolescent fertility rate (15–19-year olds), per 1,000 women	136 per 1,000 women	2015	DHS	125	115	100
	Total Fertility Rate	4.4	2015	DHS	4.4	3.5	3.0
	Inpatient malaria deaths per year per 100,000 population	23 per 100,000	2015	HMIS	20	17	14
Financing	Out-of-pocket payment for health	10.9%	2015	NHA	10.9%	9.5%	7%
Specific objectives							
Services	ART coverage among known HIV-infected pregnant women	85%	2016Q4	HIV report	83%	85%	85%
	ART coverage	68%	2016Q4	HIV report	68%	78%	90%
	HIV-positive TB patients on ART during TB treatment	92-6%	Tbc	Tb plan	95%	95%	95%
	Second line treatment coverage among multi-drug resistant tuberculosis (MDRTB) cases	100%	2014	CRL	100%	100%	100%
	% of births attended by skilled health personnel	89.8%	2015	DHS	91	93	95
	Demand for family planning (FP) satisfied with modern methods	Married: 74.6%	2015	DHS	80%	82%	84%
	IPTp for malaria during pregnancy	30%	2015	DHS	40%	50%	60%
	Penta III coverage	93%	2015	DHS	95%	97%	99%
	% of 1-yearold children immunized against measles	91.2%	2015	DHS	92%	93%	94%
	% of 1-yearold children fully immunized	71.3%	2015	DHS	88%	90%	92%
	Use of insecticide treated nets (ITNs)	44.7% (Under 5), 46.7% (PW)	2015	DHS	75%	80%	85%
	ANC- at least 4 visits	50.6%	2015	DHS	55%	60%	65%
	Postpartum care coverage	39.2% (DHS)/75% (MICS)	2015	DHS	84%	87%	90%
	Modern CPR (all women)	Married women: 58%	2015	DHS	61%	67%	73%
	Children with diarrhea receiving oral rehydration salts (ORS)	64.7%	2015	DHS	70%	79%	85%
	Vitamin A supplementation on coverage (6-59 months)	64.1%	2015	DHS	99%	99%	99%
	Cervical cancer screening	N/A	Tbd	Tbd	Tbd	Tbd	Tbd

HSSP thematic area	Indicator	Baseline	Year	Source	Target (2018)	Target (2020)	Target (2022)
	TB treatment success rate	84%	Tbc	Tb plan	88%	89%	90%
	ART retention rate (12 months)	80%	2016Q3	HIV report	80%	80%	80%
	EHP Coverage	73.3%	2017	Prog.	75%	77%	80%
	Outpatient service Utilization (OPD visits per 1,000 population)	1,046 visits	Tbd	Tbd	>= 1,100	>= 1,100	>= 1,100
Access	% of health facilities with stock-outs of Tracer medicines	20%	Tbd	Pharma plan	5%	5%	5%
HRH	Health worker density and distribution (see details in annex)	Government Doctor: 0.2(358) / 10,000	2017	IHRIS	0.2 (447)	0.3 (625)	0.4 (804)
Infrastructure	% of population living within 8 km of a health facility	81%	2011	HSSP I	81%	85%	90%
Information	Completeness of reporting by facilities	94.5%	2015	HMIS	99%	99%	99%
Financing	% of GoM budget allocated to health sector	6%	2015	NHA	9%	12%	15%
Services	(IHR) core capacity index	50%	2015	IHR	60%	80%	100%
Risks factors	Heavy episodic drinking	19% men, 2.3% women	2009	STEPS	18.8;2.8	18.4;2.7	17.9;2.6
Risks factors	Tobacco use among persons aged 18+ years	14%	2009	STEPS	14%	12%	10%
Risks factors	Stunting prevalence (under-five)	37%	2015	DHS	35%	33%	31%
Risks factors	Wasting prevalence (under-five)	2.7%	2015	DHS	2.2%	1.7%	1%
Risks factors	% of households with access to improved sanitation	51.(%	2015	DHS	65%	75%	85%
Risks factors	% of households with access to improved water source	87%	2015	DHS	87%	91%	95%
Risks factors	Minimum acceptable diet for children 6-23 months	7.8%	2015	DHS	13%	18%	23%
Risks factors	Overweight prevalence (under-five)	4.5%	2015	DHS	3.7%	3.3%	2.7%
Risks factors	Percentage of low birth weight babies	12.3%	2015	DHS	11%	9.5%	8%
Risks factors	Percentage of children 6-59 months with anemia	63%	2015	DHS	61%	59%	58%
Services	Client satisfaction with health services	N/A	Tbd	Tbd	70%	75%	80%
Financing	Total health expenditure per capita (at average USD exchange rate)	39.2 USD	2015	NHA	USD 43	USD 45	USD 47
HRH	% of health centers meeting the minimum staff norms	Tbd	Tbd	Tbd	Tbd	Tbd	Tbd
Services	UHC index	Tbd	Tbd	Tbd	Tbd	Tbd	Tbd

*Some targets reported in the National Health Indicator handbook differ from those reported in the original HSSP II report due to updates available between the launch dates.

ANNEX 5. INDICATOR REFERENCE SHEET

Unique identifier (code)	All indicators will be assigned a code that references the program.
Indicator name	A brief description of the indicator gives a general sense of what is being measured.
Indicator definition	A detailed description of the indicator. After reading the definition, you should understand what the indicator is measuring and what units it uses (e.g., percent, per 1,000 live births).
Alignment (HSSP I; Global 100; SDG)	This indicates whether this indicator (or a similar one) was part of HSSP I, the WHO Global Reference List of 100 Core Health Indicators, or the Sustainable Development Goals.
Numerator	A detailed description of the numerator.
Numerator source (primary; reporting form)	Source of information for the numerator. If a survey, it should specify which one(s). If from the HMIS system, this will give both the register(s) and the reporting form(s).
Denominator	A detailed description of the denominator.
Denominator source	Source of information for the denominator.
Method of calculation	The simple description of the calculation used to produce the indicator.
Calculation (HMIS)	(Only relevant for indicators available in DHIS 2.) This section states how the indicator should be calculated within DHIS 2. In many cases, there may be several data elements, stemming from parallel reporting systems, which could be chosen for each necessary variable within the calculation. This section will list the names of the preferred forms and data elements, providing consistent guidance to DHIS 2 programmers and stakeholders. This ensures indicators are programmedd according to calculations, and with specific data elements, that are standard and transparent.
Lowest administrative level	This is the lowest administrative unit (health facility, district, region, national) recommended for disaggregation that should be measured as part of the national health indicator process. (Note that while facility-level data and disaggregation is possible for many coverage indicators, it may not be recommended for this process.)
Disaggregation	Aside from administrative level, how the indicator should be disaggregated, e.g., by age, by sex, etc.
Reporting frequency	The frequency with which the indicator should be measured as part of the national health indicator process. (Note: survey indicators cannot be measured more frequently than the survey is conducted; HMIS indicators may be collected monthly, but as part of the national health indicator process, it is recommended to report them annually unless there is clear reason to track them more frequently.)
Rationale	The reason this indicator is important to monitor.
Notes for interpretation	Provides information useful to understanding what the values of the indicator means. Includes quality issues and other potential biases. This is supplemented by general guidance on interpreting HMIS indicators.
Custodian of the indicator	Department or program responsible for the indicator. Although multiple departments/programs may have an interest in, or contribute to, a specific indicator; the custodian has the overall responsibility to solicit feedback from all invested programs and stakeholders and to coordinate their input, approve revisions to the indicator, and set targets. Other programs may initiate changes through the custodian.
M&E framework level	Input, output, outcome or impact indicator.
Baseline / recent estimates	The most recent available data on an indicator. For indicators that have baseline values available from multiple sources, several sources are shown to provide more context.
Targets (2018; 2020; 2022)	Targets, set by the custodian, for the years 2018, 2020, and 2022, within HSSP II implementation. It is recommended that targets should be ambitious but achievable. *Some targets reported in the National Health Indicator handbook differ from those reported in the original HSSP II report due to updates available between the launch dates.

ANNEX 6. CORE MEHIS STRATEGY DEVELOPMENT TEAM

NAME	DESIGNATION	ORGANISATION
Isaac Dambula	Deputy Director	Planning and Policy Development Department (MoHP)
Tasira Mwaupighu	Chief Economist	Planning and Policy Development Department (MoHP)
Simeon Yosefe	Chief Statistician	Planning and Policy Development Department (MoHP)
Mwayi Kachapila	Economist	Planning and Policy Development Department (MoHP)
Jacob Kawonga	Senior Monitoring & Evaluation Advisor	MoHP/CMED/USAID funded HP+ Project
Thokozani Sambakunsi	Data Impact Coordinator	MoHP/CMED/ Data for Health
Maganizo Monawe	Health Informatics Advisor	MoHP BMGF/Kuunika Project
Dr Simon Ndira	HIS Advisor	MoHP/CMED/GIZ
Efrida Ghobede	Health Informatics Advisor	MoHP/CMED/CDC/EGPAF
Dr Laura Cobb	Senior Technical Advisor	Vital Strategies
Dr Ruxana Jina	Senior Technical Advisor	Vital Strategies
Emily Cercone	Technical Advisor	Vital Strategies
Ambonishe Mwalwimba	CVRS Coordinator	MoHP/CMED/Data for Health
Dr Eduardo CELADES	Technical Officer	WHO
Tyler Smith	Technical Director	Cooper and Smith