

**THE GOVERNMENT OF MALAWI'S
INVESTMENT CASE FOR
REPRODUCTIVE, MATERNAL,
NEWBORN, CHILD AND
ADOLESCENT HEALTH AND
NUTRITION**

**MINISTRY OF HEALTH AND POPULATION
GOVERNMENT OF MALAWI
2020 - 2022**

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Abbreviations

ACT	Artemisinin-based Combination Therapy
AEFI	Adverse Events Following Immunization
AFP	Acute Flaccid Paralysis
ANC	Antenatal Care
ARI	Acute Respiratory Infections
ART	Antiretroviral Therapy
BEmONC	Basic Emergency Obstetric and Neonatal Care
CEmONC	Comprehensive Emergency Obstetric and Neonatal Care
CHAG	Community Health Action Groups
CHAM	Christian Health Association of Malawi
CIP	Capital Investment Plan
CMAM	Community-based Management of Acute Malnutrition
CMED	Central Monitoring & Evaluation Division
CMST	Central Medical Stores Trust
COD/ MCCoD	Cause of Death/ Medical Certification of Cause of Death
CR	Civil Registration
CRVS	Civil Registration and Vital Statistics
CSO	Civil Society Organization
DALY	Disability Adjusted Life Year
DFID	Department for International Development
DHIS	District Health Information System
DHMT	District Health Management Team
DHO	District Health Office
DIP	District Implementation Plan
DPAT	District Product Availability Teams
DPPD	Department of Planning and Policy Development
EHP	Essential Health Package
EPI	Expanded Programme on Immunization
EQUIST	Equitable Impact Sensitive Tool
ETAT	Emergency Triage Assessment and Treatment
FP	Family Planning
GDP	Gross Domestic Product

GoM	Government of Malawi
HCMC	Health Centre Management Committee
HCMC	Health Center Management Committee
HIS	Health Information System
HPAT	Health Center Product Availability Teams
HRH	Human Resources for Health
HRMIS	Human Resources Management Information System
HSA	Health Surveillance Assistant
HSJF	Health Services Joint Fund
HSSP II	Health Sector Strategic Plan II
IC	Investment Case
iCCM	Integrated Community Case Management
IDA	International Development Association
iHRIS	Human Resources Information System
IMCI	Integrated Management of Childhood Illness
IPTp	Intermittent Preventive Therapy for pregnant women
ISS	Integrated Supportive Supervision
ITN	Insecticide Treated Nets
LiST	Lives Saved Tool
LMIS	Logistics Management and Information System
M&E	Monitoring and Evaluation
MDA	Ministries, Departments, and Agencies
MDHS	Malawi Demographic and Health Survey
MDSR	Maternal Death Surveillance and Response
MDTF	Multi-Donor Trust Fund
MEHIS	Monitoring, Evaluation and Health Information Systems
MOH	Ministry of health
NCHS	National Community Health Strategy
NHA	National Health Accounts
NRB	National Registration Bureau
NRU	Nutrition Rehabilitation Units
ORS	Oral Rehydration Solution
OTP	Outpatient Therapeutic Programme
PCV	Pneumococcal Conjugate Vaccine
PHC	Primary Health Care

PMTCT	Prevention of Mother to Child Transmission of HIV
PNC	Post Natal Care
PSM	Procurement and Supply Chain Management
PSP	National Pharmaceutical Strategic Plan
QMS	Quality Management Strategy
RETF	Recipient-Executed Trust Fund
RHS	Reproductive Health Strategy
RMNCAH+N	Reproductive, Maternal, Neonatal, Child, Adolescent Health and Nutrition
SAM	Severe Acute Malnutrition
SDG	Sustainable Development Goals
SFP	Supplementary Feeding Programme
SHSA	Senior Health Surveillance Assistant
SLA	Service-Level Agreement
SOP	Standard Operating Procedure
STI	Sexually Transmitted Infection
TFR	Total Fertility Rate
TOR	Terms of Reference
TTV	Tetanus Toxoid Vaccine
TWG	Technical Working Group
U5MR	Under Five Mortality Rate
UHC	Universal Health Coverage
USAID	United States Agency for International Development
VHC	Village Health Committees
WHO	World Health Organization
YFHS	Youth Friendly Health Services
ZQMO	Zonal Quality Management Offices

Foreword

The Government of Malawi (GoM) is committed to reducing unnecessary and avoidable maternal, neonatal, child and adolescent deaths; with the intention of improving the health and quality of life of all women, adolescents and children in Malawi. This commitment has been demonstrated by Malawi's participation in global platforms which intend to achieve notable positive results in maternal, child and adolescent health, such as the Sustainable Development Goals (SDGs) and the Global Financing Facility.

In order for Malawi to achieve its ambitious targets for health, there is a need for additional resources over and above what the Government is currently able to contribute. Additionally, it is recognized that strategic investments channeled towards a number of high impact interventions in reproductive, maternal, neonatal, child, adolescent health and nutrition (RMNCAH+N) will contribute greatly to reducing avoidable deaths in the short-term. These health gains can grow over time as a result of targeted interventions aimed at improving the health system as a whole. In order to guide the implementation of these high impact interventions the Government of Malawi through the Ministry of health has developed an RMNCAH+N investment case.

The success of this investment case resides in aligning resources towards the identified priority areas through improved coordination between the GoM and development partners with a focus on achieving key results. Together, we will reduce maternal mortality; infant mortality; neonatal mortality; stunting and the existing inequities in health outcomes.

I, therefore, pledge Government leadership in implementing this investment case. I also would like to call upon all key stakeholders within Government, as well as development partners, and civil society to align their resources towards the implementation of this investment case and help Malawi achieve its ambitious targets in RMNCAH+N outcomes.

Honorable Khumbize Kandodo Chiponda, M.P.

Minister of Health

Acknowledgements

The investment case for reproductive, maternal, neonatal, child, adolescent health and nutrition (RMNCAH+N) indicates a prioritized set of interventions for reducing preventable maternal, child and adolescent deaths and improving the quality of life of the young generation and their mothers.

Work on the RMNCAH+N investment case began in August 2018 and has involved many stakeholders through an extensive consultative process.

The Ministry of Health would like to extend its gratitude to the World Bank and the Global Financing Facility Secretariat for contributing financial and technical assistance towards the development of this investment case. The Ministry would also like to extend its gratitude to UNICEF for providing technical assistance on EQUIST, to the Bill and Melinda Gates Foundation (BMGF) for providing technical assistance, and members of the Global Financing Facility Task Force for providing valuable guidance and input during all stages of the Investment Case's development.

Special thanks should go to the following organizations for their technical contributions towards the development of this investment case: Clinton Health Access Initiative and the GFF Civil Society Platform. The Ministry would also like to extend its thanks to all MOH departments who made crucial contributions to ensure that the Investment Case appropriately reflects the needs of the various programme areas and the health system as a whole.

Dr. Charles Mwansambo,
Secretary for Health

Executive Summary

The Government of Malawi's medium-term Health Sector Strategic Plan (HSSP-II, 2017-22) aims to achieve the targets set out under Sustainable Development Goals (SDGs), including the goal to improve Reproductive, Maternal, Newborn, Child and Adolescent Health and Nutrition (RMNCAH+N) outcomes in Malawi. The 2022 goals under HSSP-II include reducing the maternal mortality ratio and child mortality rate, increasing access to reproductive health services and reducing stunting. The HSSP-II aimed to achieve this through the delivery of an Essential Health Package (EHP), a package of cost-effective health services which the Government of Malawi endeavors to provide free-of-charge to all citizens in need. The EHP aimed to maximize impact on Malawi's health outcomes given available resources by identifying and prioritizing cost-effective and high-impact interventions.

This investment case seeks to *identify and prioritize* strategies and interventions to address the existing bottlenecks in the delivery of the RMNCAH+N services in the EHP through a health systems approach. It aims to progressively increase domestic resources for health and reduce inefficiencies in health spending over time through coordinated planning and investment.

Given the multi-sectoral nature of RMNCAH+N services, the investment case was developed in collaboration with relevant ministries and departments including the Ministry of Finance, Ministry of Local Government, Ministry of Education, Ministry of Gender, Children, Disability and Social Welfare, and Ministry of Labour, Youth, Sport and Youth Empowerment, as well as other stakeholders at relevant levels, including civil society organizations, academia, private sector and development partners who contribute to the RMNCAH+N agenda.

Priority areas for investment based on bottleneck analysis

Through a bottom-up consultative process, a root cause analysis was conducted to identify the institutional and health systems bottlenecks to the delivery of the EHP. Key strategies and interventions for addressing these bottlenecks were then prioritized from existing government strategic documents through a consultative process. The interventions were categorized by HSSP-II objectives, in order to remain consistent with the existing strategic documents in Malawi's health sector. The bottlenecks and interventions can be summarized as follows:

Drugs and medical commodities: Inadequate access to essential medicines and supplies due to inefficiencies in procurement and supply chain management (PSM) as well as inadequate local capacity for PSM. Prioritized interventions aim to improve the availability of essential drugs and commodities by increasing procurements as per needs, strengthening procurement and supply chain systems with emphasis on better use of Logistics Management and Information Systems (LMIS data), improved transparency and accountability, and stronger regulatory mechanisms.

Quality of service delivery: Limited capacity for quality improvement measures due to inadequate coverage of health services as well as lack of capacity and motivation to implement the quality improvement measures. Interventions will design, develop and enforce health facility adherence to quality and safety standards, patient service charters at all facilities, clinical guidelines and SOPs at all levels, and health facility waste management. Additionally, interventions would institute systematic quality management and oversight at all levels, including strengthening communication and use of information at all levels.

Socio-economic and cultural factors: Low demand for health services due to lack of awareness as well as inadequate coverage of community health services. Interventions will hence promote healthy behavior and lifestyles and protective health policies through existing health sector structures as well as through collaborations with other sectors and key stakeholders.

Infrastructure: Inadequate geographic access to health facilities as well as insufficient and inadequately maintained health facility infrastructure. Selected interventions will improve access to health services through the construction of new health facilities, rehabilitation and upgradation of existing health facilities and expansion of community health structures. Interventions would also ensure physical connectivity and transport availability to health workers as well as to patients and local communities, for delivery of quality EHP services at all levels

Medical equipment: Inadequate supply of medical equipment to meet the demand due to the lack of health facility standard equipment guidelines and effective inventory management system. Interventions will ensure equitable investment for acquisition, replacement and repair of essential medical equipment.

Human resources for health: Inadequate availability and capacity of human resources for health due to limited availability of workers, inequitable distribution as well as inadequate pre-service training, in-service training and supportive supervision. Prioritized interventions will hence increase production capacity of prioritized health professionals as well as strengthen post-basic training and improve the management and deployment of the health workforce to address the supply-demand mismatch. To achieve these objectives, interventions would also strengthen regulation and management of health workers and ensure safe working conditions, and improve health worker motivation and retention, particularly in hard-to-reach areas.

Health information systems: Limited availability, reliability and use of data due to inadequate coordination as well as low capacity to use data for decision-making. Prioritized interventions will rationalize and strengthen data collection and reporting systems, including the existing DHIS2 platform, introduce Electronic Medical Records (EMRs) at the facility level and improve national civil registration system (CRVS); advance the interoperability of health information systems on a

single national country platform; and strengthen the monitoring of HSSP-II implementation through stronger HIS.

Leadership and governance: Weak partner coordination at the national, district and community level and need for stronger legislative environment for sexual and reproductive rights. Selected interventions will strengthen health sector policy and regulatory frameworks, as well as leadership, management, research and monitoring and evaluation of existing policy frameworks at national, district and community levels

Health financing: Inadequate absorption of available funds as well as their inequitable distribution. Prioritized interventions aim to increase efficiency in resource allocation and utilization for service providers and increase their financial autonomy

Interventions were based on the strategies included in existing national strategic documents including: the Human Resources for Health (HRH) Strategic Plan 2018-2022, the Capital Investment Plan (CIP), Monitoring, Evaluation and Health Information Systems (MEHIS) Strategy, National Community Health Strategy (NCHS), the National Pharmaceutical Strategic Plan (PSP) and the draft Quality Management Strategy and Reproductive Health Strategy. All of these were based on the approaches and objectives laid out within the HSSP-II.

Financing the identified strategies

The investment case estimates the total cost for the 125 prioritized interventions from the 9 HSSP II building blocks described above. The estimates were derived by systems and program specialists, based on existing strategic documents and an input-based costing framework developed for the IC. **The resources needed to implement the full list of interventions were estimated to be USD 928 million over a 3-year period** (between 2019-2022), of which USD 314 million would be required in the first year of implementation. Furthermore, only 25 interventions contributed 98% of the investment case costs, indicating that financial coordination can focus on this smaller list of 25 interventions and program coordination on the full list of 125 for maximum efficiency.

Given the substantial resources required for the implementation of all 125 interventions in the Investment Case, **a subset of 60 interventions have been prioritized**, the cost of these interventions is estimated at **USD 120 million, over three years of implementation**. Whilst a number of these interventions planned for **implementation nationwide, a certain number of more expensive interventions have been targeted specifically at districts where need is the greatest, according to sub-national data.**

These interventions are expected to address bottlenecks in the delivery of health services by strengthening the health sector building blocks described above. This is expected to avert close to 7,500 under-five deaths and more than 4,500 cases of stunting among children under-five years in

the period from July 2019 to December 2022, as estimated using UNICEF's EQUIST framework. Given the focus of the investment case on strengthening health systems, this impact is expected to be sustained beyond the period of implementation.

1. Introduction

RMNCAH+N has been a priority in the Ministry of Health's (MOH) overarching strategic plan for the sector: The Health Sector Strategic Plan I (2007-12) and the ongoing Health Sector Strategic Plan II (2017-22). The MOH has been successful in improving its Reproductive, Maternal, Newborn, Child and Adolescent Health and Nutrition (RMNCAH+N) indicators. Between 2000 and 2015, Malawi reduced under-5 mortality from 189 per 1000 live births to 63 per 1000 live births and infant mortality from 104 per 1000 live births to 42 per 1000 live births, against the MDG target of 78 per 1000 live births and 44.7 per 1000 live births respectively. However, whilst there may have been improvements to a large number of indicators, some fell short of the stipulated targets: prevalence of underweight children decreased from 25% to 17% against the target of 14%; maternal mortality ratio decreased from 1,120 per 100,000 births in 2000 to 439 in 2008 against the target of 155. The proportion of births attended by one or more skilled health personnel increased from 57% to 90% against a target of 100%.

The MOH aims to maintain the momentum gained during the HSSP I implementation period and meet the 2022 targets outlined in the HSSP II. These focus on reducing child mortality (with targets to lower the under-5 mortality rate to 48 per 1000 live births, Infant Mortality Rate to 34 per 1000 live births and Neonatal Mortality Rate to 22 per 1000 live births), improving maternal health outcomes (with the objective to reduce maternal mortality ratio to 439 per 100,000 births) and supporting adolescent health initiatives (with the objective to reduce adolescent fertility rates to 125 per 1000 per 1000 women aged 15-19). Reduction in the prevalence of high-burden diseases such as HIV, TB, and Malaria remain of critical importance as well.

The HSSP II aims to achieve its targets through both the expansion of coverage of health services, and through improving the quality of the services already offered. By taking a systems perspective, the HSSP II's focus on "health sector building blocks" like infrastructure, human resources for health, supply chain, financing and information systems helps to ensure the long-term sustainability of the health outcomes achieved. However, HSSP II faces several bottlenecks in the health system planning, implementation and monitoring of results.

This investment case presents a list of prioritized, sustainable interventions that can address the bottlenecks within each of the health system building blocks indicated in the HSSP II. The intention of the investment case is not to replace the HSSP II, but rather by aligning fully it's objectives and principles, the investment case presents a complementary document which provides an assessment of the health system using RMNCAH+N outcomes as the initial entry point. Where the HSSP II provides strategic direction for the health sector, the investment case translates these objectives into more granular interventions and activities, helping to provide a clearer pathway for implementation, in order to meet the targets for RMNCAH+N as set out in the HSSP II.

The interventions included in the investment case have been costed, and are linked to a results framework that defines the targets for the investment case, and proposes a framework for tracking performance by integrating with existing health sector monitoring processes. The interventions and indicators within the results framework are drawn from existing government strategic documents and policies, derived through a process of rich stakeholder discussions with all departments in MOH and other Ministries, as well as civil society organizations (CSOs) and development partners. The monitoring framework has been aligned with the HSSP II and other strategic documents to ensure that the investment case does not create duplicative processes through its implementation, but rather embed itself within existing, routine processes.

The report is structured as follows: Section 2 presents a situation analysis, detailing Malawi's demographic and economic background, health system policy and objectives and the status of RMNCAH+N outcomes; Section 3 presents the framework for the investment case, including development process of the investment case and its guiding principles; Section 4 introduces the bottlenecks in the delivery of health outcomes and the interventions formulated to address them; Section 5 presents the costs of the interventions that have been developed; Section 6 then puts forth the implementation plan and the proposed mechanisms for future coordination.

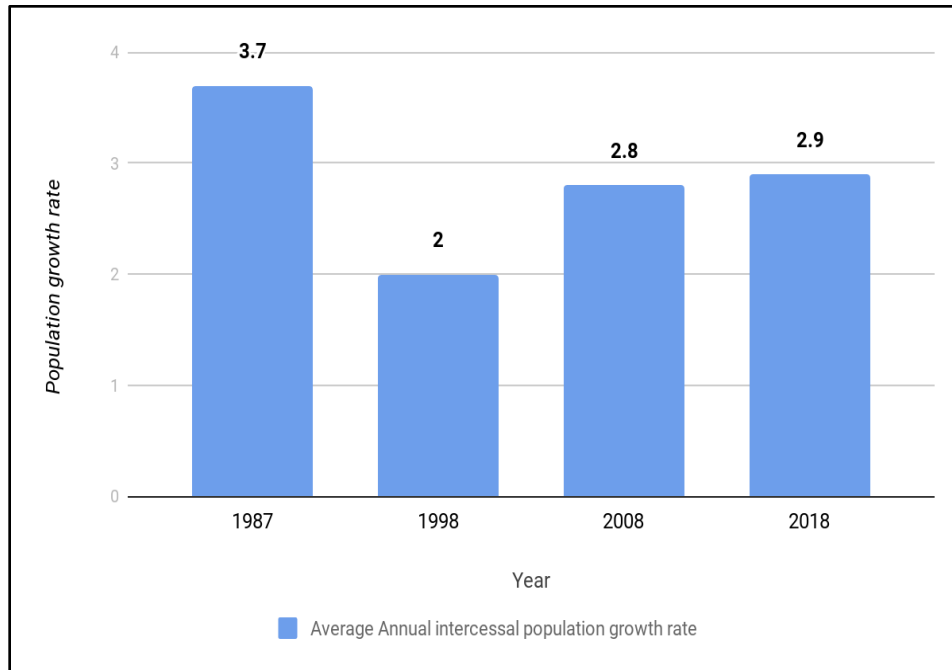
2. Situation Analysis

2.1.Context and background of Malawi

2.1.1. Demographics and economic context

Malawi is a very densely populated country with a high proportion of young people and a high population growth rate, which is projected to increase demand for basic public services like education, infrastructure and health. Malawi has a population of 17.56 million with 14.5% of the population being under five years of age and 36.1% between ages 5-17. (National Statistics Office, 2018). The population grew at 2.9% between 2008 to 2018, an increase from the 2% growth rate in 1987-1998 and 2.8% growth rate in 1998-2008. **Figure 1** below shows the average annual intercensal growth rate for Malawi.

Figure 1: Average annual intercensal population growth rate



Malawi’s health system will have to expand to meet the increased demand from its growing, young population. Demand for free or subsidized health services is high, with almost three-fourths of the country’s population below the international poverty line (\$1.90 per capita per day) in 2018. Malawi’s economy grew at a rate between 3.5-4% per annum over 2013-18 but the growth has not been strong enough for the government to meet the demand for health services in the country. Reasons for this include the susceptibility of the growth to frequent macroeconomic and fiscal shocks, low domestic tax revenue base restricting the government’s revenues, the high dependence of the economy on agriculture and the high dependence of agriculture sector on rainfall and weather patterns (Kandoole et al, 2019).

The government’s resource envelope for health continues to be insufficient to meet the demand for health services. Development aid plays a key role in bridging the gap in resources available for health, with aid accounting for 62% of total health expenditure (National Health Accounts 2015).

2.1.2. Health sector policies and objectives

The HSSP-II outlines medium-term objectives, strategies and activities and guides resource allocation to achieve Universal Health Coverage (UHC) of affordable and high-quality health care. The HSSP-II focuses on increasing equitable access and quality of essential health services, reducing environmental and social risk factors that have a direct impact on health, increasing the accessibility of health services through investments in infrastructure (new and existing), improving the availability of human resources, increasing investments towards medical equipment, improving efficiency in the supply of medicines and medical supplies, improving the use of health information at all levels, strengthening health sector governance structures and linkages, and improving the health financing landscape.

The HSSP-II recognized the need to strengthen each of the health system building blocks in order to improve health service delivery. The building blocks identified in the investment case are derived from the HSSP II and the prioritized interventions are based on addressing bottlenecks in the delivery of RMNCAH+N health services.

The following strategies are taken from the HSSP II and form the basis for the health system building blocks included in the IC:

- Increase equitable access to and improve the quality of healthcare services
- Reduce environmental and social risk factors that have a direct impact on health
- Improve the availability and quality of health infrastructure and medical equipment
- Improve availability, retention, performance and motivation of human resources for health for effective, efficient and equitable health service delivery
- Improve the availability, quality and utilization of medicines and medical supplies
- Generate quality information and make it accessible to all intended users for evidence-based decision-making, through standardized and harmonized tools across all programmes
- Improve leadership and governance across the health sector and at all levels of the healthcare system
- Increase health sector financial resources and improve efficiency in resource allocation and utilization

In order to achieve universal health coverage, the HSSP-II focuses on the free delivery of a prioritized package of basic, cost-effective health interventions, taking into account Malawi's burden of diseases and the limited financial resources. This package of interventions, called the Essential Health Package (EHP), address eleven diseases and conditions that constitute major causes of morbidity and mortality, especially those affecting the poor majority in Malawi. The key principles followed in the development of the EHP were a) re-focus resources from lower-priority interventions to allow scale up of interventions that maximize health outcomes, b) improve equity in population health, and c) strengthen complementarities thereby ensuring that the health sector gets the greatest value for money for its investments. Expanding EHP coverage through the alleviation of health system bottlenecks, remains the primary focus of the Investment Case.

2.1.3. Healthcare delivery systems

Healthcare is delivered through both the public and private sector in Malawi (**Table 1:** Types of health facilities in Malawi). The public sector accounts for 86% of all healthcare facilities and almost 60% of healthcare services delivery (HSSP-II, SHOPS Project 2012). The public sector includes all facilities under the Ministry of Health, the Ministry of Local Government and Rural Development, the Ministry of Forestry, the Police, the Prisons and the Army. The private sector includes both for-profit and not-for-profit providers. Public sector facilities provide services free of charge at the point of care while the private sector facilities charge user fees for its services. Service Level Agreements (SLAs) are in-place between the MOH and the largest private provider, the Christian Health Association of Malawi (CHAM)¹. This SLA ensures government-funded provision of free maternal, neonatal and selected child health services at CHAM facilities (HSSP-II).

¹ CHAM operates 12% of healthcare facilities which provide 37% of healthcare services in Malawi (SHOPS Project, 2012).

Table 1: Types of health facilities in Malawi

Facility type	CHAM	Government	NGO	Private	Total
Hospital	38	45	1	1	85
Health Centre	107	413	4	18	542
Health Post	18	132	2		152
Dispensary	4	49	4	30	87
Outreach	968	4008	43	71	5090
Village Clinic		3542			3542
Total	1135	8189	54	120	9498

Source: HSSP-II

Health services are delivered at four levels: community, primary, secondary and tertiary. These different levels are linked by a referral system.

At the *community level*, health services are provided by Health Surveillance Assistants (HSAs), health posts, dispensaries, village clinics, and maternity clinics. Under the MOH-established integrated community case management (iCCM) approach, HSAs are trained and deployed in hard-to-reach areas where access to health services was restricted by distance (more than 8km) and other geographical barriers. HSAs provide promotive and preventive health services for uncomplicated cases of malaria, pneumonia, diarrhea, newborn sepsis, and malnutrition through outreach and door-to-door visitation and refer patients to higher levels of care as necessary. Nearly 8900 HSAs have been trained and deployed in all of Malawi's 29 districts to provide iCCM services, representing 94% of the total hard-to-reach areas identified nationwide.

The *primary level* delivers both in-patient and out-patient services through established health centres, as well as community and rural hospitals.

At the *secondary level* are the district hospitals, which offer both in-patient and out-patient services to the local catchment population and function as referral facilities for health centres and rural hospitals in the district. CHAM hospitals also provide secondary-level health care.

The *tertiary level* of services comprises five central hospitals, each of which provide specialized health services.

The Ministry of health carries out the functions of policy making, setting standards, quality assurance, strategic planning, resource mobilization, technical support, monitoring and evaluation and management of international representation at the national level. Five Zonal Quality Management Offices (QMOs) are an extension of the central level and provide technical support to districts. District Health Offices (DHOs) manage all health care services in the district, including

management of public health facilities and direct provision of both primary and secondary level health services at district level.

2.2. Status of Reproductive, Maternal, Newborn, Child and Adolescent Health and Nutrition Targets in Malawi

In building momentum towards meeting SDG goals, Malawi’s 5-year Health Sector Strategic Plan (HSSP-II 2017-2022) has identified a series of RMNCAH impact and outcome indicators and relevant targets which will inform the investment case (**Table 2**). HSSP-II sets ambitious targets for under-five mortality rate, infant mortality rate and neonatal mortality rate, as seen in the table below:

Table 2: HSSP II indicators: baseline and targets

Indicator	HSSP II baseline (2015)	HSSP II targets (2022)
Maternal Mortality Ratio (per 100,000 live births)	439	350
Neonatal Mortality Rate (per 1000 live births)	27	22
Infant Mortality Rate (per 1000 live births)	42	34
Under five mortality rate (per 1000 live births)	64	48
Total Fertility Rate (children per woman)	4.4	3
Underweight prevalence ²	11.7%	NA

Source: HSSP-II and MDHS 2015-16

2.2.1. Reproductive and Adolescent Health

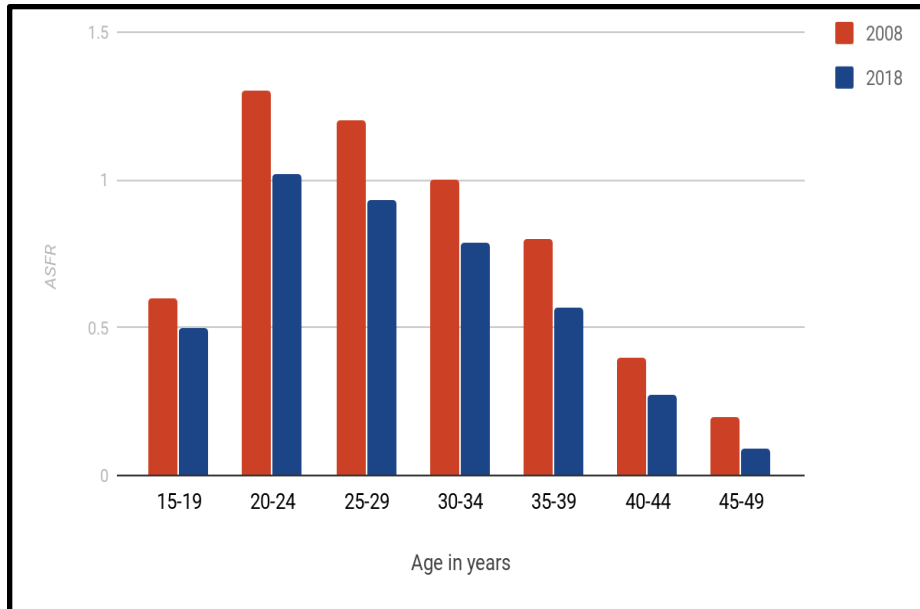
Fertility and family planning

Malawi’s fertility rate has declined from 5.7 live children per woman of childbearing age to 4.4 children between 2010 and 2015 (MDHS 2015-16). Fertility rates differ significantly between rural and urban areas, by education status and wealth status and by age. **Figure 2** shows that fertility rate has fallen across all age groups since 2008; however, with 50% of adolescent girls expected to bear a child, the adolescent fertility rate (15-19 years) remains a major concern³.

² -2 SD below median weight-for-age

³³ This amounts to one birth for every two adolescent girls.

Figure 2: Age-specific fertility rate in Malawi (2008-18)



Source: Malawi Population and Housing Census 2018

In parallel with the decline in fertility, the use of contraceptives has increased from 7% in 1992 to 58% in 2015-16 (DHS, 2015/16). However, despite this increase, demand for family planning methods is not met for 24% of married women and 25% of unmarried women. Furthermore, 37% of women who started using contraceptives in 2010-2015 stopped in less than a year, with 26% of women stopping due to FP method-related concerns and side effects (MDHS 2015-16). The Malawi Sexual and Reproductive Health and Rights policy (2016-2020) identifies low male participation, uncoordinated referral systems and linkages for clients, family planning commodity availability, and existence of cultural and religious barriers towards acceptance of family planning as part of health care as key gaps that obstruct further reduction of unmet FP need and provision of comprehensive, high-quality integrated family planning services.

Adolescent health

Adolescent health is an important priority area with 26% of Malawi's population between 10 to 19 years of age. Female adolescents constitute a particularly vulnerable population. Malawi has a high burden of teenage pregnancies - 29% of girls aged 15-19 years have started child bearing (MDHS 2015-16). Early pregnancy and early marriages are contributing factors for high fertility rates and increasing population, in addition to increased health risk and girls dropping out of education. Current data shows that 14.5% of female adolescent deaths were related to pregnancy (MDHS 2015-16); whilst HIV/AIDs and Malaria constitute major indirect causes of death amongst adolescents.

Efforts to reduce teenage pregnancies have not proven to be very successful. Lack of comfort in dealing with sensitive issues around adolescent sexual and reproductive health, and personal or religious attitudes and values act as barriers towards creating awareness around this issue. There is also a lack of comprehensive sex education amongst youths in schools due to policy and

implementation challenges. The Ministry of Education has a 'go back to school' policy for girls who drop out due to pregnancy; however, the policy has faced implementation challenges.

Adolescents sensitization on appropriate services remains low. Youth Friendly Health Services (YFHS) provide comprehensive information on sexual health and family planning; however, awareness of YFHS and number of users continue to be low. Furthermore, users of these services are predominantly men.

Awareness and gender disparities are important challenges for HIV and STI case management as well. Only 41% of men and women experiencing STI symptoms sought treatment from a health care professional (MDHS 2015-16). HIV prevalence in Malawi is higher in the southern region, in urban areas and among women than men.

2.2.2. Maternal health

In Malawi, the maternal mortality ratio has declined from 675 per 100,000 live births in 2010 to 439 per 100,000 live births in 2015/16. Whilst this constitutes a significant reduction, Malawi still remains far from achieving the HSSP-II target of 350 maternal deaths per 100,000 live births.

Table 3 demonstrates the major causes of maternal mortality. A large percentage of these deaths can be reduced through improved management of obstetric complications at the point of care. Part of the challenge is that 9% of deliveries take place outside health facilities (MDHS 2015-16) where women in labour are unable to receive sufficient care for obstetric complications. This has been attributed to lack of awareness, distance from health facilities, financial difficulties, and lack of partner support⁴. Even for deliveries which take place in-facility, health systems deficiencies contribute to inadequate management of cases (further discussed in section 4). Furthermore, higher effective coverage of ANC services (such as maternal nutrition) could also help reduce the incidence of obstetric morbidity.

Table 3: Causes of Maternal Mortality

Causes of Maternal Morality	
Indirect causes	28%
Hypertensive disorders	16%
Post-partum Hemorrhage	15%
Sepsis	10%
Complicated abortion	10%
Other direct causes	9%
Ante Partum Hemorrhage	8%
Embolism	2%
Intrapartum Hemorrhage	1%

⁴ In 2015, 72% of pregnant women reported having at least one problem accessing healthcare - for 56% pregnant women (ages 15-49) distance was an issue, 53% experienced financial difficulties, 16.4% reported not getting permission to go to a health facility, and 30% did not want to travel alone (MDHS 2015-16)

Source: EQUIST (originally from WHO 2014)

Among indirect causes, Hepatitis, HIV and malaria are the biggest contributors to maternal mortality (Maternal Death Surveillance Report, 2018).

Even though Hepatitis B is highly prevalent in Malawi, there is limited epidemiological data on its prevalence, particularly in rural areas and the northern region. One systematic review estimates the seroprevalence among the general population of to be 8.1% (Stockdale et al., 2018). Recognizing this, the MOH launched the National Viral Hepatitis Strategy in 2018.

Malawi is among 10 countries in the world with the highest HIV prevalence, estimated at 8.8% with over 34,000 new HIV infections annually (MDHS 2015-16). Transmission rate from mother-to-child remains high at 7.8% (UNAIDS, 2017⁵). Prevention of mother to child transmission (PMTCT) interventions were launched nationally in 2003 with the goal of reducing pediatric HIV infection and improving survival and quality of life of exposed infants and HIV-infected children and parents. Identification and management of HIV in pregnant women has been a success story in Malawi: 96% of pregnant women were tested for HIV and 94% of pregnant women were on ART (DHIS2, 2018).

Malaria prevention also remains a major challenge among indirect causes of maternal mortality. Malaria infection presents a significant risk to both the mother and the fetus. While, on average, 57% of households possess at least one insecticide-treated net (ITN), only 44% of pregnant women reported using one (MDHS 2015-16). Effective coverage of Intermittent Preventive Therapy for pregnant women (IPTp) also remains low with only 54% pregnant women completing the full course (ANC Report, 2018).

Focused antenatal care services are provided at all health centres and hospitals, and through outreach clinics at the community level. Only 5% of pregnant women initiated antenatal care during their first trimester and 26% made 4 or more ANC visits over the course of their pregnancy (Maternity Report, 2018) even though 95% completed their first ANC visit (MDHS 2015-16).

In Malawi, 42% of women and 60% of newborns receive postnatal care during the first 48 hours (HSSP II). This includes the prevention, early detection and treatment of complications and provision of advice on and services for breastfeeding, child spacing, immunization and maternal nutrition.

Hence, MMR is influenced by: a) delivery of health services - both accessing it as well as receiving a high quality of care, as indicated by the presence of skilled personnel or percentage of deliveries by caesarean section; b) socioeconomic and political climate, as indicated by GDP growth, political stability, poverty rates, health expenditure per capita and female illiteracy rate, total fertility rate (TFR) and life expectancy at birth; c) incidence of diseases e.g. HIV prevalence and access to antiretroviral therapy (ART) and malaria prevalence and treatment; and (d) collection and reporting of the data itself (Colbourn et al 2013, Mgawadere et al 2017). Provision of health services has been the key driver of MMR trends between 1997 and 2012 (Colbourn et al 2013).

⁵ UNAIDS (2017) 'Start Free Stay Free AIDS Free: 2017 progress report'

2.2.3. Newborn and Child Health

There has been a steady decline in infant mortality, under-five mortality and neonatal mortality in Malawi. In 2015-16, infant mortality rate was 42 per 1000 live births, under-five mortality was 63 per 1000 live births and neonatal mortality rate was 27 per 1000 live births (MDHS 2015-16).

The biggest causes of under-5 mortality are pneumonia, malaria, and diarrhea, accounting for 40% of under-5 mortality (**Table 4**). The continued high prevalence of malaria is linked to inadequate prevention measures; only 43% of children under 5 were reported to have slept under an ITN during 2016 (MDHS 2015-16). Untimely treatment could mean high case fatality rates; advice or treatment was sought for only 67% of children in this age group with fever symptoms (MDHS 2015-16). Severe deficiencies remain in diarrhea treatment for children with only 24% of children under 5 with diarrhea receiving zinc, even though close to 75% were prescribed ORS (MDHS 2015-16).

Among neonates, prematurity, asphyxia and sepsis accounted for 75% of the deaths (**Table 4**). The risk of most of these causes of neonatal mortality and case fatality rates can be significantly reduced through proper screening during pregnancy, early initiation of breastfeeding (Smith et al., 2017), improved obstetric management, and adequate fetal nutrition (O'Brien et al., 1966).

Table 4: Causes of under-5 mortality rate and neonatal mortality rate

Causes of under-5 mortality	
Neonatal conditions	29.3%
Pneumonia (Post-neonatal)	24.0%
Malaria	13.1%
Diarrhea (Post-neonatal)	7.9%
Other causes (Post-neonatal)	7.2%
AIDS	6.4%
Injuries	3.9%
Meningitis	3.4%
Pertussis	2.7%
Measles	2.1%
Causes of neonatal mortality	
Prematurity	30.5%
Asphyxia	28.3%
Sepsis	16.4%
Congenital	11.3%
Pneumonia	5.4%
Other causes	4.2%
Tetanus	3.9%

Source: EQUIST (originally from Child Health Epidemiology Reference Group (CHERG) 2012⁶)

⁶ CHERG Child Causes of Death Annual Estimates by Country, 2000-2010.

Since 2008, the MOH has accelerated efforts to improve the quality of care provided to under-fives in referral hospitals. Interventions have evolved overtime and now include improving the emergency and inpatient management of seriously ill children through Emergency Triage Assessment and Treatment (ETAT) and equipping neonatal units with basic lifesaving equipment such as oxygen concentrators, suction machines, pulse oximeters, and glucometers in addition to basic emergency medicines (Robison et al, 2011).

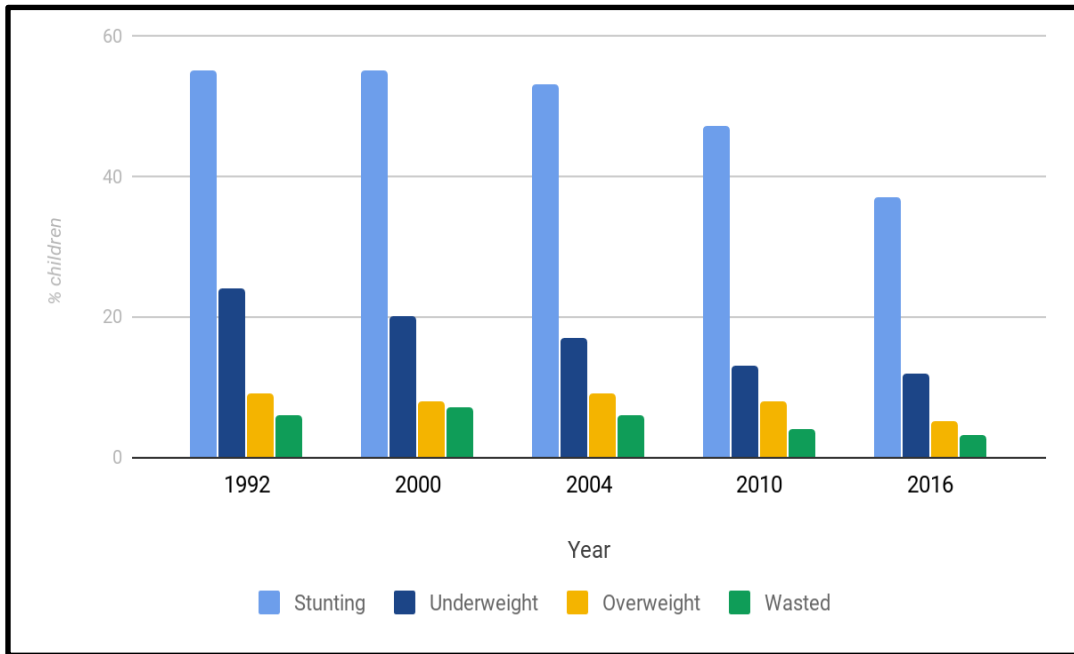
2.2.4. Nutrition

Food insecurity still affects a large portion of Malawi's population. Nutrition indicators in Malawi have improved since the 2000s but the overall incidence of malnutrition is still high and improvement in nutrition indicators has slowed since 2010. Stunting in children under 5 decreased from 53% in 2004 to 47% in 2010, and to 37% in 2016 (MDHS 2015-16). The percentage of children who are acutely malnourished (wasting) decreased from 6% in 2004 to 4% in 2010, and to 3% in 2015-16. The percentage of children under 5 who are underweight for their age decreased from 17% in 2004 to 13% in 2010 and 12% in 2015-16 (MDHS 2015-16). **Figure 3** presents the malnutrition status trends in Malawi from 1992-2016.

Causes of malnutrition in Malawi are multi-faceted, including: repeated infections (ARI, diarrhea, and malaria) and sub-optimal infant feeding practices resulting in inadequate dietary intake, poor hygiene, unsafe water, high fertility, food insecurity, gender inequality, and poverty all contribute to malnutrition. 98% of children in Malawi are breastfed; however, only 61% of infants under the age of 6 months are exclusively breastfed.

There are socio-economic and regional disparities in prevalence of malnutrition and stunting. 46% of children in the lowest wealth quintile are stunted as compared to 37% among those in the middle wealth quintile, and 24% for children in the highest wealth quintile (MDHS 2015-16). 12.9 percent of adolescent girls 15–19 years of age are underweight compared to 5.7 percent of women 20–49 years of age (MDHS 2015-16). Stunting is higher in rural areas (39%) as compared to urban areas (25%) (MDHS 2015-16).

Figure 3: Malnutrition trends for children less than 5 years old (1992 – 2016)



The MOH currently uses Community-based Management of Acute Malnutrition (CMAM) in the treatment of severe acute malnutrition (SAM). CMAM has four main components, namely, Community Outreach, Out-patient Therapeutic Programmes (OTP), Nutrition Rehabilitation Units (NRU) and Supplementary Feeding Programmes (SFP). However, much remains to be done for these programmes to succeed. Under SAM, only 71% of the expected number of severely underweight children were admitted into treatment, however of the group admitted 90% graduated from the programme and were cured.

2.3. Bottlenecks to the delivery of the EHP

HSSP-II identifies fundamental building blocks of the healthcare system that drive delivery of services and health outcomes. This section maps out the bottlenecks for effective health services delivery across the building blocks. These bottlenecks for delivery often interact with each other to compound the barriers to delivery of health services:

2.3.1. Availability of Drugs, Medical Equipment and other supplies

Drugs

Stock-outs of essential drugs have been reported as a key bottleneck at all levels of the healthcare system (for all drugs except HIV drugs and vaccines), constituting a major impediment to service delivery. **Table 5** shows that on average 40% health facilities in Malawi experienced at least one day of stock out of essential drugs⁷ during a three-month period. Furthermore, on average, health facilities did not have a supply of these drugs on 15% of days (13 days) during July-September 2018 (LMIS, June-Sep 2018).

Lack of essential drugs and supplies affects the provision of basic emergency obstetric care leading to some functions not being performed in facilities, e.g. assisted vaginal deliveries (vacuum extraction), manual removal of retained placenta and retained products of conception (MVA) as well as the lack of administration of magnesium sulphate to treat eclampsia and preeclampsia (Malawi Emergency Obstetric and Newborn Care Needs Assessment, 2014). Stockouts can be attributed to:

Inefficient procurement system: Parallel procurement and distribution systems exist for HIV commodities, antimalarial medicines, and vaccines. There is limited capacity for procurement with weak systems for auditing drugs and medical supplies and weak supervision by DHMT and HCMCs. There is weak accountability for staff managing stock, leading to prescribers not being aware of stocks at the time the prescription is made.

Weak supply chain management: This includes the availability of a logistics network as well as the adequacy of infrastructure like vehicles and refrigeration, and administrative functions such as planning and budgeting. Weak supply chain can lead to leakages, especially at the facility level where a large proportion of the total leakage is thought to occur. Lack of budgeting, planning and operational forecasting also leads to inefficiencies. Even in cases where supplies themselves were available, distribution can be affected by logistics challenges and inadequate supply-chain and cold-chain facilities.

These factors often interact and get compounded. Vaccine availability, for instance, is affected by low levels of funding for vaccine distribution, purchase of kerosene and gas for refrigerators and inadequate vehicles available for vaccine logistics. Poor data on availability and utilization of supplies affects planning and distribution even when the supplies and financial resources may be available.

⁷ For the purpose of this analysis, 16 drugs which are used in the delivery of the representative EHP services included in the bottleneck analysis were considered.

Table 5: Stockouts of drugs in health facilities (July – Sep 2018)

Drug	Average number of days of stockout	% of facilities which experienced at least one day of stockout
Albendazole 400mg	16.4	27.1%
Ceftriaxone 1g, PFR	13.6	44.6%
Ferrous Sulphate 200mg / Folic Acid 250 micrograms	12.9	48.4%
Jadelle (Implant)	12.2	37.4%
Long Lasting Insecticidal Net (LLIN)	9.5	35.6%
Lumefantrine 120mg/Artemether 20mg,6x1	1.4	9.5%
Magnesium Sulphate 50%, 2ml ampoule	16.3	51.1%
Malaria Rapid Diagnostic Test (MRDT) Kits	1.3	8.4%
Medroxyprogesterone Acetate Injection, 150mg/ml - Depo-Provera	11.9	42.8%
Misoprostol 200 mcg, tablets	26.2	86.7%
Oral Rehydration Salt, Satchet (WHO formula) for 1L solution	19.9	60.4%
Ready-to-use Therapeutic Food (RUTF) spread	6.3	24.3%
Sulphadoxine 500mg / Pyrimethamine 25mg (SP), tablets	5.5	20.9%
Tenofovir (TDF) + Lamivudine (3TC) + Efavirenz (EFV), 300+300+600, 30"s (5A)	1.5	5.9%
Vitamin A 100,000 IU	27.5	88.8%
Zinc Sulphate 20mg	28.1	74.9%
National Average	13.2	40.0%

Equipment

Availability of infrastructure and appropriate medical equipment can be considered a key bottleneck in the delivery of health services.

Malawi Emergency Obstetric and Newborn Care Needs Assessment (2014) found that of 87 hospitals surveyed, 45 (52%) had all the medical equipment and facilities in order to be listed as Comprehensive (CEmONC), 28 (32%) were partially functioning and 14 (16%) were non-EmONC. Of the 464 health centres, 19 (4%) were basic, 148 (32%) were partially functioning, and 297 (64%) were non-EmONC. This lack of equipment and infrastructure directly affects the delivery of obstetric and newborn health services.

Dilapidated infrastructure and idle medical equipment in need of repair are also common due to lack of routine maintenance. Regional and district maintenance teams do not have access to adequate resources or lack the requisite management and technical capacity.

2.3.2. Demand for services

As **Table 6** shows, initial utilization of health services is high in most cases, but continued utilization and effective coverage are lower. For instance, 95% of women complete at least 1 ANC visit but only 26% complete 4 or more visits and only 5% complete their first visit within 12 weeks of pregnancy. 87% of children received the first measles dose but only 72% received the second. Awareness also varies across programs. For example, testing for HIV in pregnant women and commencement on ART has high follow-through. However, awareness of ORS and zinc as a treatment for diarrhea in children is low; this could be a contributing factor to 11.7% children under 5 being underweight (2 SD below average weight-for-age) and 2.6% of children between the ages of 1 to 5 being severely underweight (3 SD below average weight-for-age).

Table 6: Initial utilization and effective coverage of health services

Initial utilization		Continuity	
<i>Indicator</i>	<i>Value</i>	<i>Indicator</i>	<i>Value</i>
% of pregnant women completing at least 1 ANC visit	95%	% of pregnant women with ANC 4+ visits	26%
% of pregnant women completing their 1st ANC visit within the first 12 weeks of pregnancy	5%		
% pregnant women tested for HIV	96%	% of HIV-positive women on ART	98%
% of Pregnant women with at least 1 TTV Dose (Sep 2018 - Jan 2019)	90%	% of Pregnant women with 2+ TTV Doses (2018)	67%
% of children under 1 who received their first measles dose (2018)	87%	% of children under 1 who received their second measles dose (2018)	72%
		% of children under 1 fully immunized (2018)	82%

Initial utilization		Continuity	
SAM Admission (as a % of estimated # of children 6-59 months -3 SD below weight-for-age)	71%	SAM Cure Rate (as a % of estimated # of children 6-59 months -3 SD below weight-for-age)	64%
% of births which occurred in facility (out of total expected number of births in the district)	80%	Maternal Sepsis Survival Rate	88%

Source: Maternity report (2018), ANC Report (2018)

2.3.3. Geographic accessibility

Availability of physical infrastructure can directly influence delivery of services and their demand. Currently, 55% of the population of the population of Malawi does not have access to a health facility within 5 kms of their residence. The situation becomes much worse during the monsoon season when several roads become inaccessible leading to less than 45% of the population having access to health facilities within 5 kilometers from their residence. The districts of Neno, Chikwawa, and Mwanza are particularly affected (UNICEF, 2017).

HSAs and senior HSAs are meant to provide last-mile healthcare in hard-to-reach areas. However, the current number of HSAs is approximately 1 to 2000, short of the target of 1 to 1000, resulting in the catchment population for each HSA being far higher than what is recommended. As stated earlier, only 44% HSAs reside in their catchment areas (District Community Health Coordination Tool, 2018), mainly as a result of lack of housing units in remote areas and recruitment process of HSAs, which has an impact on overall coverage indicators for health services.

Table 7: Geographic accessibility indicators

Geographic accessibility indicator	Value
% of Population with access to facilities within 5 kilometers from residence (Average)*	45%
% coverage of nutrition mass screening programme**	60%
% coverage of vitamin-A supplementation (6-59 months)**	82%
% coverage of deworming (12-25 months)**	90%

Source: *UNICEF Geographic Accessibility Report 2017; **DNHA Data 2018

Lack of health facilities in hard-to-reach areas means that certain services such as nutrition screening, vitamin-A supplementation, and deworming are delivered as mass campaigns. The coverage of these service remains inadequate (see **Table 7**).

Furthermore, limited availability of ambulances at district and central hospitals, poor communication and coordination mechanisms, and weak road infrastructure also influence

delivery of services through their impact on timely referrals and on the delivery of pre-hospital care.

2.3.4. Availability and training of human resources for health

Delivery of services is dependent on the availability of health staff, as well as by their technical capacity. Malawi faces a dire shortage of health workers among all cadres. **Table 8** demonstrates the percentage of required⁸ health posts which were filled as of 2018.

Table 8 Shortage and training of human resources on health (2018)

Human resource availability and training indicator	Value
% of all required health facility-based posts filled*	32%
% of required nursing posts filled*	31%
% of required laboratory posts filled*	33%
% of required radiography posts filled*	11%
% of required pharmacy posts filled*	16%
% of required medical officer/specialist posts filled*	71%
% of required clinical officer/technician posts filled*	63%
% of all required HSA posts filled**	48%
% of HSAs trained on at least 75% of community EHP services**	13%
% of HSA trained on ANC/PNC visits**	42%
% of HSA trained on family planning**	62%
% of HSA trained on vitamin-A and nutrition screening**	97%
% of HSA trained on immunization**	96%
% of HSA trained on malaria prevention**	81%

Source: *Workforce Optimization Model, **District Community Health Coordinator (DCHC) Tool 2018

Inadequate health worker positions and high vacancy rates

As the table above demonstrates, the number of health workers in Malawi's health system is far below the number that is required to deliver EHP coverage targets set out by HSSP II. Another

⁸ The number of required health-facility posts is calculated based on estimates for human resources for health needs based on updating a workforce optimization model that was used to inform the Human Resources for Health Strategy 2018-2022. These needs were calculated based on the number of health workers required for each cadre in order to meet 2022 target coverage rates set out by HSSP II. The number of required HSA posts is calculated based on the ideal HSA to population ratio of 1:1000. Further methodology details can be found in Annex 4.4.

challenge is that the officially recognized number of established posts against which health workers can be hired does not correspond to the actual needs. This is because the establishment has not been revised for several years. It was estimated that over 8,414 more health workers need to be recruited in order to fill the currently established posts, and another 5,784 health workers are needed to meet EHP coverage targets (see Annex 4.4 for more detail). The number of HSAs will also need to be doubled from close to 8,300 to over 16,000 to achieve the National Community Health Strategy target of 1 HSA per 1,000 population.

High vacancy rates can be attributed primarily to financial constraints. But the situation is exacerbated due to low retention of health workers, especially in rural areas, due to unfavorable working conditions and lack of adequate incentives. Shortages are worsened by health workers being absent from their posts due to unauthorized long-term training programs and uncoordinated in-service trainings.

Inequitable distribution of workforce

The overall shortage of health workers is exacerbated by an uneven distribution of workforce which means that some districts are significantly worse off than others. This is due to limited capacity for efficient human resource management at both the central level and the district level. For instance, the shortage of nursing staff in Chiradzulu is at 36% whereas in Neno it is as high as 92%. Similarly, the district-level shortage of lab staff, pharmacy staff, and radiography staff ranges between 29% to 85%, 62% to 95%, and 64% to 96% respectively⁹.

Such regional variation exists even among community health workers - with only 36% of the need for Health Surveillance Assistants (HSAs) met in Karonga on the one hand and over 70% of the need met in Likoma and Rumphi. There are a number of underlying causes of this uneven distribution of HSAs and SHSAs, including limited accommodations for HSAs in hard-to-reach areas, ease of transfer between districts, poor incentives to stay in hard-to-reach areas, and a lack of enforcement of guidelines on recruitment and deployment for HSAs (National Community Health Strategy 2017-2022).

Weak Health Training, Supervision and Regulation

There has been a 70% increase in health workers graduating from training institutions, from 674 per year in 2010 to 1,152 in 2015 (MOH, 2015). However, challenges persist of inadequate teaching staff and clinical instructors in institutions, inadequate infrastructure to handle increased student intakes, and a lack of coordination within the education sector. There are multiple training curricula for health workers, not all of which reflect the standard practices in the health sector.

Health services delivery is also affected by the lack of strong supportive supervision, mentoring, in-service trainings and regulation. Funding is focused on in-service trainings for health workers at the cost of pre-service training programs, and there are no clear guidelines to coordinate the training and support for HSAs. Implementation of the Performance Appraisal System, used to reward high-performing employees, has been limited due to lack of resources for implementation and inadequate training on use of the system.

⁹ These figures are based on the updated workforce optimization model, which had originally been used to inform the HRH Strategic Plan 2018-2022 (see Annex 4.4)

Data from Round 5 of the annual MOH Resource Mapping exercise indicates that there is significant fragmentation in the funding landscape for in-service training, with \$9.9 million in annual funding spread across 258 in-service training activities each year, funded by 40 different partners and implemented by 63 organizations.

Furthermore, in-service trainings are a major cause of health worker absenteeism, reducing valuable patient-facing time to deliver essential health services. One study found that 33% of health worker absences can be attributed to in-service trainings, and the average hospital worker has missed 16 workdays over the previous 3 months due to in-service trainings (Mueller et al., 2011) Some health workers go weeks without being at their posts, due to continuous trainings.

Definition of roles and responsibilities by cadre

At the district level, there is little guidance and clarity over the roles of various players in the management of HRH in a devolved context. The functional roles and responsibilities of District Health Management Team (DHMT) members are not clear and there is a lack of terms of reference (TORs) and job descriptions for individual positions. Further, turnover within DHMT members is high, which limits continuity and institutional memory.

Coordination of supervision

In the health sector, there are numerous vertical programmes which conduct programme-specific supervision visits; this lack of coordination leads to duplication of work, inefficiencies in a resource-constrained environment, and consequently low quality of health services.

2.3.5. Availability, reliability and use of data

Data and health information systems are critical cross-cutting determinants for efficiency in health services delivery. However, Malawi's health sector does not have access to reliable data due to lack of robust integrated health information systems across different program areas.

For instance, there is no management or inventory information system which can inform equipment procurement and maintenance for management of medical equipment. Shortcomings¹⁰ in the deployment and capacity to utilize LMIS also presents hurdles in better management of drugs and medical supplies. Such a system would enable MOH to coordinate partner inputs and align donor contributions.

Even if an integrated data management system exists, it might not provide reliable data if it is not adopted and used actively. An integrated data management system, Human Resources Information System (iHRIS), exists for human resource management. However, as is the case for numerous health information systems, there is a lack of continuous recording and use of the data due to unstable internet connectivity in districts, limited computer knowledge of the users and movement of trained users to other Ministries, lack of demand to use the system for decision-making and failure to fully customize the system (MEHIS, 2018).

¹⁰ These include issues with the quality of data (usually entered by unqualified staff), usability of data (districts do not adequately use stockout data to plan drug procurement), and limitations in the inter-operability of LMIS data with DHIS2.

Similarly, the Integrated Supportive Supervision (ISS) tool was introduced to collect and provide data on health facilities from different programme and technical areas. The objective was to reduce program visits needed by capturing the data in integrated visits. However, weak engagement at the central level meant that few programmes contributed to the indicators included in the ISS tool, undermining the potential comprehensiveness of the data collected.

Lack of data can adversely impact program management and accountability at each level of operation. For instance, incomplete Adverse Events Following Immunization (AEFI) data led to the untimely follow up of Acute Flaccid Paralysis (AFP) cases. Districts are required to follow-up on and investigate serious AEFI cases within 24 hours. Inconsistent availability of AEFI forms in some health facilities leads to districts not reporting on AEFI cases, which in turn leads to lower accountability for follow-up.

A further challenge is posed with regard to data use. The main causes for low data use are - i) lack of integration between datasets to allow for a comprehensive understanding of the service delivery situation, ii) infrastructure constraints such as absence of functional computers and connectivity, iii) inadequate availability of decision-oriented, user-friendly dashboards, and iv) limited capacity for data use at all levels. This leads to a vicious cycle of unavailability of reliable data due to limited demand and vice versa.

2.3.6. Partner coordination and engagement

As highlighted in the sections above, uncoordinated allocation of financial resources across programs can lead to duplication of effort, parallel data systems, uncoordinated procurement and inequitable distribution of resources over geographies and programs. As per data from Resource Mapping Round 5 (MOH, 2018), Malawi's health sector was supported by 191 financing agents and 261 implementing agents between 2017/18 and 2019/20. The lack of coordination has significant financial costs. These financing sources and implementing agents do not coordinate their strategic and operational plans, leading to duplication of work and inefficiencies in financing and implementation.

This can become more prominent at the district level, where district staff might not be aware of the programs being implemented or the total resource envelope available, which adversely affects monitoring and evaluation of programs and accountability at the district level. Different sets of donors often work in different districts, leading to lack of homogeneity across districts. In some cases, this leads to duplicative work especially in the development of guidelines and procedural documents. Additionally, there is often a lack of clarity in terms of whether partners should initially engage at the national level, or at the district level, which in some cases can undermine the authority of districts. In these cases, donors may not necessarily be aligned with district priorities and so whilst they may be spending funds, this may not necessarily be optimally meeting the needs of the districts, and the broader Malawian population. Such financial and operational inefficiencies in the health system could be addressed by more coordinated partner engagement, particularly in the context of decentralization.

3. Framework for the Investment Case

The Ministry of health has ambitious health targets to achieve with a restricted resource envelope. In this context, the investment case identifies interventions that address bottlenecks for the achievement of these targets, with a focus on the delivery of the EHP.

This section discusses the guiding principles and process for the development of the investment case and the associated results framework and monitoring and evaluation plan.

3.1. Process of intervention development

The interventions in the investment case were identified through a process of stakeholder discussions, and guided by existing policy and strategic documents:

Step 1: Bottleneck analysis: A bottleneck analysis was conducted to identify the key barriers in the delivery of the EHP¹¹. The framework¹² for bottleneck analysis identified six key supply and demand side determinants of coverage and delivery: *Geographic accessibility, Availability of HR, Availability of Commodities, Initial Utilization, Continuity, and Quality*. As an illustrative example, the table below (**Table 9**) shows the national average on each of the determinants for one service – Deworming treatment for pregnant women. In the workshops, relevant district-level data was shared with members of District Health Management Teams from each district. Participants reflected on this data to identify root causes for the inadequate coverage of EHP services. The results were collated to identify six key bottlenecks for delivery of services – “*Shortage & Training of HRH*”, “*Demand for Services*”, “*Reliability and Use of Data*”, “*Geographic Accessibility*”, “*Uncoordinated Partner Engagement*” “*Availability of Commodities, Supplies and Equipment*” - each linked to a set of root causes of less than targeted effective coverage of EHP services.

Table 9: Determinants for coverage for deworming treatment for pregnant women

Determinant of Coverage	Indicator Used	National Average
Geographic Accessibility	Population with access to facilities within 5 kilometers from residence (% , Best case)	64%
Availability of HR	% of Required Posts Filled (Nurse midwife technician) *	31%
Availability of Commodities	Average % of days when the drug was available (Albendazole 400mg)	82%
Initial Utilization	% of pregnant women completing at least 1 ANC visit	95%
Continuity	% of pregnant women with ANC 4+ visits	26%

¹¹ 19 representative EHP services out of a total of 97 were identified as probes to analyze bottlenecks in the delivery of services under health programmes relevant for the Investment Case.

¹² The framework was derived from Tanahashi’s model, which identifies five elements necessary for equitable and effective health coverage: availability, accessibility, acceptability, contact coverage and quality). The model was adapted based on UNICEF’s model of coverage.

Quality	% of pregnant women treated for deworming	67%
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* These figures are based on the updated workforce optimization model, which had originally been used to inform the HRH Strategic Plan 2018-2022 (see **Annex 4.4**)

Step 2: Identification of prioritized interventions: Interventions and activities which can address the bottlenecks and their root causes identified in Step 1 were identified by mapping relevant interventions from existing strategy documents and categorizing them according to nine building blocks drawn from HSSP-II objectives. Each of the nine categories had its own expert groups who also identified specific activities that would go into implementation of the interventions. This process was guided by the results framework and the theory of change for the investment case, which is detailed in the next section.

Step 3: Estimating impact and costs of the investment case: Costs for prioritized interventions were estimated through a consultative workshop. An input-based costing framework was developed, providing the basis for a costing tool. The financial costs of each of the activities were derived, based on one of two methods: a unit costing approach or a more detailed ingredients-based approach. Unit costs and cost estimates were drawn from existing sources of information, including costing reference materials collected for other strategic plans. When relevant activities had already been costed for existing strategic plans, the existing activity cost information was utilized, and hence not re-costed for the IC. Participants of the workshop and relevant stakeholders were grouped according to their field of expertise, where they followed the costing framework to estimate the cost of all activities within their relevant building block. These activity costs were then aggregated to estimate the total cost of implementing the interventions included in the IC. Additional details relating to the costing methodologies employed for specific activities, including drugs/commodities, infrastructure, human resources for health, and medical equipment have been included in **Annex 4**.

3.2. Guiding Principles

The investment case was designed based on the following underlying principles:

3.2.1. Alignment with existing strategic documents

The interventions included in the investment case are aligned to existing Ministry of health strategic documents. Relevant strategies were identified from each of the following policy documents to address the bottlenecks in the delivery of health services, and the proposed interventions in the investment case are aligned to these strategies.

The key underlying document for the investment case is the HSSP II, which is the overarching planning and implementation document for Malawi's health sector. In addition, the investment case also uses sub-sectoral strategic plans developed to guide various components of the health sector towards the achievement of HSSP II, including the Human Resources for Health (HRH) Strategic Plan, the Capital Investment Plan (CIP), Monitoring, Evaluation and Health Information Systems (MEHIS) Strategy, National Community Health Strategy (NCHS), the National Pharmaceutical Strategic Plan (PSP) and the draft Quality Management Strategy and Reproductive Health Strategy. Each of these strategic plans were developed in accordance with the objectives outlined in the HSSP-II.

Given the amount which the investment case draws from the HSSP II and the sub-sectoral strategic plans, it is positioned as a complementary document aimed at consolidating information on the areas of investment required to improve RMNCAH+N outcomes. Where possible the investment case uses these strategic documents as the source for the estimation of resource requirements for various health sector interventions e.g. the estimates for human resources for health needs is based on a workforce optimization model drawn from the Human Resources for Health Strategy 2018-2022, and the estimate for number of additional health facilities needed and their cost is taken from the Capital Investment Plan.

Whilst some strategic plans are able to provide the level of detail required for the formulation of actionable implementation plans, others provide broader strategic guidance. In these instances, the interventions included in the investment case have been aligned with the strategic plans, but developed into a more comprehensive list of actionable activities.

Health Sector Strategic Plan-II (HSSP-II) 2017-22

HSSP-II is the overarching policy document for the health sector in Malawi, which lays out the overall targets and key strategies for the sector. As discussed in the previous sections, the nine building blocks for the health system in Malawi, under which all interventions are categorized, are drawn from HSSP-II.

HSSP-II also lays out eight objectives to work towards Universal Health Coverage and delivery of the EHP. These objectives were recategorized into nine categories based on the commonalities in the interventions aligned to these objectives and provided the foundation for the priority areas outlined in the Investment Case.

- *Objective 1: Drugs, Medical Supplies, and Service Delivery* - Increase equitable access to and quality of healthcare services
- *Objective 2: Socio-economic Determinants of Health* - Reduce environmental and social risk factors that have an impact on health
- *Objective 3: Infrastructure & Medical Equipment* - Improve the availability and quality of health infrastructure and medical equipment The investment case divided this objective into two separate categories, medical equipment and infrastructure.
- *Objective 4: Human Resources for Health* - Improve availability, retention, performance and motivation of human resources for health for effective, efficient and equitable health service delivery.
- *Objective 5: Supply Chain* - Improve the availability, quality and utilization of medicines and medical supplies. This category was merged with the *Drugs and Medical Commodities* category
- *Objective 6: Health Information Systems, M&E and Research* - Generate quality information and make it accessible to all intended users for evidence-based decision-making through standardized and harmonized tools across all programmes
- *Objective 7: Leadership & Governance* - Improve leadership and governance (particularly setting direction and regulation) across the health sector and at all levels of the health system
- *Objective 8: Health Financing* - Increase health sector financial resources and improve efficiency in resource allocation and utilization

Human Resources for Health (HRH) Strategic Plan 2018-2022

The HRH Strategic Plan is aligned with “Objective 4: Human Resources for Health” under the HSSP-II. It maps the current situation of human resources of health in Malawi, identifies key challenges and proposes strategies to address them. The HRH also provides a monitoring and evaluation (M&E) framework for the proposed interventions, which are incorporated into the M&E framework of the investment case. Key objectives under HRH strategy are:

- *Objective 1.* Strengthen capacity for evidence-based workforce policy and planning
- *Objective 2.* Strengthen governance, leadership and management systems for HRH
- *Objective 3.* Improve the production and quality of HRH
- *Objective 4.* Cross-Cutting HRH Issues

Capital Investment Plan (CIP) 2017 - 2022

The Capital Investment Plan (CIP) is the focal document used to guide infrastructure investments in the health sector for the period 2017-2022 and is aligned to “Objective 3: “Infrastructure & Medical Equipment” under the HSSP-II. The CIP aims to channel the limited resources available in the health sector for infrastructure towards scaling up of the coverage of the EHP. CIP therefore prioritizes rehabilitation and upgrading of existing facilities, infrastructure projects in hard-to-reach areas, completion of unfinished projects, and construction of health posts.

The investment case uses the list of prioritized infrastructure projects (new builds, rehabilitation and upgrades) which have not yet been funded to provide detailed guidance under the “Infrastructure” building block on required projects and their costs. Key objectives identified under CIP were:

- *Objective 1.* To plan for and cost effectively manage capital investments for the purpose of facilitating the delivery of quality EHP services at all levels of service delivery.
- *Objective 2.* To ensure the development and maintenance of a network of functional, efficient and sustainable health infrastructure for effective health services delivery closer to the population.
- *Objective 3.* To ensure efficient and equitable investment in the acquisition of essential medical equipment including major repair and replacement of existing medical equipment.

Monitoring, Evaluation and Health Information Systems (MEHIS) 2017- 2022

MEHIS aims to strengthen health information systems and encourage the use of data in decision-making within the sector, in alignment with “Objective 6: Health Information Systems, M&E and Research” under the HSSP-II. It identifies challenges in collection and use of information within the health system and proposed strategies to ensure high-quality data is collected and made available as well as to develop managerial capacity to use the data for decision-making and policy development:

- *Objective 1.* Adequate functionality of data sources to effectively monitor and evaluate HSSP-II
- *Objective 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

- *Objective 3.* HSSP-II monitoring channels to effectively monitor and evaluate HSSP-II implementation
- *Objective 4.* The MOH has the managerial capabilities and leadership to plan, coordinate and implement a well-functioning Health Information System (HIS)
- *Objective 5.* Adequate inputs (HR, ICT, and financing) to implement a robust HIS

National Community Health Strategy (NCHS) 2017 - 2022

NCHS works towards the targets set for building community health infrastructure and support systems as identified under “*Objective 2: Socio-economic determinants of health*” of HSSP-II. This includes meeting the target of one Health Surveillance Assistant (HSA) for every 1000 people for integrated community health delivery in hard-to-reach areas, as well as developing the associated infrastructure to support HSAs through housing, adequate budgets as well as training and supervision. Towards this, the policy identifies the following objectives:

- *Objective 1.* Deliver the Essential Health Package at community level through integrated services provided by CHWs in Community Health Teams.
- *Objective 2.* Build a sufficient, equitably distributed, well-trained community health workforce
- *Objective 3.* Promote a harmonized community health information system with a multi-directional flow of data and knowledge
- *Objective 4.* Provide sufficient supplies, transport, and infrastructure for CHWs in the CHT

Pharmaceuticals Strategic Plan (PSP) 2016-2020

The PSP lays out objectives, strategies and activities for regulation, procurement, supply chain, distribution and use of medicines in Malawi, under “*Objective 5: Supply chain*” of HSSP-II. The objectives under PSP are:

- *Objective 1.* Enhance the human resource capacity in the supply chain management of essential medicines and medical supplies in the public and private segments of the pharmaceutical sector
- *Objective 2.* Strengthen the security and expand the capacity of the existing storage and distribution infrastructure
- *Objective 3.* Ensure adequate and sustainable financing for medicines and medical supplies
- *Objective 4.* Enhance access to high-quality information for decision-making and resource allocation
- *Objective 5.* Build national capacity for Government of Malawi regulatory systems and oversight role of pharmaceutical services
- *Objective 6.* Strengthen the pharmaceuticals services management administration to enable it to play its expected role in administering pharmaceutical services in Malawi
- *Objective 7.* Ensure effective implementation and monitoring, evaluation, and review of the PSP
- *Objective 8.* Strengthen the quality assurance and quality control systems for medicine
- *Objective 9.* Improve rational use of medicines (RUM) in health facilities at the community level

Quality Management Strategy (QMS)

Quality is an important underlying criterion across HSSP-II objectives. HSSP-II focuses on delivery of quality healthcare services, improving the quality of health infrastructure and medical equipment, generating and increasing access and use of high-quality data through stronger information systems through high standards of clinical practice and customer care and building high-quality support systems. The QMS focuses on these targets through:

- *Objective 1. Leadership, Governance, and Accountability* - Improved health sector leadership, governance, and accountability
- *Objective 2. Human Resources for Health* - Increase capacity of human resources for health (HRH) for delivery of quality health service
- *Objective 3. Clinical practice* - To promote excellence in clinical practice across the continuum of care
- *Objective 4. Client Safety* - Improve client safety at all levels of healthcare
- *Objective 5. People-Centered Care* - Strengthen people-centered care to place the needs of people at the centre of the health system
- *Objective 6. Support Systems* - Strengthen support systems for the delivery of quality health services
- *Objective 7. Evidence-Based Decision Making* - Increase capacity in generation and use of strategic information for evidence-based decision making and policymaking

National Sexual and Reproductive Health and Rights (SRHR) Strategy 2018-22

The SRHR policy aims to improve sexual and reproductive health in Malawi by focusing on improving the SDG indicators on: good health and well-being (SDG 3), quality education (SDG 4), gender equality (SDG 5) and reducing inequalities (SDG 10). Towards this, the policy aims to:

- Develop and support sustainable financing mechanisms for RH services
- Ensure availability and quality of human resources
- Improvement of basic infrastructure and strengthening logistics management systems
- Strengthening monitoring and evaluation and accountability systems.
- Increased availability of research information for evidence-based decision making, planning and program interventions.

3.2.2. Stakeholder engagement and inclusivity

The investment case is intended to drive coordinated action in the health sector, and hence an important principle was engagement and inputs from relevant stakeholders in the objectives outlined above.

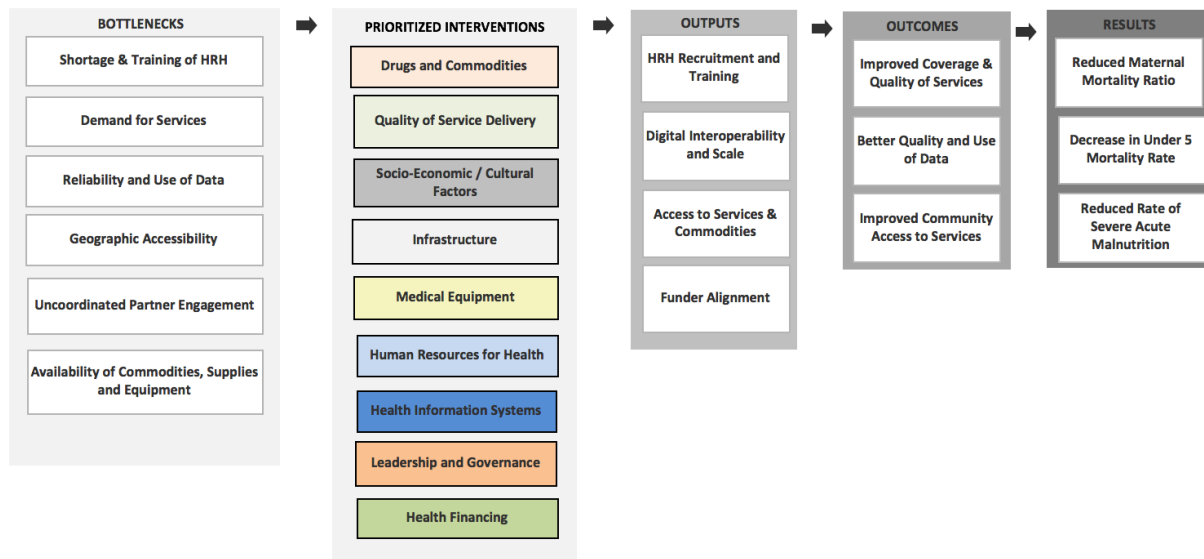
Relevant stakeholders actively participated at each step of the process of development - including MOH staff from district, zonal and national level, representatives from departments within MOH as well as other relevant Ministries including the Ministry of Labor and Vocational Training, Ministry of Youth Development and Sports, Ministry of Gender, Child Development and Community Development, Ministry of Finance, Ministry for Transport and Public Infrastructure, Ministry of Local Government and Rural Development, Ministry of Agriculture, Irrigation and Water Development as well the Ministry of Education, Science and Technology, donors and

representatives from private sector health firms as well as NGOs. The list of participants at each stage can be seen in **Annex 1**.

3.3.Theory of Change

Malawi’s Investment Case priorities aim to improve RMNCAH-N outcomes by contributing to the strengthening of the overall health system. The Theory of Change (ToC) proposes that the key bottlenecks to the delivery of the EHP be resolved by strengthening the nine building blocks of the health system identified in HSSP-II (**Figure 4**). This would be achieved by prioritizing interventions identified by expert groups, and those that are currently included in existing strategic documents. This would lead to the outputs and outcomes needed to achieve the desired impact: a reduction in the overall maternal and under age 5 mortality rates and reduced rate of severe and acute malnutrition.

Figure 4: Theory of change for the Investment Case



The following section on “Prioritized Interventions for the Investment Case” provides greater detail on how the root causes for the bottlenecks in each health system building block were identified, and how the interventions formulated intend to address these root causes.

4. Interventions for the Investment Case

4.1. Interventions by building blocks

4.1.1. Drugs and Medical Commodities

Provision of drugs and medical commodities as required under the EHP is constrained by the availability of supplies themselves, weak coordination and logistics due to lack of reliable data and inadequate provision of services, both due to absence of health workers as well as weak technical capacity. Root causes for these bottlenecks were identified to be weak planning and budgeting and inefficiencies in procurement, inadequate accountability structures to prevent leakages, insufficient human resource capacity, inadequate data availability to forecast needs and prevent stock-outs, as well as poor updating and dissemination of treatment guidelines.

The proposed interventions address these root causes by (**Table 10**): pushing for increased stakeholder engagement and coordination at all levels, building stronger health information systems and strengthening capacity to use them for planning, and addressing inefficiencies in procurement. Further, policy interventions are proposed to increase coverage of family planning methods.

Table 10: Root causes for bottlenecks and prioritized interventions for Drugs and Medical Commodities

Bottlenecks	<ol style="list-style-type: none"> 1. Availability of drugs, medical equipment and other supplies 2. Availability, reliability and use of data 3. Shortage & Training of HRH
Root cause	Interventions
Inadequate accountability structures for drug supply management	Improve engagement with CSOs on drug availability and reducing drug leakages
Inadequate correspondence between drug budgets and drug needs	Increase district drug budget to meet the need for the full provision of EHP services
Inadequate local capacity to track drug availability and forecast drugs needs	Conduct regular DPAT (District Product Availability Teams) and HPAT (Health Center Product Availability Teams) meetings
	Enhance district-level capacity to use LMIS data
	Improve inventory management at facility level to reduce wastage/expiration

Root cause	Interventions
	Set up a system for redistribution of drugs between facilities
	Strengthen LMIS data management at the facility level, including recording forms, transaction forms and reporting forms to improve drug stock reporting by facilities
Inefficiencies in procurement by the central drug supplier	Address the inefficiencies in the procurement of drugs at CMST
	Address the inefficiencies in the distribution of drugs, medical supplies and medical equipment in the supply chain system in Malawi
	Assess the cost-effectiveness and accountability of single source procurement of drugs from CMST
	Update drug procurement policy to take into account recommendations from the cost-effectiveness assessment
	Implement the updated drug procurement policy
	Recapitalize CMST to facilitate timely procurement and delivery of commodities
Inefficiencies in blood procurement and distribution	Carry out a review of assessments done on the efficiency of centralized blood procurement and assess the quality of facility-collected blood
Inefficiencies in blood procurement and distribution Infrequent updates to and dissemination of standard treatment guidelines	Explore mechanisms for improving access to blood for health facilities
	Mobilization of blood donors
	Assess available family planning methods in Malawi to ensure that most suitable methods are included in standard treatment guidelines (pharmacosurveillance)
Infrequent updates to and dissemination of standard treatment guidelines Weak and duplicative supply chain systems	Combined packaging of ORS and Zinc along with instructions on administration
	Harmonize all supply chain systems
Weak and duplicative supply chain systems	Procure water ambulances for commodity delivery and emergency cases

Root cause	Interventions
	Provide commodities to deliver the Community Health Package

4.1.2. Quality of Service Delivery

There are several underlying causes for low quality of service delivery - 1. lack of standard guidelines on health worker roles and quality assurance, insufficient training of health workers, and well as inadequate supportive supervision; 2. low last mile geographic accessibility of services due to lack of appropriate role assignment at the most accessible level of care (contingent upon required level of specialization); 3. absence of motivation schemes and limited capacity of leadership structures at health facilities for the independent enforcement of quality improvement measures. This could be addressed through strengthening operational guidelines, greater integration of supervision functions, expanding the role of community health workers, and training and provision of incentives for better quality management.

Table 11: Root causes for bottlenecks and prioritized interventions for Quality of Service Delivery

Bottlenecks	Interventions
	<ol style="list-style-type: none"> 1. Shortage & Training of HRH 2. Geographic accessibility
Root cause	Interventions
Lack of standard definitions of roles and responsibilities of each health worker cadre	Dissemination of Standard Treatment Guidelines and Standard Operating Procedures to all service delivery points
Inadequate coverage of community health services	Community-based screening of malnutrition
	Integrate provision of TTV for pregnant women into ANC visits
Insufficient facility-level motivation to implement quality improvement measures	Establish a non-monetary incentive scheme for health facilities to meet standard quality service provision targets (including proper waste management)
Limited capacity to implement quality improvement measures and tracking	Conduct regular clinical audits
	Enhance district-level capacity for IMCI supportive supervision
	Improve central-level and district-level engagement with the Integrated Supportive Supervision (ISS) tool
	Improve infection prevention and control measures at community/district hospital level

Root cause	Interventions
	Training of Health Facility Quality Improvement Teams

4.1.3. Sociocultural factors

Low demand for health services is a challenge to increasing the coverage of health services. This is due to both lack of awareness of health issues as well as limited last mile access to information and basic care. The IC proposes to address this through effective community sensitization campaigns on preventive health measures and timely healthcare-seeking (involving local leaders and influencers), better coordination between programs and sectors for demand generation as well as regular dissemination of information through efficient community health delivery channels.

Table 12: Root causes for bottlenecks and prioritized interventions for Sociocultural factors

Bottlenecks	Interventions
	<ol style="list-style-type: none"> 1. Demand for services 2. Shortage & Training of HRH
Root cause	Interventions
Lack of awareness on healthy and safe living	Assess the feasibility of incorporating comprehensive sexuality education among youths in school curriculum
	Community sensitization on ANC and PNC requirements
	Community sensitization on FP methods targeting adolescents (through community meetings, health talks and IEC materials)
	Community sensitization on ITN use
	Community sensitization on the Essential Vaccine Package
	Community sensitization on the importance of facility delivery and postnatal care
	District-level Integrated Community Health Day for advocacy
	National Integrated Community Health Day for advocacy
Inadequate coverage of community health services	Expand one-stop centers (for YFHS) to all health facilities
Uncoordinated dissemination of public health information	Coordination of community sensitization activities for health

Root cause	Interventions
	Map and monitor community sensitization activities at the district level

4.1.4. Infrastructure

Geographic coverage of health care facilities constitutes a major bottleneck for the delivery of health services. While expanding community health services can partly address this issue, improving access to a wide-range of facility-based primary and secondary health care services will require a concerted effort to expand the network of health facilities. A large part of the infrastructure costs proposed by the IC are taken directly from the Capital Investment Plan 2017-2022 consisting of both construction of new facilities and health posts in prioritized locations, as well as the upgrading and rehabilitation of existing facilities. In addition, the IC proposes the construction of additional waiting spaces for clients to ensure timely access to services and improve the support of male partners in the demand for and access to maternal health services. Furthermore, to improve the coverage of last mile health, the IC proposes the construction of housing for HSAs in hard-to-reach areas, as well as provision of vehicles to increase coverage of community health services.

Table 13: Root causes for bottlenecks and prioritized interventions for Infrastructure

Bottlenecks	1.Geographic accessibility
Root cause	Interventions
Limited accessibility of health services in hard-to-reach areas	Construction of HSA housing units in hard-to-reach catchment areas
	Improve availability of outreach services (ensure adequate availability of vehicles at the facility-level)
	Improve mobility of HSAs to improve coverage of catchment area
Inefficient planning and coordination of health facility construction	Ensure the provision of basic minimum utilities at all facilities based on the results from SARA
	Assessment of construction costs (comprehensive efficiency assessment) to bring down standard cost guidelines for high-quality, low-cost facility construction
	Construct, rehabilitate and upgrade health facilities and health posts as per the Capital Investment Plan
	Disseminate Capital Investment Plan for resource mobilization and infrastructure guidelines

Root cause	Interventions
Lack of appropriate waiting spaces for people with limited access to health facilities	Construct adequate waiting spaces in health facilities to accommodate both males and females
	Construct waiting homes
Lack of evidence-based planning in road construction	Advocate for improved road infrastructure through Ministry of Transport and Public Infrastructure (particularly to prioritize construction of roads in areas rendered inaccessible during rains) in collaboration with the Ministries of Education and Agriculture, and the District Education Office and District Agriculture Office

4.1.5. Medical Equipment

The critical root cause identified for the inadequate supply of medical equipment at the point-of-care was the lack of an effective centralized system to track the availability and condition of medical equipment, as well as the absence of an up-to-date standard equipment list to help understand gaps in current availability. The IC proposes the establishment of a high-quality inventory management system, the capacity-building for equipment planning and monitoring, and investing in required medical equipment based on the gaps identified.

Table 14: Root causes for bottlenecks and prioritized interventions for Medical Equipment

Bottlenecks	<ol style="list-style-type: none"> 1. Availability of drugs, medical equipment and other supplies 2. Shortage & Training of HRH 3. Availability, reliability and use of data
Root cause	Interventions
Absence of standard guidelines and an effective inventory to track availability of medical equipment against need	Establish a medical equipment inventory at national and district level (populate using SARA data)
	Build HTSS-PAM capacity in equipment planning, monitoring and evaluation
Inadequate availability of basic medical and non-medical equipment for effective service delivery	Improve availability of basic supplies to HSAs
	Improve the availability of ANC and CEmONC equipment at facilities - blood pressure apparatus, stethoscope, adult weighing scale, fetal stethoscope, measuring tape, height board, examination bed/couch

4.1.6. Human Resources for Health

The key bottlenecks under human resources for health are the availability, capacity, and motivation of health workers at all levels. Apart from a need to recruit more health workers, the underlying root causes were identified as inefficient allocation of health workers based on need, lack of alignment of pre-service training and in-service training with health worker capacity needs on the ground, the lack of standardized guidance on roles and responsibilities by cadre, and limited mechanisms to improve health worker motivation. The IC proposed that this could be addressed through optimizing and aligning the production, deployment, and distribution of health workers with demand for services, improving the quality and efficiency of training through a stronger pre-service and in-service training curriculum and better coordination between stakeholders, developing standardized roles and guidelines for health workers, and improving working conditions and providing incentives to improve performance.

Table 15: Root causes for bottlenecks and prioritized interventions for Human Resources for Health

Bottlenecks	1. Shortage & Training of HRH 2. Geographic accessibility
Root cause	Interventions
Limited capacity for needs-based and equitable health worker allocation	Improve tracking of catchment area covered by HSAs through supportive supervision and mobile technology
	Recruit and redistribute health workers based on the needs as estimated in the workforce optimization model from the HRH Strategic Plan 2018-2022
	Revise established posts for HRH staff to reflect demand for EHP services, and the establishment for HSAs to reflect ideal 1:1000 HSA to population ratio
	Strengthen HRH information systems, capacity, and use for HRH policy, planning, management, and development at all levels
Limited district level capacity for human resource management	Improve Human Resource Management Practices at the national and district level
	Strengthen district HRH governance
	Strengthen district level HR departments to enable effective workforce planning, deployment, recruitment, and management
Inadequate quality and relevance of pre-service training	Increase pre-service production capacity and quality of prioritized health professional training programmes based on need

Root cause	Interventions
Uncoordinated delivery of in-service training	Develop integrated in-service training curriculum for health clinical staff (clinicians and nurses)
	Implement integrated in-service training curriculum for existing HSAs and pre-service training curriculum for new HSAs
	Strengthen coordination of relevant post-basic and in-service training to meet service delivery needs
Lack of standard definitions of roles and responsibilities of each health worker cadre	Develop clearly defined roles among each cadre at the national level
Low level of motivation of health workers due to limited positive incentives and regulation	Strengthen accreditation systems, regulation of health workers, their training and practice
	Promote decent and safe working conditions for health workers
	Develop and implement strategies to motivate and retain health workers in the health system, and in particular in hard-to-reach areas
	Increased supportive supervision of HSAs by SHSAs

4.1.7. Health Information Systems

The availability of high-quality, reliable and user-friendly information systems as well as the capacity of the decision-makers to use the data effectively are the biggest bottlenecks under HIS. This is primarily due to untimely submission of HMIS reports, inability to submit data at the point-of-care, as well as the fragmented nature of data collection, submission, analysis and use. This, in addition to limited human resource capacity to use data for decision-making, reduces data use. In turn, limited use of data reduces incentives for generation. For instance, a robust Civil Registration and Vital Statistics (CRVS) system could improve service delivery across sectors, but a limited inter-sectoral understanding of its potential has meant minimal progress in its establishment and integration. The IC prioritizes interventions which focus on: 1. introducing digital data collection tools and guidelines for data collection and use; 2. coordinating across existing data systems, and making them interoperable; 3. increasing capacity to use data and provide supportive supervision to improve quality.

Table 16 Root causes for bottlenecks and prioritized interventions for Health Information Systems

Bottlenecks	<p>1. Availability, reliability and use of data</p> <p>2. Shortage & Training of HRH</p>
Root cause	Interventions
Untimeliness, incompleteness and inaccuracy of data available	Introduce digital data collection tools at the health facility level
	Improve Health Facility Reporting forms to remove duplication of entries by health staff
	Introduce Electronic Medical Records
	Strengthen MDSR data quality
Inadequate linkages between different health systems and service delivery datasets	Make HIS sub-systems interoperable
Inadequate local capacity for data use	Increase capacity for data use at facilities and districts
	Quarterly zonal review meetings – Assessing district-level monitoring mechanisms and data use
	Review standard zonal review guidelines to include both data assessments and quality (develop a Zonal Action Tracker to track progress with specific timelines and responsible person)
Lack of standard guidelines on the potential use of CRVS to improve service delivery (targeting and quality) in all sectors and the role of MDAs in its development	Assist MDAs in the adoption, integration and use of the birth certificate and unique ID in the provision of their services.
	Conduct joint MOH and NRB national monitoring exercise of CRVS activities (both birth and death registration) to all districts.
	Institutionalize the birth and death registration in the MOH
	Monitor and provide supportive supervision of CRVS activities by joint district teams to all health facilities in the district

Root cause	Interventions
	Provide technical and financial support for national CRVS coordination in the MOH
Limited health sector commitment towards improving the CRVS system	Assist MOH in the adoption, integration and use of the Birth Certificate and unique ID in the provision of their services.
	Roll out community birth and death registration in all districts.
	Roll out health facility based (24 districts) and community based (all districts) death registration.
Limited linkage between CRVS and health sector digital platforms	Link the CR electronic system and DHIS in health for determining the proportion of births notified to the civil registration (CR) agency versus actual.

Box 1 provides detail on the functions of CRVS.

Box 1: CIVIL REGISTRATION AND VITAL STATISTICS (CRVS)

Primary Functions of the Civil Registration System

The primary functions of the civil registration system can be broadly divided into three categories: legal, administrative, and statistical functions (UNSD 2014, 3).

1. Legal and Protective Advantages to Individuals

The civil registration system plays an important role in facilitating the realization of many fundamental human rights recognized in major international declarations and conventions. Individuals at all ages, through the civil registration system, can exercise rights to obtain legal identity, proof of age, nationality, and further access to social services, among others.

Civil registration also facilitates many forms of protection, including proof of age preventing against child labor, early marriage, and sexual exploitation and trafficking of children; prevention of statelessness; and social protection. Linking civil registration and national identity management systems is important for providing social protection services. For example, a national identification management system can enable identification of the poor for cash transfer programs and so forth whereas civil registration alone cannot.

2. Administrative Advantages

In addition to issuing certificates that provide legal and protective advantages to individuals, through the continuous process of recording, maintaining, and retrieving vital records covering the entire population, the civil registration system also yields numerous benefits for public administration:

- **Improving governance.** Having reliable data can support informed decision-making on government policies, programs, and services.
- **Planning and monitoring programs effectively.** Since a well-functioning CRVS system can provide information on the condition and needs of even small groups of people on a continuous basis, it can improve accuracy in identifying a subset of the population that needs targeted intervention. Having continuous and universal data can also strengthen monitoring and evaluation of public services and research. Resources can thus be allocated and used more efficiently and effectively.

- **Serving as a reliable source of information for national identification systems, population registers, and functional registers** (for electoral rolls, pension fund registers, and so forth). As governments, public institutions, and businesses such as banks and insurance companies increasingly process data and provide services electronically, linking the CRVS system with other administrative databases offers advantages of reducing the response burden on the public and allows agencies to exchange and manage data more efficiently.
- **Facilitating business and commerce.** Businesses such as banks and insurance companies can better understand customers' needs and improve services by accessing data from the CRVS system

3. Statistical Advantages

Vital statistics are important for monitoring the SDGs as well as national development plans. Compared to other methods of obtaining statistics on a population, such as censuses and sample surveys, a well-functioning CRVS system can offer the following advantages:

- **Annual vital statistics:** useful for government policies, programs, services, and research at any geographical or administrative level
- **Timely and reliable disaggregated data:** by geographic location, sex, age, ethnicity, and other characteristics relevant in the national context
- **Statistical data subject to no sampling errors and relatively low response error:** when the civil registration is complete and accurate
- **Statistics that can be obtained at a relatively low cost:** because data are continuously supplied through an administrative system (World Bank and WHO 2014), there are cost-savings when a population register (a civil register linked with administrative registers such as those for migration, employment, education, using a unique identification number) is used for a register-based census instead of conventional population and housing census.

Vital statistics are useful for estimating population projections (for example, size and growth), mortality, fertility, and other population characteristics at the national and regional levels. This information supports governments in making informed decisions on policies. For example, vital statistics can enable more accurate planning, monitoring, and evaluation of programs concerning maternal and child health (using statistics on live births, fetal deaths, and other deaths) and family dynamics (based on marriage, divorce, and so forth).

4.1.8. Leadership and Governance

The bottlenecks of partner coordination, human resource availability and capacity, and data use can be traced to underlying deficiencies in leadership and governance. Interventions under this area are primarily focused around strengthening leadership at the district-level - the level directly responsible for the delivery of primary and secondary healthcare. In order to accomplish this objective, the IC proposes that the roles and responsibilities of district and community-level governance structures in the health sector be clearly defined, and districts be empowered to have more authority over development partners. In addition, it is proposed that inter-sectoral coordination improve at all levels to gain efficiencies in service delivery across sectors, particularly with regard to sexual and reproductive rights and nutrition. To address the issue of unsafe abortions, it is proposed that the legal context for abortions be appropriately addressed.

Table 17: Root causes for bottlenecks and prioritized interventions for Leadership and Governance

Bottlenecks	<ol style="list-style-type: none"> 1. Uncoordinated partner engagement 2. Shortage & Training of HRH
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3. Reliability and use of data	
Root cause	Interventions
Lack of clarity of the role of important leadership positions at the district and community level	Orient Directorates of Health and Social Services on their role
	Orient Health and Environmental Committees on their roles and responsibilities in relation to health issues in the district
Lack of partner coordination to ensure the implementation of the one-district, one-plan guideline	Improve engagement of partners in DIP development through routine partner mapping and joint strategic and operational planning through the DIP process and partner accountability through routine district DIP review meetings
	Strengthen partner accountability through routine reporting of partner activities into district DIP review meetings
Limited inter-sectoral collaboration at the district-level	Assess avenues for inter-sectoral collaboration (Ministry of Agriculture) in the implementation of nutrition activities & strengthen existing avenues
Weak leadership to monitor and improve community health services	Hold National Community Health TWG on a quarterly basis
	Conduct quarterly zonal community health team meeting
Inappropriate legislative environment to enforce sexual and reproductive rights	Assess avenues for inter-sectoral collaboration (Ministry of Education and Ministry of Youth Development) in the implementation of SRHR policy
	Assess the feasibility of legalizing abortions and develop a work plan

4.1.9. Health Financing

As discussed in previous section, weak coordination and engagement between development partners and the government leads to inefficiencies in the use of resources available in the health sector. This could be addressed by improving the absorption of funds through simplified funding and procurement processes, as well as distributing resources more equitably to districts and health facilities. It is also proposed that health facilities enjoy more financial autonomy over their budgets in order to improve timely budget execution in accordance with needs.

It should be noted that a National Health Financing Strategy is currently under development through which a more comprehensive set of interventions will be formulated to implement health system changes which improve efficiency, equity and increase resource mobilization.

Table 18: Root causes for bottlenecks and prioritized interventions for Health Financing

Bottlenecks	1. Uncoordinated partner engagement
Root cause	Interventions
Inadequate absorption of donor funds	Improve absorption of donor funds in health sector (further assessment of barriers to full absorption required)
Inequitable distribution of health sector resources	Increase health facility autonomy to manage their own budgets
	Provide guidelines to districts to allocate resources to health facilities based on need

4.2. Estimated Impact

In order to quantify the potential impact of alleviating the bottlenecks identified in the Investment Case, the UNICEF Equitable Impact Sensitive Tool (EQUIST) was utilized. The tool was developed to support decision-makers in developing equitable strategies to improve health and nutrition for the most vulnerable children and women, facilitating country processes in support of governments' commitments. It incorporates the functionality of Lives Saved Tool (LiST) in its back-end, which allows estimation of the mortality impact of changes in intervention coverage levels.

For the estimates on health impact, a workspace for Malawi was generated on EQUIST including the latest data from household surveys; Demographic Health Survey (DHS: 2016), and localized and routine data specially obtained for the purpose from Malawi government sources including: DHIS2; ANC Report; MDSR and Maternity Report; LMIS Report; and others. Additional indicators from such sources were added to EQUIST for inclusion in the analysis. Inputting results from the bottleneck analysis and identified strategies for implementation, scenarios were generated following UNICEF's seven-step approach to health system strengthening based on national data and priorities. Using global evidence on effect sizes for the identified strategies, LiST modeling was run at the back-end of EQUIST to produce impact the impact results below.

The estimates from the EQUIST simulation show that the proposed alleviation of bottlenecks can avert close to 7,500 under-five deaths and more than 4,500 cases of stunting among children under-five years in the period from July 2019 to December 2022.

Further details of the methodology can be found in **Annex 5**.

5. Financing the Investment Case

5.1. Estimation of total resources required to fund the investment case

The total cost of interventions included in the investment case has been estimated as \$928 million¹³ over three years (2019 – 2022), as seen in

Table 19. Of this, \$314 million is the total cost of interventions to be implemented during the first year (2019/20). The Investment Case is a live document to be updated as new information becomes available and new gaps are identified on a regular basis. A number of interventions included in the Investment Case include assessments to be carried out in the first year of implementation, which inform the scope and cost of activities in the subsequent years. In addition, some activities remain to be formulated based on assessments that are currently on-going. Therefore, the costs estimated for the first year of implementation can be viewed as the most accurate, and will be the focus of this section.

In the Investment Case, human resource for health interventions account for the largest share of the total cost during the first year of implementation at 37%, followed by infrastructure at 32%, medical equipment at 11% and drugs and commodities at 10%. The remaining 9% of the costs can be attributed to the other five building blocks.

Under infrastructure, the majority (42%) of the costs for the first year arise from the construction of new facilities, derived from the prioritized list included in the Capital Investment Plan (CIP). These prioritized infrastructure projects include Health Centers and Community Hospitals that are able to provide primary and secondary healthcare services. In addition, the resource requirement estimates include provisions for the construction of Health Posts in hard-to-reach areas; facilitating the delivery of primary healthcare services at the community-level. Under human resources for health, 58% of the costs in year 1 can be attributed to salaries for additional staff needed to achieve HSSP-II coverage targets, and 37% to expanding pre-service training in order to meet the requirements of recruitment. Under drugs and commodities, filling the financial gap for essential RMNCAH+N commodities by increasing the district drug budget amounts to 96% of the total cost for this building block.

Similar to the previously mentioned building blocks, medical equipment related interventions form a substantial share of the costs in the first year (10%). These costs are driven primarily by the procurement of basic medical equipment related to ANC, labor, PNC, as well as services for all other demographic groups. Whilst the interventions in these building blocks contain the bulk of the costs, the interventions in the remaining building blocks include activities that will ultimately

¹³ The detailed costs by intervention can be found in **Annex 2**.

contribute substantial health gains through the increased provision of EHP services at all levels of care.

Leadership and governance related interventions form 4% of the total costs for the first year, whilst interventions related to socio-economic/cultural factors contributed 1%, and quality of service related interventions accounted for 2% of the costs. The majority of the interventions within these building blocks are aimed at alleviating bottlenecks at the sub-national level, whilst central-level interventions are included to address issues of inter-sectoral collaboration and national-level coordination with development partners. At the community, facility and district-level, interventions take greater aim at improving accountability mechanisms and governance structures; whilst improving demand for services through community sensitization methods.

Table 19: Total cost of the investment case

Building Block	Year 1	Year 2	Year 3	Total IC Cost
Drugs and Medical Commodities	\$30,656,891	\$32,362,681	\$35,548,850	\$98,568,421
Of which: Procurement of essential RMNCAH+N drugs to fill current gaps ^a	\$28,600,120	\$31,319,991	\$34,298,523	\$94,218,634
Quality of Services	\$7,416,699	\$5,019,254	\$4,414,623	\$16,850,575
Socio-economic/Cultural factors	\$3,235,373	\$1,510,668	\$2,273,292	\$7,019,333
Infrastructure and Transport	\$100,696,266	\$84,184,500	\$108,531,461	\$293,412,227
Of which: Construction of new facilities	\$42,899,924	\$16,491,778	\$31,486,549	\$90,878,251
Rehabilitation of health facilities	\$10,958,433	\$45,621,227	\$27,871,657	\$84,451,317
Upgrades of health facilities	\$25,299,999	\$10,983,333	\$42,261,188	\$78,544,520
Medical Equipment	\$39,094,496	\$38,257,812	\$19,548,531	\$96,900,839
Of which: Procurement of essential medical equipment	\$37,418,561	\$37,418,561	\$18,709,280	\$93,546,402
Human Resources for Health	\$115,861,079	\$117,206,053	\$138,625,531	\$371,692,663
Of which: Salaries for additional staff required	\$66,843,847	\$66,843,847	\$66,843,847	\$200,531,540
Pre-service training for additional staff required	\$42,379,470	\$42,379,470	\$42,379,470	\$127,138,411
In-service training	\$1,964,200	\$1,964,200	\$1,964,200	\$5,892,599
Health Information Systems (HIS)	\$5,968,128	\$8,624,956	\$5,181,362	\$19,774,446
Leadership and Governance	\$11,035,402	\$5,006,739	\$7,231,154	\$23,273,296

Building Block	Year 1	Year 2	Year 3	Total IC Cost
Health Financing	\$252,442	\$178,474	\$178,474	\$609,390
Grand Total	\$314,216,775	\$292,351,137	\$321,533,278	\$928,101,190

The full list of interventions included in the Investment case are detailed in **Annex 2.1**.

5.2. Geographic prioritization of investments

The performance of each health system building block tends to vary by district. Prioritizing funding towards low-performing districts is likely to maximize the impact of any investment made towards IC interventions, especially in Malawi’s resource-constrained environment.

Hence, an analysis of key indicators under each IC building block was carried out to direct stakeholders towards districts with the greatest need. **Table 20** presents ranking of each district under each building block. The rank of each district was based on a set of key indicators¹⁴ drawn primarily from the bottleneck analysis for all building blocks except Health Information Systems and Leadership and Governance (full list of indicators in **Annex 5**). For Health Information Systems, reporting rates of HMIS15 were used along with the timeliness of reporting rates. For Leadership and Governance, data on the presence of community-based leadership structures (CHAGs and HCMCs) was taken from the District Community Health Coordination Tool (2018).

A low value in the table signifies better performance. For instance, Neno is the best performer among all districts with respect to the availability of drugs and commodities, and the worst performer with respect to HR availability.

It should be noted that the rankings of course provide a relative comparison between districts, and therefore whilst a district can be ranked highly, there may actually be little difference between them and a lowly ranked district in absolute terms. This indicator ranking should be complemented by district-level data pertaining to each of the building blocks.

¹⁴ When more than one indicator was used under a building block, the rank of each district was determined by taking an average of the rank of the district for each independent indicator and then ranking each district based on this average figure.

Table 20: Rank of districts for each building block

Zone	District	Drugs and medical commodities	Quality	Socio-economic/Cultural factors	Infrastructure	Medical Equipment	HR Availability	HR Training	Health Information Systems	Leadership and Governance
Central East	Nkhotakota	21	3	12	8	1	16	6	4	16
	Ntchisi	13	26	8	21	1	6	11	8	21
	Salima	3	21	24	23	21	4	13	15	6
	Dowa	21	29	9	26	19	10	17	20	7
	Kasungu	4	7	1	28	1	24	22	23	1
Central West	Dedza	17	6	22	16	22	17	5	25	12
	Lilongwe	26	28	15	8	1	14	29	15	17
	Mchinji	4	19	4	22	26	12	28	14	7
	Ntcheu	19	10	24	12	1	20	8	8	11
North	Chitipa	23	16	20	13	28	23	15	26	7
	Karonga	6	7	9	8	1	26	14	5	4
	Likoma	2	2	3	1	1	28	2	1	21
	Mzimba North	25	9	23	4	18	9	16	18	21
	Mzimba South	16	15	26	29	17	6	22	17	NA
	Nkhata Bay	14	24	14	24	1	1	22	2	2
	Rumphi	6	11	2	15	1	2	10	26	7
South East	Machinga	29	20	28	13	1	15	4	22	5
	Mangochi	28	18	29	20	25	17	18	28	18
	Mulanje	15	14	19	6	1	19	25	3	13
	Zomba	27	25	9	4	20	5	19	5	3

Zone	District	Drugs and medical commodities	Quality	Socio-economic/Cultural factors	Infrastructure	Medical Equipment	HR Availability	HR Training	Health Information Systems	Leadership and Governance
	Balaka	11	5	17	7	1	22	7	12	15
	Phalombe	9	12	7	19	23	13	27	18	21
South West	Chiradzulu	20	1	5	3	23	11	8	8	21
	Nsanje	10	4	15	16	1	8	3	29	21
	Blantyre	23	22	6	2	15	21	20	24	20
	Chikwawa	12	27	27	18	16	27	26	7	21
	Mwanza	8	13	13	27	1	24	12	13	14
	Neno	1	17	17	25	29	29	1	8	21
	Thyolo	18	23	21	8	27	2	21	21	19

5.3. Prioritized list of interventions

The total amount of resources required for the implementation of all interventions included within the IC is substantial. These resources are unlikely to be immediately available and hence there is a need to prioritize the interventions, so that more immediate investment can be directed in an appropriate manner, where it can elicit the greatest impact.

In the section below, a list of prioritized interventions has been articulated. The intention is to present a scenario for where an initial investment of approximately \$120 million should be channeled.

The list of prioritized interventions has been developed to include interventions implemented nationwide and some that will only be implemented in certain districts. The choice of districts is informed by the sub-national indicators that had informed the bottleneck analysis, and is outlined in the section above on geographic prioritization. Districts which exhibited low performance in the key indicators for each of the health system building blocks were designated as prioritized districts.

Given that the interventions developed for the Investment Case take a systems-based approach, they were conceived to be delivered in a holistic manner. In order to implement certain activities, other preceding activities must take place. Therefore, for the development of the prioritized

interventions, care has been taken to ensure that the interventions are packaged in an appropriate manner, guaranteeing that all of the conditions for change are met when delivering an intervention. In addition, priority has also been given to interventions that include an initial assessment, which will inform the scope of subsequent activities.

It should be noted that the costs estimated for the prioritized interventions represent the cost of delivering the intervention over the full three-year implementation period, rather than just the first-year. This has been done to ensure that the financial burden is understood in its entirety, and that funding for the first year of a large number of interventions is not prioritized over the sustainability of a smaller number of interventions.

In total, 60 interventions have been included in the prioritized intervention scenario of the total 125 included in the Investment Case. However, as stated above, not all interventions are implemented fully but rather, implemented in only a certain number of districts. **Table 21** shows the number of prioritized interventions for each building block, and the costs of these interventions.

The interventions related to Infrastructure and Transport remain for the construction of health facilities, health posts and dwelling units in hard-to-reach areas. Health posts and housing for health workers have taken particular priority, as the most cost-efficient means of ensuring that health care services are provided in areas where geographic access is currently low. These interventions account for 38% of the prioritized interventions costs.

The prioritized interventions for the Drug and Medical Commodities building block, include central-level activities aimed at improving efficiency in the procurement of medicines from Central Medical Stores Trust, and harmonizing supply chain systems. Sub-national interventions aim to ensure that stock management is improved, with wastage and pilferage reduced through the empowerment of accountability structures and enhanced capacity to report to and utilize LMIS data. Currently, the funding gap for medical commodities in Malawi is substantial and constitutes a major impediment to the optimal coverage of EHP services. Whilst the entire funding gap has been estimated, the prioritized intervention disaggregates the commodities required and includes those specifically aimed at improving RMNCAH+N outcomes; specifically, nutrition commodities, and commodities for common obstetric complications (hemorrhage, sepsis), diarrhea, pneumonia, and family planning commodities. These interventions account for 15% of the total prioritized intervention costs.

Table 21: Prioritized Interventions by building block

Building Block	Number of Interventions	Total Cost of Interventions (US\$)	Percentage of Total Prioritized Intervention cost
Drugs and Medical Commodities	11	\$17,568,332	14.85%
Health Financing	1	\$571,215	0.48%
Health Information Systems (HIS)	3	\$446,733	0.38%
Human Resources for Health	12	\$22,937,709	19.39%

Building Block	Number of Interventions	Total Cost of Interventions (US\$)	Percentage of Total Prioritized Intervention cost
Infrastructure and Transport	3	\$44,555,557	37.67%
Leadership and Governance	5	\$7,768,482	6.57%
Medical Equipment	4	\$18,564,406	15.70%
Quality of Services	13	\$3,688,115	3.12%
Socio-economic/Cultural factors	8	\$2,169,879	1.83%
Grand Total	60	118,270,428	

The single Health Financing intervention is focused on improving financial autonomy at health facility level. The intervention is aimed at improving capacity at health facilities, and ensuring that the policies are in place for more autonomous administration of health facility budgets. The prioritized interventions aimed at improving Health Information Systems focus largely on the improving of health facility data reporting, and data recording for clinical audits to improve the quality of EHP services.

In order to ensure that health service needs are being met in the hardest-to-reach areas, the bulk of the prioritized HRH costs relate to the recruitment of HSAs and other cadres in 8 districts. This amount of funding for 30% of the gap to be filled in these districts, where there is highest need for HSAs and nurse midwife cadres; allowing for improved service delivery of preventive care and ANC and PNC services. In addition, to the funding of additional personnel the prioritized interventions also include activities to improve the current in-service training curriculums for various cadres. Prioritized interventions also include those that are designed to devolve greater power to districts for the recruitment and deployment of health personnel. Interventions aimed at improving health worker productivity are also included, where activities are aimed at increasing mentorship and additional accountability through supervision visits. These interventions account for 19% of the total prioritized intervention costs.

The prioritized interventions under the Leadership and Governance building block focus primarily on enhancing the capacity of leadership and accountability structures at the community level. Importantly, the interventions included here are packaged in a manner which ensures that the appropriate hierarchy of accountability structures is implemented in a holistic manner, so that all bodies are able appropriately empowered to carry-out their duties but also remain accountable to an established higher body. These governance structures will help provide necessary foundations for interventions at community-level across other health system building blocks. Additionally, interventions have been included which aim at improving coordination of partners at district-level. These interventions work towards empowering districts to direct development partners towards their stated areas of need, and ensure that resources within the health sector are aligned to the government's priorities. Specifically included are activities which look to improve partner engagement in the district planning processes, as well as ensuring the continuing operations of district partner harmonization forums.

The medical equipment interventions which have been prioritized mainly concern the procurement of medical equipment for health facilities and supplies for HSAs. Given the large total cost of funding the medical equipment gap in health facilities throughout Malawi, and so for the prioritized interventions, basic equipment and that used for the provision of ANC and PNC services has been prioritized for procurement.

A substantial number of interventions have been prioritized under the Quality of Services building block; these reflect a wide variety of activities aimed at improving and maintaining quality at a number of different levels of the health care system. At the central-level there is an emphasis on ensuring that there is greater engagement with the Integrated Supportive Supervision (ISS) tool, to help ensure that supervision between programs is harmonized and resources are more efficiently utilized. At the sub-national level there is a greater emphasis on ensuring that EHP services are delivered in a safe and appropriate manner. The dissemination of standard treatment guidelines, the provision of routine clinical audits and sensitization activities on the hospital ombudsman are all aimed at ensuring that minimum treatment standards are met, and creates accountability mechanisms so that quality standards are met.

The prioritized interventions within the Socio-economic/Cultural factors building block comprise of activities that aim to stimulate demand for services through community sensitization events. These activities are aimed primarily to ensure that populations are aware of the need for continued ANC, PNC and facility delivery for pregnant women, whilst also ensuring that there is an uptake in the use of ITNs and immunization services. These activities include the development of IEC materials, and their dissemination through HSAs, local leaders and various forms of media.

A full list of the prioritized interventions can be found in **annex 2**.

6. Implementation Plan for the Investment Case

6.1 Resource Coordination

The investment case found that a major bottleneck in the utilization of health sector resources is the coordination of investments made by 191 financing sources towards 261 implementing agents. Whilst there is a substantial amount of resources within the health sector, evidence suggests that the funding is not aligned with the proposed priorities. The majority of current expenditure is focused on specific vertical programs instead of sustainable health systems, including major health systems building blocks like human resources and infrastructure.

Furthermore, inadequate coordination of these resources results in large inefficiencies due to duplicative investments as well as misalignment of investments with the overarching priorities of the health sector as articulated in the Health Sector Strategic Plan II. Stakeholder interviews with development partners and government partners suggested the following key barriers in coordination:

Coordination of resource mobilization and expenditure

There is no unified resource mobilization strategy for the health sector, individual departments or HSSP II. Donor planning and investment timelines are not aligned with each other or with government plans (**Table 22**). However, annual plans provide flexibility in realigning implementation as needed.

Table 22: Donor and Government planning timelines

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
HSSP II									
RMNCAH+N Investment Case									
Department for International Development (DFID)									
Gavi									
GIZ									
Global Fund									
Health Services Joint Fund (HSJF)									
Norwegian Embassy									
UNICEF									
USAID									
Legend									
	Time period for Government's planning cycle								
	Ongoing planning cycle for Development Partner								
	Next/upcoming planning cycle for Development Partner								

There are forums for partnership between MOH and development partners, but resource mobilization and expenditure are not aligned for the sector as a whole. Programmatic focus for globally funded diseases like HIV/AIDS, malaria and tuberculosis do not always align to national plans like the HSSP II (Table 22).

Table 23 contains information relating to the current means through which donor agencies currently go about their planning and monitoring of their own programmes, and how these fit with existing health sector strategies.

Table 23: Donor planning and monitoring mechanisms and alignment with the government

Donor Agency	Annual Planning and Monitoring	Policy alignment	Coordination mechanisms and agencies
Department for International Development (DFID)	Yes - fixed targets but activities can change as needed. Program reviews conducted by DFID in consultation with relevant MOH departments.	HSSP II	One on one with the departments and programs, including DPPD
Gavi	Yes: Years 1-2: Guaranteed funding. Year 3: Performance-linked funding. Program reviews conducted by GAVI in consultation with MOH and other key stakeholders such as UNICEF	HSSP II (and associated strategies like National Community Health Strategy as relevant). Planning documents from the EPI.	EPI, DPPD, Community Health Section
GIZ	Yes - fixed targets but activities can change as needed. Annual program review with key beneficiaries	HSSP II	DPPD, QMD, HRD, RHD, selected DHMTs
Global Fund	Yes - fixed targets but activities can change as needed. Program review by WHO	National strategies on Tuberculosis, Malaria and HIV/AIDS	NMCP, NTP, HIV/AIDS, DPPD
Health Services Joint Fund (HSJF)	Yes - fixed targets but activities can change through a reprioritization mechanism. Implementation and monitoring coordinated by DPPD	HSSP II	DPPD, HTSS, EPI
Norwegian Embassy	Yes - fixed targets and budgets. Monitoring done by the Norwegian embassy HSJF	HSSP II	DPPD through HSJF

Donor Agency	Annual Planning and Monitoring	Policy alignment	Coordination mechanisms and agencies
UNICEF	Yes - fixed targets but activities can change with input from MOH. Joint reviews done in collaboration with key MOH departments	HSSP II	UN Malawi, IMCI, EPI, Community Health and DPPD

HSSP-II Operational Plan

Successful implementation of the Investment Case requires not just the mobilization of additional resources towards priority interventions, but also better coordination of available resources. With this in mind, there is need for a comprehensive and continuous understanding of activities being implemented within the health sector. This would provide a consolidated source of information, containing all activities occurring across the health sector at both national and sub-national level. Importantly, this would also need to contain information related to activities which have been funded, but also those which may have been planned but not funded.

This annual implementation plan has been developed and termed the HSSP-II Operational Plan. It presents a consolidated source of data combining the activities and costs contained within the central-level budget, as well as those contained in the district implementation plans formulated by the DHOs. The HSSP-II Operational Plan includes activities that will be funded by the Treasury, development partners and also the activities where no funding has yet been secured. In addition, each activity is mapped to the relevant HSSP-II Objective, the geographic location of the activity (at national-level or the specific district), the government unit responsible for its implementation or oversight.

In addition to the activities taken from the national and district budgets, the HSSP-II Operational Plan also include activities drawn from sub-sectoral strategic plans. For instance, the information taken from the Capital Investment Plan (CIP) provides a detailed breakdown of the activities related to the construction, rehabilitation and maintenance of the various health facility types, the districts in which they are needed as well as the cost of the activity. The inputs taken from the Human Resources for Health Strategic Plan, specifies the gap in staffing for each health worker cadre in each district, along with the cost of meeting the full health worker need to ensure that targeted levels of EHP coverage are met.

Importantly, the HSSP-II Operational Plan also includes the interventions and activities developed for the Investment Case, as well as specifying the prioritization level of the activity. By including the activities included in the IC, there is a greater understanding of the need for health systems investments, as opposed to the operational needs that may be captured in the district and national plans. The inclusion of the IC interventions in the HSSP-II Operational Plan, allows for the recording of funding for each of the activities as well as the broad timeline for the activity’s implementation (depending on when funding is secured) which can inform the monitoring and evaluation of IC interventions. In this way, the HSSP-II Operational Plan will be central in the monitoring of IC implementation, and will ensure that it is done in a manner which fits with existing MOH initiatives.

The consolidation of this information not only gives a greater understanding of the activities being conducted in the health sector, but also provides a document which delineates the funding gaps within the health system. This therefore, allows for the HSSP-II Operational Plan to be used as a means of facilitating dialogue with development partners, to ensure that their investments are directed towards areas of greatest need. The continuous tracking of health sector resources then allows for the greater coordination within the sector, and greater alignment of resources towards the priorities of the MOH.

The tool will be useful for (1) continuous tracking of health sector resources and better monitoring, (2) understanding detailed financial gaps at any point in time (3) and directing new investments towards unfunded priorities.

6.2 Monitoring the Investment Case

Results Framework

Whilst the HSSP-II Operational Plan is able to track funding that may have been channeled towards Investment Case interventions, it is necessary that progress in activity implementation and programmatic achievement also be tracked. Building on the Theory of Change in section 3.3, the Monitoring and Evaluation (M&E) framework maps the IC health system building blocks with indicators that align with the prioritized interventions required to achieve the desired improvements in RMNCAH+N outcomes.

The selection of these indicators followed a number of guiding principles:

- **Alignment with existing indicators:** in order to reduce the burden of data collection, the results framework has been developed in a manner which leverages relevant, existing national indicators to the extent possible.
- **Leveraging existing work:** the interventions formulated for the IC are in-part informed by existing strategic documents and assessments. In a similar fashion, the results framework aims to tie together the indicators used in M&E frameworks of existing strategic documents and indicators that have been included for the IC.
- **Inclusivity:** the consultative process used to develop the IC extended to the results framework. As such, workshops and interviews were conducted with representatives from various MOH departments, as well as nationally representative stakeholders, during the framework's development and validation.
- **Measurable and practical:** Indicators, to the extent possible, align with the HMIS and the National Indicator Handbook. Additional validation for this was provided by CMED, who reviewed the indicators to ensure that they are collectable with current resources. In certain instances, indicators which are not currently collected were conceived and a practical methodology for their collection was developed. In most instances, this involved the creation and inclusion of indicators to be captured using the Integrated Supportive Supervision (ISS) tool.

The list of indicators identified for each building block can be seen in **Annex 3**.

Processes for Monitoring

In all aspects of the Investment Case, care has been taken to ensure that existing processes are utilized so that additional resources and efforts are not used. The process for monitoring progress against the targets outlined in the results framework, is embedded within the existing Joint Annual Review (JAR) process.

The JAR is a mechanism in which the annual progress of the health sector is tracked against the targets outlined within the HSSP II. It acts as the focal evaluative activity for the HSSP II. The Report is typically prepared through submissions from MOH directorates, programmes, partners, and regulatory institutions, and data from the District Health Information Software (DHIS 2). The data is used to calculate key indicators for monitoring performance of the Health Sector.

The JAR report takes a detail-oriented approach to evaluating the health sector's progress, not only focusing on disease or programmatic issues but also ensuring that the key areas of the health system are appraised, alongside progress in health policy reforms. When assessing progress, the JAR provides relevant contextual information, explaining the activities that have been conducted over the previous years, as well as the on-going initiatives. When viewed in tandem with the relevant indicators, this provides a means of appraising the success of programmatic activities and also presents a method for highlighting where bottlenecks to the successful delivery of services may lie. It is also intended that a number of the outputs developed for the IC be utilized further during the JAR process, namely the bottleneck and root cause analysis. When assessing the indicators included in the JAR, the information from the bottleneck analysis will help to provide a greater depth of understanding for which activities are alleviating the existing bottlenecks in the system, and will also highlight the areas where bottlenecks impede progress. Additionally, the use of the bottleneck analysis in the JAR can help to guide activities aimed at course correction, which have already been developed as interventions for the IC.

Given that the indicators included in the results framework for the IC are mainly drawn from existing sources, many are already included within the JAR. Those that are not, will be integrated into the relevant sections of the report. Given the close alignment of the HSSP II and the Investment Case, linking the monitoring and evaluation processes presents the most efficient use of existing resources, and ensure that there are no duplicative processes.

Whilst the JAR is typically a MOH led exercise, considerable support is garnered from development partners. This support comes as technical assistance for the analytical aspects of the report, and also financial support for a review meeting during which the report is presented and discussed by the health sector's various stakeholders. Integrating the IC's monitoring with the JAR will also present an opportunity to ensure that the IC remains at the forefront of discussions when engaging with development partners.

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