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SUSTAINABILITY IMPLICATIONS FOR TANZANIA'S FOURTH HEALTH SECTOR STRATEGIC PLAN, 2015/16–2019/20



*Financial, Health System,
and Impact Analyses Using
the OneHealth Tool*

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Sustainability Implications for Tanzania's Fourth Health Sector Strategic Plan, 2015/16–2019/20

*Financial, Health Systems, and Impact Analyses
Using the OneHealth Tool*

SEPTEMBER 2015

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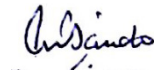
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FOREWORD

The *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV) builds upon previous health sector strategies. It was created through a highly participatory process involving various departments of the Ministry of Health and Social Welfare, other allied ministries and departmental agencies, technical partners, external consultants, and development partners. As the overarching strategic document for Tanzania's health sector over the next five years, the HSSP IV aims to expand coverage and quality of health services to the level of a middle-income country. The overall objective is to reach all households with essential health and social welfare services, aiming to meet the expectations of the population and objective quality standards by applying evidence-based, efficient channels of service delivery.

Meaningful strategy formulation can only be achieved with readily available and properly documented evidence. During development of the HSSP IV, the Ministry of Health and Social Welfare and other key stakeholders used the OneHealth Tool for strategic, evidence-based decision making. The OneHealth team, comprised of representatives from the Ministry of Health and Social Welfare and technical consultants supported by the USAID- and PEPFAR-funded Health Policy Project, estimated the resource requirements and resources available for the health sector over the next five years, the impact on maternal and child health and HIV if HSSP IV service delivery targets are met, and the human resources constraints in scaling up health services. These analyses supported prioritization exercises to set realistic targets for the health sector to ensure sustainable health achievements.

This report showcases the results from the OneHealth Tool application and assesses the long-term sustainability of the HSSP IV. I encourage all of our valued partners to take ownership of this document and use it as a guide as we implement the HSSP IV and aim to improve the health status of Tanzanians over the next five years.



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PERMANENT SECRETARY

MINISTRY OF HEALTH AND SOCIAL WELFARE

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The OneHealth technical team would like to acknowledge the essential assistance provided by Ministry of Health and Social Welfare (MOHSW) staff who dedicated their time and expertise to supplying and validating data during the OneHealth application. In particular, we would like to acknowledge the leadership and guidance provided by Bernard Konga and Mariam Ally of the Directorate of Planning and Policy in the Ministry of Health and Social Welfare. We also thank the Ministry's Health Sector Reform Secretariat, led by Dr. Oberlin Kisanga, for coordinating data validation and guiding the prioritization process. Lastly, we appreciate the valuable inputs and guidance provided by the Health Financing Technical Working Group within the MOHSW throughout this process.

We also acknowledge the important inputs from other stakeholders who were involved in OneHealth data collection and validation. We thank clinicians, district medical officers, and regional medical officers for providing useful information on service delivery in Tanzania. We also appreciate the HSSP IV extended task force, comprised of MOHSW staff and development partners, for commenting on cost and fiscal space scenarios.

EXECUTIVE SUMMARY

Tanzania's *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV) aims to provide basic health and social welfare services that are of good quality, equitable, accessible, affordable, sustainable, and gender sensitive. Development of the HSSP IV was highly participatory across the Ministry of Health and Social Welfare (MOHSW) and all its departments, as well as other ministries and development partners, and used financial, health system, and impact analyses to inform target setting. Specifically, the MOHSW, with support from the USAID- and PEPFAR-funded Health Policy Project (HPP), used the OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, to estimate the resource requirements and resources available for the health sector, the impact on maternal and child health and HIV if HSSP IV service delivery targets are met, and the human resources constraints in scaling up health services.

The MOHSW used the OneHealth results to inform prioritization and construct scenarios where targets varied for coverage of health services, human resources, and infrastructure. The final HSSP IV targets and cost estimates reflect the ambitious scale-up of key health services, but temper ambition with realism by assuming flat coverage of lower-priority interventions. This scenario also reflects current capacity and plans for increases in the number of human resources for health (HRH) and new facilities.

Financial resource requirements for the HSSP IV

Across five years of the HSSP IV, Tanzania requires US\$10,561 million (TZS 21,818 billion). The total costs of the HSSP IV increase from \$1,942 million in 2015/16 to \$2,333 million in 2019/20.

The cost of health services, which includes commodity and program management costs, accounts for 51 percent of the total HSSP IV resource requirements and increases from \$994 million to \$1,182 million from 2015/16 to 2019/20. About three-quarters of the total health services costs are for commodities (exclusive of supply chain costs, which are under a separate health system component for logistics). HIV is the highest-cost program, representing 28 percent of total health service costs and requiring \$1,486 million across all five years of the HSSP IV. The NCD program is the fastest growing program in terms of resource requirements; the cost of NCDs nearly doubles from \$153 million in 2015/16 to \$311 million by 2019/20.

The total cost of health system components across all five years of the HSSP IV is estimated to be \$5,118 million, increasing from \$948 million in 2015/16 to \$1,151 million in 2019/20. Two-thirds of the total costs of health system components are for HRH and infrastructure.

Human resource constraints

The OneHealth Tool estimates the number of full-time equivalents (FTEs) needed, by staff type and program, to meet the coverage targets outlined in the HSSP IV. As Tanzania plans to scale-up coverage of key interventions under the HSSP IV, the number of HRH needed increases from 127,623 to 190,137 from 2015/16 to 2019/20. The reproductive, maternal, newborn, child, and adolescent health (RMNCAH) program needs more FTEs than any other program.

The number of FTEs needed to deliver services based on HSSP IV targets is compared to the supply according to the HRH Production Plan to estimate the HRH gap. Overall, the results suggest there may be insufficient human resources in Tanzania to meet the HSSP IV service delivery targets. Across all disease programs and staff types, an additional 40 percent of the estimated staff available in 2019/20 is needed to delivery health services that year.

Fiscal space and financial gap analysis

Three fiscal space scenarios were developed based on current trends in funding from domestic and external sources, the introduction of innovative sources of financing, and creation of a Single National Health Insurer (SNHI).

Assuming funding trends remain constant, the resources available for health from the government, donors, and health insurance payouts will decline from \$1,280 million in 2015/16 to \$1,180 million in 2019/20. With the introduction of innovative financing sources, including potential allocations from alcohol and tobacco taxes, levies on mobile communications and public corporations' surplus revenue, and the AIDS Trust Fund, resources available for health increase to \$1,516 million by 2019/20. The fiscal space given innovative financing and a SNHI is even greater; \$1,614 million could potentially be available for health by 2019/20 under this scenario.

Even under the most optimistic fiscal space scenario, Tanzania faces an estimated funding gap of \$2,540 million for implementing the HSSP IV. Without innovative funding sources or the SNHI, the HSSP IV funding gap from 2015/16 to 2019/20 may be as large as \$4,347 million.

Conclusions and recommendations

The results of the OneHealth Tool application in Tanzania provide an evidence base for strategic planning and resource allocation. As the country implements the HSSP IV, it must balance fiscal and human resource constraints with desired health outcomes. By using the OneHealth Tool during development of the HSSP IV, the MOHSW chose to prioritize scale-up of the most cost-effective interventions and assume moderate increases in the number of HRH and facilities from 2015/16 to 2019/20. Tanzania may be able to further reduce costs by minimizing inefficiencies and waste, and could use OneHealth results to mobilize additional resources for health.

Tanzania plans to build upon its first application of OneHealth. The Directorate of Policy and Planning in the MOHSW is currently developing an action plan for OneHealth institutionalization in Tanzania. This plan seeks to

1. Establish a process for coordinating data collection and making updates to the tool
2. Develop the capacity of MOHSW staff in maintaining and using OneHealth
3. Determine how to best use OneHealth results for decision making

In addition to informing strategic planning, OneHealth can be used by the MOHSW to monitor and evaluate progress toward meeting health targets under the HSSP IV. OneHealth can also be used to inform annual operational planning and budgeting.

ABBREVIATIONS

AIM	AIDS Impact Model
ART	antiretroviral therapy
ARV	antiretroviral
BEmOC	basic emergency obstetric care
BRN	Big Results Now
CEmOC	comprehensive emergency obstetric care
CHW	community health worker
CPR	contraceptive prevalence rate
CVD	cardiovascular disease
DPP	Directorate of Policy and Planning
DSW	Department of Social Welfare
FTE	full-time equivalent
HMIS	Health Management Information System
HPP	Health Policy Project
HRH	human resources for health
HSRS	Health Sector Reform Secretariat
HSSP IV	Fourth Health Sector Strategic Plan 2015–2020
IRS	indoor residual spraying
IVD	Immunization and Vaccination Department
LiST	Lives Saved Tool
LGA	Local Government Authority
LLIN	long-lasting insecticide-treated nets
MDA	mass drug administration
MDG	Millennium Development Goal
MDR-TB	multidrug-resistant tuberculosis
MMR	maternal mortality ratio
MOHSW	Ministry of Health and Social Welfare
MSD	Medical Stores Department
NACP	National AIDS Control Program
NCDs	non-communicable diseases
NMCP	National Malaria Control Program
NMR	neonatal mortality rate
NTDs	neglected tropical diseases
NTLP	National Tuberculosis and Leprosy Program
PMTCT	prevention of mother-to-child transmission
RCHS	Reproductive and Child Health Section
RMNCAH	reproductive, maternal, newborn, child, and adolescent health
SDG	Sustainable Development Goal
SNHI	Single National Health Insurer
VEN	vital, essential, nice to have
VMMC	voluntary medical male circumcision

BACKGROUND

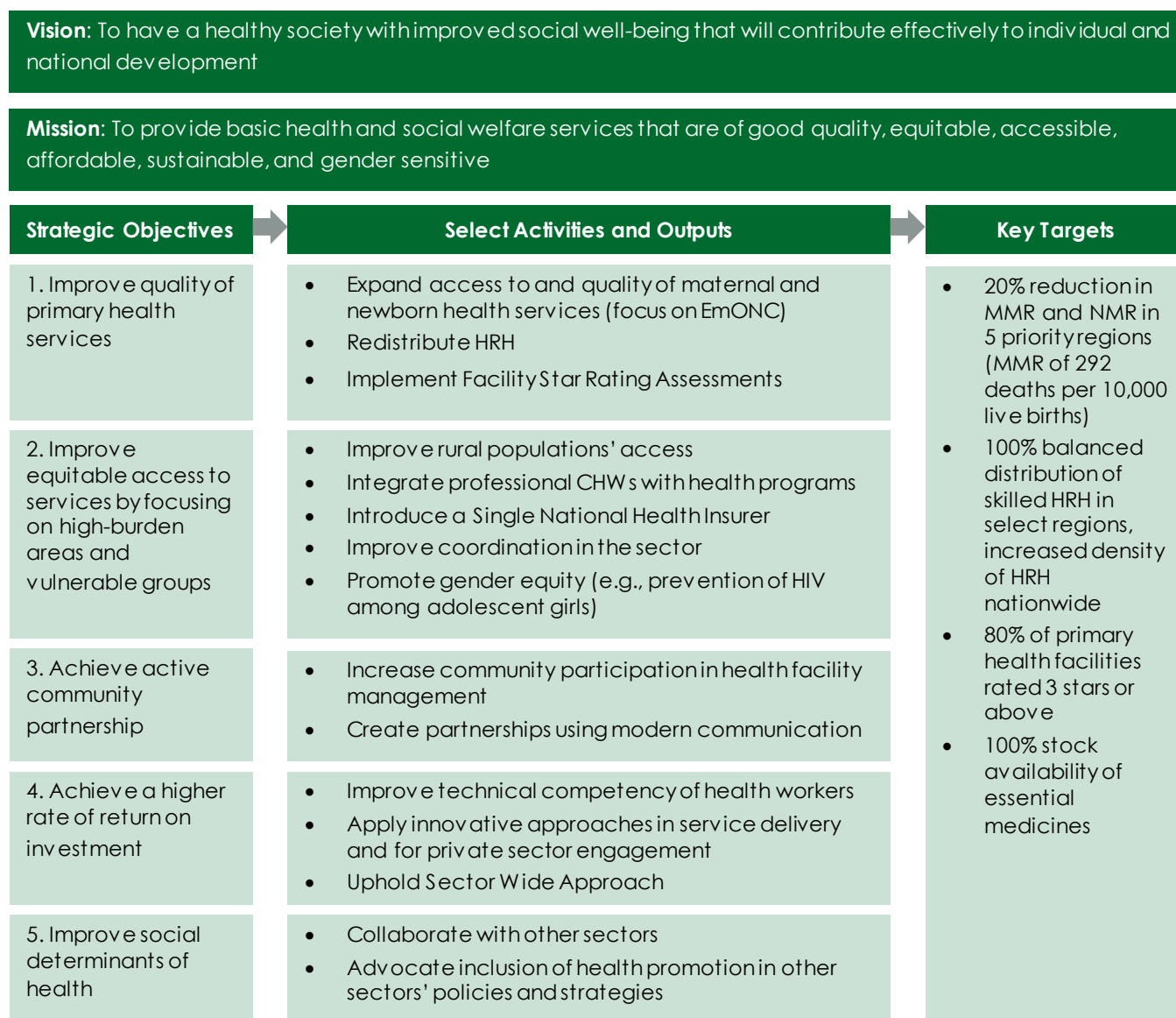
The *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV) was developed through a participatory process involving government and nongovernmental stakeholders across multiple levels of the healthcare system. For the first time, the Ministry of Health and Social Welfare (MOHSW) compared rigorously derived and prioritized cost projections to the estimated financial resources available and considered health system constraints to set realistic targets for the sector. This chapter summarizes the main objectives of the HSSP IV, other strategic initiatives and policies for the health sector in Tanzania, and current health status and trends in Tanzania.

HSSP IV Objectives

The midterm review of the *Third Health Sector Strategic Plan 2009–2015* (HSSP III) estimates that Tanzania will meet most of its 2015 health indicator targets. However, the country's progress in reproductive, newborn, and maternal health is lagging and geographic inequities still exist despite growth in health sector infrastructure and human resources for health (HRH). The review found that efficiency, quality, equity, and sustainability of health service provision are major challenges that need to be addressed (MOHSW, 2013).

Under the HSSP IV, Tanzania strives to address issues raised in the HSSP III midterm review and improve performance of the health and social welfare sectors, both in coverage and quality of services, to match that of middle-income countries. The overarching aim of the HSSP IV is to reach all households with essential health and social welfare services. Figure 1 shows the vision, mission, and specific objectives outlined in the HSSP IV.

Figure 1. HSSP IV Conceptual Diagram



Note: MMR: maternal mortality ratio; NMR: neonatal mortality ratio; CHW: community health worker

Key Strategies Informing the HSSP IV and OneHealth Application

The MOHSW developed the HSSP IV based on national and global strategic initiatives and priorities (Figure 2). Global advocacy targets for HIV, maternal and child health, and other health areas; national inter-sectoral development strategies; and health sector-specific policies and plans laid the foundation for drafting the HSSP IV.

At the global level, the unfinished agenda of the Millennium Development Goals (MDGs), particularly for maternal health (MDG 5), and the draft Sustainable Development Goals (SDGs) guided the planning process of the HSSP IV.

Figure 2. Strategies and Policies Informing HSSP IV Development

Global	Health-related goals	MDGs, SDGs, Reaching EveryChild (vaccination), 90-90-90 (HIV), etc.
National	Inter-sectoral	Vision 2025, MKUKUTA,* Big Results Now
	Health sector policies	Tanzania Health Policy, MMAM,** disease program strategic plans (e.g., HIV, TB, RMNCAH, malaria) and health system-specific plans (e.g., HRH; monitoring and evaluation, or M&E)

* Mkakati wa Kukuza Uchumi na Kuondoa Umaskini Tanzania (National Strategy for Growth and Reduction of Poverty 2010/11–2015/16)

** Mpango wa Maendeleo wa Afya ya Msingi (Primary Health Care Services Development Program 2007–2017)

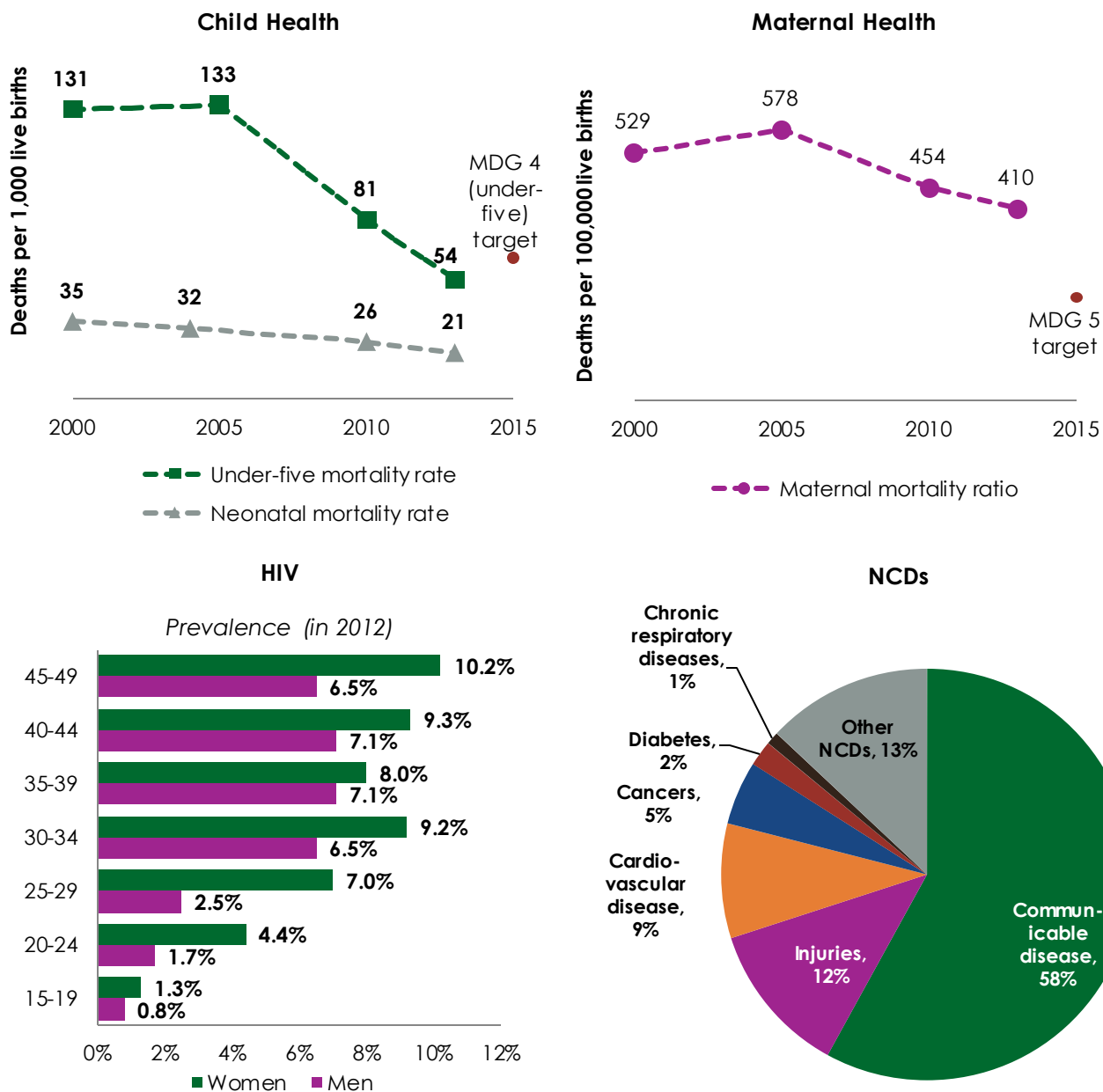
One of the key national documents guiding the HSSP IV is the Tanzania Development Vision 2025 (Vision 2025), the overarching strategy for long-term development in Tanzania, which identifies the health and social welfare sector as a priority sector. Vision 2025 aims for all Tanzanians to have access to high-quality health services and for life expectancy to be comparable to that in middle-income countries. Other cross-sectoral initiatives informing HSSP IV development include the National Strategy for Growth and Reduction of Poverty 2010/11–2015/16 (known in Kiswahili as the MKUKUTA), the Five Years' Development Plan 2011/12–2015/16, and the Big Results Now (BRN) initiative. Health is one of the key areas of the BRN, which emphasized prioritization and focused planning. Under BRN, 22 initiatives across four categories—HRH; health commodities; health facility performance management; and RMNCAH—will be implemented from 2015/16 to 2017/18 and are fully incorporated in the HSSP IV.

Many policies, strategies, and plans specific to the health sector in Tanzania also guided the HSSP IV. The Tanzania Health Policy, created in 1990 and updated in 2003 and 2007, is the overarching strategic document for the health sector and strives to reduce morbidity and mortality while strengthening the health system through public-private partnerships, training of HRH, investments in infrastructure and equipment, and other activities. The Primary Health Care Services Development Program 2007–2017, known as MMAM in Kiswahili, was created by the MOHSW to accelerate the provision of primary healthcare services. Several sub-sector strategies, including the HRH Production Plan, M&E Strengthening 5 Year Plan, One Plan II for RMNCAH, Health Sector Strategic Plan for HIV/AIDS (HSHSP III), and others, were used to define HSSP IV activities and targets. For a list of key sub-sector strategic documents used in the HSSP IV development, see Annex A.

Snapshot of Tanzanians' Health Status

The midterm review of the HSSP III found that Tanzania will likely meet HSSP III targets for child health (except for stunting), HIV and AIDS, malaria, and tuberculosis in 2015 (MOHSW 2013, NBS 2013). As a result, the country is on-track to meet MDG 4 for child survival. However, progress for newborn and maternal health has been limited, and Tanzania is not likely to meet the MDG 5 maternal health target of 193 maternal deaths per 100,000 live births. Further, the country faces a rising burden of non-communicable diseases (NCDs), which account for approximately 31 percent of all deaths in Tanzania (Afnan-Holmes et al., 2015; WHO 2011).

Figure 3. Health Status Across Indicators



Sources: Afnan-Holmes et al., 2015; Tanzania HIV/AIDS and Malaria Indicator Survey 2011–12; WHO 2011

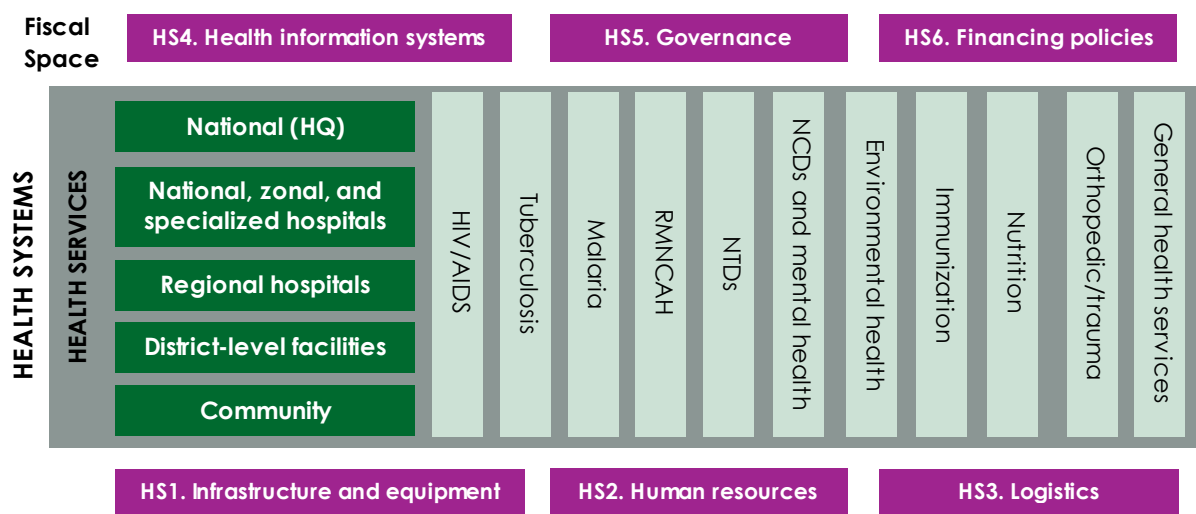
METHODOLOGY

OneHealth Overview

The MOHSW chose the OneHealth Tool to estimate the financial resources required for and the impact of the HSSP IV. OneHealth is a model for medium- to long-term (3 to 10 years) strategic planning in the health sector. Created by an international consortium comprising the World Health Organization (WHO), other United Nations agencies, and Avenir Health, the OneHealth Tool combines disease program and system-wide perspectives to estimate the cost of health service delivery and health system components. OneHealth is integrated within the Spectrum suite of models, which allows for the linking of cost assumptions with health outcome and impact models. More information on the OneHealth Tool and its application in other countries is available elsewhere (Perales, Dutta, and Maina 2015; Dutta et al., 2014).

OneHealth incorporates the WHO’s six health system building blocks: health workforce, health financing, medicine and health products, health information, governance, and service delivery. Medicine and health products are costed in the analysis of health programs, which also incorporates national-level program management costs (gray box in Figure 4). The remaining building blocks are captured in the OneHealth health systems components (HS1–HS6 in Figure 4).

Figure 4. OneHealth Diagram



Costing health services

Health service costs include the costs of medicines and supplies needed to deliver specific interventions under each disease program. The OneHealth Tool estimates these intervention costs by multiplying the number of cases per year by the average unit cost of the commodities needed per case per year (see Annex B for more detailed methodology). The number of cases per year is based on the population size of those targeted to receive the intervention, the percentage of the target population in need of the intervention, and the percentage of people in need who actually receive the service (i.e., programmatic coverage). The average unit cost per case is based on the cost, quantity, and frequency of use of each commodity and the percentage of cases that require each commodity.

The OneHealth Tool includes the costs of program management, such as training, M&E, and communication and outreach activities under the health services costing. OneHealth allows for health

service costs to be disaggregated by four delivery channels. The MOHSW chose to analyze the cost of delivering services in communities; district-level facilities, including dispensaries, health centers and district hospital; regional referral hospitals; and national, zonal, and specialized hospitals.

Costing health system components

OneHealth estimates sector-wide costs that cut across disease programs. These health system costs are captured under six components: infrastructure and equipment, human resources, logistics, health information systems, health financing, and governance (Table 1).

Table 1. OneHealth Health System Components

Health System Component	Inputs for HSSP IV Costing
Infrastructure and equipment	Construction of new facilities; rehabilitation (including CEmONC and BEmONC upgrades) and operation of existing facilities; procurement and maintenance of general facility equipment, furniture, and vehicles at the facility level
Human resources for health	Total remuneration for staff (salaries, benefits, allowances, relocation costs, and any other retention incentives), human resources administrative costs
Logistics	Cost of the supply chain, ⁱ including the Medical Stores Department (MSD) operating costs for storage and transportation and the cost of drugs and commodities which are procured but never consumed (i.e., wastage ⁱⁱ)
Health information systems	Cost of health management and information systems (HMIS) and information and communication technology (ICT), paper-based M&E, and related national-level administration costs
Health financing	Cost of health financing initiatives, such as performance-based financing for healthcare workers funded through the World Bank ⁱⁱⁱ
Governance	Funding for national-level departments and coordination units, regional and community health management teams, other departments or organizations that play a cross-cutting role in service delivery (e.g., Government Chemist Laboratory)

i. Cost of commodities is included under intervention costing, but the cost of freight, clearance, quality assurance, storage, and transportation is included in the logistics module.

ii. This is calculated by assuming a wastage rate (%) for each commodity.

iii. All voucher schemes and user fee waivers were excluded because their purpose is to cover a cost that is already reflected in the intervention cost analysis.

Abbreviations used: CEmONC: comprehensive emergency obstetric and neonatal care; BEmONC: basic emergency obstetric and neonatal care.

Additional Analyses for Prioritization

In consultation with stakeholders, the OneHealth costing team conducted several analyses to contextualize the cost results and support prioritization during the HSSP IV development. Prioritization is needed to ensure costs align with strategic priorities and realistic implementation of the HSSP IV. There are several approaches to prioritization, including analyzing cost drivers, identifying inefficiencies, rationalizing targets, and aligning resource requirements with current capacities.

Health impact analysis

Impact analyses are needed to better understand the effectiveness of investments made in health. The OneHealth team used the Lives Saved Tool (LiST) and the AIDS Impact Model (AIM) in the Spectrum suite of models to estimate the health impact of meeting HSSP IV coverage targets. These models are linked with the OneHealth costing assumptions and other impact modules in Spectrum related to

demography and family planning. LiST is a deterministic mathematical model that estimates the combined impact of different sets of interventions on neonatal, infant, and under-5 child mortality, birth outcomes and stillbirths, maternal mortality, and pneumonia and diarrhea incidence (Walker, Tam, and Friberg, 2013). LiST uses intervention coverage targets from the OneHealth costing and its in-built assumptions on the effectiveness of interventions in reducing the probability of an outcome to estimate changes in population-level risk factors, such as stunting, or cause-specific mortality. LiST was used in other OneHealth applications to estimate maternal and child health impacts if strategic plan targets were met (Dutta et al., 2014). AIM forecasts HIV epidemiological trends, including the number of people living with HIV (PLHIV), new infections, and AIDS deaths by age and sex each year, and has been described previously (Stover, Brown, and Marston, 2012).

Fiscal space analysis

Fiscal space for health can be defined as the combined potential annual resources that could be mobilized across government, development partners, philanthropy, and households. Fiscal space analysis complements applications of OneHealth. By comparing estimated resource needs with projections of the resources available, Tanzania can determine whether current sources of funding will be sufficient to meet strategic plan targets or if new sources must be found. A fiscal space analysis for the Tanzanian health sector was conducted in 2014. However, given proposed reforms to the health financing structure under HSSP IV, availability of new data, and discussions on innovative sources, a revision was required.

Three fiscal space scenarios were developed based on current trends, the introduction of innovative sources of financing, and creation of a Single National Health Insurer (SNHI). A detailed macroeconomic model was built for 2014/15 to 2019/20 and data from bilateral as well as health basket fund partners were used to disaggregate all on- and off-budget funding sources. Sources such as domestic allocation to health via MOHSW, regions, and for recurrent and development heads were projected. Local government authority (LGA) revenues and allocation to health were also estimated. Moderately ambitious targets were set for allocation to health from such sources, where required. Out-of-pocket expenditures were not explicitly modeled. As a result, the gap between resources available and resources needed under HSSP IV may be partially understood as out-of-pocket payments.

Human resources for health gap analysis

Achieving HSSP IV targets requires investments in health systems. In particular, the scale-up of labor-intensive interventions needs to align with the scale-up in the number of trained health workers available to provide services in the country. The OneHealth team calculated the number of full-time equivalents (FTEs) needed to provide health services in the country based on the number of services and staff time requirements per service each year (Figure 5). One FTE is equivalent to one employee working full time. In OneHealth, total FTEs are disaggregated by staff cadre and disease program. This disaggregation helps determine how many of a particular staff type would be needed to meet a program's service delivery targets if this staff type spent all their clinical time delivering the program's services. In order to assess the feasibility of scaling up health services under the HSSP IV, the OneHealth team compared the FTE estimates to the estimated number of staff available per year, based on projections from Tanzania's Human Resources for Health Production Plan.

Figure 5. Full Time Equivalent (FTE) Methodology



Data for the FTE and HRH gap analysis were collected from a two-day workshop in Dar es Salaam in March 2015. District and Regional Medical Officers, HRH technical working group members, clinicians, and nurses provided information on the type of staff and number of minutes required to deliver each of the 228 interventions based on current practice.

VEN (vital, essential, nice to have) analysis

VEN analysis is a well-known methodology for prioritizing medicine purchasing in developing countries (Holloway and Green, 2003). The OneHealth team in Tanzania, together with representatives from all disease programs in the MOHSW, adapted the VEN methodology to categorize health interventions as “vital,” “essential,” or “nice to have” (i.e., nonessential). Essential interventions were subdivided into three groups based on their priority. Table 2 shows the criteria used to classify interventions. The MOHSW classified 228 interventions and used the VEN classifications to set parameters for cost scenarios.

Table 2. VEN Analysis

Category	Definition	Examples
Vital	Life-saving EmONC and selected integrated management of childhood illness interventions; management of emergencies; routine interventions in well-defined population expected to have high impact on reduction of mortality	Case management of obstructed labor; treatment of acute psychosis, neonatal resuscitation
Essential	P1: High priority, cost effective; preventive or routine interventions; screening of well-defined at-risk populations for conditions having low-cost treatment and/or secondary prevention of NCDs or HIV; management of common conditions in outpatient primary care; program interventions with earmarked funding	Routine vaccination, facility-based screening for cardiovascular disease and diabetes, treatment of uncomplicated malaria, NTD mass drug administration
	P2: Medium priority, higher cost but still effectively addressing the disease burden in the longer term (2025–2030)	Breast cancer screening
	P3: Low priority but still essential interventions	Case management for common cold
Nice to have	High-cost or specialist level interventions that affect mortality, life expectancy, or quality of life and/or result in cost savings from deterring referrals abroad	Treatment for oral benign cancers; knee replacement

OneHealth Data Sources and Process in Tanzania

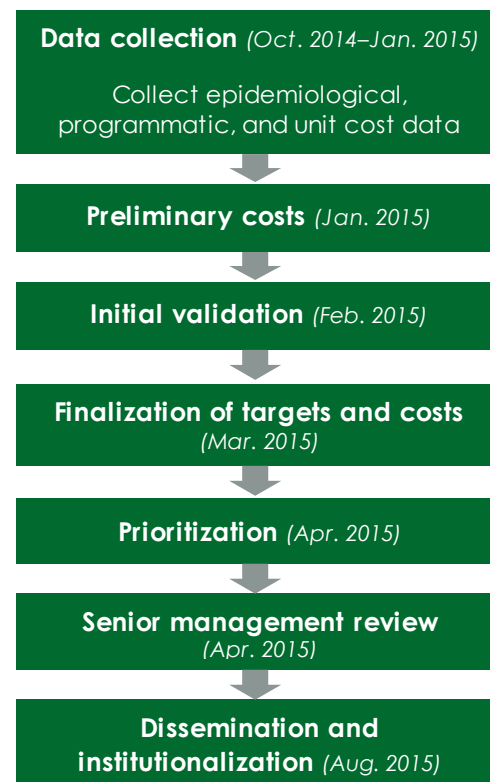
The Directorate of Policy and Planning (DPP) in the MOHSW led the OneHealth Tool application in Tanzania with technical assistance from HPP. Specifically, HPP and the World Health Organization supported the four-day training of 17 individuals in the OneHealth Tool methodology in June 2014. HPP, working with the DPP, created custom data collection templates, and HPP technical staff mentored MOHSW staff throughout the data collection, validation, and prioritization process.

The OneHealth process is composed of technical and validation phases. The technical phase involves collecting and confirming data and finalizing targets at the program level; the validation phase brings together all stakeholders to prioritize costs given fiscal space and health system constraints, and involves senior management review, dissemination of final results, and institutionalization of the OneHealth Tool (see Figure 6). Throughout the OneHealth application, the technical team coordinated with and received inputs from the HSSP IV technical working groups (TWGs) and writing team, consisting of a team lead and national consultant.

The OneHealth technical team estimated service delivery costs borne in both the public and private health sectors from 2015/16 to 2019/20. MOHSW staff, clinicians, regional and district medical officers, and staff from other organizations in the health sector, such as the Tanzanian Food and Nutrition Centre (TFNC), provided all cost assumptions. For a few programs, the HSSP IV costing is based on costed strategic and operational plans, Global Fund New Funding Model applications, or government budgets. For programs without these resources or with incomplete information, staff developed detailed cost assumptions. Data from the Health Management Information System (HMIS), the 2010 Demographic and Health Survey, the 2012 Service Availability and Readiness Assessment, and other studies informed the development of these assumptions. The OneHealth team used the 2014/2015 Medical Stores Department (MSD) and 2012 National Health Insurance Fund (NHIF) price lists to estimate the cost of commodities. For a few select commodities, we consulted with wholesalers (e.g., Anudha) or specific departments and organizations (e.g., Ocean Road Cancer Institute) for unit cost data.

Following preliminary cost presentations and validation with programs, in March 2015 the OneHealth team presented results to and received feedback from the MOHSW Health Financing TWG and a representative group of key stakeholders in the health sector. In April, the Health Sector Reform Secretariat (HSRS) in the MOHSW reviewed all costing assumptions, flagging potential duplications, missing costs or assumptions that needed further review, and completed the first-round VEN analysis by classifying all interventions as vital, essential, or nice to have. The OneHealth team adjusted costs in consultation with MOHSW staff, validated the VEN analysis with program representatives, and developed several cost and fiscal space scenarios based on guidance from the HSRS and an extended HSSP IV task force. Stakeholders agreed to three cost and four fiscal space scenarios to be presented to senior management at the end of April. Senior management chose the final cost scenario for the HSSP IV, which was finalized in August 2015.

Figure 6. OneHealth Process for the HSSP IV



RESULTS: RESOURCE REQUIREMENTS

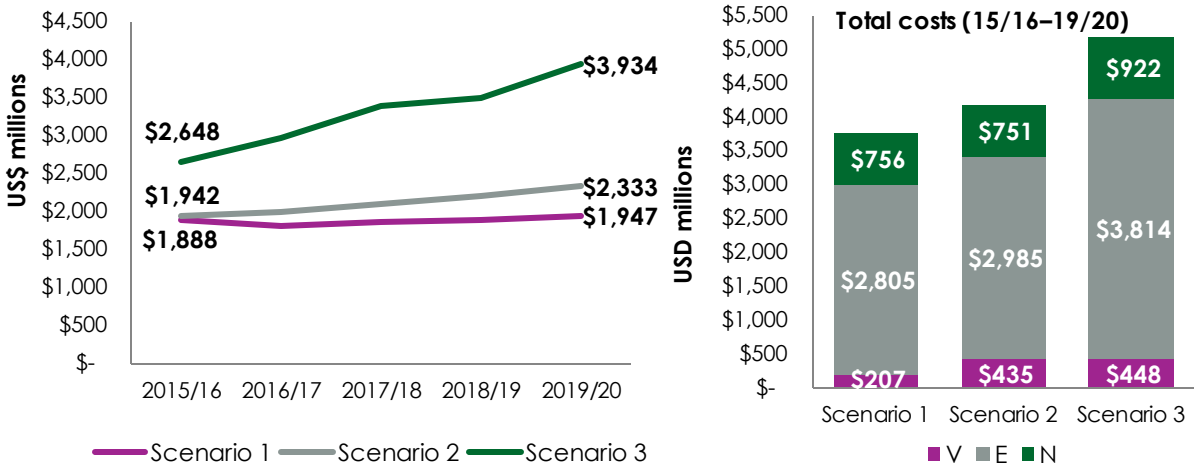
This chapter presents the results of the prioritization process, the final and prioritized HSSP IV financial requirements for health services and health system components, and the human resources for health requirements and gap under the HSSP IV. For more detailed results on the costs of health services and health system components, please see specific modules at the end of the report.

Prioritization Results

The MOHSW classified 29 of the 228 interventions as vital. The majority of these interventions (69%) are for RMNCAH services. The 166 interventions classified as essential were divided among first priority (51% of essential interventions), second priority (31%), and third priority (17%) groups. The remaining 33 interventions were classified as nonessential.

With guidance from the HSRS, the OneHealth costing team developed three scenarios for MOHSW senior management using the VEN analysis and varied assumptions for scale-up in human resources for health and infrastructure. The first scenario assumed the status quo, where all interventions have flat coverage from 2015/16 to 2019/20 and the number of facilities and HRH stay constant across all years. The second scenario assumed all interventions classified as vital or first-priority essential would be scaled up in full according to programs' ambitions and that second- and third-priority essential and nice to have interventions will have flat coverage from 2015/16 to 2019/20. Under this scenario, scale-up of HRH and facility construction is based on the HRH Production Plan, with new construction of health facilities not beginning until 2016/17. The third scenario, the most ambitious, assumed all interventions will be scaled up according to programs' targets, MMAM facility construction targets will be met by 2019/20, and the supply of HRH in the country will expand beyond the HRH Production Plan to meet the demand of full scale-up in health services. Figure 7 shows the cost results by scenario, along with the total commodity costs by the VEN classification.¹

Figure 7. Annual Costs by Scenario (left) and Total Commodity Costs by VEN Classification (right)



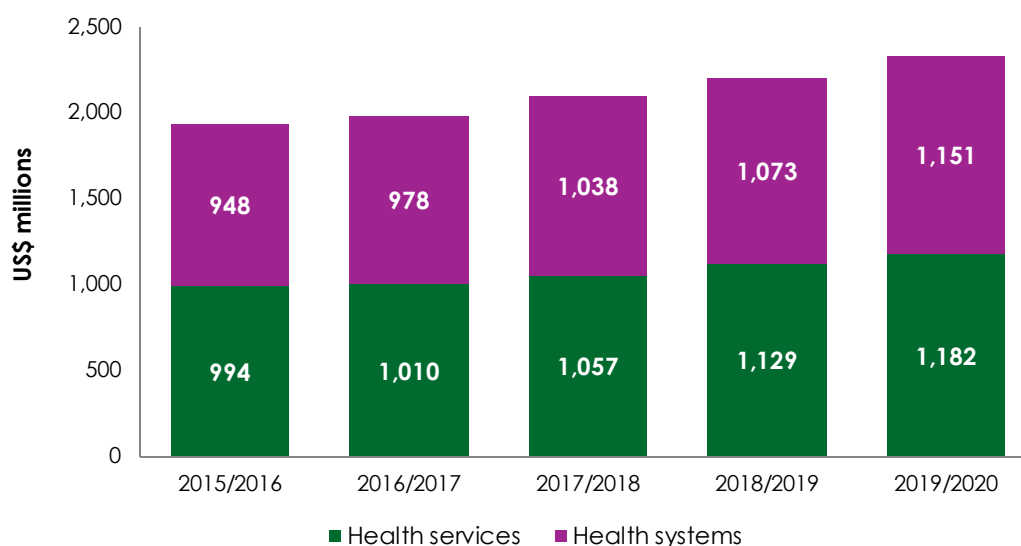
¹ OneHealth is a dynamic model where changes in coverage may affect population projections. Therefore, the slight differences in the underlying base population sizes across scenarios can result in different cost results even if coverage assumptions are the same across scenarios.

Given fiscal space and health system constraints, the MOHSW chose Scenario 2 for the HSSP IV. The first scenario may fit within the fiscal space for health, but maintaining the status quo may have minimal positive—or even detrimental—health impacts. The third scenario may have the optimal health impact, but the MOHSW senior management judged that the targets would be difficult to achieve and the resource requirements were significantly above the estimated fiscal space. The second scenario reflects ambitious scale-up of high-priority interventions, but tempers this ambition by assuming flat coverage of lower-priority interventions. This scenario also accounts for current capacity and plans for scaling up the number of HRH and construction of new health facilities.

HSSP IV Financial Resource Requirements

Over the five years of the HSSP IV, Tanzania requires \$10,561 million (TZS 21,818 billion). The total costs of the HSSP IV increase from \$1,942 million (TZS 4,013 billion) in 2015/16 to \$2,333 million (TZS 4,820 billion) in 2019/20 (Figure 8). Health services (51%) and health system components (49%) represent nearly equal proportions of the total resource requirements.

Figure 8. HSSP IV Resource Requirements by Year



Health services

The cost of health services, which includes commodity and program management costs, totals \$5,372 million across all five years and increases from \$994 million to \$1,182 million from 2015/16 to 2019/20. About three-quarters of the total cost are for commodities (exclusive of supply chain costs, which are under a separate health system component for logistics). Commodity costs increase from \$717 million to \$968 million from 2015/16 to 2019/20 due to increases in the number of people who need and receive health services over time. Program management costs, however, decline from \$278 million to \$214 million, reflecting investments in program-specific training, communications, M&E, and other support activities at the onset of the HSSP IV.

Total health service costs can be disaggregated by program (see Annex C). HIV is the highest-cost program, representing 28 percent of total health service costs and requiring \$1,486 million across all five years of the HSSP IV. However, the NCD program is the fastest growing program in terms of resource requirements; the cost of NCDs nearly doubles from \$153 million in 2015/16 to \$311 million by 2019/20. As a result, about half of health service costs in 2019/20 are attributable to HIV and NCDs (26% each, see Figure 9). RMNCAH grows to become the third highest-cost program in 2019/20, requiring \$143 million,

due to rapid scale-up of interventions. The National Malaria Control Program, which is the third highest-cost program in 2015/16, is estimated to be the fifth highest-cost program by 2019/20 due to costs declining over time due to decreasing caseloads and fewer nets being distributed. More detailed information for each program is included in program-specific modules at the end of this report.

Figure 9. Total Cost of Health Services Alone, Disaggregated by Program, 2015 (left) and 2020 (right)

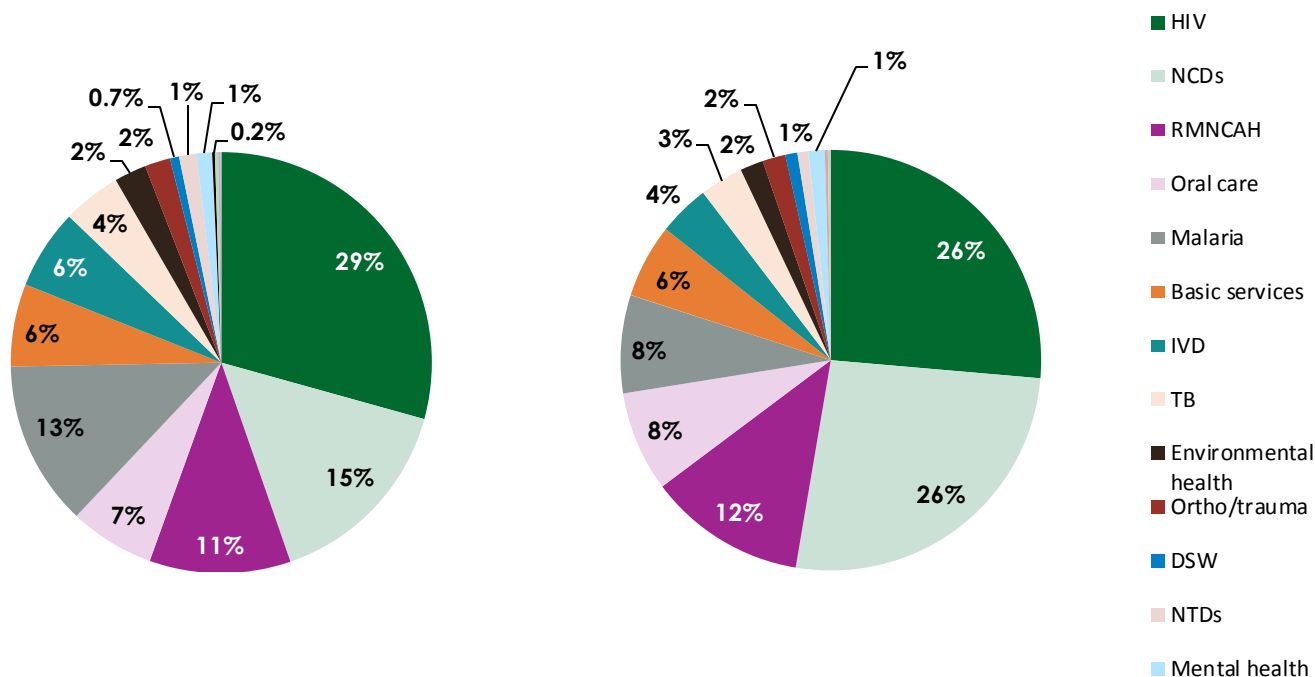
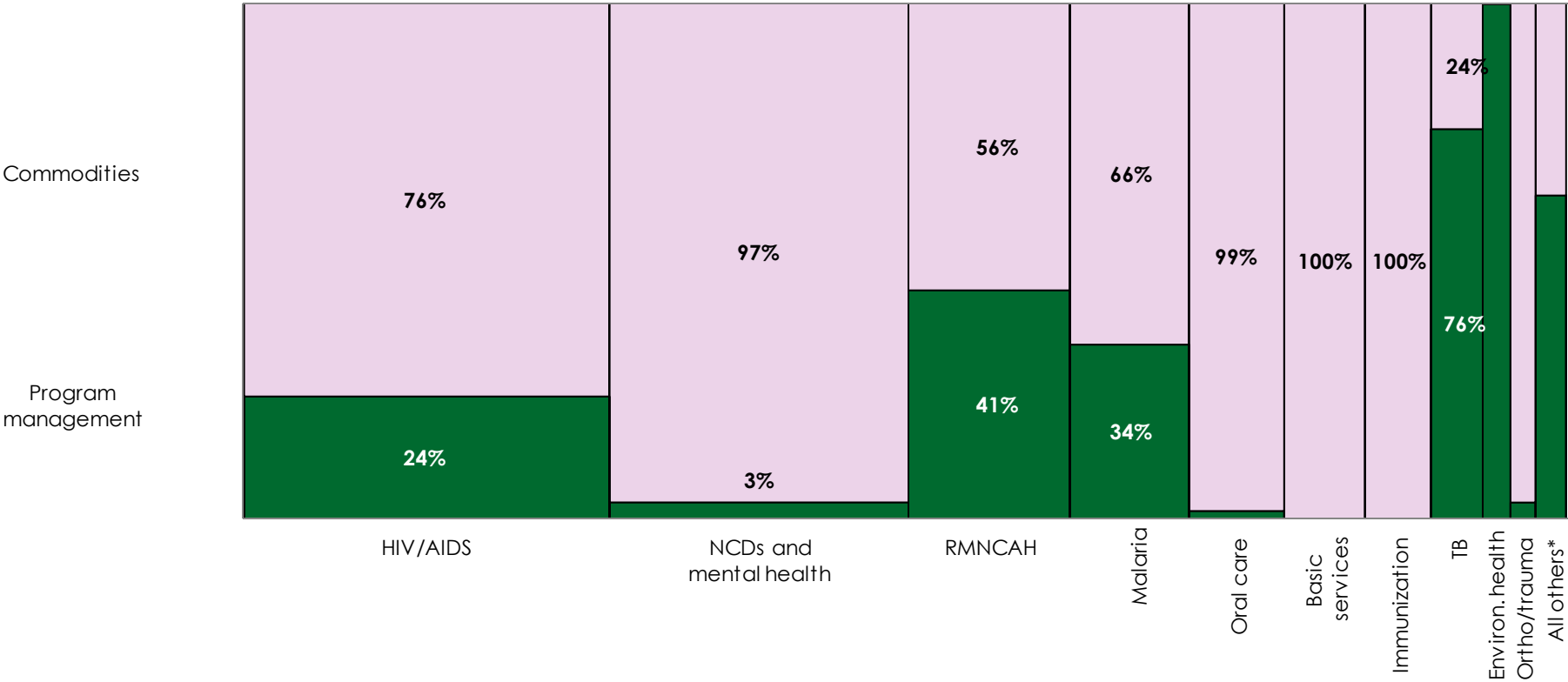


Figure 10 shows the proportion of resources needed for commodities and program management for each program, taking into account the program's contribution to the overall cost of health services. The bar width of each program is related to its total cost. For most programs, the vast majority of the costs are for commodities. However, at least half of the total costs of environmental health, Department of Social Welfare (DSW), and TB are for program management costs.

Figure 10. Total Health Program Costs by Program and Type of Cost



*Includes NTDs, DSW, health promotion, alternative and traditional medicine, ophthalmology, and nutrition.

Only a few interventions drive the costs of commodities; the top ten highest-cost interventions account for 45 percent of the total commodity costs. All antiretroviral commodities, including those used for prevention of mother-to-child transmission (PMTCT), are categorized as one intervention in Tanzania's OneHealth application, and this intervention accounts for 15 percent of the five-year total commodity cost of the HSSP IV (Table 3). Other high-cost interventions include treatment of cases with type I diabetes (6% of total costs), oral cancer treatment (4%), laboratory monitoring of people on antiretroviral therapy (ART) (3%), pneumococcal vaccine (3%), and insecticide-treated materials (3%). Some interventions are costly due to the high unit cost of the service (e.g., oral cancer treatment costs \$521 per patient per year), while others require significant resources due to the high number of services performed each year (e.g., over 18 million insecticide treated nets are to be distributed in Tanzania in 2015/16).

Table 3. Top 10 Highest-cost Interventions

Intervention	2015/16		2019/20	
	Cost (US\$)	Number of Services	Cost (US\$)	Number of Services
1. Antiretrovirals (ARVs)	102,757,488	880,681	136,715,874	1,233,718
2. Type I diabetes treatment	14,299,171	140,686	61,775,023	774,881
3. Oral cancer treatment	35,426,727	67,983	37,905,191	73,975
4. ART laboratory monitoring*	26,663,584	1,239,627	29,087,949	1,254,072
5. Pneumococcal vaccine	32,987,336	1,799,285	25,800,951	1,268,630
6. Insecticide-treated materials	47,960,333	18,765,840	20,445,803	8,000,000
7. Asthma treatment	16,176,906	1,618,654	27,001,490	3,123,404
8. Chronic heart failure treatment	8,009,863	84,646	28,734,983	397,304
9. Hearing loss	20,414,381	80,933	21,842,577	88,066
10. First-line genital ulcer disease treatment	18,472,568	225,653	21,560,761	277,094

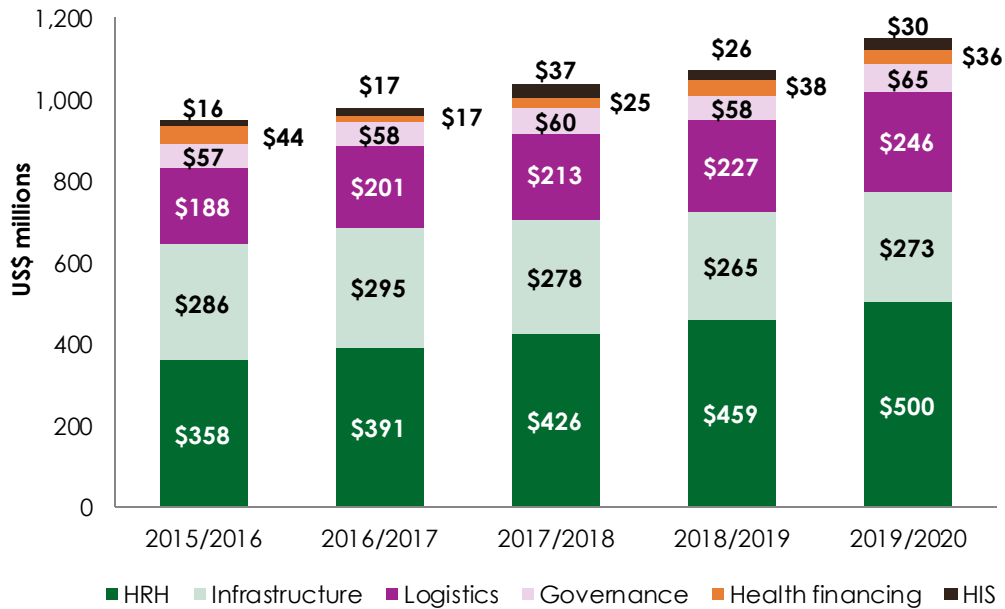
*Includes costs of CD4, hematology, and clinical chemistry tests.

Health systems

The total cost of health system components across all five years of the HSSP IV is estimated to be \$5,118 million. Costs increase from \$948 million in 2015/16 to \$1,151 million in 2019/20 (Figure 11). Two-thirds of the total costs of health system components are for HRH and infrastructure, which account for costs borne in both the private and public health sectors. For more information on the costs of each health system component, please refer to the detailed modules at the end of the report.

HRH costs increase over time due to growth in the number of staff available in Tanzania each year. As the total number of healthcare workers and support staff increases from 115,808 in 2015/16 to 150,635 in 2019/20, salary and benefit costs rise from \$347 million to \$489 million. The other HRH costs represent a small proportion of total HRH costs and are for administration, information systems, and staff redistribution.

Figure 11. Health System Component Costs by Year



The five-year cost of infrastructure and equipment is \$1,397 million, of which 62 percent is for operating and maintenance costs of existing facilities. Under the HSSP IV, construction of new facilities will not begin until 2016/17; as a result, infrastructure costs peak in 2016/17.

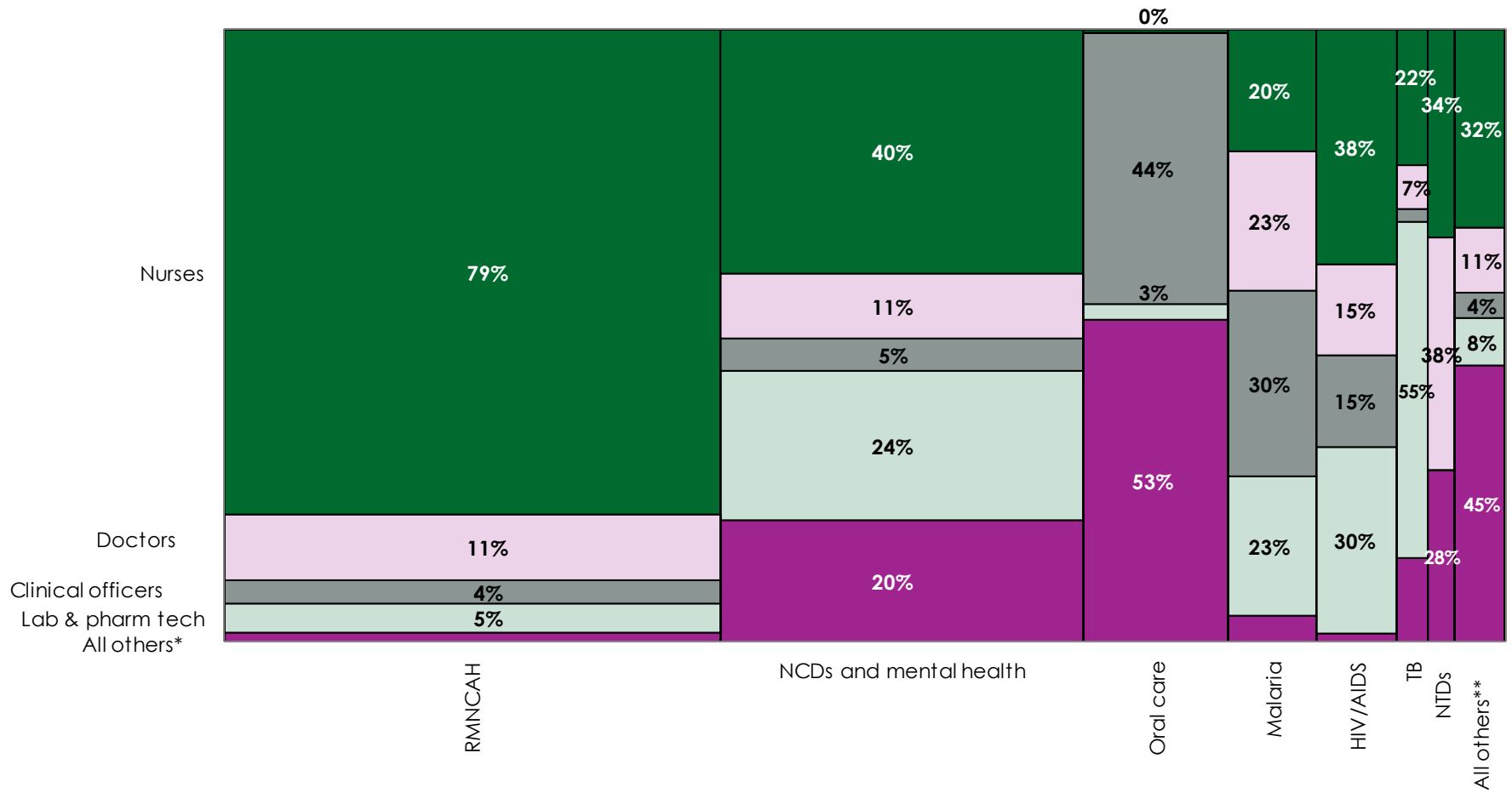
Logistics costs increase from \$118 million to \$246 million from 2015/16 to 2019/20 due to annual increases in the volume of commodities needed to deliver health services. The vast majority (89%) of logistics costs are for commodity freight, clearance, and quality assurance. MSD’s operating costs and in-country logistics systems, including the costs of warehouses, vehicles, and workers, represent the other 11 percent of logistics costs and total \$123 million across all five years.

The remaining health system components—governance, health financing, and health information systems (HIS)—account for 11 percent of the total health systems costs. Governance costs remain relatively constant each year, with support and operating costs for the Ministry of Health and Social Welfare representing just over one-quarter of total governance costs. Health financing costs are highest in 2015/16 due to the start-up costs of implementing a Single National Health Insurer. The World Bank’s results-based financing costs increase annually and total \$70 million across the HSSP IV timeframe. HIS costs total \$126 million across all five years. Investments in information and communications technology (ICT) account for 82 percent of total HIS costs.

Health System Resource Constraints

The OneHealth costing approach facilitates unified and realistic strategic planning through consideration of health system and disease program requirements. The OneHealth Tool estimates the number of FTEs needed, by staff type and program, to meet the coverage targets outlined in the HSSP IV. As Tanzania plans to scale up coverage of key interventions, the number of HRH needed also increases. Figure 12 shows the number of FTEs needed by cadre and disease program in 2019/20. The bar width is proportional to the FTEs needed for that program in relation to FTEs needed for all programs.

Figure 12. FTEs Needed in 2019/20 by Health Program and Type of Health Worker



* All others include specialists, community health workers, radiographers, and any other type of staff.

** All others include orthopedic/trauma, general services, immunization and vaccines, ophthalmology, and nutrition.

The number of FTEs needed to deliver health services under the HSSP IV increases from 127,623 to 190,137 from 2015/16 to 2019/20. Nearly half (48%) of the number of FTEs needed by 2019/20 are nurses or midwives (labeled as “nurses” in Figure 12). The RMNCAH program needs more FTEs than any other program; 39 percent of all FTEs in 2019/20 are needed for RMNCAH services. NCDs and mental health have the fastest growth in number of FTEs needed. The proportion of all FTEs needed for NCD and mental health services grows from 19 percent in 2015/16 to 28 percent in 2019/20.

The number of FTEs needed to deliver services based on HSSP IV targets was compared to the supply according to the HRH Production Plan to estimate the HRH gap and assess the feasibility of meeting coverage targets. Overall, the results suggest there may be insufficient human resources in Tanzania to meet the HSSP IV service delivery targets. Across all disease programs and staff types, an additional 40 percent of the estimated staff available in 2019/20 is needed to deliver health services that year. The largest gaps in 2019/20 are for specialist doctors, radiographers and x-ray technicians, and laboratory technicians and assistants. However, there is more staff available than needed for some cadres, such as medical attendants. This suggests that less-qualified personnel are providing services that other cadres typically provide.

Figure 13. Nurse FTEs Needed by Program vs. Number of Nurses Available per Year

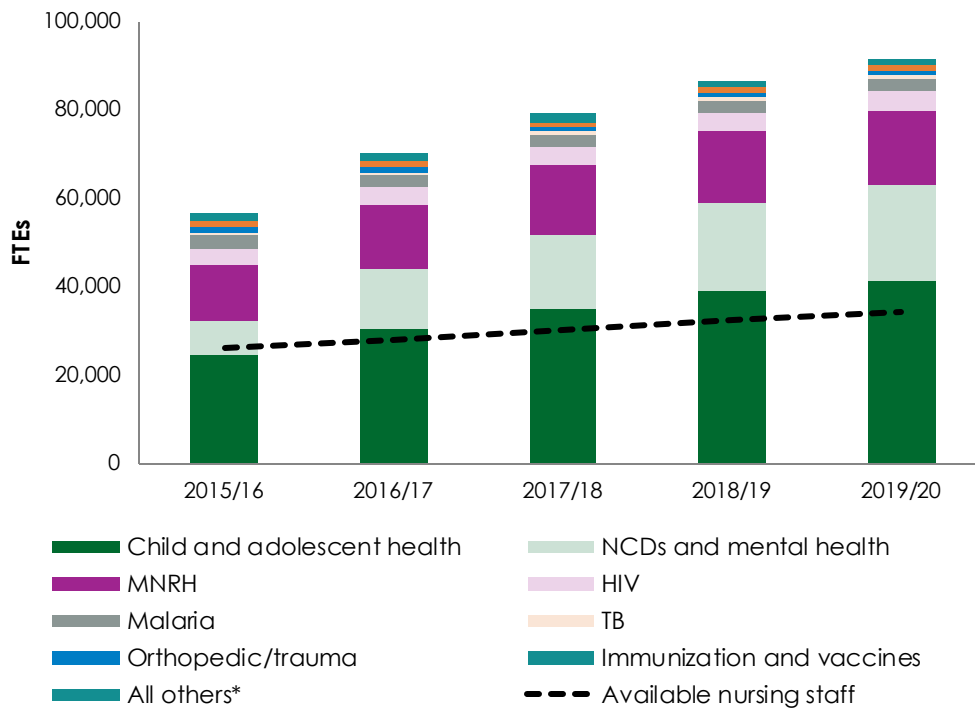


Figure 13 shows the gap just for nurses, the staff type with the highest demand. The bars show the total number of FTEs needed to deliver services, separated by program, while the dotted line shows the number of HRH estimated to be available in Tanzania according to the HRH Production Plan and HSSP IV. RMNCAH, NCD, and mental health services require the most nurses, accounting for 87 percent of all FTEs by 2019/20. The number of FTEs needed to deliver health services increases at a faster rate than the number of staff available in Tanzania. By 2019/20, the number of nurses needed to deliver services is 2.7 times the number projected to be available.

IMPACT OF THE HSSP IV ON KEY HEALTH INDICATORS

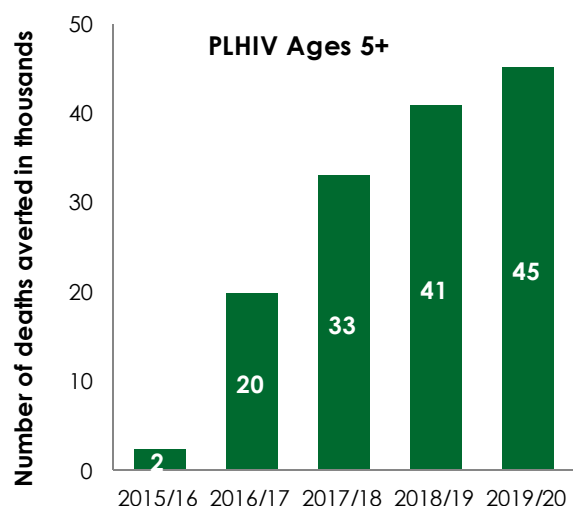
Meeting HSSP IV service delivery targets could significantly reduce morbidity and mortality in Tanzania. The OneHealth team modeled the potential health impacts of scaling up services related to HIV and maternal and child health.

Impact on HIV

The National AIDS Control Program (NACP) provided the OneHealth costing team with assumptions for the number of people to receive ART in a year. These targets are based on reaching the 90-90-90 target of at least 81 percent of people living with HIV receiving antiretroviral therapy by 2020. NACP used program enrollment data and estimated numbers of people living with HIV to set these targets.

The AIDS Impact Module (AIM) within the Spectrum suite of models estimates that if ART targets are met, the number of AIDS deaths per year will dramatically decrease from 49,887 deaths in 2015/16 to 18,040 deaths in 2019/20. AIM also projects the number of AIDS-related deaths averted from ART and new infections averted from PMTCT. Across all years of the HSSP IV, 141,325 deaths may be averted (Figure 14).

Figure 14. Estimated Deaths Averted from ART



Impact on Maternal and Child Health

Using the Lives Saved Tool (LiST) in Spectrum, the OneHealth team estimated the maternal and child health impacts of scaling up a package of interventions related to antenatal care; intrapartum care; postpartum care; neonatal health; child health; family planning; and water, sanitation, and hygiene (WASH).

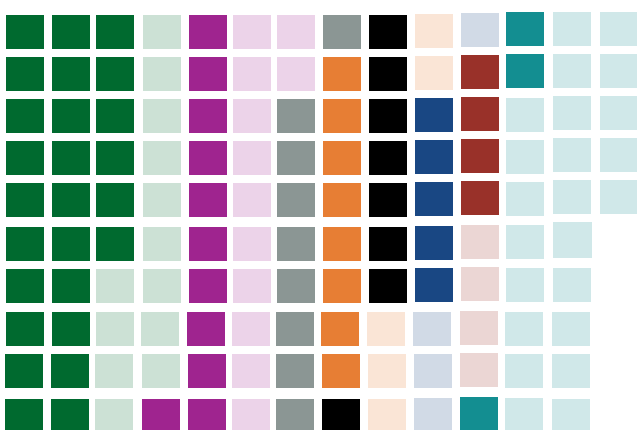
Maternal and child health are priority areas in the HSSP IV due to insufficient progress toward meeting MDG targets for newborn and maternal health. The draft medium-term strategy for RMNCAH—the National Road Map Strategic Plan to Improve Reproductive, Maternal, Newborn, Child & Adolescent Health in Tanzania (2016–2020): OnePlan II—outlines key areas for scale-up, and was incorporated in the HSSP IV costing. The plan calls for rapid scale-up of institutional deliveries, hospitals and health centers providing Comprehensive and Basic Emergency Obstetric and Newborn Care (CEmONC and BEmONC) services, and women receiving antenatal and postnatal care. It also emphasizes immunization, HIV services for pregnant women and children, reproductive services, and adolescent-friendly services.

If service delivery targets established under the One Plan II and HSSP IV were achieved, Tanzania would likely meet its neonatal mortality rate target of 16 deaths per 1,000 live births and its under-five mortality rate target of 40 deaths per 1,000 live births by 2019/20. However, the country is not likely to reach its maternal mortality ratio (MMR) target of 292 deaths per 100,000 live births by 2019/20 (MOHSW, 2015). The modeling analysis projects the MMR to decrease from 410 to 321 per 100,000 live births from 2015/16 to 2019/20.

LiST estimates the causes of death and number of lives saved through various interventions. Neonatal deaths account for 40 percent of all under-five deaths. The leading causes of neonatal deaths in Tanzania as of 2015 are asphyxia (31% of all neonatal deaths), prematurity (24%), and sepsis (20%). Leading causes of under-five deaths include pneumonia (14% of all under-five deaths), malaria (11%), and diarrhea (8%). By scaling up select services, a total of 71,510 under-five lives can be saved from 2015/16 to 2019/20, of which 24,788 are neonates. Scale-up of labor and delivery management (19% of all neonatal lives saved), neonatal resuscitation (19%), and antenatal corticosteroids for preterm labor (18%) have the largest impact on neonatal lives saved, while antimalarials (20% of all under-five lives saved), oral antibiotics (10%), and oral rehydration solution (9%) have the largest impact on under-five lives saved.

Figure 15. Total Number of Lives Saved, by Intervention, 2015/16 to 2019/20

Each square represents 500 lives saved



- | | |
|---|---|
| ■ Antimalarials | ■ Clean postnatal practices |
| ■ Oral antibiotics (pneumonia) | ■ Vitamin A supplementation |
| ■ Labor and delivery management | ■ Clean birth practices |
| ■ Oral rehydration solution | ■ Zinc for treatment of diarrhea |
| ■ Handwashing with soap | ■ Injectable antibiotics |
| ■ Improved sanitation | ■ Promotion of breastfeeding |
| ■ Long-lasting insecticide treated nets/indoor residual spraying | ■ All others* |

*Includes 30 other interventions

Rounded to nearest whole number

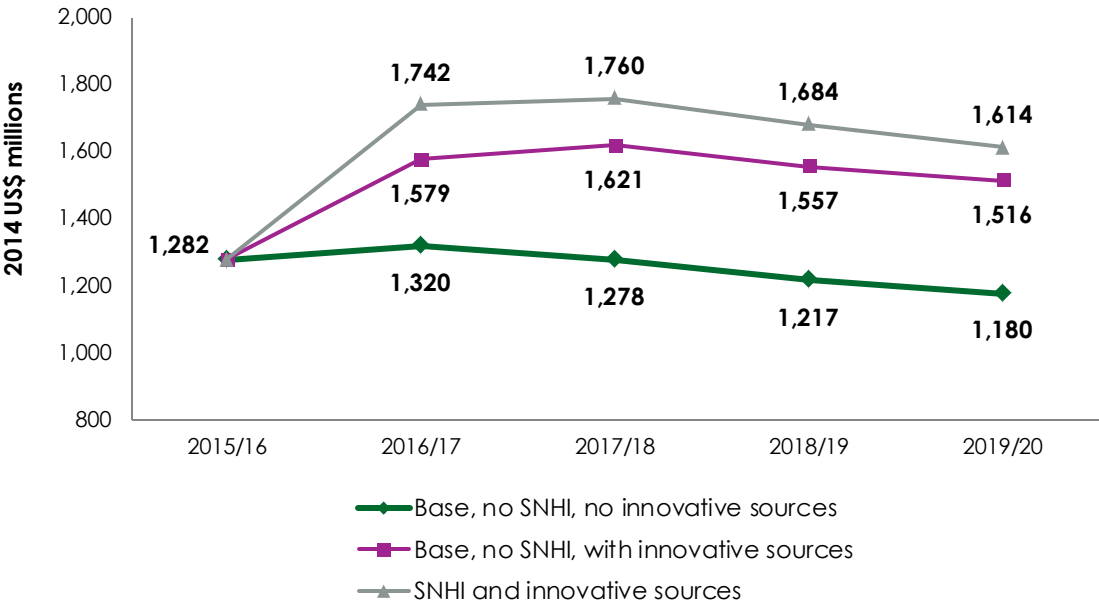
Maternal deaths in Tanzania are primarily a result of indirect causes (38% of all maternal deaths), postpartum hemorrhage (16%), and hypertensive diseases (13%). About 25 percent of maternal deaths could only be averted through facilities offering CEmONC services. From 2015/16 to 2019/20, 4,242 maternal lives can be saved. Scale-up of five services—active management of the third stage of labor, labor and delivery management, maternal sepsis case management, contraceptive use, and management of eclampsia with magnesium sulfate—account for two-thirds of maternal lives saved.

HSSP IV FISCAL SPACE AND FUNDING GAP

Fiscal space for health can be defined as the combined potential annual resources that could be mobilized across government, development partners, philanthropy, and households. During the HSSP IV period, the new health financing strategy (HFS) may be finalized, which would see a major change to how health services, especially primary healthcare and secondary care, are financed. Details of these changes are not reproduced here, and are available in the draft of the HFS. Significantly, the HFS, which captures operationalization costs in the health financing module under “health systems” in OneHealth, proposes a single national health insurer (SNHI) that will procure a benefit package of services and also raise and pool additional funds for health services, especially from the informal sector. However, there may be delays in the implementation of the HFS, which requires alternative scenarios to be considered.

Overall, the OneHealth team developed three fiscal space scenarios for the HSSP IV period, with background data and assumptions discussed in Annex D. Figure 16 shows the different possibilities across these scenarios. Current financing for health in Tanzania is heavily determined by external funding, and about 8 percent of the GOT budget is allocated to health (including on-budget external sources). Under the most optimistic scenario, where innovative financing sources and the SNHI are introduced early in the HSSP IV period, the fiscal space for health may be as high as \$1,614 million by 2019/20. However, this is just 3.5 percent of the projected real GDP for 2019/20. The future fiscal space may be more constrained if optimistic forecasts and innovative sources are not realized or if the SNHI is not promulgated during the HSSP IV period. Without the SNHI or innovative financing sources such as a proportion allocated to health from alcohol and tobacco taxes, tapping the retained revenues of parastatal bodies, and/or taxes on mobile communication, the fiscal space is significantly smaller. If current macroeconomic trends continue and development partners reduce contributions to the health sector, just \$1,180 million may be available for the sector by 2019/20.

Figure 16. Resources Available for the HSSP IV, by Scenario

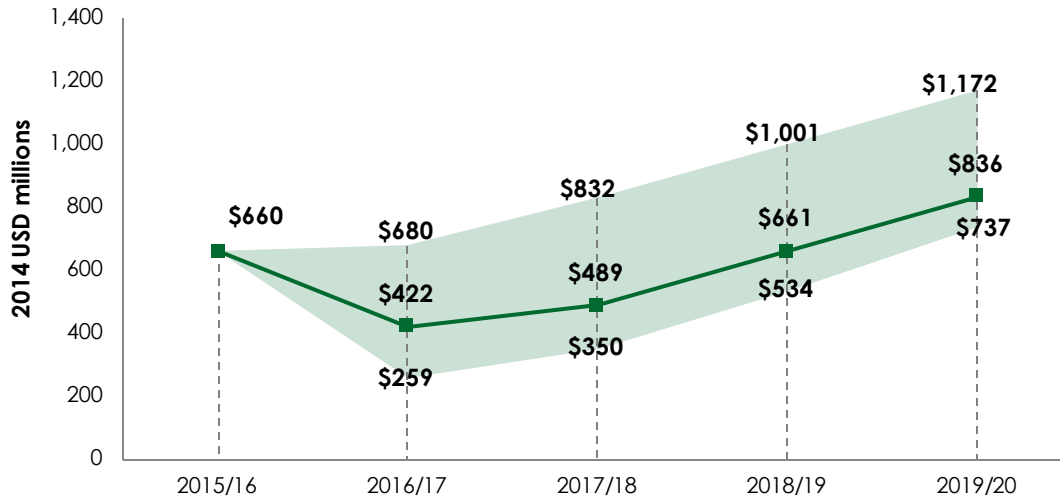


The difference between the estimated fiscal space and costs reveals the potential funding gap for implementing the HSSP IV. The fiscal space analysis did not explicitly model out-of-pocket payments, meaning that some of the funding gap could be partially understood as out-of-pocket payments. However,

the funding gap indicates the additional financial resources that must be mobilized to meet the HSSP IV targets.

Figure 17 shows the potential range in the HSSP IV funding gap each year by comparing the HSSP IV costs to the three fiscal space scenarios. The estimated funding gap in 2015/16 is \$660 million across all scenarios. Under the most ambitious fiscal space scenario, the funding gap will increase from \$259 million in 2016/17 to \$737 million in 2019/20. Without innovative financing sources or SNHI, the funding gap could be as large as \$680 million in 2016/17 and grow to \$1,172 million by 2019/20.

Figure 17. HSSP IV Financial Gap Range



Tanzania may face challenges in scaling up health programs and strengthening its health system given these funding gaps. The OneHealth estimates show that by 2019/20, half of the HSSP IV resource requirements remain unfunded under the least-optimistic scenario. Even under the most-optimistic fiscal space scenario, 31 percent of the costs of the HSSP IV may not be funded.

DISCUSSION

The results of the OneHealth Tool application in Tanzania provide an evidence base for strategic planning and resource allocation. Under the HSSP IV, the health sector requires \$10,561 million, with costs increasing over time primarily due to the rising burden of NCDs. Although the MOHSW used the OneHealth results and additional analyses to support prioritization, HSSP IV service delivery targets may not be met due to fiscal and human resource constraints. From 2015/16 to 2019/20, the estimated funding gap could be as large as \$4,347 million without innovative financing sources or a Single National Health Insurer. The country also requires a 40 percent increase in the number of clinical health workers by 2019/20, above what is currently planned to meet programs' targets.

There are opportunities for cost savings during implementation of the HSSP IV which could reduce the funding gap while optimizing health outcomes. For instance, the cost of logistics could be reduced if commodity wastage rates decreased, and commodity costs for preventable diseases could decrease if health promotion and preventive activities were scaled up. Program management activities, which account for 11 percent of the total HSSP IV costs, are not integrated across programs, so there is some risk of inefficiencies or duplication of program support activities.

In addition to reducing costs through improved efficiency and effectiveness, Tanzania could use results from the application of the OneHealth Tool as evidence for resource mobilization from domestic and external sources. As much as 50 percent of the HSSP IV may be unfunded in 2019/20 without innovative financing sources or introduction of the SNHI. If all programs were to scale up services according to their ambitions, this gap would be even larger. Due to the MOHSW prioritizing lifesaving, cost-effective interventions, nearly half of the interventions costed in the HSSP IV have flat coverage from 2015/16 to 2019/20, so significant portions of the populations in need of services will not receive them by the end of the HSSP IV. While some programs—HIV, malaria, and tuberculosis—have earmarked or ring-fenced funding available during the HSSP IV, others, such as NCDs and mental health, do not and will likely face significant funding constraints in scaling up services.

Limitations

This analysis is limited by the lack of high-quality data on certain disease programs or health systems components. For example, there have been few studies in Tanzania to ascertain the burden of disease from specific NCD, mental health, oral health, and other conditions, and the costing team received wide-ranging estimates from the MOHSW for the cost of constructing new dispensaries. In these instances, the OneHealth team used studies from other countries or relied on expert opinions to develop cost assumptions. As this is Tanzania's first application of OneHealth, there are potentially missing or duplicative costs. Costs of pre-service HRH training, for instance, are excluded from the HSSP IV costing. The assumptions and data inputs can be further refined during future applications of OneHealth in Tanzania.

OneHealth Institutionalization

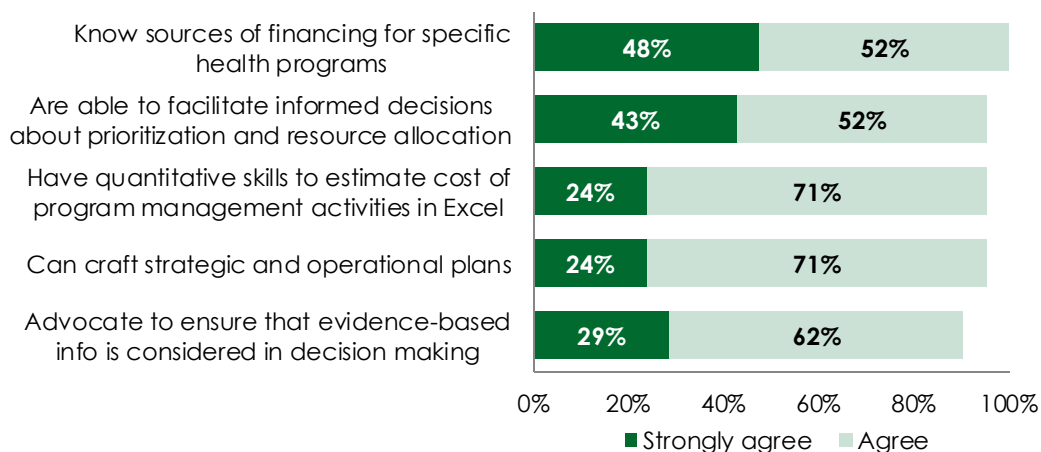
Tanzania could use its first application of OneHealth to measure HSSP IV performance and inform the development of other strategic plans. The study team recommends that the OneHealth Tool be institutionalized within the MOHSW so results can be used to make evidence-based strategic decisions on a regular basis. The MOHSW can use OneHealth to answer specific policy and budgeting questions about reducing costs without reducing the quality of care, which investments have the most impact on health outcomes, and what targets are achievable given resources available for health.

The Directorate of Policy and Planning in the MOHSW is planning for OneHealth institutionalization in Tanzania, which requires leadership, commitment, skilled human resources within the ministry, access to high-quality data, and most importantly, coordination and communication within the MOHSW and across organizations in the sector. Institutionalization requires that the projection file be updated regularly to reflect any changes in underlying epidemiological assumptions, cost data, programmatic targets, and the results.

The OneHealth team assessed the MOHSW's capacity to implement the tool as a baseline for OneHealth institutionalization. Indicators from a standardized Organizational Capacity Assessment were adapted to form 31 agree or disagree questions assessing individual, organization, and system or sector-wide competencies related to OneHealth. The team conducted 21 face-to-face interviews in June 2015; 5 organizations were represented, although the majority of respondents were MOHSW staff; 6 respondents were representatives from vertical disease programs, and 11 were economists or statisticians.

Overall, the respondents reported high levels of capacity, particularly for individual competencies (Figure 18). At least 50 percent of respondents agreed or strongly agreed with 29 of the 31 statements. For instance, at least 95 percent agreed MOHSW staff know the sources of financing for specific health programs, are able to facilitate informed decisions about prioritization and resource allocation, have the quantitative skills to use Excel for estimating program management costs, and can craft strategic and operational plans. The highest-rated MOHSW competency is that the ministry regularly tracks resource allocation and use across program areas (86% agreed). For system-wide competencies, two-thirds of respondents agreed that there is commitment within the national health system to share OneHealth data and information, and that there are coordinating mechanisms in place to support OneHealth data collection and use.

Figure 18. OneHealth Capacity Assessment: Five Highest-Scored Individual Indicators



The assessment found some opportunities for further capacity development. Staff revealed relatively low levels of familiarity of the types of data generated by OneHealth (38% agree), knowledge of the data required for OneHealth and how to obtain them (58% agree), and ability to develop compelling messages or visuals using OneHealth results (57% agree). The lowest-ranked MOHSW institutional competency is that the MOHSW includes costing, budgeting, and other related activities in MOHSW job descriptions (52% agree). Lastly, just 43 percent of respondents said there is regular communication among health sector organizations that would support OneHealth data collection and use.

To overcome some of these challenges, HPP held a workshop in July 2015 to refresh staff on OneHealth and to develop an action plan for institutionalization. This plan will be a roadmap for establishing a data

collection process and making updates to the tool, developing capacity of MOHSW staff in maintaining and using OneHealth, and determining how to best use OneHealth results for decision making and budget advocacy. Draft action steps include integrating the OneHealth Tool into the existing costing coordinating desk within DPP, identifying data collection focal points from within the MOHSW, and training focal points on the OneHealth methodology.

Health Services Modules

REPRODUCTIVE, MATERNAL, NEWBORN, CHILD, AND ADOLESCENT HEALTH

Overview

Reproductive, maternal, newborn, child, and adolescent health (RMNCAH) is a top priority for the government of Tanzania (GOT). In April 2014, the GOT launched the Sharpened One Plan to fast-track RMNCAH progress over a 500-day period [1]. Under the Big Results Now (BRN) initiative, the GOT strives to improve the quality of and expand emergency obstetric and newborn care (EmONC) services in five priority regions from 2015 to 2018 [2]. The draft medium-term strategy for RMNCAH—the *National Road Map Strategic Plan to Improve Reproductive, Maternal, Newborn, Child & Adolescent Health in Tanzania (2016–2020): OnePlan II*—aims to “promote, facilitate and support in an integrated manner, the provision of comprehensive, high impact and cost effective RMNCAH services, along the continuum of care, to accelerate reduction of maternal, newborn and child morbidities and mortality” [3].

OnePlan II Strategic Objectives	Baseline	2020 target
1. Maternal mortality ratio	410 per 100,000 live births	292 per 100,000 live births
2. Neonatal mortality rate	21 per 1,000 live births	16 per 1,000 live births
3. Infant mortality rate	45 per 1,000 live births	25 per 1,000 live births
4. Under-five mortality rate	54 per 1,000 live births	40 per 1,000 live births
5. Contraceptive prevalence rate	36%	60%
6. Adolescent and youth-friendly services available	30%	80%
7. Facilities with GBV services	30%	80%

Momentum for improving and scaling up RMNCAH services is a result of mixed progress toward achieving the Millennium Development Goals (MDGs). Tanzania met MDG 4 targets by reducing the under-five and infant mortality rates at an average annual rate of 7.1% and 8.5% from 2000 to 2012/13, respectively [4]. However, Tanzania is off-track to meet MDG 5 targets for maternal health. Although the maternal mortality ratio (MMR) decreased from 870 to 410 per 100,000 live births from 2000 to 2013, this level does not meet the 2015 target of 193 maternal deaths per 100,000 live births [4].

Cost Assumptions and Key Targets

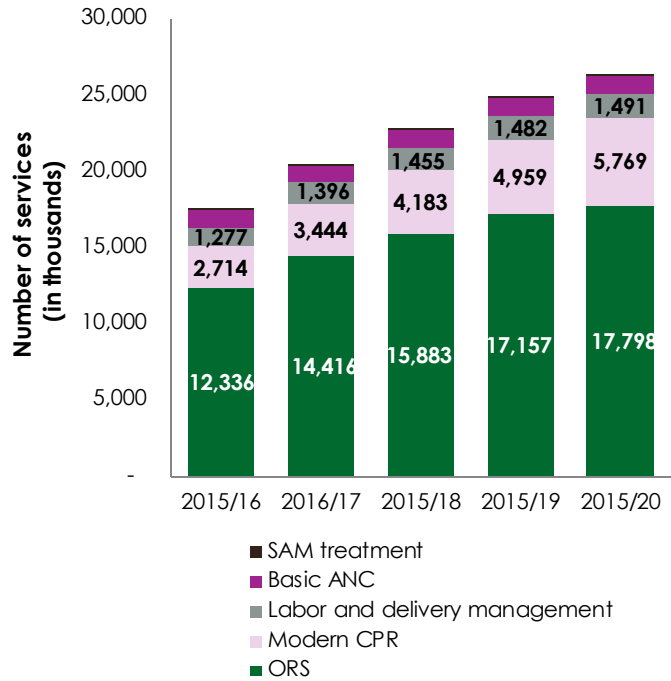
The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to estimate the costs, human resource constraints, and impact of the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV). The RMNCAH cost results include program management and commodity costs; system-wide costs such as human resources are excluded from these program-specific costs. Staff from the Reproductive and Child Health Section (RCHS) of the Ministry of Health and Social Welfare (MOHSW) provided all cost assumptions. RCHS set targets by geographical zone and used data from the 2010 Demographic and Health Survey, 2012 Service Availability and Readiness Assessment, and other studies to develop assumptions for unit costs, need for services, and coverage targets.

Top 5 Intervention Unit Costs	
Intervention	Unit cost (US\$)
1. Management of SAM	\$134
2. Ectopic case management	\$49
3. Maternal sepsis case management	\$43
4. Severe pneumonia treatment	\$25
5. Management of obstructed labor	\$22

The tool estimated costs of delivering 48 RMNCAH interventions. Through a multi-stakeholder prioritization exercise, 43 interventions were categorized as either vital or high-priority essential interventions. For 16 of these interventions, Tanzania plans to at least double the coverage rate from 2015/16 to 2019/20.

The analysis accounts for the total contraceptive prevalence rate (CPR) among women ages 15 to 49 increasing from an estimated 35% in 2015/16 to 60% in 2019/20 (Fig. 1). Four-fifths of these women use modern contraceptive methods. The percentages of pregnant women attending all four antenatal care (ANC) visits and giving birth in a health facility are targeted to increase from 43% and 50% in 2015/16 to 65% and 80% by 2019/20, respectively. The child health costing assumes 22% of children under age five have severe acute malnutrition (SAM), 10% of whom will be treated by 2019/20, and that three in four diarrhea episodes will be treated by 2019/20 [5].

Figure 1. RMNCAH Targets for Highest-Cost Interventions



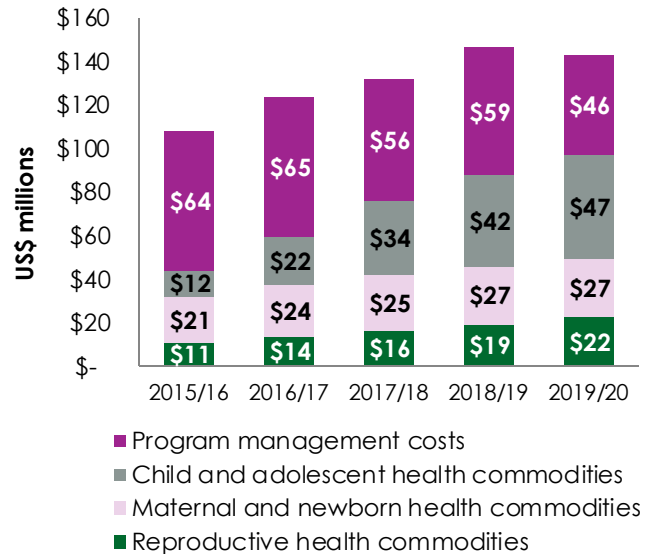
Resource Requirement Estimates

The total cost of the RMNCAH program from 2015/16 to 2019/20 is US\$653 million (TZS 1.3 trillion), with costs increasing from \$108 million to \$143 million (Fig. 2). Over half (56%) of the total cost is for commodities. For the 15 interventions classified as vital, commodity costs total \$107 million (29% of total commodity cost).

Family planning costs, accounting for 22% of the total RMNCAH commodity costs, increase from \$10 million to \$79 million from 2015/16 to 2019/20 due targeted increases in the CPR. Nearly half of these costs are for injectable contraceptives, which are projected to represent 37% of the method mix by 2019/20.

Maternal and newborn health constitute about one-third of total RMNCAH commodity costs. Labor and delivery management is the highest-cost intervention under this area, totaling \$52 million from 2015/16 to 2019/20. Basic ANC requires \$29 million across all five years.

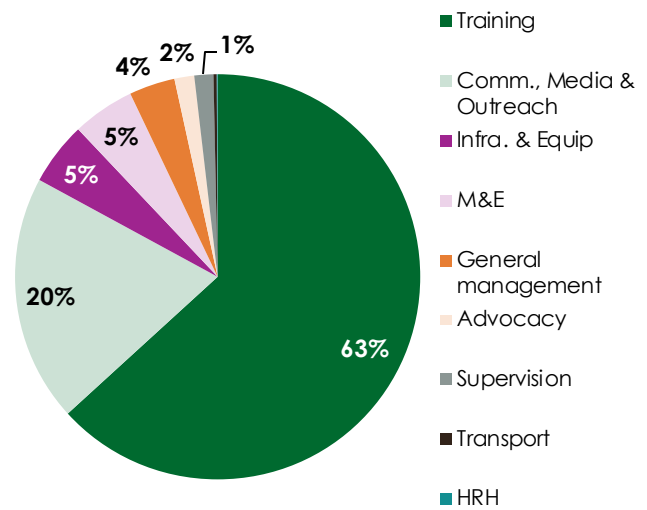
Figure 2. Total RMNCAH Costs by Year



Child and adolescent health represent 43% of the total RMNCAH commodity costs. Management of SAM is the largest cost driver of child health costs, increasing from \$3 million in 2015/16 to \$23 million in 2019/20. This is a result of the high cost of treatment per child and rapid increases in coverage. Diarrhea management and anemia treatment cost \$39 million and \$18 million, respectively, across all five years.

While commodity costs increase over time as services scale up, program management costs generally decline over time due to investments in training, advocacy, monitoring and evaluation (M&E), and program-specific infrastructure and equipment at the onset of the HSSP IV. Trainings account for the majority of RMNCAH program management costs (Fig. 3). One of the largest costs—totaling \$37 million and representing 15% of all training costs—is for training 22,500 community health workers on integrated community RMNCAH services by 2020.

Figure 3. Total RMNCAH Program Management Costs by Type of Cost



Note: Costs of facility upgrades for BEmONC and CEmONC are included in the infrastructure module.

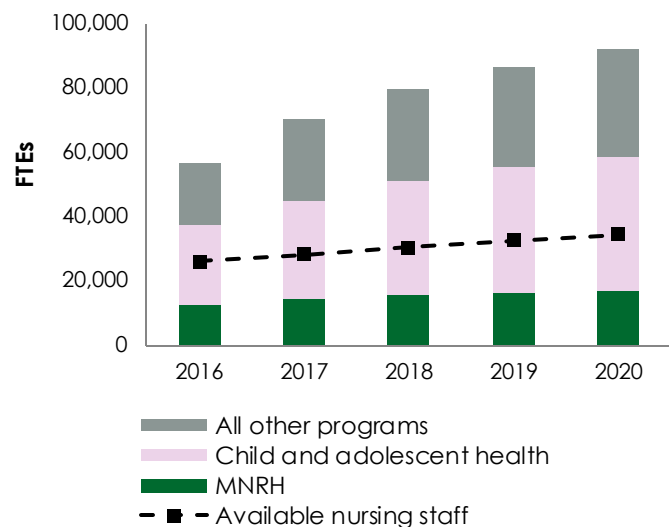
In addition to financial resource requirements, the number of human resources in the country must increase along with scale-up in RMNCAH service provision. The number of nurses needed to provide RMNCAH interventions is estimated to grow from 37,591 in 2015/16 to 58,353 in 2019/20 based on the number of services to be provided and staff requirements per service (Fig. 4). However, the GOT estimates there will be only 34,564 nurses in the country in 2019/20, and these nurses are also needed for other health services.

Projected Health Impact

The maternal and child health impact of implementing the HSSP IV was estimated using the Lives Saved Tool (LiST). The model estimates that Tanzania can meet its 2020 targets for neonatal and under-five mortality rates based on the currently planned scale-up of services; however, it may not meet its MMR targets (Fig. 5). LiST projects the MMR will decline to 321 deaths per 100,000 live births by 2020, but this is above the target rate of 292 deaths per 100,000 live births.

Still, the scale-up of health services under HSSP IV is estimated to save lives. From 2015/16 to 2019/20, a total of 75,752 deaths may be prevented (Fig. 6). Children under age five represent 62 percent of the lives saved. Increasing coverage of antimalarials and oral antibiotics for pneumonia account for 20% and

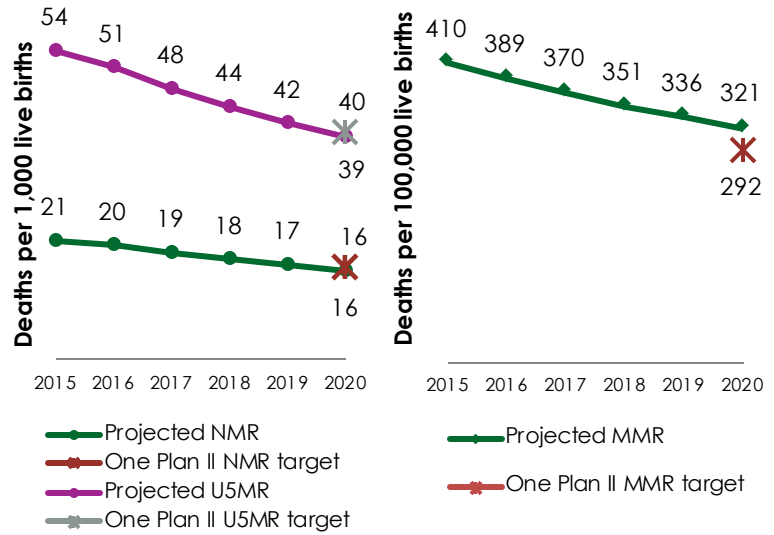
Figure 4. Number of Nurses Needed vs. Available under HSSP IV



10% of under-five lives saved, respectively.

An estimated 24,788 newborn deaths may be prevented from 2015/16 to 2019/20. Two-thirds of these lives saved result from scale-up in labor and delivery management (19% of lives saved), neonatal resuscitation (19%), antenatal corticosteroids for preterm labor (18%), and clean postnatal practices (11%). Of the projected 4,242 maternal lives saved across all five years, nearly half are due to active management of the third stage of labor (21%), labor and delivery management (14%), and maternal sepsis case management (11%).

Figure 5. Impact Projections vs Targets

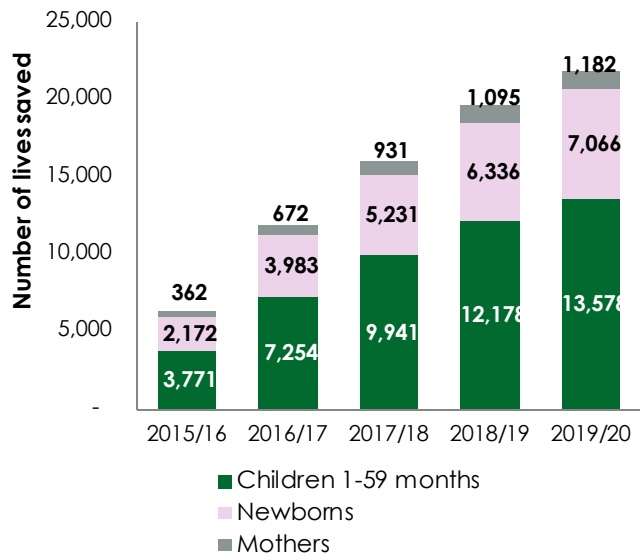


Financial Resource Gap

A recent resource tracking exercise involving 24 of the 26 donors that support RMNCAH services in Tanzania estimated that US\$105 million was budgeted for RMNCAH activities in fiscal year 2013/14, excluding allocations for nutrition, vaccination, and healthcare workers [6]. If these funding levels remain constant from 2015/16 to 2019/20, the RMNCAH funding gap could grow from \$3 million in 2015/16 to \$38 million in 2019/20 (Fig. 7).

The Global Financing Facility in support of Every Woman Every Child (GFF), launched by various partners in September 2014, offers a new opportunity to fill a significant portion of this gap. This \$4 billion initiative aims to end preventable deaths of women and children globally by 2030, and Tanzania is one of four initial countries to receive GFF support. Although the exact disposition of GFF funding for Tanzania is still unknown, Tanzania may be eligible to receive grant funds of \$40 million from the GFF trust fund and \$20 million from the Achieving Nutrition at Scale Multi-Donor Trust Fund across a five-year period from 2015/16 to 2019/20 [7]. These funds will be aligned with \$36 million in existing support from USAID for Eliminating Preventable Child and Maternal Deaths (EPCMD) goals. Excluding nutrition funds, this represents \$76 million in dedicated funding for RMNCH in Tanzania. However, even after including this optimistic scenario, Tanzania could still have an estimated funding gap of nearly \$52 million.

Figure 6. Projected Number of Lives Saved per Year if HSSP IV Targets Are Met



Conclusion

The GOT aims to rapidly scale up coverage of RMNCAH services to meet targets for maternal, child, and newborn health. As a result, RMNCAH services and activities represent a significant portion of the total HSSP IV resource

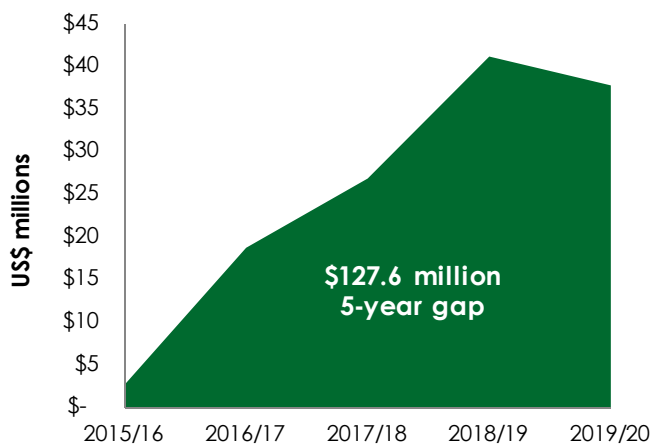
requirements. By 2019/20, RMNCAH is the third highest-cost program, following HIV/AIDS and NCDs, and represents 12% of health service costs.

Although the GOT has prioritized RMNCAH under the HSSP IV, Tanzania is at risk of not meeting RMNCAH targets due to human resource and fiscal space constraints. The planned number of human resources in the country is insufficient to meet the growing demand for RMNCAH services, and the five-year RMNCAH funding gap could be \$127.6 million if current funding levels remain constant.

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Figure 7. Potential RMNCAH Funding Gap



Overview

HIV prevalence among Tanzanians ages 15–49 declined from 7% in 2003/04 to 5.3% in 2011/12. HIV incidence also declined from its peak of 1.34% in 1992 to 0.32% in 2012 [1]. Despite these gains, Tanzania still has a large HIV burden with an estimated 1.5 million people living with HIV (PLHIV) and 86,000 new cases in 2012 [2]. Certain populations are disproportionately affected by HIV. Women and those living in urban areas have higher prevalence rates than men or people in rural areas [1]. Key populations, including people who inject drugs (36% estimated prevalence rate), sex workers (26%), and men who have sex with men (25%), have particularly high prevalence rates [3].

Select HSHSP III Interventions	Key Targets (2017/18)
HIV testing and counseling	70% of people ages 15–49 know their status
Condom utilization	70% of people ages 15–49 use condom during high-risk sex in last 12 months
Social and behavior change communication	80% of people ages 15–49 have comprehensive HIV knowledge
STI treatment	50% reduction in syphilis prevalence among ANC attendees
Targeted youth services	0.8% and 2.2% HIV prevalence rates among people ages 15–19 and 15–24, respectively
Voluntary medical male circumcision	2.8 million total VMMC clients
Blood safety	100% of donated blood screened
Elimination of mother-to-child transmission	90% of HIV-positive pregnant women initiated & retained on ART
Early infant diagnosis	90% of babies born to women with HIV receive a virological test within 2 months of birth
Pediatric ART	90% of children under age 2 living with HIV initiated on ART
Adolescent and adult ART	90% of eligible PLHIV (or 1,068,799 clients) on ART
Addressing co-morbidity	90% of TB patients who are HIV positive initiated on ART
Eliminating stigma	80% of PLHIV not stigmatized by health providers
Key populations services	50% reduction in HIV prevalence among key populations

The national HIV response is guided by the *Third National Multi-Sectoral Strategic Framework for HIV and AIDS 2013/14–2017/18* (NMSF III), which aims to halve the HIV incidence rate to 0.16% by 2017/18, reduce AIDS-related deaths, and decrease HIV-related stigma and discrimination among PLHIV [2]. In alignment with the NMSF III, the *Third Health Sector HIV and AIDS Strategic Plan 2013/14–2017/18* (HSHSP III) outlines the health sector HIV response led by the National AIDS Control Programme (NACP). Under the HSHSP III, Tanzania plans to scale up HIV prevention, diagnosis, and care and treatment services [4]. In May 2015, the government of Tanzania (GOT) released a circular on HIV treatment ambitions. All children under age 15 who are living with HIV are now eligible for treatment, and Tanzania will move to routine viral load testing, antiretrovirals for key populations, and expanded eligibility from CD4 350 to CD4 500 for adult treatment once additional resources are mobilized.

Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to estimate the costs, human resource constraints, and impact of the HSSP IV. The HIV cost results are based on HSHSP III operationalization and costing, which NACP reviewed and extended by two years for the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV) [5]. NACP routinely conducts quantification exercises using Spectrum, QuantiMed, and Pipeline to estimate commodity resource needs and for supply planning. The OneHealth costing team incorporated the results of NACP's quantifications into the costing. Assumptions were based on the 2011/12 HIV/AIDS and Malaria Indicator Survey, program data, and other studies.

The costs of delivering 18 HIV interventions were estimated. Through a multi-stakeholder prioritization exercise, 10 of these interventions were categorized as high-priority essential interventions to be scaled up according to NACP's ambitions. The costing assumed that coverage for the remaining interventions, including voluntary medical male circumcision (VMMC), viral load testing, and second-line treatment of sexually transmitted infections (STIs), will remain constant from 2015/16 to 2019/20.

Tanzania aims to increase antiretroviral therapy (ART) coverage to reach global 90-90-90 targets, which call for at least 81 percent of PLHIV to be on ART by 2020 (Fig. 1). NACP plans to scale up the number of people being tested for HIV from 7.4 million in 2015/16 to 8.9 million in 2019/20. Although VMMC coverage is flat under the HSSP IV, the costing assumes 2.4 million people will undergo VMMC from 2015/16 to 2019/20.

Resource Requirements

The HIV program under the HSSP IV requires US\$1,486 million (TZS 3.1 trillion) (Fig. 2). Overall costs remain relatively stable over time. Three-quarters (76%) of the total cost is for commodities, which increase in cost from \$201 million to \$251 million from 2015/16 to 2019/20.

Figure 1. Number of People Receiving Treatment and Care vs. Number of PLHIV

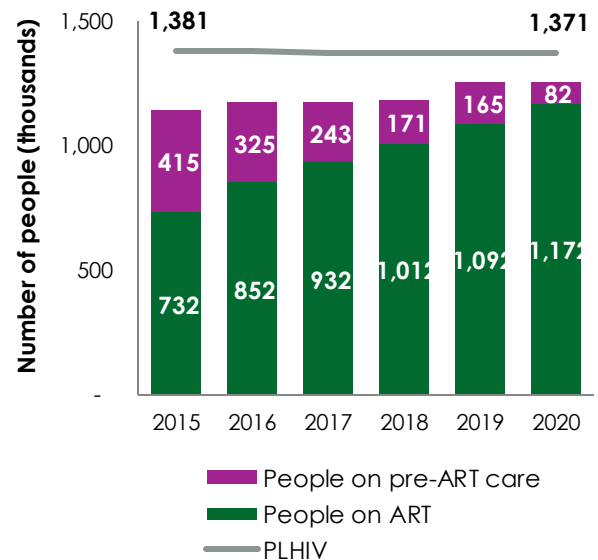
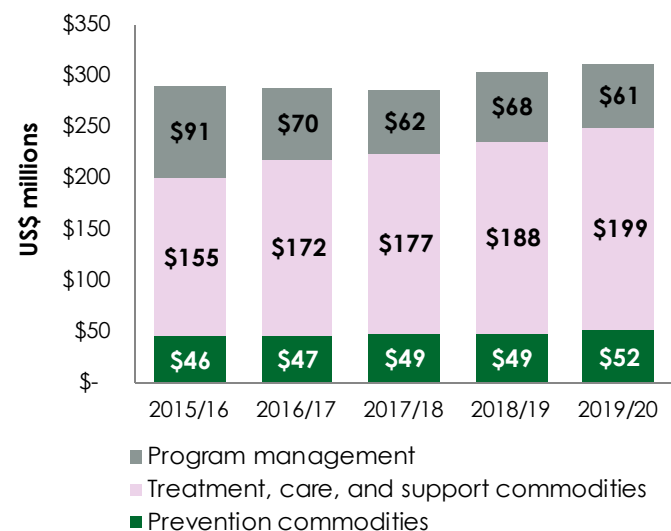


Figure 2. Total Health Sector HIV Costs by Year



Commodity costs can be disaggregated by prevention- or treatment-related interventions.¹ Prevention-related commodities account for just 21% of the total commodity cost. Treating STIs is the largest prevention-related cost (totaling \$107 million from 2015/16 to 2019/20), followed by VMMC (\$50 million). Interventions for treatment, care, and support require \$890 million across all five years, of which \$629 million (71%) is needed for ARVs. Laboratory monitoring and treatment of opportunistic infections cost \$157 million and \$92 million, respectively, from 2015/16 to 2019/20.

Program costs generally decline over time, from \$91 million to \$61 million between 2015/16 and 2019/20. The majority of program management costs are for training (\$188 million across all five years) (Fig. 3). NACP also plans to invest \$19 million in infrastructure and equipment, inclusive of \$6 million for 300 point-of-care viral load testing machines, at the onset of the HSSP IV.

Human resources are also needed to scale up HIV service delivery. By 2020, the HIV program alone requires 46% of the total number of laboratory and pharmaceutical technicians in Tanzania.

Health Impact

The OneHealth team estimated the health impact of scaling up ART and PMTCT using the AIDS Impact Model (AIM) within Spectrum. AIM projects that 368,836 deaths can be averted from 2015/16 to 2019/20 if treatment targets are met (Fig. 4). The number of AIDS deaths is estimated to decline each year, from 29,742 in 2015/16 to 12,882 in 2019/20.

Financial Resource Gap

The financial resources available for the multisectoral HIV response are estimated to decline from \$502 million in 2015/16 to \$341 million in 2017/18, assuming donor support decreases and domestic funding remains constant during this period (Fig. 5). Based on these projections and the costs of implementing the NMSF III, the funding gap for HIV may grow from \$110 million to \$262 million between 2015/16 and 2019/20.

Figure 3. Total HIV Program Management Costs

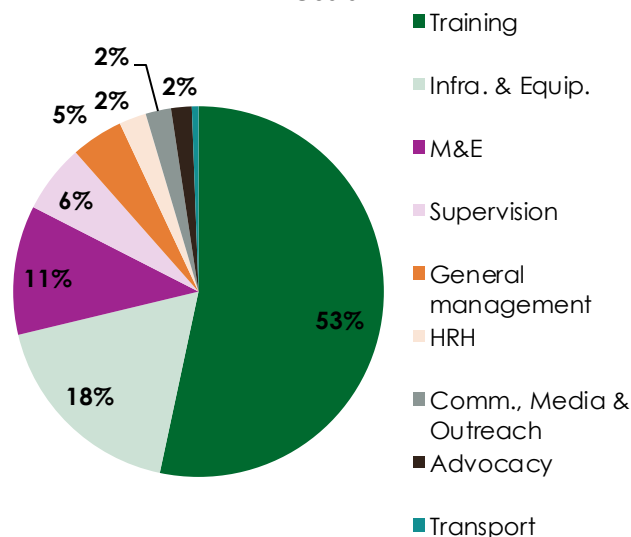
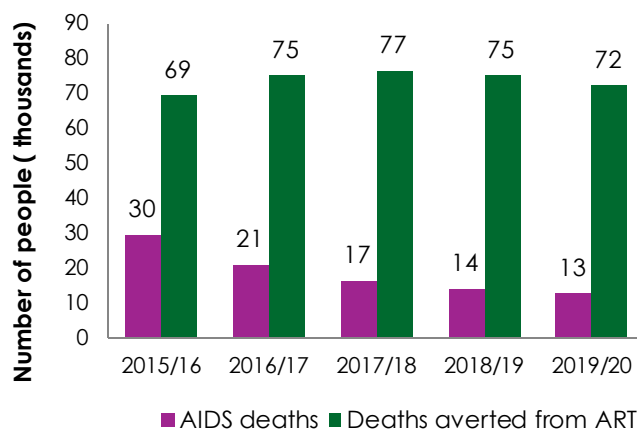


Figure 4. Health Impacts of ART and PMTCT



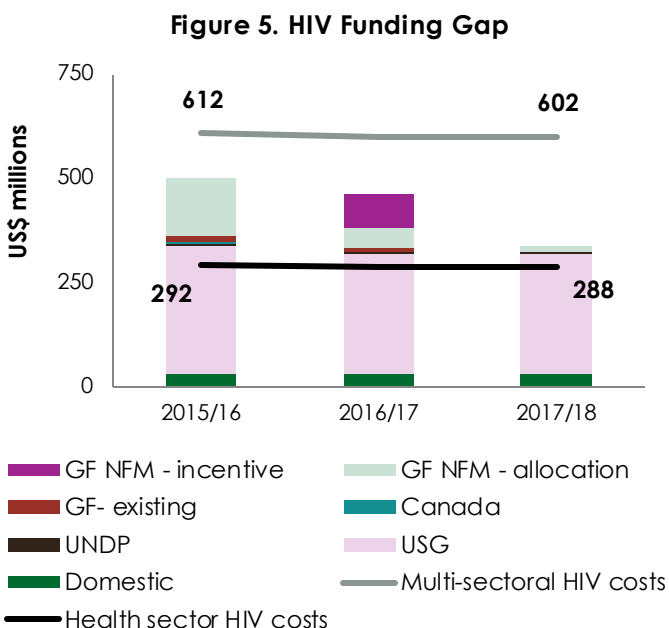
¹ All antiretroviral (ARV) drug costs, including those for prevention of mother-to-child transmission (PMTCT), are allocated as treatment costs.

While the resources available for the health sector's HIV response are not as well defined, nearly three-quarters of the HIV commodity needs in 2015/16 can be covered by the Global Fund. As Global Fund support declines over time, other financing sources for commodities are needed.

Conclusion

The HIV program requires more financial resources than any other health program from 2015/16 to 2019/20. About one-quarter (28%) of total health service costs under the HSSP IV are for HIV services.

NACP plans to rapidly scale up ART coverage over the next five years. Although this initiative will avert deaths, it requires significant resources, and the estimated resources available for the multisectoral HIV response are not sufficient to meet the country's HIV-related targets. If NACP further expands treatment eligibility as planned, the government may need to mobilize additional financial resources for HIV.



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Overview

Non-communicable diseases (NCDs) are gaining increased attention across Africa, and President Kikwete recently called for an awareness campaign in Tanzania following his prostate cancer diagnosis [1]. In response to the rising burden of NCDs in Tanzania, the Ministry of Health and Social Welfare (MOHSW) created the *Action Plan for the Prevention and Control of Non Communicable Diseases in Tanzania 2013–2020*. This plan aims to address NCDs through “prevention, detection and treatment of risk factors and early identification and treatment of prevalent diseases” [2]. The overall target is to reduce NCD-related mortality by 25% from 2013 to 2025.

The World Health Organization estimates that NCDs account for 31% of all deaths in Tanzania. Cardiovascular disease (9% of total deaths), cancers (5%), and diabetes (2%) are leading causes of NCD-related deaths [3]. In 2012, Tanzania carried out a population-based STEPS survey and found high prevalence of NCD risk factors among adults ages 25 to 64, with 16.6% having three or more risk factors. About one-quarter (26%) of Tanzanians are overweight, have raised cholesterol, or have raised blood pressure and 11.8% smoke cigarettes daily [4].

Cost Assumptions and Targets

Numbers Reached for Highest-cost Interventions

Intervention	2015/16	2019/20
Type I diabetes treatment	140,686	774,881
Chronic heart failure treatment	84,646	397,304
Asthma treatment	1,618,654	3,123,404
Dyslipidemia treatment	225,862	409,507
Thyroid disease treatment	192,720	221,153

Social Welfare (MOHSW) and clinicians from Muhimbili Hospital provided all cost assumptions. The MOHSW used data from the WHO STEPS survey [4], other disease burden studies, and the Health Management Information System (HMIS) to develop assumptions for unit costs, need for services, and coverage targets.

The OneHealth team estimated the cost of delivering 53 NCD and mental health interventions. Through a multi-stakeholder prioritization exercise, 13 interventions were categorized as either vital or high-priority

Select NCD Action Plan 2013–2020 Targets

Community-level interventions

- **30%** reduction in smoking prevalence
- **25%** reduction in prevalence of raised blood pressure
- **10%** reduction in raised cholesterol
- **10%** reduction in diabetes prevalence
- **50%** increase community awareness of NCDs

Improved facility care

- **50%** of people diagnosed with stroke or heart disease use aspirin
- **50%** of patients with diabetes or hypertension receive protein urine tests annually
- **50%** increase in the proportion of newborns at health facilities screened for Sickle Cell Disease
- **50%** increase in access to essential medicines for those diagnosed with major NCDs

Overall outcomes

- **20%** reduction in mortality for those age 70 or younger due to cardiovascular disease, chronic respiratory disease, cancer, and diabetes
- **10%** reduction in general population suicide rate
- **50%** increase in sickle cell disease survival rate
- **20%** reduction in injury and trauma mortality

Top 5 Intervention Unit Costs	
Intervention	Unit cost (US\$)
1. Prostate cancer treatment	\$3,397
2. Breast cancer treatment	\$839 - \$2,036*
3. Neurological tumor removal surgery	\$1,094
4. Vascular abnormality treatment	\$1,092
5. Hydrocephalus treatment	\$994

*Unit cost varies by stage. Highest cost is stage 1 treatment

essential interventions. The model scaled up these interventions according to the NCD program's ambitions. Coverage is flat from 2015/16 to 2019/20 for the remaining interventions.

In general, the NCD and mental health program assumed that the NCD disease burden would increase over the next few years, as new prevention initiatives under the HSSP IV are

unlikely to have an immediate effect. For example, prevalence of high blood pressure among those ages 40 and older is projected to increase from 29% in 2015/16 to 33% by 2019/20. Over the same time frame, prevalence of type II diabetes in adults age 30 and older is estimated to increase from 8 to 10%. However, many interventions assume disease prevalence will stay constant. For example, prevalence of prostate cancer in men age 50 and older (9.7%), prevalence of dementia among those age 70 and older (6.4%), and need for basic depression treatment (4%) remain constant across all five years of the HSSP IV.

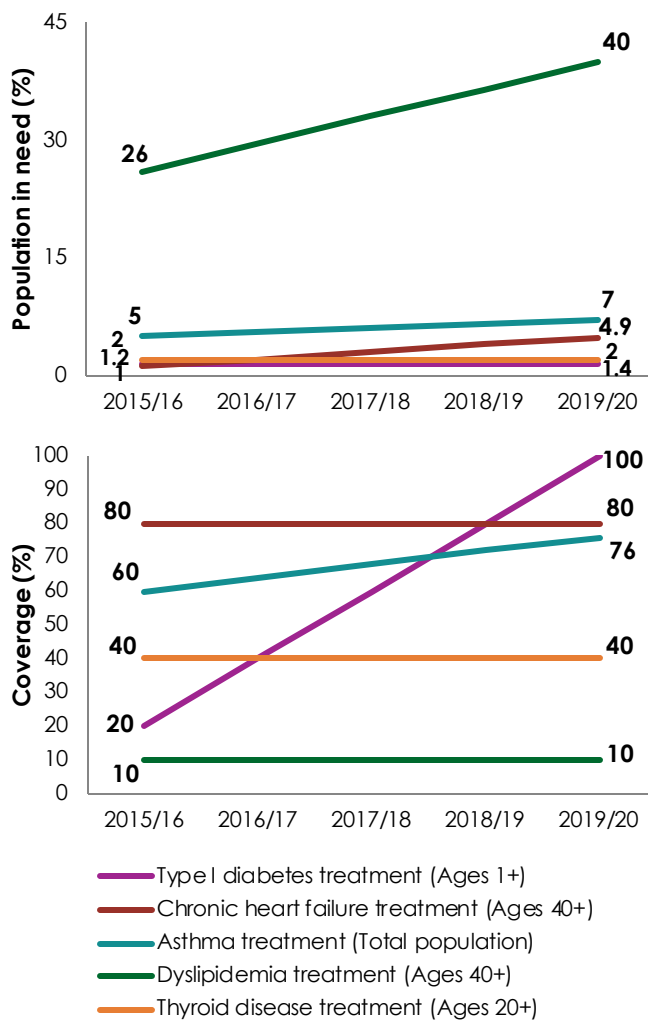
Coverage of NCDs, particularly of mental health, remains low. For instance, the mental health department estimates just 0.2% of people with dementia are receiving treatment. Many of these gaps in coverage will remain in 2019/20. Three-quarters of NCD and mental health interventions have the same coverage rate for all five years as a result of MOHSW rationalizing targets during prioritization. However, coverage rates at least double from 2015/16 to 2019/20 for six interventions: basic psychosocial support and anti-psychotic medication, management of opioid withdrawal, lifestyle modification, facility screening for CVD, cervical cancer treatment, and type I diabetes treatment.

Resource Requirements

NCD interventions have the highest unit costs, but few people receive these high-cost interventions. For instance, the unit cost of hydrocephalus treatment is the fifth highest for NCD interventions, but only an estimated 236 people will receive this treatment in 2019/20.

The total five-year resource requirements for NCDs are \$1,216 million, with costs increasing from \$164 million in 2015/16 to \$326 million in 2019/20 (Fig. 2). Commodity costs represent 97% of the total NCD costs, and the five highest-cost interventions account for 54 percent of the total commodity costs (Fig. 3).

Figure 1. Population in Need and Coverage for 5 Highest-Cost Interventions



Commodities for endocrine-related disorders represent 43% of the total resource requirements for NCDs. These disorders also see the fastest growth in cost; costs increase 2.5 times from 2015/16 to 2019/20. Treatment of type I diabetes requires \$230 million of the \$527 million needed for endocrinology commodities. Other high-cost endocrinology-related interventions include thyroid disease treatment (totaling \$90 million), type II diabetes treatment (\$83 million), and chronic kidney disease treatment (\$76 million).

Resource requirements for cardiology commodities double from 2015/16 to 2019/20 and account for 31% of total NCD costs. Chronic heart failure treatment (totaling \$108 million), dyslipidemia treatment (\$94 million), continuation of high blood pressure treatment (\$76 million) are the highest-cost cardiology-related interventions.

Although cancer treatments have the highest unit costs, relatively few people receive treatment. As a result, cancer-related interventions cost \$85 million from 2015/16 to 2019/20 and account for just 7 percent of all NCD costs. Nearly all of the resource requirements for cancer are for prostate cancer treatment (\$41 million) and breast cancer treatment (\$40 million). Mammography and palliative care for breast cancer are among the lowest-cost interventions.

Mental health commodities require \$69 million across all five years of the HSSP IV. Costs related to detecting and treating substance abuse amount to \$32 million from 2015/16 to 2019/20. Basic treatment of psychosis and bipolar disorder also require significant financial resources (\$13 million each).

The majority (85%) of NCD program management costs are for Ocean Road Cancer Institute’s support activities and operating costs. The remaining program management costs are split evenly between tobacco control activities and general NCD program management activities.

Tanzania needs to increase the number of human resources available in response to the growing need for NCD and mental health interventions (Fig. 4). The number of nurses, laboratory technicians and assistants, and specialist doctors needed just for NCD and mental health service delivery nearly doubles from 2015/16 to 2019/20 due to increases in demand for these services. By 2019/20, the need for specialists just for NCD and mental health services exceeds the number of specialists estimated to be available in the country by fivefold. Furthermore, 78% of the projected number of doctors in Tanzania in 2019/20 are needed just for NCD and mental health service provision.

Figure 2. NCD Resource Requirements

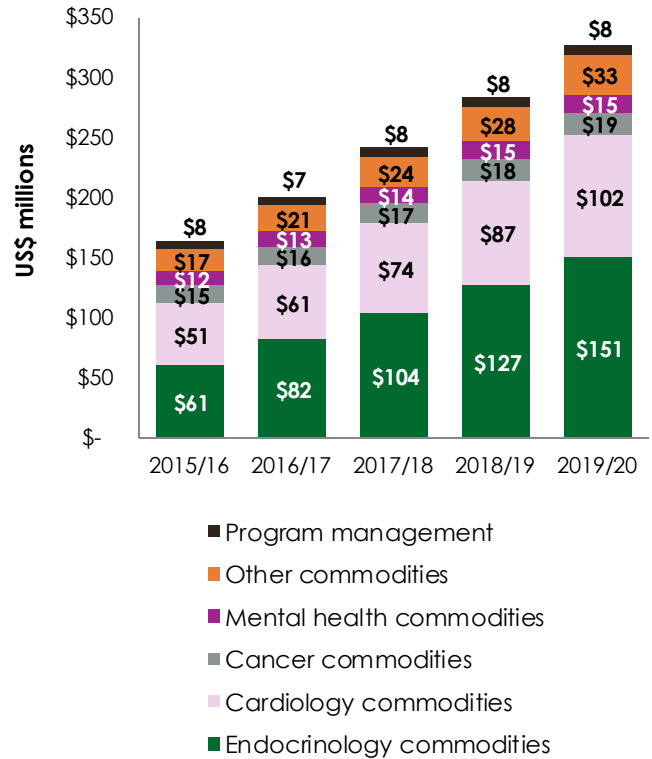
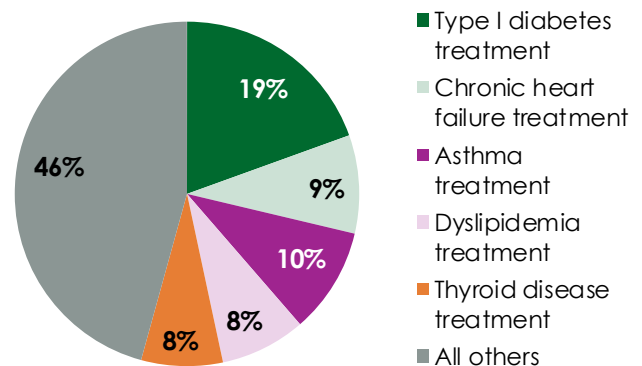


Figure 3. Total Commodity Costs

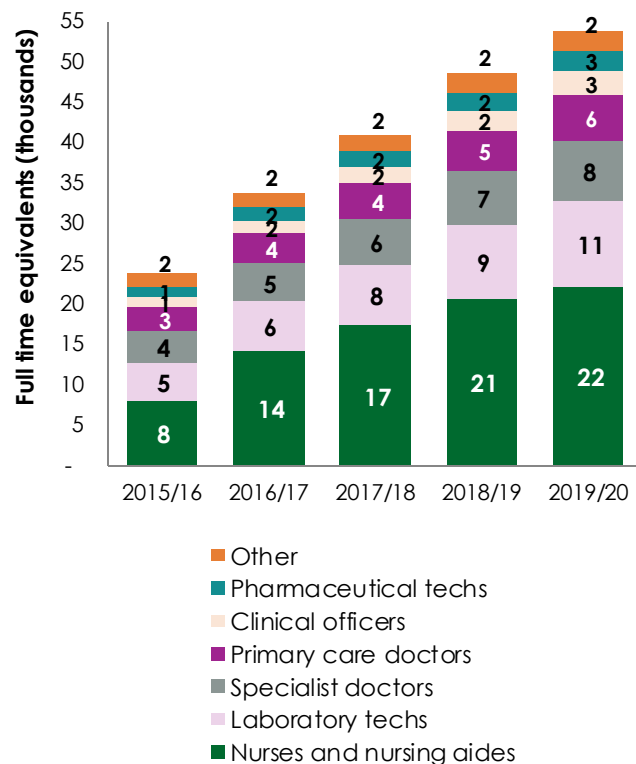


Conclusion

Tanzania faces a rising burden of NCDs. As a result, the costs of NCD and mental health services grow at a faster rate than any other program, with costs nearly doubling from 2015/16 to 2019/20. In 2015/16, NCDs and mental health represent 17% of total health services costs. By 2019/20, the NCD and mental health program is the highest-cost program and accounts for 27% of total health services resource requirements.

Under the HSSP IV, scale-up in coverage of NCD and mental health interventions is limited due to prioritization of other health services, particularly lifesaving services related to maternal and child health. Even with limited scale-up of preventive and curative NCD services, the NCD and mental health program requires significant human resources and funding. Unlike other disease programs, such as HIV, malaria, and tuberculosis, the NCD and mental health program generally does not have ring-fenced or earmarked funding. Therefore, there may be detrimental impacts on this program if the projected sector-wide funding gap remains unfilled.

Figure 4. Human Resources Needed for NCD and Mental Health Services



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Overview

The vision of the draft *National Strategic Plan V (2015–2020) for Tuberculosis and Leprosy* is for zero deaths, disease and suffering due to tuberculosis (TB) and leprosy in Tanzania. The plan’s goal is to reduce TB and leprosy incidence by 25% and mortality by 50% by 2020 [1].

Tanzania has the sixth-highest TB burden in Africa, with an estimated TB mortality rate of 12 per 100,000 in the general population. The WHO estimates 176 per 100,000 people have TB in Tanzania, and that 79% of TB cases are detected [1]. However, preliminary results of a 2012 prevalence survey indicate that TB prevalence may be even higher [1].

The number of multi-drug resistant TB (MDR-TB) patients enrolled in treatment increased from 15 in 2009 to 94 in 2013, largely due to ongoing expansion of Xpert testing and detection. Integration of TB and HIV services in the last several years has increased; 83% of TB patients received HIV testing and counseling services in 2013. The number of leprosy cases has decreased annually, but 19 districts still have a prevalence rate above 1 per 10,000 people. The national leprosy prevalence rate as of 2012 is 0.49 per 10,000 people [1].

Strategic Objective	2020 Target (if available)
1. Increase case detection	33% increase from baseline
2. Increase percentage of childhood TB cases notified	15% (baseline 10.6%)
3. Increase MDR-TB cases detected and treated	84% (baseline 17%)
4. Expand TB/HIV collaborative activities	
5. Establish TB burden and increase case notification rate within the mining sector	
6. Reduce new leprosy cases with disability grade 2	0.3 per 100,000 (baseline 0.7)
7. Support implementation of good-quality, accessible, and equitable TB and leprosy services	
8. Institute an efficient and integrated M&E system	

Cost Assumptions and Targets

Top 5 intervention unit costs	
Intervention	Unit cost (US\$)
1. MDR case management	\$4,863
2. Line probe assay test	\$218
3. MDR liver and kidney function tests	\$65
4. Adult TB retreatment (first-line)	\$54
5. Leprosy treatment	\$34

National Tuberculosis and Leprosy (NTLP) program within the Ministry of Health and Social Welfare (MOHSW) provided all cost assumptions. NTLP provided calendar-year targets, which were averaged to determine fiscal year targets under the HSSP IV.

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to estimate the costs, human resource constraints, and impact of the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV). The TB and leprosy cost results include program management and commodity costs; system-wide costs such as human resources are excluded from these program-specific costs. The

The OneHealth costing team estimated the resource requirements for 18 TB and leprosy interventions, of which half are related to TB diagnostics or monitoring. The MOHSW classified all TB and leprosy interventions as essential during its prioritization process. However, one-third were deemed second or third priority, meaning these interventions have flat coverage under the HSSP IV.

The costing assumes that the number of new TB case notifications will increase from 69,275 in 2015/16 to 80,536 in 2019/20 (Fig. 1). The percentage of all new TB notifications that are pediatric cases increases from 12 to 14 percent under the HSSP IV. NTLP plans to scale up active case finding of TB, reaching 5% of the total population annually through smear testing. While the number of previously treated TB cases and MDR-TB patients enrolled in treatment increases each year, the number of leprosy cases declines from 2,916 to 1,912 from 2015/16 to 2019/20, in line with recent trends.

Resource Requirements

The total cost of NTLP under the HSSP IV is US\$209 million. Costs are highest in 2015/16 and 2016/17 due to investments in program management at the onset of the HSSP IV (Fig. 2).

Commodities account for 24 percent of TB and leprosy costs. Laboratory commodities for TB and MDR-TB diagnosis and monitoring are 60% of the total commodity cost. Smear testing, the highest-cost intervention, requires \$23 million from 2015/16 to 2019/20 due to large numbers of people reached through active case finding. MDR-TB case management is the second highest-cost intervention (totaling \$11 million) due to the high unit cost of treatment.

The majority of NTLP resource requirements are for program management activities, which total \$158 million from 2015/16 to 2019/20. These activities were mapped to the eight objectives under NTLP's strategic plan (Fig. 3). Nearly one-third of program management costs are for supportive systems, as \$12 million is needed to fund program-specific human resources that are not included in the human resources for health (HRH) module. Other high-cost activities include NTLP supervision and mentorship (totaling \$9 million across all five years), upgrading of TB clinics (\$6 million), and equipment procurement (\$5 million for Xpert, line probe assay, and mycobacteria growth indicator tube machines).

In addition to financial resources, human resources are needed to scale up TB and leprosy services. By 2019/20, 48% of the total number of lab technicians and assistants in Tanzania will be needed just for delivering TB and leprosy services.

Figure 1. TB and Leprosy Caseloads and Targets

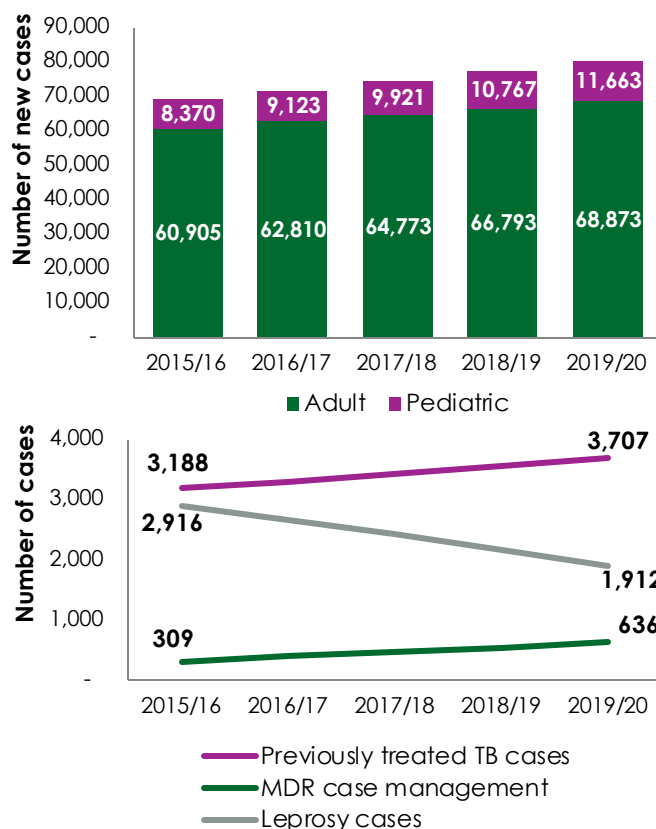
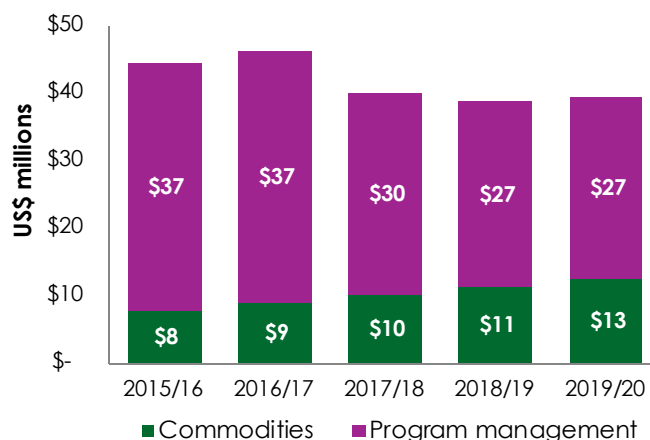


Figure 2. TB and Leprosy Resource Requirements



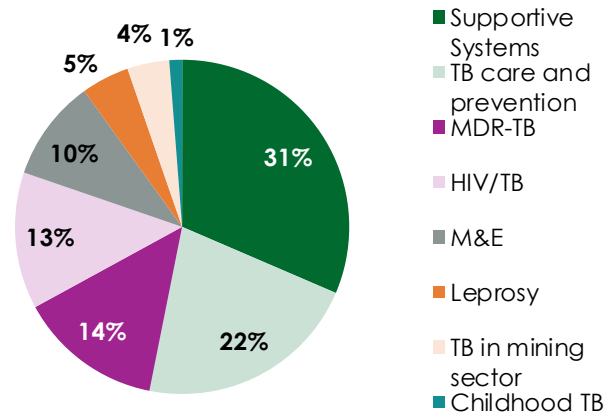
Conclusion

The TB and leprosy program represents 2% of the total resource requirements of the HSSP IV, but requires significant financial and human resources to meet its case detection and other service delivery targets.

References

1. MOHSW. 2014. *National Strategic (Core) Plan V (2015–2020) for Tuberculosis and Leprosy*. Dar es Salaam: NTLP.
2. WHO. 2014. *Global Tuberculosis Report 2014*. Geneva: World Health Organization.

Figure 3. NTL Program Management Costs



Overview

Tanzania has made large strides in reducing malaria mortality and prevalence. Mortality from malaria decreased from 41 per 100,000 people in 2004 to 12 per 100,000 in 2014 [1], and prevalence has declined 43% since 2007. However, there are significant geographical variations, with 2% of the population across 26 districts living in areas where malaria prevalence exceeds 50% [2].

The *National Malaria Strategic Plan 2014–2020* aims to reduce the prevalence of malaria from 9.5% as of 2012 to less than 1% by 2020. The National Malaria Control Program (NMCP) is targeting universal access to long-lasting insecticide treated nets (LLINs) and indoor residual spraying (IRS) in select areas and scale-up of malaria diagnosis and treatment [3].

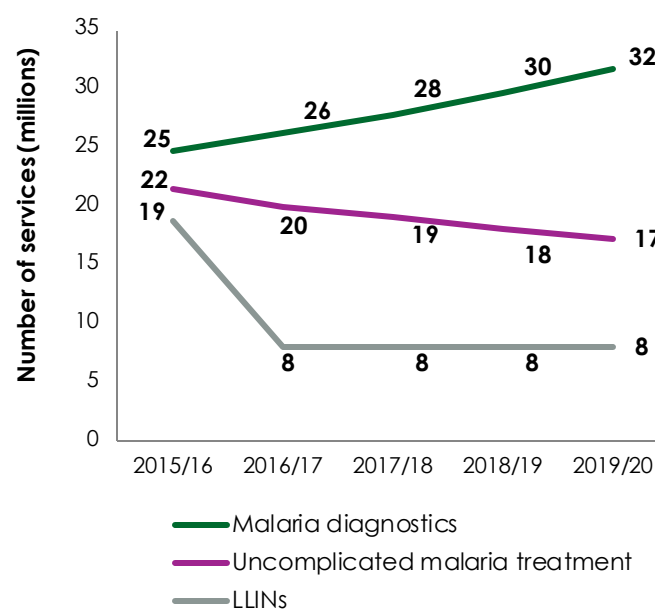
Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to estimate the costs, human resource constraints, and impact of the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV). The malaria cost results include program management and commodity costs. Other costs that cut across multiple programs, such as human resources for health, are captured under separate modules. NMCP staff provided all cost assumptions based on an extension of NMCP’s three-year Business Plan and quantification exercises.

Nine malaria interventions were costed for the HSSP IV. During the MOHSW-led prioritization process, NMCP and other stakeholders classified three interventions as vital, four interventions as first-priority essential, and two as second-priority essential.

Malaria rapid diagnostic testing will be scaled up during the HSSP IV (Fig. 1). NMCP also plans to distribute nearly 19 million LLINs through a campaign in 2015/16. Due to projected declines in the prevalence of malaria, the number of uncomplicated and severe malaria treatment cases is expected to decline from 2015/16 to 2019/20. An estimated 22 million uncomplicated malaria cases will be treated in 2015/16, and 17 million by 2019/20.

Figure 1. NMCP Key Targets



Top 5 Intervention Unit Costs

Intervention	Unit cost (US\$)
1. Indoor residual spraying	\$15
2. Treatment of severe malaria (adult)	\$15
3. Treatment of severe malaria (children)	\$8
4. Larviciding	\$7
5. LLINs	\$3

Resource Requirements

The total resource requirements for malaria under the HSSP IV are US\$486 million. Costs decrease from \$126 million in 2015/16 to \$89 million in 2019/20 due to investments in program management and LLINs at the onset of the HSSP IV and

projected declines in the number of malaria cases to be treated.

Two-thirds of the malaria program costs are for commodities (Fig. 2). The highest-cost intervention is LLIN distribution (totaling \$130 million), followed by treatment for uncomplicated malaria (\$54 million). For these interventions, the high number of services, rather than the unit cost, drives the high cost. Significant resources are also needed for uncomplicated malaria treatment (\$41 million from 2015/16 to 2019/20), indoor residual spraying (\$36 million), and malaria diagnostic testing (\$35 million).

For program management, the largest proportion of costs is for communication, media, and outreach activities, which account for nearly 32% of total program management costs. Developing and airing TV and radio advertisements—one of the largest communications costs—totals \$3 million in 2015/16.

NMCP requires significant human resources to deliver malaria interventions. In 2019/20, more than one-third of all primary care doctors (40%) and clinical officers (38%) available in the country are needed just for malaria service provision.

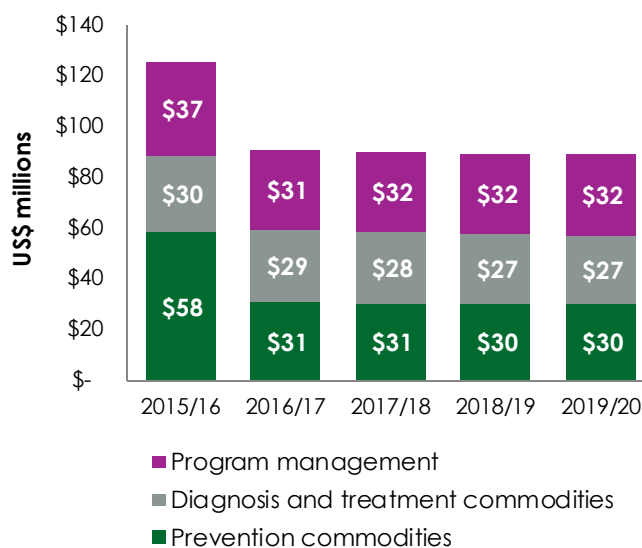
Conclusion

For the NMCP to meet its targets, significant resources are needed at the onset of the HSSP IV for malaria. The malaria program is estimated to be the third highest-cost health program in 2015/16, representing 13% of total health service costs. By 2019/20, it is the fifth highest-cost program and accounts for 8% of total health service costs.

References

1. Health Management Information System (HMIS). 2014. Dar es Salaam: MOHSW.
2. National Bureau of Statistics, Tanzania. 2013. *Tanzania HIV/AIDS and Malaria Indicator Survey 2011–12*. Dar es Salaam: National Bureau of Statistics.
3. MOHSW. 2014. *National Malaria Strategic Plan 2014–2020*. Dar es Salaam: NMCP.

Figure 2. NMCP Resource Requirements



Overview

Neglected tropical diseases (NTDs) cause significant morbidity, impacting childhood development and economic productivity in endemic areas, which tend to be poor, rural communities. Under the *Third Health Sector Strategic Plan 2009–2015* (HSSP III), Tanzania significantly scaled up NTD surveillance, diagnostics, and treatment. Of the 160 endemic councils, 101 currently implement NTD control programs. Under the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV), 90% of districts endemic with onchocerciasis, lymphatic filariasis, and trachoma will receive preventive chemotherapy through mass drug administration (MDA) by 2019/20 [1]. Tanzania also aims to eliminate lymphatic filariasis and blinding trachoma by the end of the HSSP IV [2].

Cost Assumptions and Targets

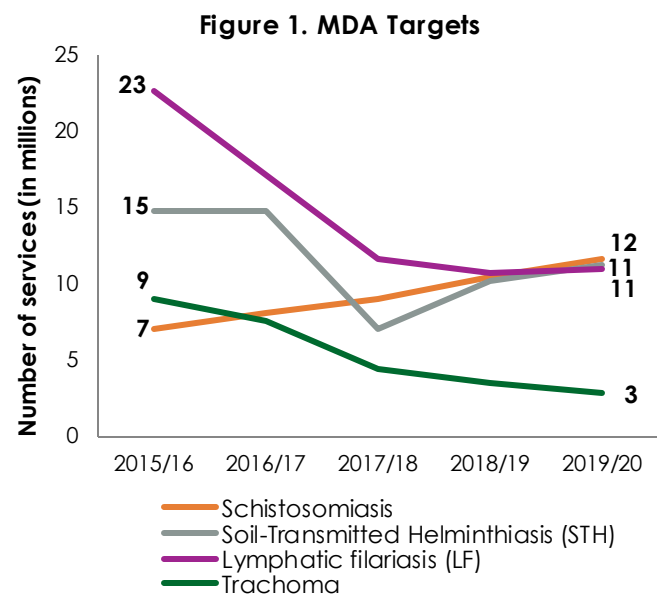
The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used to estimate the costs, human resource constraints, and impact of the HSSP IV. The NTD cost results include program management and commodity costs. Other costs that cut across multiple programs, such as human resources for health, are captured under separate modules. Staff from the Ministry of Health and Social Welfare’s (MOHSW) NTD program provided all cost assumptions. Using the Tool for Integrated Planning and Costing (TIPAC), the NTD program estimated the number of people in endemic areas reached by MDA and the supporting costs. TIPAC results were fully integrated into the OneHealth costing of the HSSP IV.

The OneHealth team estimated the cost of delivering eight NTD interventions. The MOHSW classified all of these interventions as essential. The four MDA interventions¹ are considered first priority. MDA scale-up is estimated to peak in 2015/16 and will then scale down and plateau for the remainder of the HSSP IV (Fig. 1). The other four interventions, which include surgical treatments, were classified as second or third priority by the MOHSW, and therefore have flat coverage from 2015/16 to 2019/20. The costing assumes 10,000 people will receive surgery for lymphatic filariasis (LF) hydroceles, or trachoma trichiasis (TT) (5,000 each), and 2,500 people will need LF lymphedema management during the HSSP IV.

Due to the MOHSW prioritization process, nearly one-third of the NTD program’s targeted number of surgeries (14,950 in total) may not be completed during the HSSP IV.

Top 5 Intervention Unit Costs

Intervention	Unit cost (US\$)
1. LF hydrocele surgery	\$22.3
2. LF lymphedema management	\$7.3
3. Trachoma trichiasis surgery	\$5.1
4. Trachoma MDA	\$0.3
5. LF MDA	\$0.2



¹Onchocerciasis control and treatment costs are covered under LF control and treatment costs as the treatment and endemic areas are the same.

Resource Requirements

The NTD program under the HSSP IV requires \$54 million across all five years, with costs decreasing from \$13 million in 2015/16 to \$10 million in 2019/20 due to scale-down of MDA (Fig. 2). NTD commodity costs account for 69 percent of the total resource requirements.

The highest-cost intervention is LF control and treatment, which represents 45 percent of all NTD commodity costs and requires nearly \$17 million from 2015/16 to 2019/20. LF control and treatment has the highest cost due to the larger number of people living in endemic areas, who require the interventions. MDA for schistosomiasis and trachoma are the second and third highest-cost interventions (each requiring about \$8 million in total). Although surgical and NTD management interventions have the highest unit costs, these three interventions account for less than 1 percent of total commodity costs due to relatively small numbers of people estimated to receive these services.

NTD program management requires \$17 million across all five years. The largest proportion of program management costs are for MDA support (Fig. 3), which includes transportation, registration, and other related activities. Nearly one-quarter of program management costs are for training community health workers who provide NTD health services.

In addition to financial resources, human resources are needed to meet NTD targets. An estimated 1,583 community health workers are needed just for NTD service provision in 2015/16.

Conclusion

NTDs represent 1% of the total resource requirements for health services. Although bilateral donors and pharmaceutical companies provide MDA drugs free of charge to Tanzania, the MOHSW must pay the procurement and supply chain management costs of these commodities (captured under the logistics module). Despite uncertain demand for curative NTD services in the future, the NTD program is unlikely to meet the need for LF hydrocele surgery, LF lymphoderma management, and TT surgery due to prioritization of other interventions under the HSSP IV.

References

1. MOHSW. 2015. *Fourth Health Sector Strategic Plan 2015/16–2019/20*. Dar es Salaam: MOHSW.
2. USAID. n.d. *Tanzania’s NTD Program*. Available at <http://www.neglecteddiseases.gov/countries/tanzania.html>.

Figure 2. NTD Resource Requirements

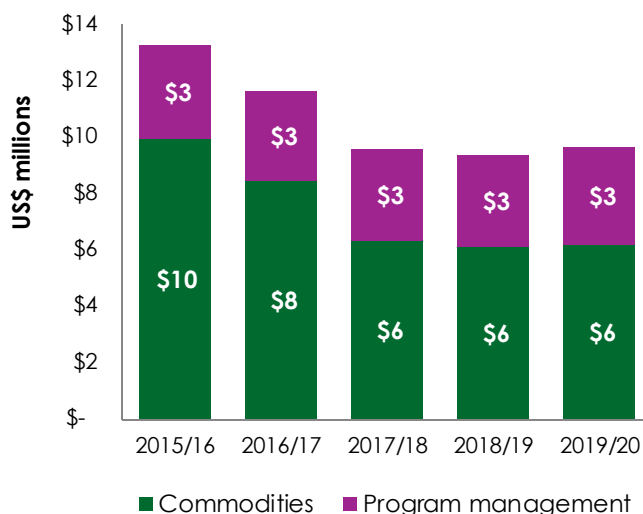
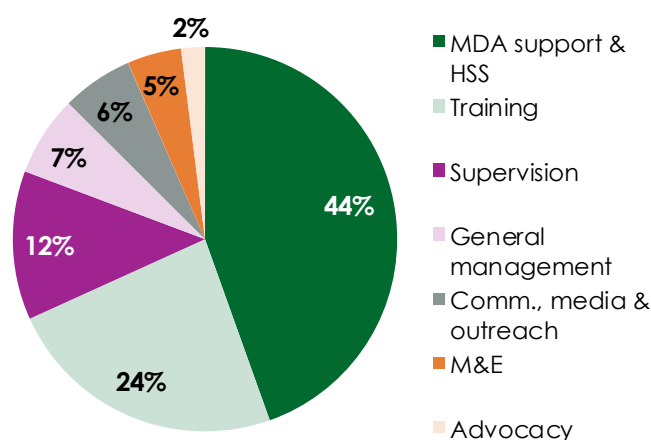


Figure 3. NTD Program Management Costs



Overview

Tanzania has achieved at least 90% coverage for nearly all child vaccinations and has introduced four vaccines—rotavirus, pneumococcal, combined measles rubella, and second dose of measles rubella—in the routine immunization schedule since the *Third Health Sector Strategic Plan 2009–2015*. Under the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV), these achievements will be sustained. In line with the Global Vaccine Action Plan Goals and the Reach Every Child initiative, Tanzania aims for 90% immunization coverage in 90% of districts, polio eradication, and elimination of neonatal tetanus, measles, rubella, and congenital rubella syndrome. Tanzania plans to roll out the human papillomavirus (HPV) vaccine nationally, strengthen outreach services in hard-to-reach areas, and support daily immunization services in facilities during the HSSP IV [1].

Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to estimate the costs, human resource constraints, and impact of the HSSP IV. The immunization cost results include the cost of commodities needed to deliver services. Other costs that cut across multiple programs, such as human resources for health, are captured under separate modules. The Ministry of Health and Social Welfare’s (MOHSW) Immunization and Vaccine Department (IVD) and Epidemiology and Disease Control Section provided all cost assumptions. Staff used data collected by the programs, corroborated by the Tanzania Demographic and Health Survey and Service Availability and Readiness Assessment, to determine coverage assumptions.

The HSSP IV includes the costs of 16 immunizations, all of which are classified as first-priority, essential interventions, except for the measles rubella vaccine campaign planned for 2017/18. This intervention is a second-priority essential intervention, but the coverage or costs are not affected as it occurs in just one year.

Nine of the 16 vaccines are for newborns. The need for these vaccines decreases over time due to projected declines in the number of births as the contraceptive prevalence rate rises under the HSSP IV (Fig. 1).

Coverage remains at 95% of births each year for five vaccines—polio, pentavalent, first dose of measles rubella, rotavirus, pneumococcal, and meningococcal (Fig. 2). The vaccine with lowest coverage in 2015/16 is oral polio vaccine (OPV). IVD aims to increase OPV coverage from 65% to 80% of all births from 2015/16 to 2019/20.

Intervention	Unit cost (US\$)
1. Rabies (5 doses per person)	\$45
2. Pneumococcal	\$18
3. Hepatitis B	\$9
4. Rotavirus	\$4
5. HPV	\$4

Figure 1. Declining Need for Newborn Vaccinations

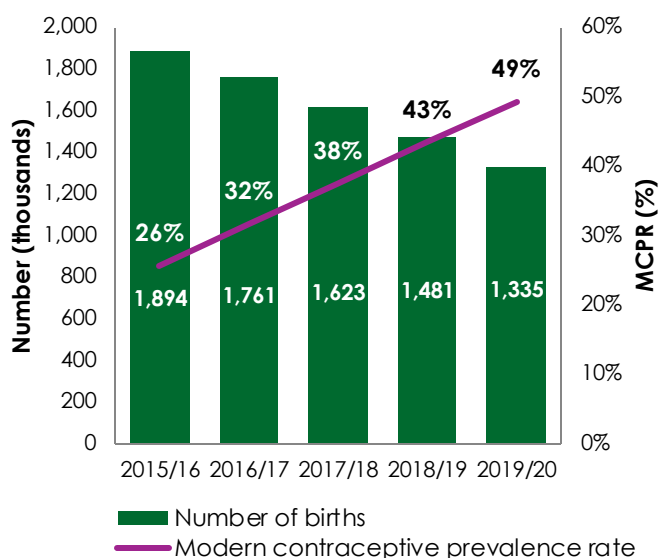


Figure 2. Coverage and Numbers Reached for 5 Highest-cost Interventions

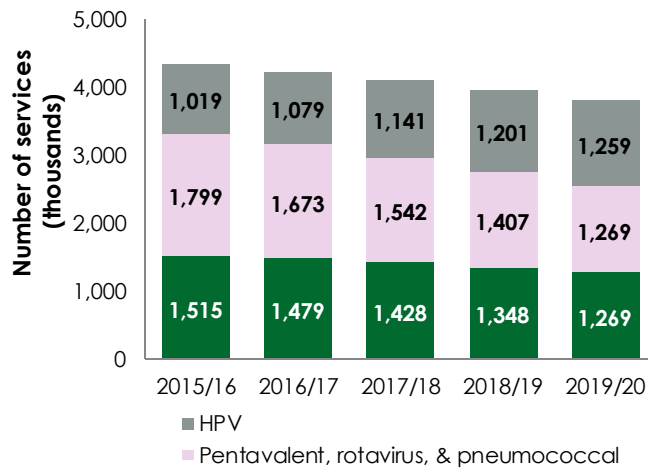
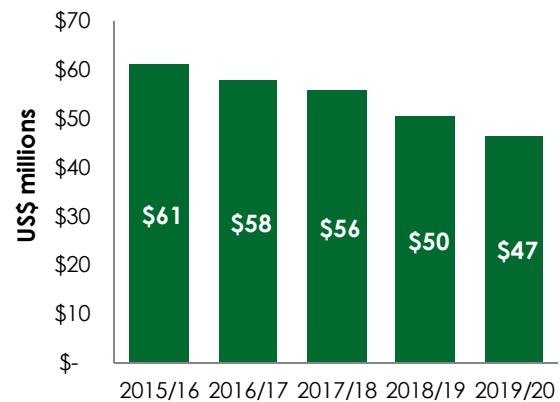


Figure 3. Immunization Resources Requirements



Targets for yellow fever, rabies, meningitis, and hepatitis B are based on past procurements of the vaccines and Tanzania’s routine health management information system data on vaccine uptake.

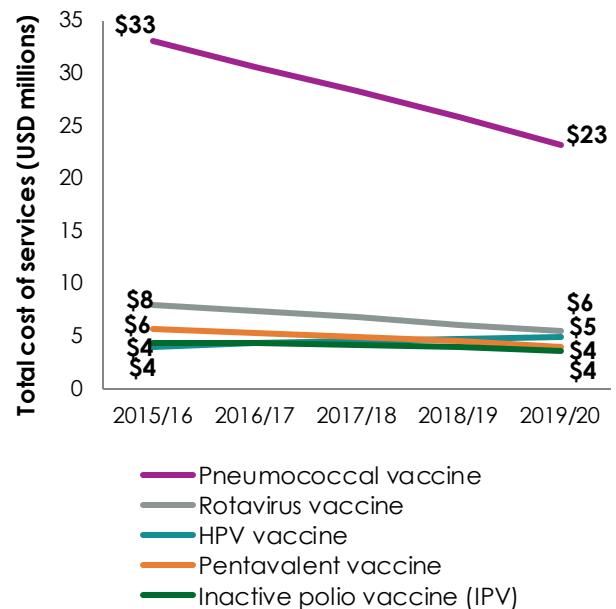
Resource Requirements

Tanzania requires US\$271 million from 2015/16 to 2019/20 for immunization commodities, excluding procurement and supply chain management costs. Costs decline over time due to decreases in the need for newborn vaccines (Fig. 3).

Pneumococcal vaccine requires the most resources, accounting for 52% of the total immunization costs, due to the high unit cost and targeted number reached (Fig. 4). The other highest-cost vaccines include rotavirus (totals \$34 million), pentavalent (\$25 million), HPV (\$23 million), and IPV (\$20 million).

The intervention with the highest unit cost is rabies. Each person who gets the vaccine receives five doses, which amounts to \$45 per person. Unit costs of seven of the 16 interventions are less than \$1.

Figure 4. Highest-cost Vaccines



Conclusion

Sustaining high levels of immunization coverage and scaling up newly introduced vaccines require significant investments in immunization commodities. Immunization commodities represent 6% of the total health service costs in 2015/16. By 2019/20, immunization accounts for 4% of health service costs.

References

1. MOHSW. 2015. *Fourth Health Sector Strategic Plan 2015/16–2019/20*. Dar es Salaam: Ministry of Health and Social Welfare (MOHSW).

Overview

Tanzania has made limited progress in improving its nutritional status, which contributes to under-five mortality and morbidity and decreased economic productivity. The prevalence of stunting among children under age five remains high at 42%, representing only a marginal decline from 48% in 1999 [1]. Children in the lowest wealth quintile are nearly twice as likely to be stunted as those in the highest wealth quintile. One-third of women ages 15 to 49 suffer from iron, vitamin A, and iodine deficiencies and 10% of women are undernourished [2].

The *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV) outlines acceleration of nutrition interventions in Tanzania, particularly for those focused on the 1,000 days from the start of a woman’s pregnancy through her child’s second birthday [3]. The Ministry of Health and Social Welfare

(MOHSW), along with other partners, aims to reduce the prevalence of underweight or stunted children under age five from 16% to 11% and 42% to 27%, respectively, by 2019/20 [4]. The incidence of low-birth-weight babies is also targeted to decrease to less than 2% by the end of the HSSP IV. The MOHSW will oversee development of a National Nutrition Action Plan for 2015–2020 at the onset of the HSSP IV to develop a detailed strategy for meeting these targets.

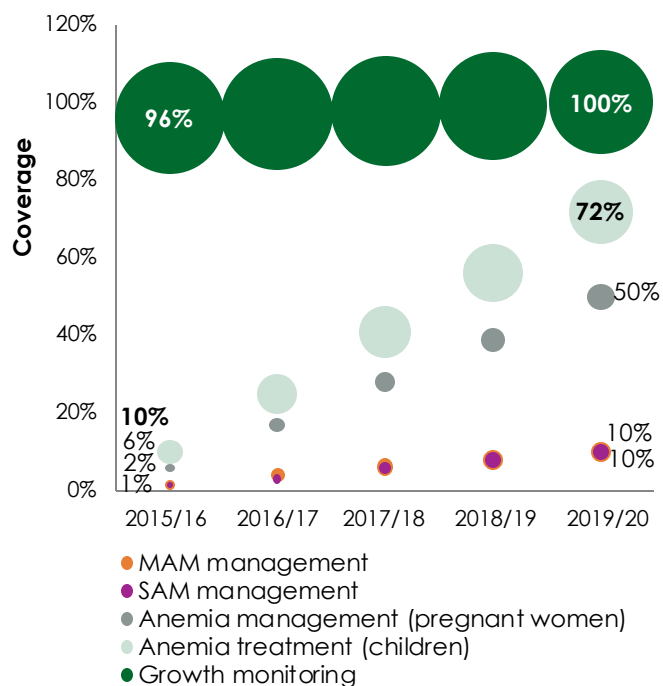
Top 5 Intervention Unit Costs	
Intervention	Unit cost (US\$)
1. Management of SAM	\$134
2. PLHIV nutritional support	\$31
3. Management of MAM	\$14
4. Severe anemia treatment (children)	\$4
5. Vit. K & iron suppl. for LBW babies	\$4

Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to estimate the costs, human resource constraints, and impact of the HSSP IV. The nutrition costs include commodity and program management costs associated with delivering services. Representatives from the MOHSW, Tanzania Food and Nutrition Centre (TFNC), and other partners, including UNICEF, provided all cost assumptions.

The OneHealth team projected the cost of providing 14 interventions for undernutrition. Besides lifestyle modification counseling under the NCD program, which does not require commodities, there are no interventions for overnutrition. Four interventions—management of severe acute malnutrition (SAM), severe anemia treatment in children, kangaroo mother care, and anemia management in pregnant women—were classified as vital during the MOHSW prioritization exercise. Another four interventions were classified as first-priority

Figure 1. Nutrition Targets for 5 Highest-cost Interventions



Note: Bubble size represents number of people reached

essential interventions and will be scaled up according to programs’ ambitions during the HSSP IV. The remaining six were either second- or third-priority essential interventions and have flat coverage from 2015/16 to 2019/20.

High-priority nutrition interventions are scaled up rapidly under the HSSP IV (Fig. 1). Seven interventions assume coverage will at least double from 2015/16 to 2019/20. Severe anemia treatment in children has the most rapid scale-up, from 6% in 2015/16 to 80% in 2019/20.

Resource Requirements

Nutrition costs over the period of the HSSP IV total US\$131 million, with annual costs increasing from \$10 million to \$40 million from 2015/16 to 2019/20. Commodity costs represent 94% of the total nutrition costs (Fig. 2).

One intervention, management of SAM, accounts for 50% of the total commodity costs and requires \$70 million from 2015/16 to 2019/20 (Fig. 3). This intervention has the highest unit cost, as well. Other high-cost interventions include anemia treatment in children (\$17 million in total), management of moderate acute malnutrition (MAM) (\$15 million), growth monitoring (\$9 million), and anemia management in pregnant women (\$5 million).

The program management costs (totaling \$7 million) include health-sector support activities carried out by the MOHSW, as well as the TFNC.

Conclusion

Under the HSSP IV, nutrition interventions are scaled up rapidly. Across all health programs, nutrition interventions and support activities represent just 2% of the total health service costs. Investments in preventive and curative services for undernutrition will contribute to Tanzania reaching its child health goals while also improving economic productivity—UNICEF estimates Tanzania loses 2.65% of GDP in revenue each year due to vitamin and mineral deficiencies [2].

Tanzania has seen a rise in the prevalence of overweight, a leading risk factor for non-communicable diseases, in recent years. The country will need to address the double burden of undernutrition and overnutrition during development of the National Nutrition Action Plan.

Figure 2. Nutrition Resource Requirements

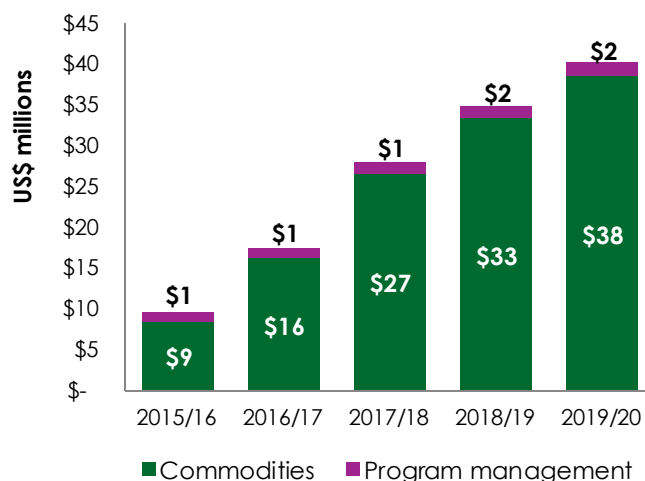
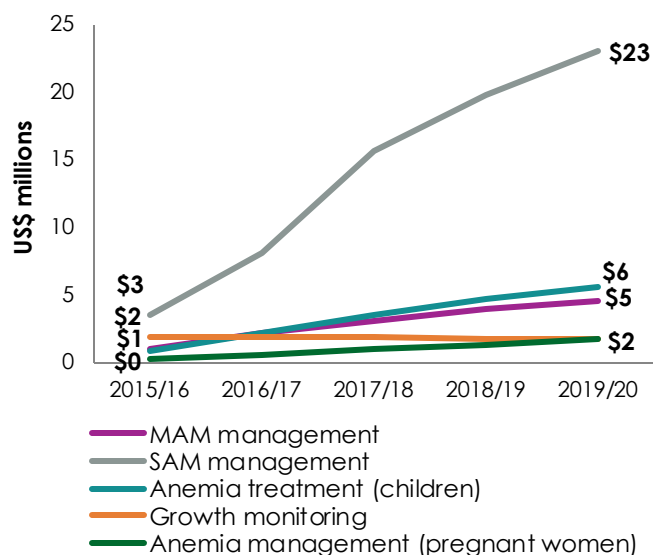


Figure 3. Highest Cost Interventions



References

1. Global Nutrition Report. 2014. *2014 Nutrition Country Profile: United Republic of Tanzania*. Washington, DC: International Food Policy Research Institute (IFPRI).
2. UNICEF. *Tanzania: Nutrition Overview*. Available at <http://www.unicef.org/tanzania/nutrition.html>.
3. MOHSW. 2015. *Fourth Health Sector Strategic Plan 2015/16–2019/20*. Dar es Salaam: MOHSW.
4. National Bureau of Statistics, Tanzania. 2010. *Tanzania Demographic and Health Survey*. Dar es Salaam: National Bureau of Statistics.

Overview

Tanzania’s *Strategic Oral Health Plan 2012–2017* calls for prevention and increased awareness of oral health risk factors, and early detection and treatment of oral health problems [1]. Oral health is also an integral part of the *Action Plan for the Prevention and Control of Non-Communicable Diseases in Tanzania 2013 to 2020*, which calls for a 20% reduction in tooth loss due to periodontal disease [2].

The last nationwide oral health survey, conducted in 2010, found that one-third of children ages 4 to 6 had at least one decayed tooth [3]. In 2006, 47.9% of adults age 18 years and older had calculus (dental stone) and 80% had gingivitis. Prevalence of oral health problems is anticipated to increase in Tanzania as consumption of sugar and smoking prevalence increase [2].

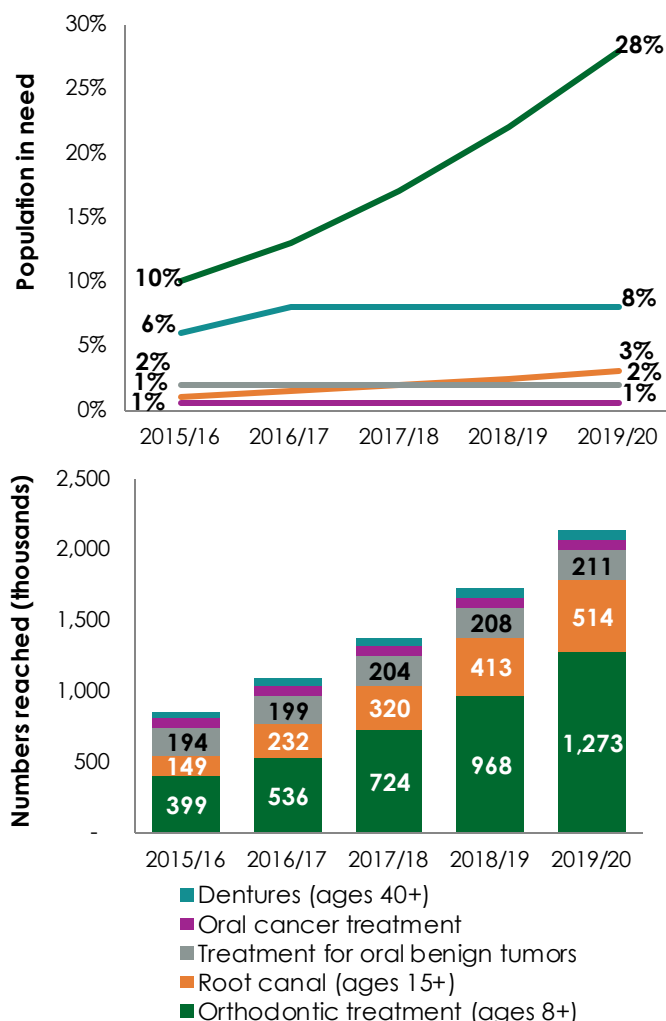
Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to estimate the costs, human resource constraints, and impact of the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV). The oral health costs include commodity and program management costs associated with delivering services. The oral health section of the Ministry of Health and Social Welfare (MOHSW) provided all cost assumptions.

The OneHealth team estimated the cost of 11 oral health interventions, most of which are curative services. One intervention, tooth filling, was classified as a first-priority essential intervention during the MOHSW prioritization process and its coverage rate of those in need is scaled up from 2.5% to 6.5% under the HSSP IV. The remaining interventions were classified as third-priority essential interventions (3) or nice to have interventions (7). These interventions assume flat coverage from 2015/16 to 2019/20.

Even though coverage remains flat for nearly all interventions, the HSSP IV assumes that the need for some oral health interventions will increase over time, resulting in more people being reached each year (Fig. 1).

Figure 1. Oral Care Disease Burden and Numbers Reached for 5 Highest-cost Interventions



Annual Coverage Rates	
Orthodontic treatment	- 10%
Root canal	- 50%
Treatment for oral benign tumors	- 18%
Oral cancer treatment	- 21%
Dentures	- 8%

Resource Requirements

Top 5 Intervention Unit Costs	
Intervention	Unit cost (US\$)
1. Oral cancer treatment	\$521
2. Tooth filling	\$105
3. Oral benign tumor treatment	\$84
4. Dentures	\$50
5. Orthodontic treatment	\$15

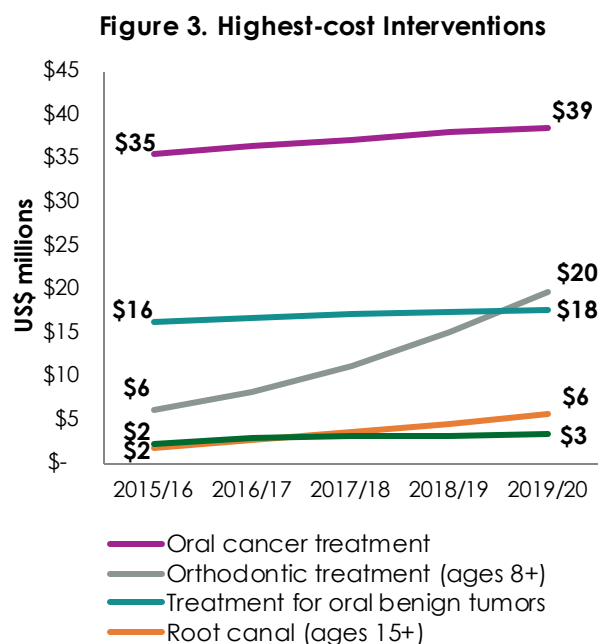
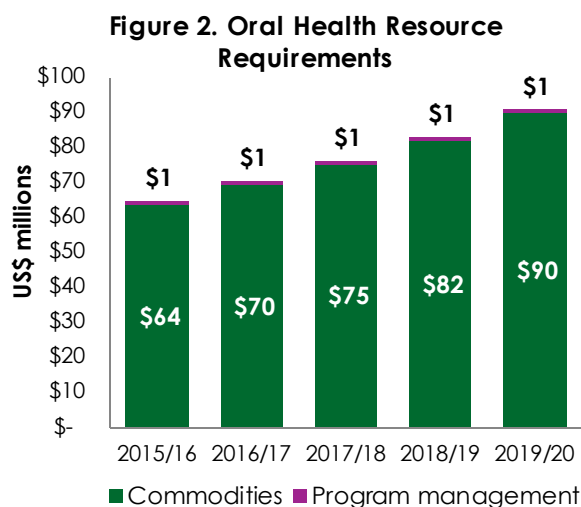
Oral health under the HSSP IV requires US\$386 million, with costs increasing from \$65 million to \$91 million from 2015/16 to 2019/20. Commodities represent 99% of the total oral health resource requirements (Fig. 2).

About half of commodity costs are attributable to oral cancer treatment, which has the highest unit cost across all oral health interventions (Fig. 3).

Significant resources are also needed for oral benign tumor treatment (\$85 million across all five years), orthodontic treatment (\$60 million), root canal (\$18 million), and dentures (\$14 million).

Program management costs require \$6 million from 2015/16 to 2019/20. One-third of these costs are for program-specific infrastructure and equipment, which includes procuring dental equipment for regional and districts dental clinics.

Oral health services also require significant human resources. Tanzania needs five times the number of specialist doctors to just provide oral health services in 2019/20.



Conclusion

Oral health accounts for 7% of the estimated resource requirements for health services under the HSSP IV.

Due to prioritization of other interventions, large gaps in coverage of oral health interventions will remain in 2019/20, and achievement of current targets may be difficult due to human resource constraints.

References

1. MOHSW. 2012. *Strategic Oral Health Plan 2012–2017*. Dar es Salaam: MOHSW.
2. MOHSW. 2013. *Action Plan for the Prevention and Control of Non Communicable Diseases in Tanzania 2013 to 2020*. Dar es Salaam: MOHSW.
3. Tambwe, Masembe. 2013. “Tanzania: Oral Health Awareness Drive Launched.” *AllAfrica*, September 21. Available at <http://allafrica.com/stories/201309230049.html>.

Overview

Tanzania, in alignment with the Global Vision 2020 Initiative, aims to eliminate avoidable causes of blindness. The *National Eye Care Strategic Plan 2011–2016* outlines six key objectives for eye care in the country, emphasizing the need for accessibility to medicines, appropriate equipment and infrastructure, and skilled human resources for health [1].

Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to estimate the costs of the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV). The ophthalmology costs include commodity and program management costs associated with delivering services. The National Eye Care Program (NECP) in the Ministry of Health and Social Welfare (MOHSW) provided all cost assumptions.

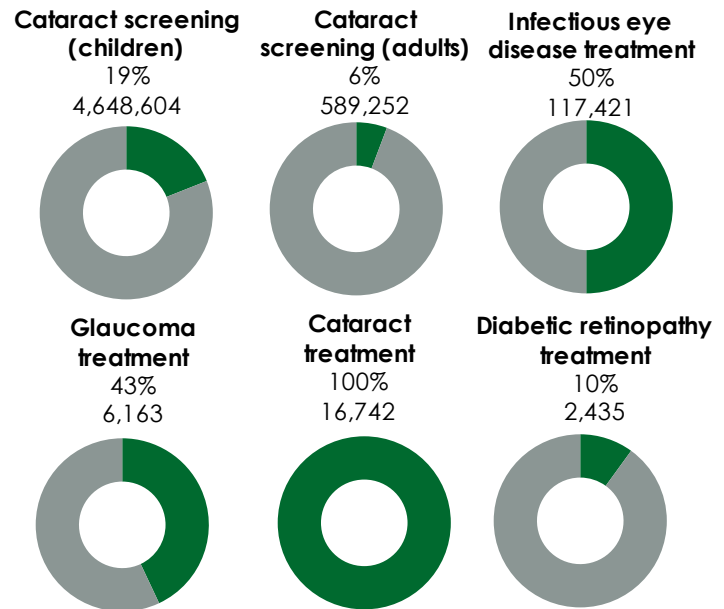
The OneHealth team costed six eye care interventions, all of which were classified as essential during the MOHSW prioritization exercise. Two interventions, cataract treatment and diabetic retinopathy treatment, were deemed first-priority and are scaled up according to the NECP’s ambitions. The remaining interventions assume flat coverage from 2015/16 to 2019/20.

Resource Requirements

Nearly US\$10 million is needed from 2015/16 to 2019/20 for eye care under the HSSP IV. Costs decline annually due to decreases in program management costs and presumed decreased prevalence of infectious eye disease (Fig. 2).

Infectious eye disease treatment accounts for 45% of commodity costs and requires nearly \$3

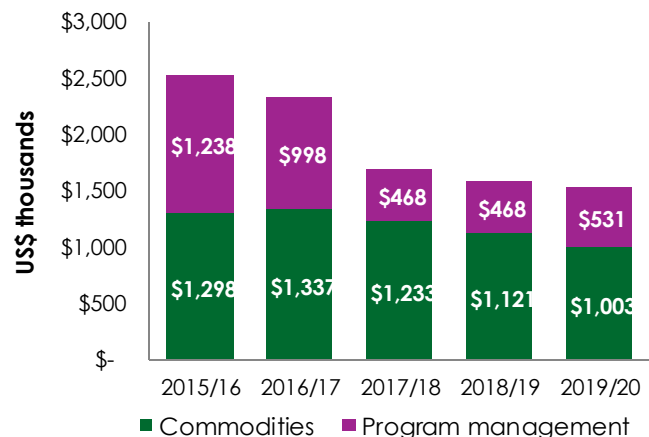
Figure 1. Targets for Coverage and Numbers Reached in 2019/20



Top 3 Intervention Unit Costs

Intervention	Unit cost (US\$)
1. Glaucoma treatment	\$70
2. Cataract treatment	\$10
3. Infectious eye disease treatment	\$3

Figure 2. Resource Requirements



million across all five years. One-third of commodity costs are for glaucoma treatment, which has a relatively high unit cost.

Conclusion

Ophthalmological interventions represent just 0.2% of the total HSSP IV health service costs. Due to prioritization of other health services, Tanzania will still have eye care coverage gaps in 2019/20.

References

1. MOHSW. 2011. *National Eye Care Strategic Plan 2011–2016*. Dar es Salaam: NECP.

Overview

The *Action Plan for the Prevention and Control of Non-Communicable Diseases in Tanzania 2013 to 2020* aims to reduce mortality from injuries and trauma by 20% through increased awareness of road safety, improvement of post-injury care, and promotion of road safety laws. A 2012 hospital study of 9,316 injury patients found that road traffic accidents (47.5% of all injuries), falls (27.9%) and assault (17.4%) were the leading causes of injury [1].

Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to estimate the costs of the *Fourth Health Sector Strategic Plan 2015/15–2019/20* (HSSP IV). The OneHealth team, using assumptions provided by Ministry of Health and Social Welfare (MOHSW) staff and clinicians from Muhimbili Hospital, estimated the commodity costs associated with providing 10 orthopedic and trauma services and the costs of related support activities.

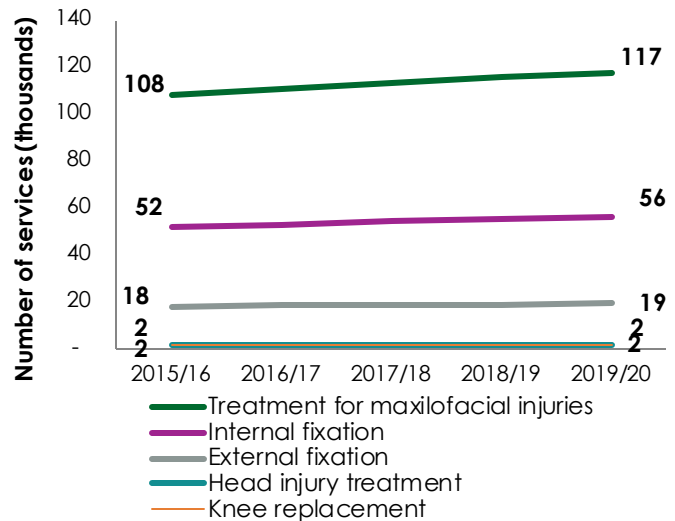
Top 3 Intervention Unit Costs	
Intervention	Unit cost (US\$)
1. Spinal injury treatment	\$1,377
2. Head injury treatment	\$1,094
3. Knee replacement	\$854

During the MOHSW prioritization exercise, two interventions, casting of fractures and general wound management, were classified as first-priority essential and are scaled up in coverage from 2015/16 to 2019/20. The remaining interventions have flat coverage under the HSSP IV. The need for injury treatment in the future is uncertain. As a result, Health Management Information System (HMIS) data and expert opinions were used to develop assumptions for numbers reached (Fig. 1).

Resource Requirements

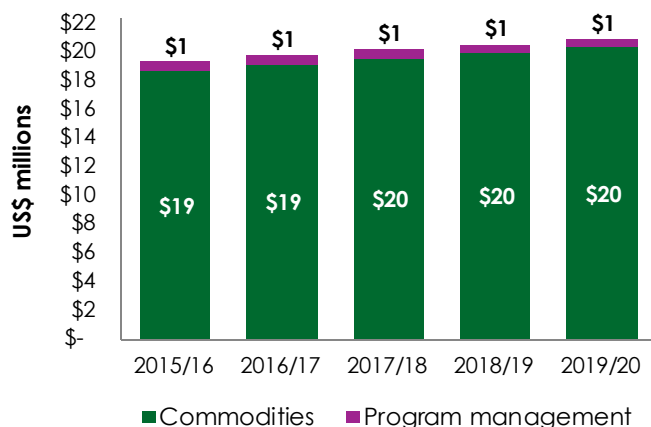
Orthopedic and trauma services require US\$101 million from 2015/16 to 2019/20, representing 2% of the total health service resource requirements. Costs are relatively stable across the years (Fig. 2). Program management costs (\$3 million total) include training and other support activities for emergency services within the MOHSW. Commodities represent 97% of the total costs. The highest-cost interventions—internal and external fixation—require \$41 and \$14 million from 2015/16 to 2019/20, respectively. Head injury treatment (\$11 million) and knee replacement (\$8 million) also require significant resources due to the high unit cost of

Figure 1. Targets for 5 Highest-cost Interventions



During the MOHSW prioritization exercise, two interventions, casting of fractures and general wound management, were classified as first-priority essential and are scaled up in coverage from 2015/16 to 2019/20. The remaining interventions have flat coverage under the HSSP IV. The need for injury treatment in the future is uncertain. As a

Figure 2. Resource Requirements



Sustainability Implications for Tanzania's Fourth Health Sector Strategic Plan,
2015/16–2019/20

treatment. Orthopedic and trauma services require human resources; 68% of specialist doctors are needed just for these services in 2019/20.

References

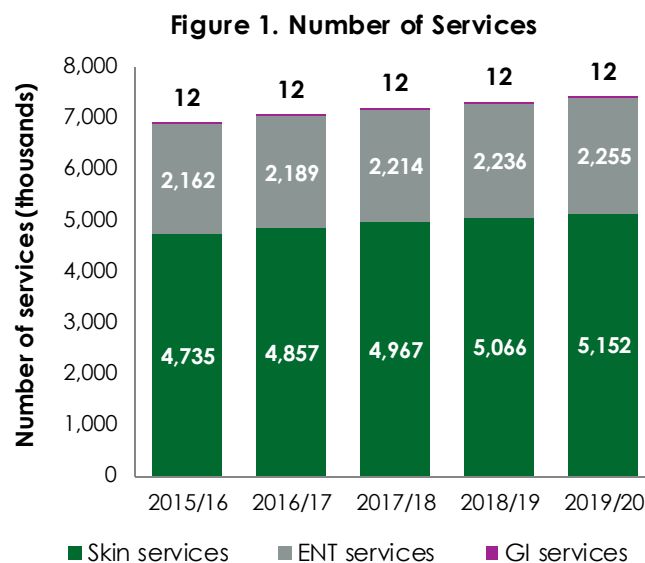
1. MOHSW. 2013. *Action Plan for the Prevention and Control of Non Communicable Diseases in Tanzania 2013 to 2020*. Dar es Salaam: MOHSW,

Some health services, such as skin or gastrointestinal conditions, are not managed by vertical programs in Tanzania. For the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV), these basic health services were costed as one program in the OneHealth Tool.

Cost Assumptions and Targets

The OneHealth Tool is a model for medium- to long-term strategic planning in the health sector. All assumptions for basic health services were provided by Ministry of Health and Social Welfare (MOHSW) staff and clinicians from Muhimbili Hospital.

The HSSP IV includes the commodity costs of 27 basic health services. These services include ear, nose, and throat (ENT) interventions (18), treatment for skin conditions (4), treatment for gastrointestinal disease (3), meningitis treatment, and blood transfusion services. Two interventions, meningitis treatment and cholera treatment, were classified as vital and another four were classified as first-priority essential interventions during the MOHSW prioritization process. The MOHSW deemed the remaining 21 interventions as lower priority, meaning they interventions have flat coverage from 2015/16 to 2019/20. As a result, increases in the number of basic health services to be conducted each year are mainly a result of population growth (Fig. 1).

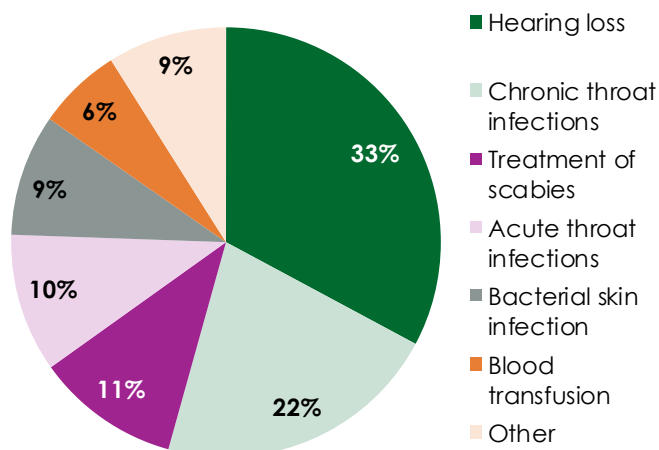


Resource Requirements

Basic health service commodities require US\$325 million from 2015/16 to 2019/20, with costs increasing slightly over time from \$63 million to \$67 million. Basic health services account for 6% of the total health service requirements under the HSSP IV.

Six interventions account for over 90% of the total resource requirements (Fig. 2). Hearing loss is the highest-cost intervention, requiring \$107 million across all years, mostly due to the high unit cost (\$252) of hearing aids. Treatment of chronic throat infections (\$70 million in total), scabies (\$35 million), acute throat infections (\$34 million), and bacterial skin infections (\$30 million) require significant resources due to the large number of targeted services to be conducted each year.

Figure 2. Resource Requirements by Intervention



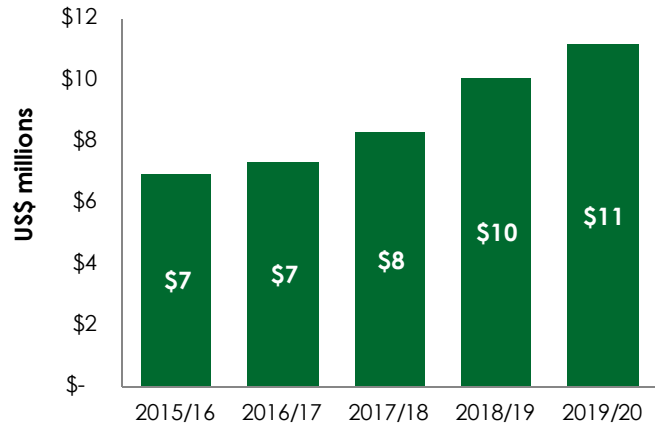
Department of Social Welfare

The Department of Social Welfare (DSW) oversees services for vulnerable populations, including children, the elderly, and disabled people. Under the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV), social welfare will be further integrated with health services and decentralized, with social welfare departments institutionalized in local government authorities. DSW aims to reach at least 50% of adults and children in need of care and protection by 2019/20.

Social welfare costs under the HSSP IV are based on an extension of the *Second National Costed Plan of Action for the Most Vulnerable Children (2013–2017)*. DSW staff provided all cost assumptions.

Social welfare requires US\$44 million from 2015/16 to 2019/20, representing just 0.4% of the total HSSP IV resource requirements. The largest cost driver is for assistive devices, such as wheelchairs, which cost \$20 million across all five years of the HSSP IV.

Figure 1. DSW Resource Requirements



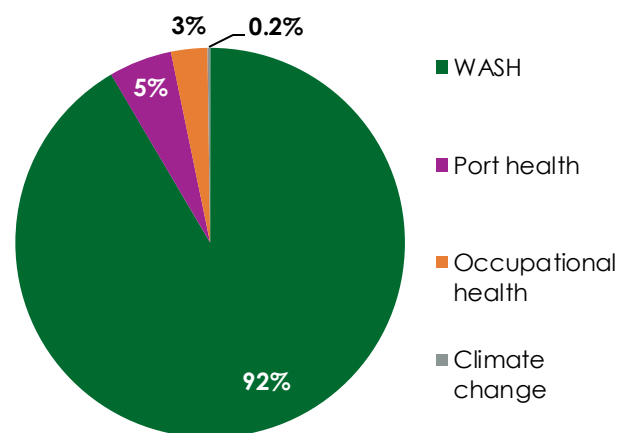
Environmental Health

The environmental health costing includes the costs of port health; occupational health; climate change; waste management; and water, sanitation, and hygiene (WASH) activities. Under the HSSP IV, the health sector will advocate intersectoral collaboration to address environmental and occupational health issues. Tanzania aims for 75% of the population to have access to safe drinking water and 80% of health facilities to meet the standards for safe healthcare waste management by 2019/20.

The Environmental Health, Hygiene, and Sanitation section of the Ministry of Health and Social Welfare (MOHSW) provided all the cost assumptions. Environmental health costs borne by other ministries or community members, such as building of latrines, were not included in the costing.

Environmental health requires \$111 million and accounts for 2% of the total costs of the HSSP IV. Annual costs are fairly stable and are highest in 2015/16 at \$24 million. The largest costs are for WASH (Fig. 2). Allocations made to households for WASH campaigns account for \$48 million of the \$101 million needed for WASH.

Figure 2. Environmental Health Costs (2015/16–2019/20)



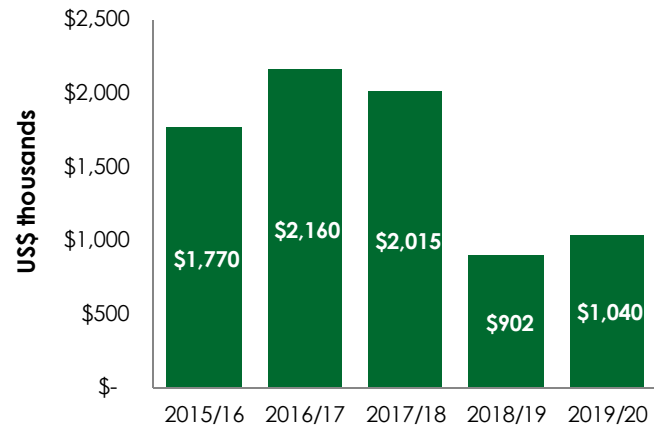
Health Promotion

Health promotion is a key aspect of the HSSP IV, particularly for its community health initiatives. Tanzania aims to reach every household with high-quality healthcare services and reduce preventable causes of disease, disability, and premature death. Awareness and behavior change can only be accomplished through strong health promotion.

Health promotion costs in the HSSP IV incorporate the costs of implementing the newly developed Community-Based Health Care Strategic Plan (CBHCSP) 2015–2020 and the costs of operating the health promotion section (HPS) in the MOHSW. HPS provided all costing assumptions.

Health promotion costs \$8 billion across all years of the HSSP IV (exclusive of community health worker [CHW] training costs which are captured under the human resources module). Costs are generally lower in the final two years of the HSSP IV due to investment in health promotion support activities at the onset of the plan (Fig. 3). The largest cost is procurement of materials and tools, such as bicycles, rain gear, and scales, for formalized CHWs (totaling \$1.6 million from 2015/16 to 2019/20). Health promotion costs are 0.1% of the total costs of health services.

Figure 3. Health Promotion Resource Requirements



Alternative and Traditional Medicine

Alternative and traditional medicine was costed as a separate health program as it has its own section under the curative services division in the MOHSW. This section provided all cost assumptions for alternative and traditional medicine support activities under the HSSP IV.

Alternative and traditional medicine costs \$1.2 million across all five years of the HSSP IV. Costs decrease from \$0.5 million to \$0.1 million from 2015/16 to 2019/20, and represent 0.02% of the total HSSP IV resource requirements.

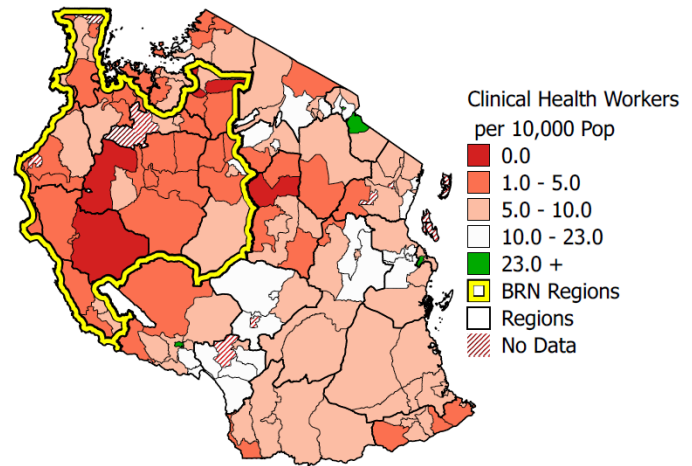
Health System Component Modules

Overview

Shortages and misdistribution of qualified human resources for health (HRH) are major challenges for expanding and improving health service delivery in Tanzania. There are 7.7 doctors and nurses per 10,000 people, below the World Health Organization’s recommendation of 23 per 10,000 people [1]. In 2012, as many as 500 facilities were nonoperational due to staff shortages [2]. Low absorptive capacity, insufficient HRH production, and lack of incentives to attract service providers to rural areas are some of the underlying causes of HRH shortages and misdistribution [3].

Several strategies and policies, including the Big Results Now (BRN) initiative, *Public Service Pay and Incentive Policy (2010)*, *HRH Production Plan 2014–2024*, the newly developed *Community-Based Healthcare Strategic Plan (CBHSP)*, and results-based financing, aim to address HRH issues. However, enforcement of policies has been weak under the *Third Health Sector Strategic Plan 2009–2015 (HSSP III)* [3]. Through BRN, Tanzania has identified six priority HRH initiatives and plans to have 100% balanced distribution of HRH in 13 underserved regions by 2017/18 (Fig. 1) [4].

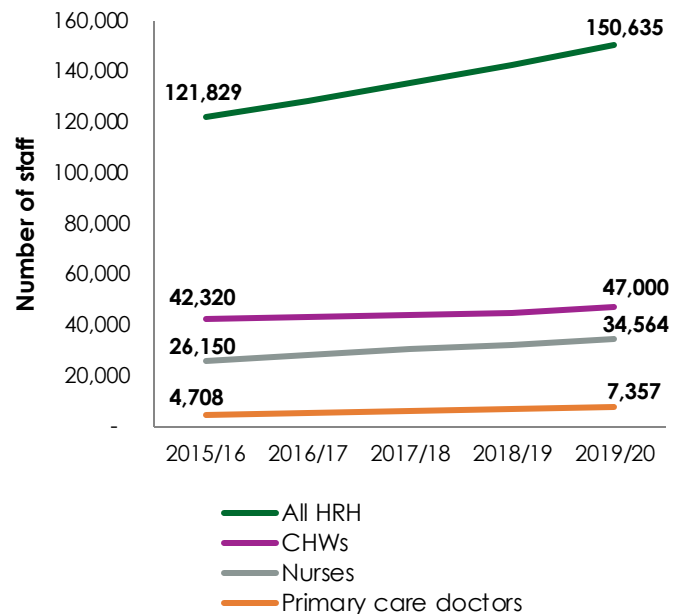
Figure 1. HRH Density Map



Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to cost and assess the human resource constraints of the *Fourth Health Sector Strategic Plan 2015/16–2019/20 (HSSP IV)*. The costs of human resources are based on the costs of clinical and support staff across 48 unique cadres in both the private and public sectors. Resource requirement estimates include costs of salaries, benefits, retention incentives, staff allowances, and HRH administration. In-service training costs are captured under the programmatic costing. Staff from the Department of Human Resources (DHR) in the Ministry of Health and Social Welfare (MOHSW) provided all cost assumptions, using data from the Human Resources for Health Information System (HRHIS). The MOHSW set targets for HRH scale-up based on the *HRH Production Plan* and *CBHSP*; these targets were deemed more feasible to achieve than targets based on facility staffing norms.

Figure 2. HSSP IV HRH Production Targets



Tanzania plans to increase the number of HRH available in the country from 121,829 in 2015/16 to 150,635 by 2019/20 (Fig. 2). The percentage of HRH represented by management and support personnel grows from 7% to 10% under the HSSP IV. The largest number of health workers is the non-formalized community health workers (CHWs) cadre,¹ followed by nurses. The cadre with the fastest growth rate is formalized CHWs, which sees an increase from 320 to 5,000 staff from 2015/16 to 2019/20.

Resource Requirements

Top 5 Average Annual Salaries	
Cadre	Salary per person (US\$)
1. Physiotherapist	\$12,585
2. Medical specialist	\$8,017
3. Medical officer	\$7,309
4. Assistant Environ. Health Officer	\$7,240
5. Dental Surgeon	\$6,491

Human resources for health cost US\$2,134 million under the HSSP IV, with costs increasing from \$358 million to \$500 million from 2015/16 to 2019/20 (Fig. 3). HRH is the most costly health system component and accounts for one-fifth of the total HSSP IV resource requirements.

Salaries and benefits represent 97% of HRH costs. By 2019/20, just five cadres account for two-thirds

of total salary costs (Fig. 4). Nurses have the highest wage bill (\$103 million) by the end of the HSSP IV, followed by medical attendants (\$57 million), due to the large number of health workers included in each cadre. Growth in salary costs is driven by annual increases in the number of staff available in the country and, to a lesser extent, real increases in salary, which range from 1% to 3% depending on the cadre.

HRH administration includes the cost of activities in the Human Resources for Health Strategic Plan (\$38 million in total), formalized community health worker trainings (\$9 million), BRN HRH costs primarily for staff redistribution (\$7 million), and maintenance of HRH information systems (\$1 million).

Human Resources Gap

The number of human resources available in the country may be insufficient to meet HSSP IV service delivery targets. Scale-up of HRH needs to increase at a rate similar to the scale-up of health services for supply to meet demand.

Using data on the number of minutes it takes to deliver services and time utilization by staff type collected from clinicians, the OneHealth team estimated that 127,623 HRH are needed for service delivery in 2015/16, and this number grows to 190,137 by 2019/20. Two-thirds of the HRH needed in 2019/20 are for reproductive, maternal, newborn, child, and adolescent health, non-communicable disease, and mental health.

Comparing the number of HRH needed to the number available under the HSSP IV reveals a

¹ The cost of non-formalized CHWs is not included in the HSSP IV because those who are paid are unknown.

Figure 3. HRH Costs

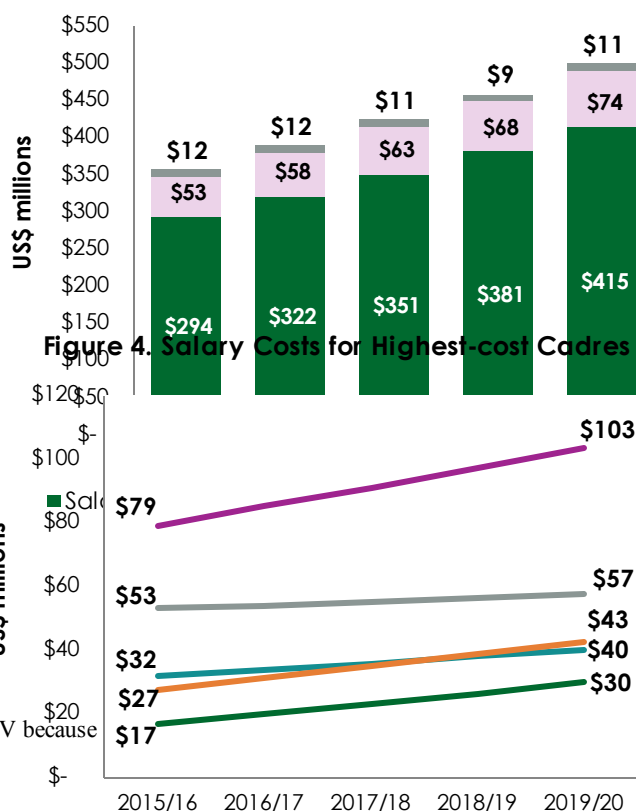
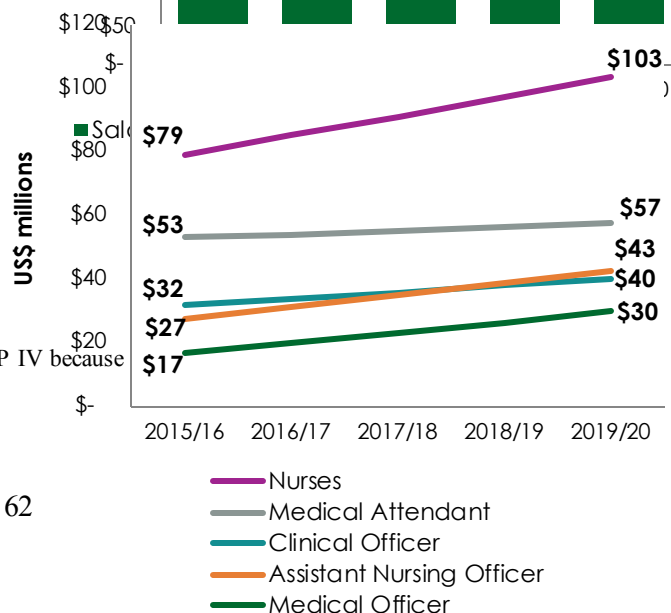


Figure 4. Salary Costs for Highest-cost Cadres



growing HRH gap; Tanzania faces an overall HRH gap of 13% in 2015/16, which increases to 40% by 2019/20 (Fig. 5). Certain cadres face larger gaps than others. In 2019/20, Tanzania needs about 12 times the number of specialist doctors and nearly four times the number of radiographers, x-ray technicians, and pharmaceutical technicians to meet the health program’s service targets.

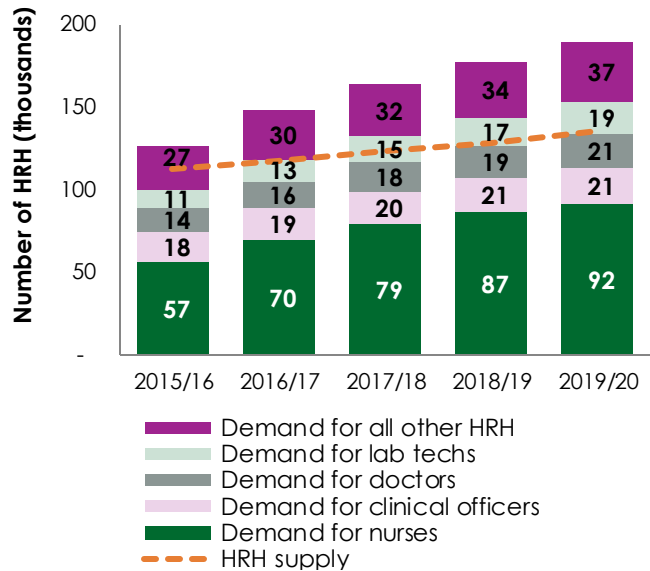
Conclusion

Increasing the number and geographical balance of qualified human resources for health is a key priority for Tanzania. The government has committed to increasing the total number of HRH by 24 percent under the HSSP IV and is strengthening community-based care through the introduction of formalized CHWs. However, Tanzania’s HRH gap will only grow from 2015/16 to 2019/20 as there is insufficient HRH to meet current service delivery targets. Further, HRH initiatives require significant financial resources and strong systems in place to recruit absorb and retain qualified staff.

References

1. MOHSW. Human Resources for Health Information System. Accessed February 2015.
2. MOHSW. 2014. *HRH Production Plan 2014–2024*. Dar es Salaam: MOHSW.
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4. MOHSW. 2014. *BRN Healthcare NKRA Lab Report—Part I*. Dar es Salaam: MOHSW.

Figure 5. HRH Gap Under the HSSP IV



Overview

Service Readiness Indicator	Prevalence (%) Among All Facilities
Emergency transport	47%
Availability of all six basic equipment items	22%
Power supply	21%
Availability of suitable sanitation facilities	19%
Consulting rooms with auditory and visual privacy	15%
Computer with internet	12%

quality, maintenance, and linkage with human resources planning [1]. Tanzania plans to introduce a facility star-rating system and have at least 80% of primary health facilities achieve a three-star rating by 2019/20. The Big Results Now Initiative from 2015/16 to 2017/18 includes a few infrastructure-related targets, calling for Tanzania to refurbish and upgrade facilities and purchase ambulances to expand and improve basic and comprehensive emergency obstetric and newborn care (BEmONC and CEmONC) [3].

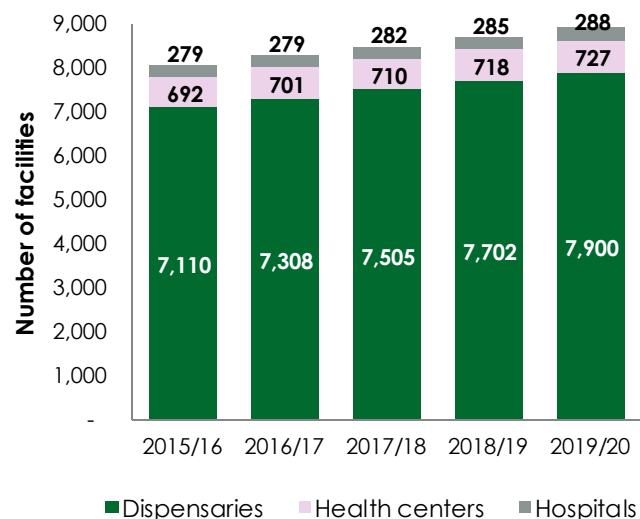
Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to cost the HSSP IV. Infrastructure resource requirement projections include costs borne in both the public and private health sectors. The costs of infrastructure are based on the costs of facility construction, rehabilitation, and maintenance; vehicle purchases and operating costs; and BRN-related infrastructure costs, including BEmONC and CEmONC upgrades. The Ministry of Health and Social Welfare (MOHSW) provided all cost assumptions. Multiple scenarios for infrastructure targets were presented to MOHSW senior management during the HSSP IV prioritization process.

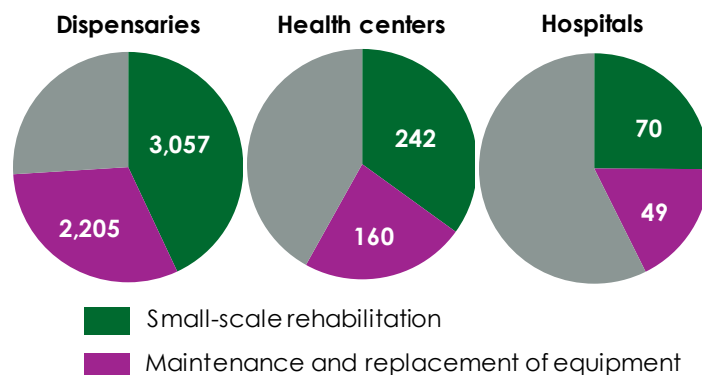
Although Tanzania has made progress in expanding infrastructure in the health sector, the growth in facility construction has outpaced the deployment of staff and infrastructure quality and maintenance remain a challenge [1]. Tanzania has about 1.5 facilities per 10,000 people. Health facilities tend to lack basic amenities and equipment, with primary and rural facilities reporting the lowest levels of service readiness [2].

Under the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV), Tanzania aims to improve equitable access to health facilities geographically, with an emphasis on infrastructure

Figure 1. Facility Targets



Rehabilitation Targets 2015/16–2019/20



Ultimately, the MOHSW decided to base facility construction targets on the *Human Resources for Health Production Plan 2014–2024* in alignment with the HSSP IV human resources targets. For facility rehabilitation and vehicle purchases, targets were based on closing gaps identified in Tanzania’s 2012 Service Availability and Readiness Assessment.

Under the HSSP IV, the number of public and private health facilities is expected to increase from 8,081 to 8,915 from 2015/16 to 2019/20 (Fig. 1). Nine district hospitals will be constructed during this time; there are no plans for construction of new regional, zonal, national, or specialized hospitals. Across the

five-year period, 3,369 and 2,414 of the 8,081 existing facilities will undergo small-scale rehabilitation and equipment replacement and maintenance, respectively. The costing assumes the number of vehicles available will increase from 2,433 in 2015/16 to 2,958 in 2019/20, which includes procurement of an additional 250 ambulances and 271 motorcycles for facilities.

Resource Requirements

Facility Type	Construction Costs	Rehabilitation Costs	Operating Costs
Dispensary	\$84,747	\$22,667	\$4,244
Health center	\$499,261	\$195,124	\$16,533
District hospital	\$7,155,343	\$484,039	\$102,716
Regional hospital	\$72,636,075	\$2,420,194	\$828,110
Zonal, special, national hospital	\$101,394,032	\$3,630,291	\$2,097,824

Infrastructure requires US\$1,397 million from 2015/16 to 2019/20, representing 13% of the total HSSP IV resource requirements. Infrastructure costs are relatively constant from 2015/16 to 2019/20, but peak in 2016/17 at \$295 million due to new construction costs.

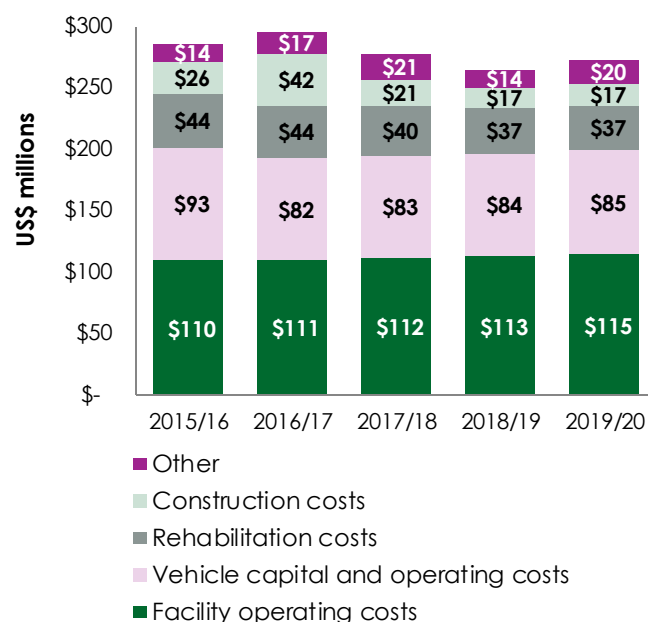
Facility operating costs are the largest proportion (40%) of infrastructure resource requirements. Vehicle costs are 31% of total infrastructure costs, with new purchases and vehicle operating costs requiring \$118 million and \$309 million from 2015/16 to 2019/20, respectively.

Facility construction and rehabilitation costs generally decline over time due to initial investments made at the onset of the HSSP IV. BRN-related infrastructure initiatives require \$29 million and equipment and furniture purchases require \$57 million across all years of the HSSP IV.

Conclusion

The MOHSW is committed to further expand and improve health infrastructure. Investments in facility construction, rehabilitation, and vehicles require significant financial resources, particularly at the beginning of the HSSP IV. Infrastructure costs as a proportion of total health sector costs decline from 15% to 12% from 2015/16 to 2019/20.

Figure 2. Infrastructure Resource Requirements

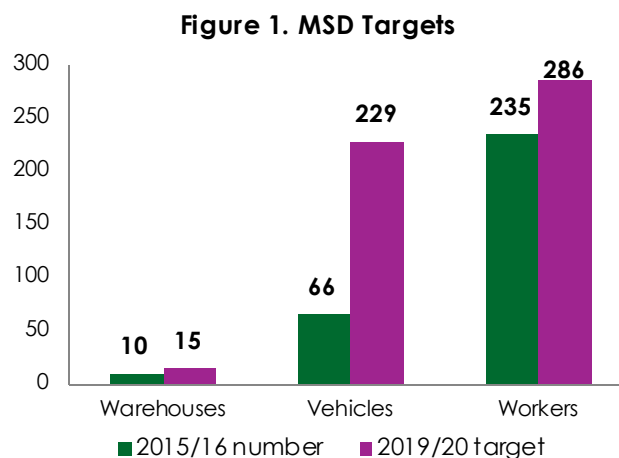


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Overview

One of the key *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV) and Big Results Now (BRN) targets is to achieve 100% stock availability of essential medicines [1]. As of 2012, the mean availability of all tracer medicines was just 41%, with urban and private facilities having greater availability than rural and public facilities [2]. Due to poor reporting, management, and financing, and limited local manufacturing of commodities (30% of commodity requirements are manufactured locally), Tanzania has faced challenges in improving stock availability. Under the HSSP IV, the supply chain will be strengthened through improved governance and accountability, reductions in pilferage, improved management of Medical Store Department (MSD) working capital, and engagement of the private sector [1].



Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to cost the HSSP IV. The logistics component of the HSSP IV includes the costs borne by the MSD, an autonomous government institution which procures, stores, and distributes medicines and medical supplies on behalf of the Ministry of Health and Social Welfare (MOHSW). Logistics also includes costs of commodity shipping, clearance, quality assurance, and wastage.¹

MSD costs include capital and operating costs for warehouses, vehicles, and workers. Commodity shipping, clearance, and quality assurance are assumed to be 13% of the total commodity costs under HSSP IV, and wastage rates for commodities are 10%, except for vaccines, which have specific wastage rates ranging from 5% to 70%. MSD provided cost assumptions, primarily based on targets and initiatives outlined in its Medium Term Strategic Plan 2014–2020 [3].

Resource Requirements

Logistics requires US\$1,074 million under the HSSP IV. Costs increase from \$188 million to \$246 million from 2015/16 to 2019/20 due to increases in commodity wastage, shipping, clearance, and quality assurance costs (Fig. 2). These costs grow as health services scale up and additional commodities are procured.

MSD costs spike in 2015/16 due to the costs of constructing new warehouses and procuring new vehicles (Fig. 3). MSD requires \$8 million under the HSSP IV to construct new warehouses and \$27 million for warehouse operating costs. Vehicle purchases from 2015/16 to 2019/20 are estimated to cost \$24 million. Vehicle maintenance (\$17 million in total) and fuel (\$20 million) are also significant costs. Worker wages

¹ Wastage costs are the cost of commodities that are procured but not consumed. Commodity wastage can be caused by expiry, pilferage, damage, nonuse or other reasons. A 2012 study in Dar es Salaam estimates that as many as 27 percent of wastages are a result of pilferage [4]. In other country applications of OneHealth, countries assumed commodity wastage rates of 5% (Kenya) and 15% (Mozambique) [5,6].

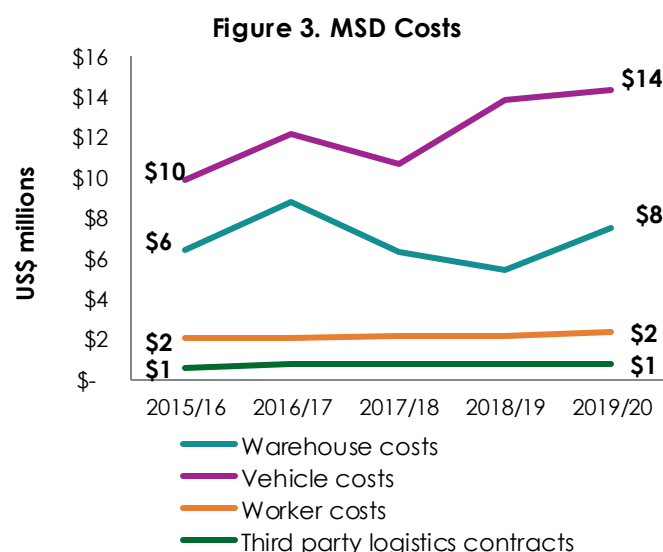
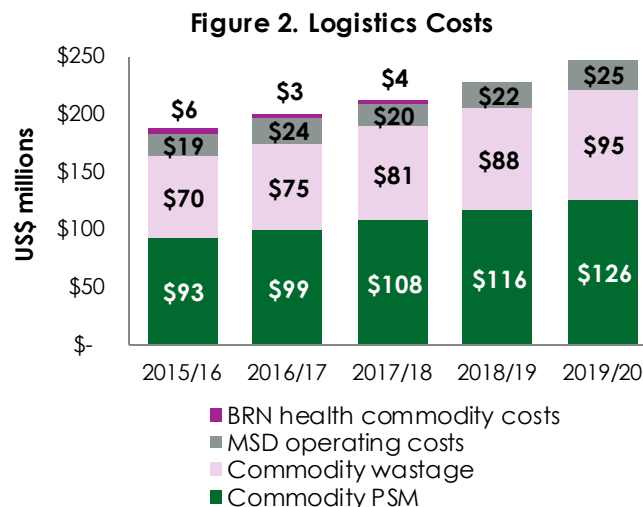
increase slightly due to increases in the number of workers over time and require \$11 million from 2015/16 to 2019/20.

Conclusion

Logistics costs are 10% of the overall HSSP IV resource requirements. MSD’s operating costs, and its working capital not costed under the HSSP IV, are recuperated through service fees charged to the government and vertical programs. MSD faces challenges in declining working capital due to unpaid government debt while the demand for commodity procurement is on the rise under the HSSP IV. As a result, MSD is re-evaluating its current fee structure to optimize income while addressing these challenges. Reducing wastage rates through improved supply chain management is another goal under the HSSP IV and would result in reduced logistics costs.

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Overview

Monitoring and evaluation (M&E) in the health sector is an integral, cross-cutting area under the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV). Tanzania relies on routine health management information system (HMIS), specific information systems, sentinel surveillance, surveys, census and other research to monitor and evaluate the country's health status and the health sector's performance. Tanzania plans to improve data quality, including accuracy, completeness, and timeliness, during HSSP IV implementation. Specifically, the country aims to have 95% of health institutions provide timely and complete data using automated data transfer systems by 2020 [1].

Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to cost the HSSP IV. The health information systems (HIS) component includes the cost of paper-based and electronic M&E systems, along with the costs of information and communication technology (ICT). Assumptions were provided by the Ministry of Health and Social Welfare (MOHSW) and based on the draft M&E Strengthening 5 Year Strategy (2015–2020) [2].

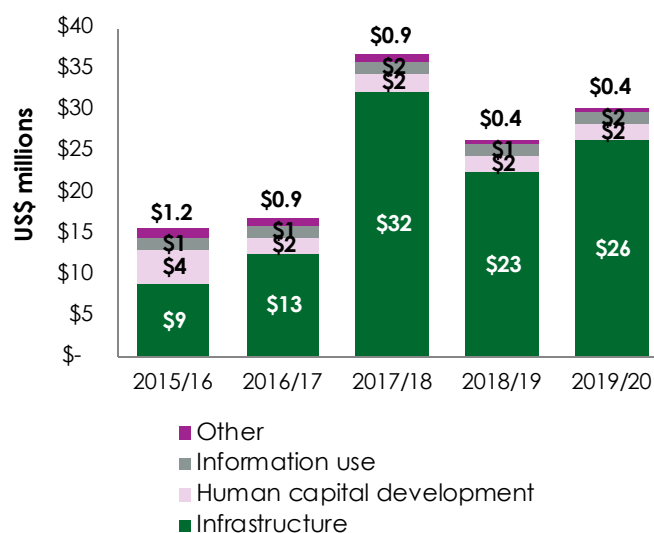
Resource Requirements

HIS requires US\$126 million from 2015/16 to 2019/20, accounting for just 1% of the total HSSP IV resource requirements. Costs generally increase over time from \$16 million to \$30 million from 2015/16 to 2019/20, but peak in 2017/18 due to planned procurement of ICT equipment (Fig. 1). Infrastructure costs are the largest cost driver, representing 82% of HIS costs. Human resources development (totaling \$12 million) is also a significant cost.

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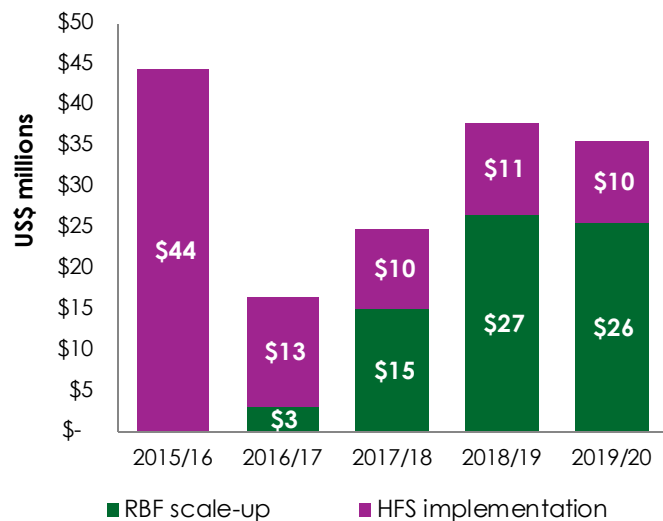
Figure 1. HIS Resource Requirements



Overview

The Ministry of Health and Social Welfare (MOHSW) has developed a new health financing strategy (HFS) toward universal health care coverage. The HFS is aligned with the *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV) and aims for sustainable and efficient funding of the health sector, equitable access to affordable health services, and protection from catastrophic health expenditures. Tanzania plans to introduce a Single National Health Insurer (SNHI) and define a minimum benefit package of services under the HFS and HSSP IV [1,2].

Figure 1. Health Financing Resource Requirements



Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to cost the HSSP IV. The health financing component in OneHealth estimates the cost of health financing activities. This component is not related to the resources available for health (i.e., fiscal space). In Tanzania, this module includes the costs of results-based financing (RBF) initiatives in seven regions and implementing the new HFS. The World Bank provided the cost assumptions for RBF scale-up, and the MOHSW operationalized and provided inputs for the HFS costing.

Resource Requirements

Health financing activities require US\$159 million from 2015/16 to 2019/20, representing 2% of the total costs of the HSSP IV. Costs peak in 2015/16 due to start-up costs of the SNHI, including establishing the SNHI legal and regulatory framework, institutional structure, and roles and responsibilities (Fig. 1). Across the five years of the HSSP IV, the HFS costs \$89 million to implement.

As RBF is scaled up in Tanzania, costs increase from \$3 million in 2016/17 to \$26 million in 2019/20. RBF under the HSSP IV requires approximately \$70 million, of which 46% is for incentive payments. The vast majority (72%) of incentives are for dispensaries and hospitals, while hospital (15% of total incentive costs) and council health management team (CHMT) (13%) incentives require fewer resources. More than half of the RBF costs are for technical assistance/capacity building and health facility readiness assessments (27% each).

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2. MOHSW. 2015. *Draft Health Financing Strategy 2015–2025*. Dar es Salaam: MOHSW.

Overview

Strong governance is critical for *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV) implementation and meeting health sector targets. The HSSP IV, in alignment with the Big Results Now (BRN) initiative, aims to improve leadership, accountability and partnership. Tanzania will continue its Sector Wide Approach (SWAp) to facilitate coordination and collaboration among health sector stakeholders, move to further decentralization of financial and performance management, and increase social accountability activities under the HSSP IV [1].

Cost Assumptions and Targets

The OneHealth Tool, a model for medium- to long-term strategic planning in the health sector, was used by the study team to cost the HSSP IV. The governance component for the HSSP IV estimates health management and support costs at the national, regional, and district levels that have not been captured elsewhere in the tool's application. It also includes BRN governance-related costs, such as the cost of social accountability and facility star-rating assessment activities. The Ministry of Health and Social Welfare (MOHSW) and the Prime Minister's Office-Regional Administration and Local Government (PMO-RALG) provided most cost assumptions.

Resource Requirements

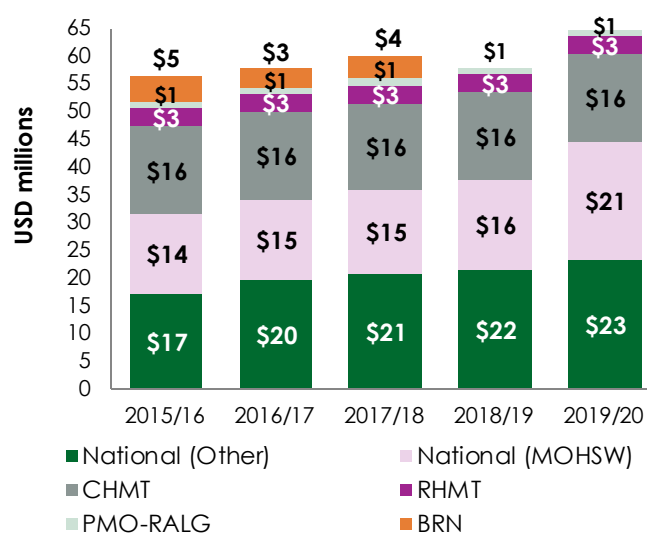
Governance activities under the HSSP IV require US\$297 million, with costs increasing from \$57 million to \$65 million from 2015/16 to 2019/20. Governance accounts for 3% of the total HSSP IV resource requirements.

Most governance costs (62%) are at the national level, and include management and operating costs of the MOHSW, Government Chemist Laboratory, Tanzania Food and Drug Authority, and national-level councils, such as the Tanzania Nursing and Midwifery Council. Council and Regional Health Management Teams (CHMTs and RHMTs) require \$79 million and \$16 million, respectively, across all five years. Management of PMO-RALG health units costs approximately \$6 million from 2015/16 to 2019/20. Lastly, BRN governance-related activities span from 2015/16 to 2017/18 and cost \$12 million.

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1. MOHSW. 2015. *Fourth Health Sector Strategic Plan 2015/16–2019/20*. Dar es Salaam: MOHSW.

Figure 1. Governance Resource Requirements



ANNEX A: SELECT STRATEGIC PLANS

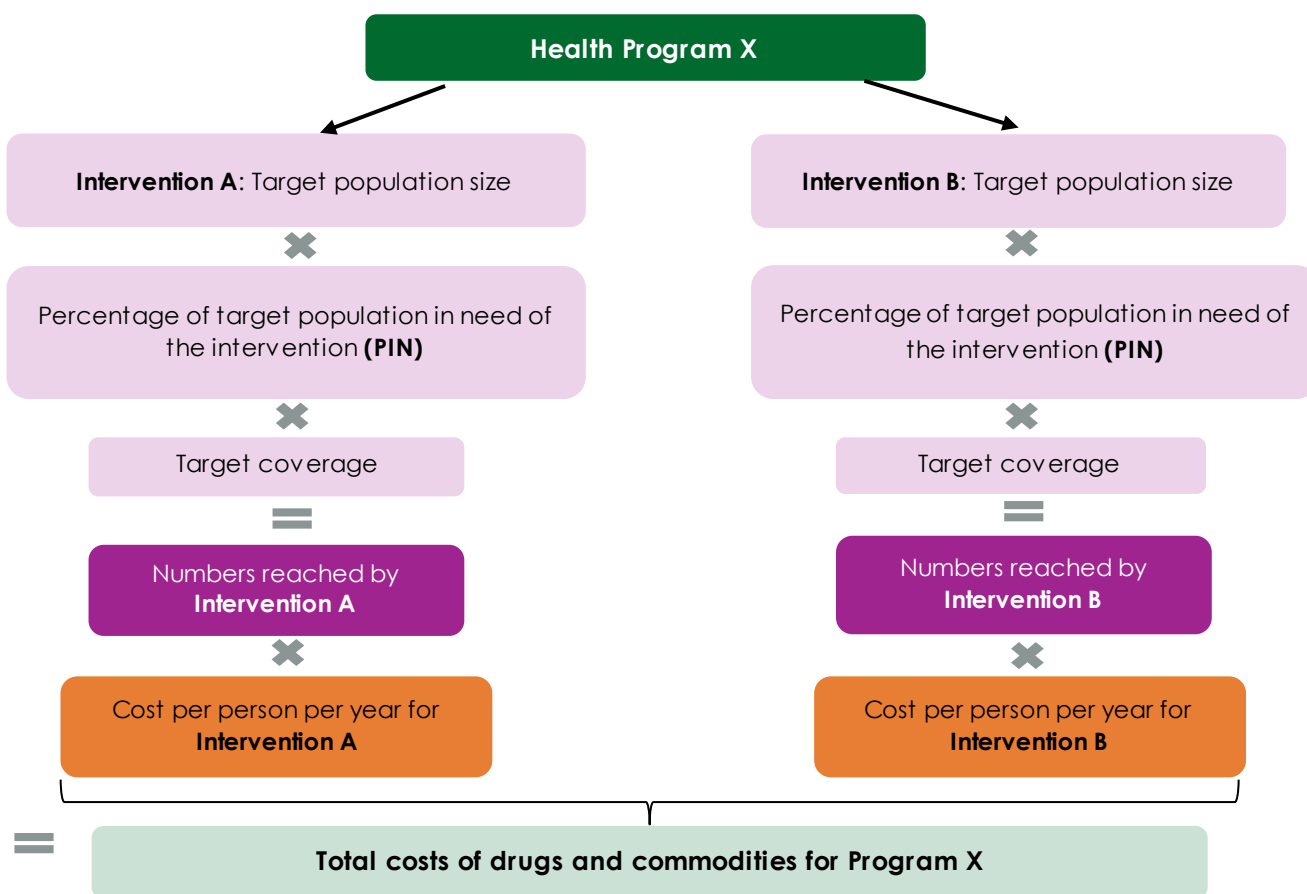
Select strategic documents guiding HSSP IV development

Document Title	Period
Health and social welfare programs	
Health Sector HIV Strategic Plan III (HSHSP III)	2013–2017
Draft VMMC Country Operation Plan	2014–2017
Draft National Road Map Strategic Plan to Improve Reproductive, Maternal, Newborn, Child & Adolescent Health in Tanzania: OnePlan II	2016–2020
Malaria Strategic Plan	2014–2020
Malaria Business Plan	2013/14–2015/16
Draft National TB and Leprosy Strategic Plan V	2015–2020
Strategic Master Plan for the Neglected Tropical Diseases	2012–2017
National Nutrition Strategy	2011–2016
TFNC Strategic Plan	2013–2018
National Eye Care Program Strategic Plan	2011–2016
National Strategy for Non Communicable Diseases	2009–2015
Strategic Oral Health Plan	2012–2017
National Tobacco Control Strategic Plan	2010–2015
National Environmental Health Hygiene and Sanitation Strategy (NEHHSAS)	2007–2015
The Strategic Plan II for the Prevention and Control of Workplace HIV, TB and HBV for Health Workers at Their Workplaces	2013–2017
National Costed Plan of Action for Most Vulnerable Children–II	2013–2017
Support systems	
Human Resource for Health and Social Welfare Strategic Plan	2014–2019
Human Resource for Health and Social Welfare Production Plan	2014–2019
NMP Implementation Strategy 2014	2014–2024
National Pharmaceutical Sector Action Plan 2020	2014–2020
PSAP 2020 Costed Implementation Plan	2014–2017
MSD Medium-Term Strategic Plan	2014–2020
M&E Strengthening 5 Year Strategy—A Tanzanian Platform for Health Information and Accountability	2015–2020
MOHSW PPP Strategic Plan	2010–2015
Draft Health Financing Strategy (HFS)	2015–2025

ANNEX B: HEALTH SERVICES COSTING METHODOLOGY

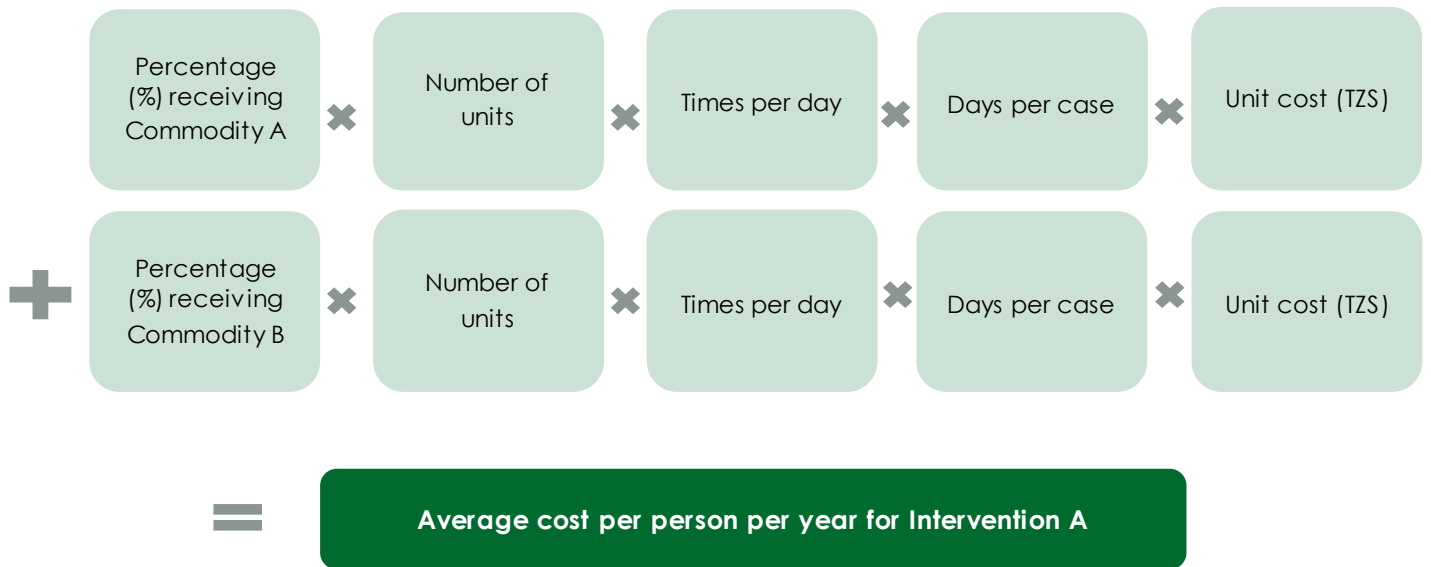
OneHealth approach to costing health programs:

The base or target population is generated from internationally approved demographic and impact modules linked to the OneHealth Tool. The central model, DemProj, projects the population for an entire country disaggregated by age and sex, based on assumptions about fertility, mortality, and migration. The population in need (%) across interventions reflects the epidemiological profile of Tanzania. This input can be interpreted as the prevalence of a condition to be targeted for curative, palliative, or rehabilitative interventions, or an at-risk population to be targeted for promotive or preventive interventions. Coverage (%) is the major policy variable and indicates baseline programmatic coverage of the population in need and targeted scale-up, based on *Fourth Health Sector Strategic Plan 2015/16–2019/20* (HSSP IV) objectives. In certain cases, the health program provided multi-year estimates of the number of persons it would reach with a specific intervention instead of percentage coverage. In these cases, the number of cases per year, per intervention was entered directly.



OneHealth intervention costing

The unit cost per person per year is estimated using an ingredients-based approach. Each commodity or supply used in an intervention has an average unit cost per person based on the percentage of people who receive the commodity, the number of units needed per day, and the number of days the person will need the commodity.



ANNEX C: COSTS BY PROGRAM AND HEALTH SYSTEM COMPONENT

Annual costs by disease program and health system component, 2014 US\$ millions

	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020
Health Programs					
HIV/AIDS	\$292	\$290	\$288	\$305	\$312
NCDs and mental health	\$164	\$201	\$242	\$283	\$326
RMNCAH	\$107	\$124	\$132	\$146	\$143
Malaria	\$125	\$91	\$90	\$90	\$89
Oral care	\$65	\$71	\$76	\$83	\$91
General health services	\$63	\$64	\$65	\$66	\$67
Immunizations and vaccines	\$61	\$58	\$56	\$51	\$47
Tuberculosis and leprosy	\$45	\$46	\$40	\$39	\$40
Environmental health	\$24	\$21	\$24	\$21	\$21
Orthopaedic and trauma services	\$19	\$20	\$20	\$21	\$21
Neglected tropical diseases	\$13	\$12	\$10	\$9	\$10
Department of Social Welfare	\$7	\$7	\$8	\$10	\$11
Ophthalmology	\$3	\$2	\$2	\$2	\$2
Nutrition	\$2	\$2	\$2	\$3	\$3
Health promotion	\$2	\$2	\$2	\$1	\$1
Alternative and traditional medicine	\$0.6	\$0.2	\$0.2	\$0.1	\$0.1
Subtotal	\$994	\$1,010	\$1,057	\$1,129	\$1,182
Health System Components					
Human resources	\$358	\$391	\$426	\$459	\$500
Infrastructure	\$286	\$295	\$278	\$265	\$273
Logistics	\$188	\$201	\$213	\$227	\$246
Governance	\$57	\$58	\$60	\$58	\$65
Health financing	\$44	\$17	\$25	\$38	\$36
Health information systems	\$16	\$17	\$37	\$26	\$30
Subtotal	\$948	\$978	\$1,038	\$1,073	\$1,151
Grand Total	\$1,942	\$1,988	\$2,095	\$2,202	\$2,333

ANNEX D: FISCAL SPACE ANALYSIS

Generally, there are no publicly available future commitment values from development partners in Tanzania. Data are entered into the aid management portal (<http://amp.mof.go.tz/>) when available. However, these data were not made available for this fiscal space exercise, so figures were sourced where possible directly from development partners or appropriate assumptions were made in concert with MOHSW. All values were converted into constant FY 2014 Tanzanian shillings using appropriate deflators prior to comparison with HSSP IV costs. However, all tables below display current Tanzanian shillings.

On-budget, non-basket funding sources, current TZS billions (values before adjustment for inflation)

Sources	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Global Fund	206.9	450	588	558	530	504	479
UNICEF	11.3	11	11	11	11	11	11
World Bank	17.3	17.3	53	104	104	104	111
Others	18.1	18	18	18	18	18	18
UNDP	12.0	12	12	12	12	12	12
Total	266	509	682	703	676	649	631

Notes: Where possible, data were sourced from recent commitments or from values provided by development partners. World Bank values are mixed, comprising grant (GFF related trust fund grants) and IDA concessional loan. For the Global Fund, values after 2017/18 are assumed, and based on 5% decline p.a.

External resources off-budget, current TZS billions (values before adjustment for inflation)

Sources	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
USAID	602	602	594	564	536	509	484
GIZ	10	10	10	10	10	10	10
DANIDA	56	56	56	56	56	56	56
CDC	62	62	62	59	56	54	51
DFID	43	55	38	34	6	6	6
SDC	7	7	7	7	7	7	7
DOD	71	71	71	67	64	60	57
Canada	119	119	119	95	76	61	49
IrishAid	4	6	6	6	6	6	6
UN agencies	20	20	20	20	20	20	20
Total	994	1,008	983	918	837	789	746

Notes: Where possible, data were sourced from recent commitments or from values provided by development partners. Values were kept constant due to a lack of data for GIZ, SDC, and UN Agencies. DFID values were as provided by the agency and kept flat for 2019–21. For Canada, some of the planned resources are included in the GFF trust fund managed by the World Bank. The remaining bilateral funds from Canada were assumed to decline 20% p.a. from 2017/18. USAID resources were assumed to decline 5% p.a. from 2017/18.

Innovative financing sources, current TZS billions (values before adjustment for inflation)

Allocation to health from	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Surplus of public corp.	-	129	138	146	156	166
Airtime taxes	-	100	106	113	120	128
Alcohol and tobacco taxes	-	260	276	294	313	333
AIDS Trust Fund	3	100	300	300	300	300
Total	3	589	820	853	889	926

Notes: These values are based on detailed analysis of actual tax or revenue collections for all but the AIDS Trust Fund. Proportional allocations from these sources to the health sector were based on discussions with MOHSW and feedback from stakeholders. MOF stakeholders were also present in these discussions. For the 20% allocation from the surplus of public corporations to health, analysis of FY 2013/14 values suggests that versus the estimated nominal GDP for that year, a level of 0.126% of GDP is appropriate going forward, which assumes that revenues will rise proportionately with GDP. Similarly, for the 17% allocation from mobile communication/airtime taxes to health, a value of 0.1% of GDP per year was estimated; and the same value for the 33% allocation from alcohol and tobacco taxes was 0.253% of GDP. The AIDS Trust Fund values are based on discussion with TACAIDS and are speculative.

Government of Tanzania and the Health Basket Fund, current TZS billions (values before adjustment for inflation)

Sources	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
GOT domestic resources	942	966	989	1,017	1,048	1,085	1,127
Health Basket Fund	109	47	45	42	40	38	36

Notes: GOT sources are an aggregation of allocation to recurrent and development spending across MOHSW, PMO-RALG, regions, and local government authorities (LGAs). This included LGA own-source revenues, which were estimated based on recent actuals and an increasing allocation to health was projected. Overall, for non-LGA sources, an increase of 2% p.a. was estimated from FY 2015/16. For the Health Basket Fund, these were the assumed values available as of May 2015, and prior to recent discussions on base vs. performance tranches of the basket fund. For the basket, values up to 2014/15 were based on available data, and from FY 2015/16, in the absence of details in May 2015 for the renewed commitment; an assumption was based on a 5% projected annual decline per year.

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