



The Republic of Uganda
Ministry of Health

**10-Year Roadmap for
Government of Uganda's Health
Supply Chain Self-Reliance
2021/2022 – 2031/2032**

**10-Year Roadmap for Government of Uganda's Health Supply Chain Self-Reliance
2021/2022 – 2031/2032**

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LIST OF ACRONYMS

ACODE	Advocates Coalition for Development and Environment
AHPC	Allied Health Professionals Council
AMR	Antimicrobial Resistance
ART	Antiretroviral Therapy
ARV	Antiretroviral
BUBU	Buy Uganda Build Uganda Initiative
CAO	Chief Administrative Officer
CPD	Continuing Professional Development
DADIs	District Assistant Drug Inspectors
DHO	District Health Officer
DHT	District Health Team
DMMS	District Medicines Management Supervisors
DPNM	Department of Pharmaceuticals and Natural Medicines
DSC	District Services Commission
eLMIS	Electronic Logistics Management Information System
EMHS	Essential Medicines and Health Supplies
EMRs	Electronic Medical Records
ERP	Enterprise Resource Planning System
eSPARS	Electronic Supervision Performance Assessment and Recognition Strategy
FY	Fiscal Year
GDP	Gross Domestic Product
GoU	Government of Uganda
HC	Health Centre
HCWM	Health Care Waste Management
HLMA	Health Labour Market Analysis
HMIS	Health Management Information System
HR	Human Resources
HRH	Human Resources for Health
HSC	Health Supply Chain
HSCEA	Health Supply Chain Digital Health Enterprise Architecture
HSDP-III	Health Sector Development Plan 2020/2021 – 2024/2025
ICT	Information, Communication, and Technology
IFMS	Integrated Financial Management System
IMSC	Inter-Ministerial Task Force Sub-Committee
IMTF	Inter-Ministerial Task Force
IPPS	Integrated Personnel and Payroll System
IT	Information Technology
JMS	Joint Medical Store
LAN	Local Area Networks
LG	Local Government
LMIS	Logistics Management Information System
M&E	Monitoring and Evaluation
MDAs	Ministries, Departments, Agencies
MoES	Ministry of Education and Sport
MoFPED	Ministry of Finance, Planning and Economic Development

MoH	Ministry of Health
MoICT	Ministry of Information Communication and Technology
MojCA	Ministry of Justice and Constitutional Affairs
MoLG	Ministry of Local Government
MoPS	Ministry of Public Service
MoTIC	Ministry of Trade, Industry and Cooperatives
MoU	Memorandum of Understanding
MSH	Management Sciences for Health
MTCs	Medicines and Therapeutics Committees
NCDC	National Curriculum Development Centre
NCHE	National Council for Higher Education
NDA	National Drug Authority
NDP-III	Third National Development Plan 2020/2021 – 2024/2025
NDQCL	National Drug Quality Control Laboratory
NEMA	National Environment Management Authority
NHIS	National Health Insurance Scheme
NITA-U	National Information Technology Authority – Uganda
NMP	National Medicines Policy 2020 – 2030
NMS	National Medical Stores
NPA	National Planning Authority
NPSSP	National Pharmaceutical Services Strategic Plan 2020/21 – 2024/2025
NRHs	National Referral Hospitals
OOP	Out-Of-Pocket
PFP	Private For-Profit
PHC	Primary Health Care
PHE	Public Health Emergency
PHP	Private Health Care Provider
PIP	Pharmaceutical Information Portal
PMS	Post-Marketing Surveillance
PNFP	Private Not-For-Profit
PPDA	Public Procurement and Disposal of Public Assets Authority
PPP	Public Private Partnership
PPP-H	Public-Private Partnership In Health
PSFU	Private Sector Foundation Uganda
PSU	Pharmaceutical Society of Uganda
QA	Quality Assurance
RRHs	Regional Referral Hospitals
SCM	Supply Chain Management
SO	Strategic Objective
SOPs	Standard Operating Procedures
SPARS	Supervision, Assessment and Recognition Scheme
SSCS	Strengthening Supply Chain Systems
TCMP	Traditional and Complementary Medicine Practitioners
TWG	Technical Working Group
UAV	Unmanned Aerial Vehicle
UCI	Uganda Cancer Institute
UCMB	Uganda Catholic Medical Bureau

UGX	Uganda Shilling
UHC	Universal Health Coverage
UHCF	Uganda Healthcare Federation
UHF	Uganda Healthcare Federation
UHI	Uganda Heart Institute
UIA	Uganda Investment Authority
UNBS	Uganda National Bureau Of Standards
UNCDA	Uganda Non-Communicable Disease Alliance
UPMB	Uganda Protestant Medical Bureau
UPOA	Uganda Pharmacy Owners' Association
USAID	US Agency for International Development
USD	US Dollar
WHO	World Health Organization

FOREWORD

It gives me great pleasure to present to you the first of its kind, Government of Uganda's (GoU) 10-Year Health Supply Chain Roadmap for the period 2021/22 to 2031/32. Broadly, the Roadmap seeks to strengthen the capacity of the Government of Uganda's ministries, departments, and agencies (MDAs) to plan, finance, and effectively manage the national health commodities supply chain priority areas independent of donor support. This is in line with Government of Uganda's Vision 2040 and 3rd National Development Plan that both seek to make Uganda more self-reliant as the country progresses to a middle-income status.

The Roadmap articulates a plan, process, and transition as an exit strategy from donor reliance evidenced by the fact that more than 70% of public sector funding for essential medicines and health supplies in Uganda is from donors. The Roadmap presents the short, medium- and long-term investment needs of Uganda's national health supply chain system over the next 10 years with the aim of ensuring sustainability of development outcomes of the health supply chain.

Aligned with the goal and objectives of the National Health Policy III (2021) and National Pharmaceutical Services Strategic Plan (2020/2021 – 2024/2025), the eight core thematic areas of the Roadmap include (1) health commodities supply chain management; (2) human resources for health supply chain; (3) health commodities infrastructure, warehousing, storage, and distribution; (4) health commodities quality and waste management; (5) health supply chain information systems; (6) public-private partnerships for health supply chain; (7) resource mobilization and financing of the health supply chain; (8) health supply chain policy and governance.

The development of this 10-year health supply chain Roadmap demonstrated commitment of all GoU MDAs to contributing to the resolution of lifesaving challenges created by a nonresponsive health supply chain to the population of Uganda. Coordinated by the Office of the Prime Minister under a 'One government approach', the MDAs involved include: Ministry of Health, Ministry of Finance, Planning and Economic Development, Ministry of Local Government, Ministry of Information and Communications Technology and National Guidance, Ministry of Energy and Mineral Development, Ministry of Public Service, National Medical Stores, National Drug Authority, National Planning Authority, and the National Information Technology Authority-Uganda, together with a number of development partners (US Agency for International Development [USAID], US Centers for Disease Control and Prevention, UNICEF, United Nations Population Fund, United Nations Refugee Agency, Global Fund to Fight AIDS, Malaria and Tuberculosis, etc).

The developers of the Roadmap propose and remain committed to follow through its implementation under the One government multispectral collaboration, leadership, and ownership, with each MDA taking specific roles and responsibilities in the Roadmap implementation using resources appropriated by GoU and with support from development partners, albeit in a decreasing manner. The Roadmap envisages that the GoU will enhance its domestic resource mobilization as well as streamline private sector participation and financing as donor input reduces over the 10-year period. In this spirit, private sector and civil society organizations are equally key in the implementation of this Roadmap.

My profound appreciation goes to the National Health Commodities Supply Chain Inter-Ministerial Task Force and its sub-committee for leading the development process of this Roadmap. The invaluable efforts of the staff that represented various institutions in the Task Force and its sub-committee are very much appreciated. Special thanks go to the USAID Mission Uganda for the financial support rendered to the development of this Roadmap through the USAID/Uganda Strengthening Supply Chain Systems (SSCS) Activity which is implemented jointly by Management Sciences for Health

(MSH), Advocates Coalition for Development and Environment (ACODE) and Uganda Healthcare Federation (UHF). The USAID/SSCS Activity is appreciated for the day-to-day technical support rendered to the process of developing the Roadmap, while the Ministry of Health Department of Pharmaceuticals and Natural Medicines are appreciated for providing overall guidance and oversight to the process.

I call upon my colleagues, Hon. Ministers from the other sectors under the coordination of the Office of the Prime Minister, to continue to support the implementation of this great Roadmap as demonstrated during the development process. I will be extremely grateful to the Office of the Prime Minister for strong leadership and effective coordination of all the key and relevant MDAs in the implementation of this Roadmap.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jane Ruth Aceng Ocero', written in a cursive style.

HON. DR. JANE RUTH ACENG OCERO

Minister of Health

Republic of Uganda

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Mr. Samuel Wasike, CDC Uganda
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Generally, I would like to recognize and appreciate all the individuals and institutions that contributed to the process of developing the Uganda's 10-Year Health Supply Chain Roadmap in one way or another. I look forward to working with you all during the implementation of the roadmap.

Sincerely,



DR. DIANA ATWINE

Permanent Secretary

Ministry of Health

Republic of Uganda

EXECUTIVE SUMMARY

Background

The Government of Uganda (GoU) has demonstrated significant progress in reversing multiple identified health sector challenges and meeting several targets over the last two decades. The country has embraced universal health coverage (UHC) and made steady strides in ensuring that it is achieved for the entire population. Among the critical UHC elements, a strong and robust supply chain system is an essential component. Since 2001, government allocation to essential medicines, priority health products, related commodities, as well as health equipment has been on an upward trajectory with GoU meeting the bulk of funding for essential medicines and health supplies (EMHS) through National Medical Stores (NMS) and through direct subventions to Joint Medical Store (JMS) to serve the private not-for-profit (PNFP) health sector. On the other hand, partners have mainly supported programme products (HIV, malaria, TB, nutrition, and reproductive, new-born, child, and adolescent health) with comparatively much lower inputs from the government. As part of economic development needs and meeting commitments, this 10-Year Roadmap for Government of Uganda Health Supply Chain 2021/2022–2031/2032 has been developed to guide the incremental ownership, stewardship, and financing of the health supply chain (HSC) and commodities by the GoU.

Rationale

The GoU is committed to attaining the highest standard of health as evidenced in its robust policy, regulatory, planning, and budgeting frameworks, namely the Uganda Vision 2040, and the Third National Development Plan 2020/21-2024/25 (NDP-III). The GoU leadership and ownership Roadmap sets the pace for Ugandan capacity to plan, facilitate, and effectively manage the national priority areas independent of donor support as the country moves to middle-income status. Uganda's health sector is currently preoccupied with health financing transition planning and efficiency/optimisation processes. Programme commodities/supplies and laboratory reagents and supplies are heavily dependent on external financing. Increasingly, partners have indicated their desire to reduce funding, or in some instances, stop financing certain areas. It is therefore critical that GoU works through a transition plan to increasingly take on the financing of the HSC and commodities over time. The 10-year Roadmap articulates the strategic plan, process, and transition as an exit strategy from donor reliance. The Roadmap lays out preparatory processes for the GoU to become self-reliant and eventually assume ownership of all aspects of planning, financing, and management of the supply chain aligned with existing national strategic plans. Developed through a collaborative process, this Roadmap was drawn under the guidance of the inter-ministerial task force (IMTF) on the health supply chain consisting of the Ministry of Finance, Planning and Economic Development (MoFPED) as chair; Ministry of Public Service (MoPS); Ministry of Health (MoH); Ministry of Local Government (MoLG); Office of the Prime Minister as overall coordinator; and the GoU semi-autonomous agencies, namely National Planning Authority (NPA), National Drug Authority (NDA), NMS, and Pharmaceutical Society of Uganda (PSU), plus United Nations agencies and others.

Purpose and Objectives of the Roadmap

This Roadmap is an implementation document meant to augment already-existing national strategic plans and related documents. The objectives of the 10-year supply chain Roadmap are to:

- (i) Establish a transition plan and adopt goals geared towards the strengthened GoU leadership, ownership, and sustainability of a fully functional national HSC system.
- (ii) Articulate a national supply chain financing plan that would leverage innovative domestic resource mobilisation and optimisation methods to ensure adequate supply.
- (iii) Enhance an enabling environment through policy, regulatory framework, and structured change management methods to strengthen active leadership and ownership of the national HSC system.
- (iv) Strengthen private sector integration and participation in the national HSC system.

Proposed Strategic Interventions

The strategic objectives (SOs)/interventions under each of eight identified technical areas are:

Health Commodities Supply Chain Management

- (i) SO1: Guarantee that the health commodities, technologies, and relevant supplies selected, quantified, and used to deliver UHC are aligned and responsive to the priority needs of the country.
- (ii) SO2: Strengthen and harmonise the national and sub-national quantification and procurement planning processes to ensure that health commodities, technologies, and supplies are provided cost-effectively and efficiently.
- (iii) SO3: Strengthen and implement comprehensive rational health commodities use programmes at national and health facility levels.
- (iv) SO4: Strengthen supervision of health facilities to improve the availability of quality data for decision-making, quantification, and capacity strengthening.

Health Supply Chain Information Systems

- (i) SO1: Strengthen routine data collection, reporting, and information used in decision-making from point of collection through to national level to support performance monitoring, traceability, visibility, and accountability.
- (ii) SO2: Prioritise the digitalisation of health supply chain processes and integration at all levels to achieve end-to-end visibility of HSC data.
- (iii) SO3: Adopt the use of GSI global standard to enhance traceability in the HSC.
- (iv) SO4: Strengthen governance and leadership over health supply chain information system management.

Human Resources for HSC

- (i) SO1: Enhance HSC workforce performance, productivity, and accountability for efficient resource use at all levels.
- (ii) SO2: Undertake targeted recruitment and retain optimal HSC workforce.
- (iii) SO3: Strengthen HSC workforce training and capacity building.

Infrastructure, Warehousing, Storage, and Distribution

- (i) SO1: Strengthen national warehouse capacity and coordination mechanisms to meet the desired performance standards and needs of the country.

- (ii) SO2: Rationalise and strengthen the district-level storage and infrastructure including energy needs to be better placed to support expanded district supply chain needs.
- (iii) SO3: Align and strengthen the storage, handling, and inventory control practices at health facility level.
- (iv) SO4: Ensure essential health products and technologies are sourced in a cost-effective and efficient manner.

Quality Assurance, Pharmacovigilance and Waste Management

- (i) SO1: Enhance the national pharmacovigilance framework and implementation mechanism to effectively collect quality data about adverse effects or any other health product-related issues and to appropriately act on it to improve patient safety.
- (ii) SO2: Transform the EMHS post-marketing surveillance (PMS), registration, regulatory inspection, and quality testing to align emerging challenges, changing landscape, and strategic shifts locally and globally.
- (iii) SO3: Address the legal and regulatory loopholes for effective quality assurance (QA) and health care waste (HCW) management in the country.
- (iv) SO4: Enhance the existing health care waste management systems, policies, and practices to be able to manage HCW sustainably.

Public-Private Partnerships

- (i) SO1: Strengthen the engagement of the private sector in HSC based on their expertise and interests.
- (ii) SO2: Continuously review HSC partnerships' legal and policy frameworks.
- (iii) SO3: Continuously build the capacities of the private sector players in HSC.
- (iv) SO4: Strengthen regular reporting of HSC private players' activities into the mainstream health management information system (HMIS) for evidence.

HSC Financing and Resources Mobilisation

- (i) SO1: Increase funding for EMHS amid reducing donor funding and reduce catastrophic out-of-pocket (OOP) expenditure.
- (ii) SO2: Enhance efficiency and equity in the utilisation of available resources for EMHS.

Health Supply Chain Policy and Governance

- (i) SO1: Strengthen the HSC leadership, standards, policies, and regulations.
- (ii) SO2: Strengthen coordination among actors: weak coordination of the HSC actors and actions is a critical challenge.
- (iii) SO3: Strengthen accountability at different levels of the HSC.

Cost Implications of the Roadmap

The estimated cost of implementing this 10-year Roadmap is USD 44,809,000 (UGX 160,230,000,000). This cost excludes the health commodities required for services delivery. Overall, a total investment of US\$ 7.85 billion inclusive of health commodities is expected over the 10-year period.

I INTRODUCTION

I.1 THE UGANDAN CONTEXT OF HEALTH AND DEVELOPMENT

Health care forms an integral and important part of sustainable human development in Uganda and is a central pillar in the UN Sustainable Development Goals—Goal 3 on health and wellbeing. Sustainable health care requires a delicate balance of investments in the inputs, processes, and outcomes with particular focus on equity, efficiency, and effectiveness. Goal 3 outlines 10 targets among which are: the reduction of maternal mortality (3.1), reduction of child mortality (3.2), reduction of mortality from non-communicable diseases (3.4) and achieve UHC and access to essential medicines and vaccines (3.8)¹. The commonality between the targets is that they are directly hinged on the pharmaceutical sub-programme of any health system, given their involvement in both prevention and curative care².

Uganda has made significant progress in achieving UHC by ensuring progressive health care access, financing, and utilisation of health services for its entire population. The country has realised significant progress towards global objectives such as 95-95-95, which relates to people living with HIV who know their status and HIV patients under antiretroviral therapy (ART)³. Advances are also evident in the falling rates of malnutrition and infant, under-five, and maternal mortality⁴. An estimated 90.7% of the population can access a health facility within 5 KM, a rise from 83% in 2014 and 86% in 2017, showing improved accessibility of health services⁵. ART coverage for both adults and children has significantly improved by 23 percentage points between 2010 and 2020, and health facility deliveries have also significantly improved by 20% over the same period⁶. By June 2018, at least 86% of children under one year were fully immunised as per the national immunisation schedule demonstrating the positive trend in immunisation across the country⁷. Consequently, the life expectancy at birth has been increasing and stands at an average of 63 years⁸. Uganda's gross domestic product (GDP) annual growth rate has also steadily averaged at 6% between 2015 and 2020⁹. In 2019, Uganda's GDP per capita was USD 747.5 placing the country in the low-income country status, with 21.4% of the population living below the poverty line in 2019¹⁰. The GoU projects the country to gain middle-income status by 2025. As part of economic development needs and meeting commitments, this 10-year Roadmap for GoU HSC local capacity development (2021/2022 – 2031/2032) has been developed to guide the enhancement of planning, leadership, and stewardship, as well as financing of the HSC by the GoU.

¹ The United Nations (UN) Department of Economic and Social Affairs Sustainable Development, 2015; The 2030 Agenda for Sustainable Development, available from <https://sdgs.un.org/goals>

² Steeb, S.R., Ramaswamy, R. (2020). Recognizing and engaging pharmacists in global public health in limited resource settings. *Journal of Global Health* (ISSN 2047-2986), Edinburgh University Global Health Society

³ The Global Fund Office of the Inspector General third audit of Uganda (September 26, 2019). Available from https://www.theglobalfund.org/media/8804/oig_gf-oig-19-017_report_en.pdf

⁴ Uganda Bureau of Statistics (UBOS) and ICF. 2018. Uganda Demographic and Health Survey 2016. Kampala, Uganda and Rockville, Maryland, USA: UBOS and ICF Accessed September 24, 2021, from <https://www.ubos.org/uganda-national-survey-report-2019-2020-released/>

⁵ Ibid, page 161

⁶ MoH, 2020; Ministry of Health Strategic Plan 2020/21 – 2024/25. Page 44. Accessed on October 20, 2021, from: <http://library.health.go.ug/publications/work-plans/ministry-health-strategic-plan-202021-202425>

⁷ Ibid, page 64

⁸ UN Population Division. World Population Prospects: 2019 Revision: Life expectancy at birth, total (years) – Uganda. Accessed on August 29, 2021, from <https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=UG>

⁹ Uganda Economic Outlook 2020. Accessed on August 29, 2021 from <https://www.afdb.org/en/countries/east-africa/uganda/uganda-economic-outlook>

¹⁰ United Nations Populations Fund (UNFPA) and National Populations Council, November 2020; 2020 State of Uganda Population Report (SUPRE 2020). Accessed on August 29, 2021, from: <http://npcsec.go.ug/wp-content/uploads/2013/06/SUPRE-2020.pdf>

I.2 RATIONALE

The GoU underscores its commitment to the highest attainable standard of health and better health outcomes for the population by strengthening the HSC system. This is evidenced in the existing robust policy, regulatory, planning, and budgeting frameworks, namely the Uganda Vision 2040, and the NDP-III. The GoU leadership and ownership agenda sets the pace for Uganda's capacity to plan, facilitate, and effectively manage the national priority areas independent of donor support. The goal is to accelerate progress towards GoU's Vision 2040, which seeks to make Uganda more self-reliant and progress to a middle-income country.

Consistent with the above, Uganda's health sector is currently preoccupied with health financing transition planning and efficiency/optimisation processes. Among other things, this includes designing domestic resource mobilisation strategies. Despite impressive advances that have been made which need to be fortified, sustained, and scaled up, there remains serious weaknesses in the health sector in general and health supply chain specifically. Addressing these weaknesses involve identifying innovative and sustainable approaches to finance EMHS, promote resource use efficiencies, and advocate for increased supply chain resources. Developing the 10-year supply chain Roadmap is part of this broader health financing transition planning process.

The 10-year Roadmap for GoU supply chain local capacity development articulates the strategic plan, process, and transition as an exit strategy from dominant donor reliance. The Roadmap lays out Government's preparatory processes **to increase local capacity and ensure sustainability of development outcomes** and eventually assume ownership of all aspects of planning, financing, and management of the supply chain. Through this Roadmap, the GoU strategically prepares to undertake interventions that bring the country closer to its vision of self-reliance. Critical to this Roadmap is the embedded comprehensive capacity-building plan for the supply chain entities at multiple levels that need a mix of technical, financial, and managerial skills to be operational. The Roadmap is aligned with the National Medicines Policy 2015 (NMP), National Pharmaceutical Services Strategic Plan IV 2020/21 – 2024/2025 (NPSSP), NDP-III, and other sector strategic documents and frameworks to ensure harmonisation, prioritisation, optimisation, planning, and a phased approach to GoU leadership and ownership.

I.3 OBJECTIVES OF THE ROADMAP

This Roadmap is an implementation document meant to augment already existing national strategic plans and related documents. The objectives of the 10-year supply chain Roadmap are to:

- (i) Establish a transition plan and adopt goals geared towards strengthened GoU leadership, ownership, and sustainability of a fully functional national HSC system.
- (ii) Articulate a national supply chain financing plan that would leverage innovative domestic resource mobilisation and optimisation methods to ensure adequate supply.
- (iii) Enhance an enabling environment through policy, regulatory framework, and structured change management methods to strengthen active leadership and ownership of the national HSC system.
- (iv) Strengthen private sector integration and participation in the national HSC system.

I.4 ORGANISATION OF THE 10-YEAR ROADMAP DOCUMENT

This Roadmap is organised in three major sections: Section I constitutes the background (introduction, HSC situational analysis, and processes/methodology); Section II, the mainstay of the Roadmap; and

Section III, which considers financial implications and implementation arrangements. The contents of chapters under Section II are:

Health Commodities Supply Chain Management (SCM): This chapter looks at the sum processes required to ensure that the health commodities SCM has the desired level of visibility, efficiency (technical and allocative), integration, optimisation, and performance. The efforts to rationalise the Uganda supply chain in 2012 has set the foundation for whole-system approach in ensuring better capacitation as well as reduction in wastage through effective use of available health products through better forecasting, need for application of tools to inform decision, and better coordination of warehouses and donors.

Health Supply Chain Information Systems: Health care supply chain management systems are available as two components, software and hardware. It is important to now focus the efforts of health supply chain into strengthening the components of business intelligence, availability of quality data for decision-making, digitalisation, and enhanced capacity to drive all key functions. The Roadmap will focus on better systems for a better health supply chain, while applying the integrated approach of one government at all levels.

Human Resources (HR) for HSC: This chapter looks at the aspects of HR by building on work already done at country level. It analyses the need for a competent, recognised, and supported workforce with significant technical and managerial capacity as a key driver of strong supply chains. Emphasis will be made on how to transition donor supported HR, competency modelling, workforce development, local professionalisation activities and to increase the numbers and mix to achieve impact over the 10-year transitional period.

Infrastructure, Warehousing, Storage, and Distribution: The infrastructure for HSC consists of the physical structures and support inputs to ensure that the products are warehoused, stored, and distributed up to the last mile under ambient conditions. Efforts have been made to ensure that all levels have adequate capacity and capabilities to handle products without compromising quality. This chapter will look at the country needs for infrastructure, warehousing, storage, and distribution and the processes of how government can sustainably own, resource, and maintain the processes by 2032.

Health Product Quality, Pharmacovigilance, and Waste Management: Effective regulation of health products aims to enhance access to and protect end users from risks and to ensure that all medicines marketed NDA's supervision are safe, effective, and of high quality. The NDA is mandated to take responsibility for this area as well as for pharmacovigilance and health care waste management guidance. In this Roadmap, this chapter looks at how GoU intends to maximise existing capacities and capabilities at all levels to strengthen, mainstream, and increase performance in this area.

Public-Private Partnerships: A significant proportion of health services continues to be delivered through private health care providers (PHPs). In addition, private sector philanthropies and financing for the health sector have demonstrated a large potential that has remained untapped over the years. With the rapid growth of the private sector, there is need for an enhanced partnership between the GoU and the private sector including civil society, businesses, and others to improve access to health products and technologies. The private sector will play an important role in supporting strategic national investments through public-private partnerships (PPPs) and expanding access to high-quality health services.

HSC Resource Mobilisation and Financing: Currently a big proportion of all financing for the HSC (products and enablers) are donor driven. While it may not be possible to immediately get government to take over, it is planned that in the short term, focus is paid to optimising available resources, maximising the whole resource value chain, and identifying efficiency gains. In the long term, it is expected that there will be a careful and gradual shift in financing of the HSC to government through revenue optimisation and innovative financing approaches. The Roadmap proposes that the donor–GoU point of financing equilibrium will be attained in fiscal year (FY)2026/2027, if GoU invests an additional UGX 100B funding in the HSC on a year-on-year basis starting with FY 2021/2022. At this financing rate, by the end of this Roadmap in 2030, GoU HSC financing should be at about 57.6% (estimated at USD 453.9M) and donor financing at 41.1% (estimated at US\$324.2M) for health commodities. At this point, there will remain a projected commodities financing gap of US\$ 253.1M (24.3%) that will require innovative efforts including the private sector to address.

HSC Policy and Governance: This chapter recognises that without strong leaders, robust systems of governance, accountability, and a proper regulatory environment, the desired improvements will not have their intended effect. It is therefore critical that a whole systems approach in promoting the policies, resources, and education needed for improved national supply chain management is looked at from the broader perspective. This chapter lays out the approach to foster civic participation, improve national policies and stakeholder coordination, and promote data-driven planning and decision-making at national and sub-national (local government [LG]) levels.

2 HEALTH SUPPLY CHAIN SITUATIONAL ANALYSIS

2.1 OVERVIEW

Uganda's health sector has experienced tremendous progress towards ensuring access to affordable and good quality medicines for Ugandans. The average availability of a basket of EMHS was 84%, with 41% of health facilities having over 95% availability¹¹. Between financial years 2015/2016 and 2019/2020, the GoU contribution to the purchase of essential medicines and health supplies through NMS increased from UGX 218.3B to UGX 362.7B¹². Even with improvement in Uganda's Health care Access and Quality Index scores since 1990, however, the annualised rate of improvement has slowed down significantly.

Health care supply chain management is the regulation of the flow of medical goods and services from manufacturer to patient or point of final use. It therefore consists of functions, processes, actions, and coordination required to move products without affecting their integrity, efficacy, or other quality attributes¹³. Effective health care SCM requires reliability of information on demand, coordination of all actors, clear standards, and well-equipped systems to ensure adequate human capital and financing. Figure 1 below provides an illustration of the full HSC system.

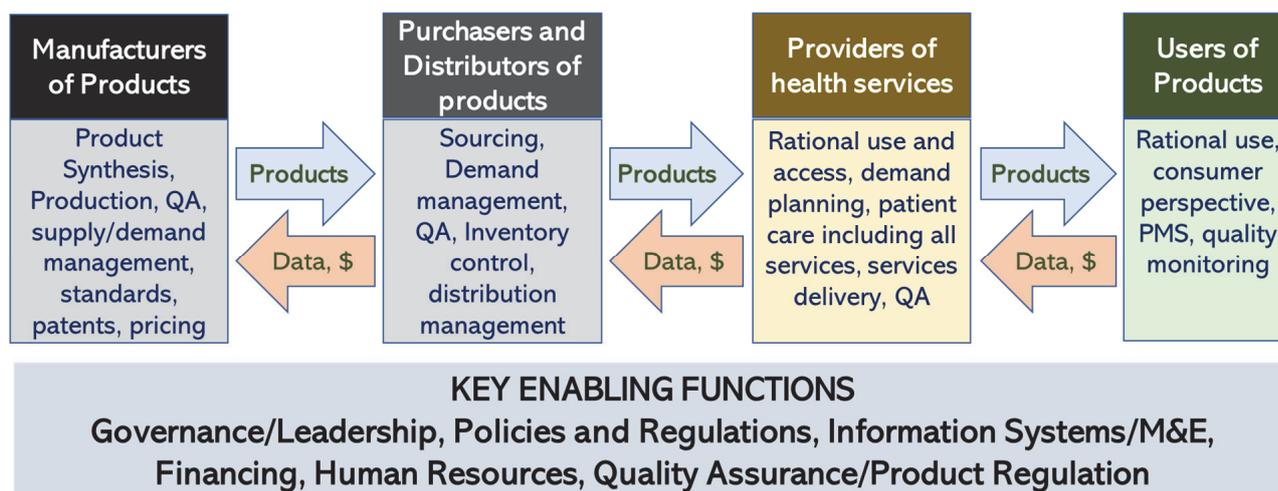


Figure 1: Complete health supply chain system (longitudinal model)¹⁴

Within each level of the supply chain, there exists an internal logistics system comprising the key functions of selection, forecasting/quantification, procurement planning and procurement, warehousing/storage, distribution, and product use (figure 2). While certain functions are lumped together, they can be totally stand-alone depending on the institutional mandates. It is important to note that the logistics management information system (LMIS) is the central connecting/integrating component of an effective health supply chain. Effective policy and adaptability are other key functions required.

¹¹ MoH, 2019; Annual Health Sector Performance Report 2018/19. Accessed from <http://library.health.go.ug/publications/performance-management/annual-health-sector-performance-report-20182019>

¹² Ibid, page 23

¹³ International Association of Public Health Logisticians, 2013

¹⁴ Adapted from Joseph Mathew, Joshin John, et al. Accessed on September 28, 2021, from: https://www.pomsmeetings.org/confproceedings/043/fullpapers/fullpaper_files/043-0259.pdf

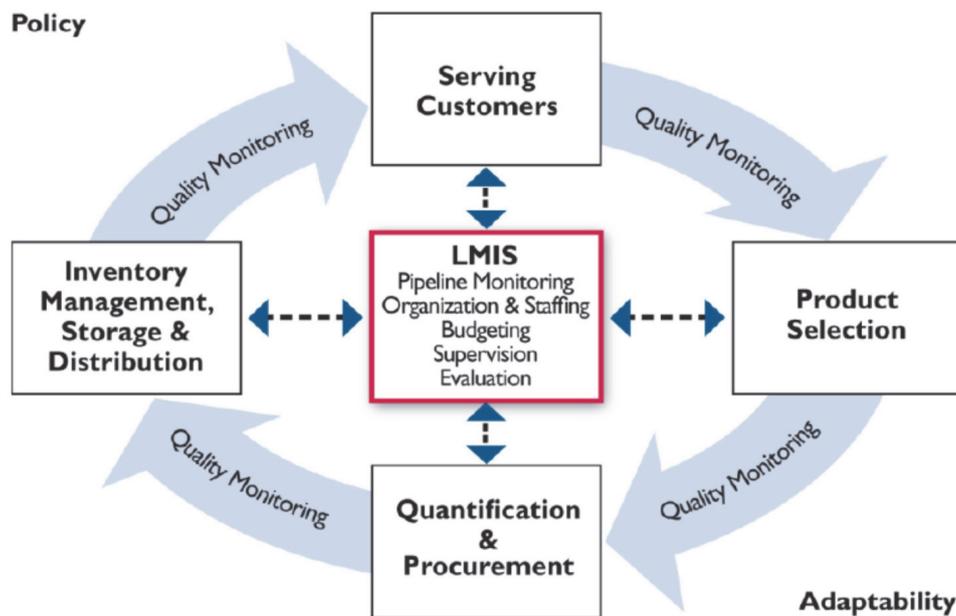


Figure 2: Logistics cycle for good supply chain management¹⁵

2.2 POLICY CONTEXT

Political and strategic direction is derived from the Uganda Vision 2040 and the NDP-III, both aligned to the African Union Agenda 2063 and East African Community Vision 2050. Vision 2040’s aspirations are to change the country from a predominantly low income to a competitive upper middle-income country within 30 years with a per capita income of USD 9,500 and Ugandans to have access to affordable quality health and education services. It articulates that good health is instrumental in facilitating socioeconomic transformation¹⁶. These aspirations are further described in the MoH Health Strategic Plan 2020/21 – 2024/25, the NMP 2015 and the NPSSP.

Third National Development Plan (NDP III)

The NDP-III goal is “**increased household incomes and improved quality of life of Ugandans**”, actualised through five strategic objectives with objective 4, “Enhance the productivity and social wellbeing of the population” providing guiding direction for the health sector¹⁷ as part of the broader human capital development. The NDP-III further articulates the broader mandates, intersectoral collaboration, approach to integration, and stronger governance and digital frameworks. The NDP-III stipulates the need for integrated development, strong governance, efficiency in services delivery, strengthened government financing of the different sectors, mainstreaming of information systems as a core strategy, human capital development, and overall sustainability. Objectives 1 and 4 under the Human Capital Development pillar outline key interventions related to this Roadmap that includes but is not limited to:

- (i) Increased access to immunisation against childhood diseases.

¹⁵ MSH. MDS-3: Managing Access to Medicines and Health Technologies. Arlington, VA: Management Sciences for Health; 2012. Accessed on Sept. 2, 2021, from: <https://www.msh.org/resources/mds-3-managing-access-to-medicines-and-health-technologies>

¹⁶ National Planning Authority (NPA), 2007; Uganda Vision 2040; Ministry of Finance, Planning and Economic Development (MoFPED). Pages 4, 10 and 88

¹⁷ NPA, 2010; Third National Development Plan 2020/2021 – 2024/2025; MoFPED. Page xxi Accessed from <https://www.health.go.ug/cause/third-national-development-plan-ndp-iii-2020-21-2024-25/>

- (ii) Improved the functionality of the health system to deliver quality and affordable preventive, promotive, curative and palliative health care services focusing on: adequate human resources for health at all levels, Availability of affordable medicine and health supplies including promoting local production of medicines (including complementary medicine), continuous training and capacity building for in-service health workers, service and service delivery standards targeting lower middle-income standards, among others.
- (iii) Investment in appropriate guidelines, health care package, infrastructure, technologies, and human resource capacity for neonatal services at all levels of health care.
- (iv) Increased investment in child and maternal health services at all levels of care.
- (v) Increased access to sexual reproductive health and Rights with special focus on family planning services and harmonised information.
- (vi) Increased financial risk protection for health with emphasis on implementing the national health insurance scheme.
- (vii) Promotion of health research, innovation, and technology uptake.
- (viii) Establishment and operationalisation mechanisms for effective collaboration and partnership for health at all levels.

MoH Strategic Plan 2020/21 – 2024/25

The MoH Strategic Plan 2020/21 – 2024/25 indicates the principles of country leadership and ownership, partnership and multisectoral collaboration, financial sustainability, and evidence-based and multisectoral action¹⁸. These together with the core values of health equity; transparency and accountability; and professionalism, integrity; and ethics clearly relate to the focus of this HSC Roadmap. The MoH Strategic Plan 2020/21 – 2024/25 thus recognises the need to move from “business as usual” if the country is to accelerate towards UHC as well as sustain improvements through four interconnected strategic shifts. These shifts are based on country context and needs to improve efficiencies, effectiveness, and equitable impact that provide the opportunity for the country to reshape the health system along the global and regional agendas and targets.¹⁹

The strategic shifts that are aligned to this Roadmap place emphasis on:

- (i) Identifying interdependencies, mapping, and securing buy-in amongst sectors and stakeholders to implement multisectoral action for health sector-led collaborations for UHC.
- (ii) Instituting health in all policies that lie outside the health sector and within urban health governance and development.
- (iii) Harnessing the private health sector and partnerships with non-state actors under UHC.
- (iv) Strengthening the city and LG leadership and organisational development capacity for population health management.
- (v) Using a health information system with datasets in other sectors to provide setting-specific, timely, and relevant evidence from national and sub-national levels on burden magnitudes and distribution in relation to health determinants.
- (vi) Increasing the capacity of the city and LG to implement close-to-community cross-sectoral and synergistic actions.
- (vii) Integrating all care processes, tools, and medical clinical information on each health service delivery platform (i.e., individual care, population based, and outreach/community) to ensure patient-focused comprehensive and integrated care.

¹⁸ MoH, 2020; Ministry of Health Sector Strategic Plan 2020/21 – 2024/25. Page 56.

¹⁹ Ibid. Pages 70 plus

- (viii) Improving availability, distribution, and motivation of human resources for health (HRH) at all levels.

National Medicines Policy (NMP) - 2015 and the National Pharmaceuticals Services Strategic Plan (NPSSP) – 2020/21 – 2024/25

The NMP provides the blueprint for the pharmaceutical sub-programme and the health supply chain. It prioritizes eight core areas:

- (i) Increased efficiency in utilisation of available funds
- (ii) Improved medicines use
- (iii) Improved pharmaceutical information systems
- (iv) Increased public financing for essential medicines
- (v) Private sector participation and engagement in policy implementation
- (vi) Establishing the post of district pharmacist
- (vii) Strengthening the national medicines regulatory authority
- (viii) Governance

Within governance, the NMP emphasises that the MoH needs to strengthen and extend its oversight role over pharmacy professionals, practice, premises, and products, among others.²⁰ The goal of the new NPSSP 2020/21 – 2024/25 is to ensure availability, physical access, affordability, and appropriate use of quality-assured essential medicines, health commodities, and pharmaceutical services.

The NPSSP provides the technical guidance for the pharmaceutical aspects of the health sub-programme under the human capital programme, while the semi-autonomous institutions/agencies have their own strategic plans. The NPSSP principles are (i) UHC, (ii) equity and efficiency, and (iii) quality of health care. Achieving UHC requires that the medicines needed for this effort be clearly defined and quantified and multiple financing strategies put in place. Equity and efficiency require that a range of health commodities are available based on need and used efficiently with the available limited resources. Investments in quality of health care will increase effectiveness of service delivery and improve patient safety. The NPSSP has made strategic shifts to move away from doing business as usual to a more nuanced approach to strengthening the sub-programme.²¹ The NPSSP priority areas and strategic objectives are summarised in table I below.

Table I: Priority areas and strategic objectives of the NPSSP²²

#	Priority area	Strategic objective
1	Governance, leadership, and stewardship	Improve stewardship and coordination for pharmaceutical service delivery in Uganda
2	Health commodity supply management system	Strengthen the health commodity supply management system in Uganda
3	Pharmaceutical HR planning and development	Strengthen the HR capacity for pharmaceutical sector at all levels (national, sub-national, district, private sector)
4	Regulatory framework and compliance	Strengthen the pharmaceutical sector regulations and compliance

²⁰ Ministry of Health, (2015) National Medicines Policy. Pages 13-15 <http://library.health.go.ug/publications/policy-documents/national-medicines-policy>

²¹ Ministry of Health, 2020; National Pharmaceutical Services Strategic Plan (NPSSP): Strategic Agenda. Pages 31 - 33

²² MoH, 2020; National Pharmaceutical Services Strategic Plan (NPSSP): Summary of priority areas and strategic objectives. Page 34

5	Appropriate medical product use	Strengthen appropriate use of medical products in Uganda Strengthen the capacity of HSC to manage medical counter measures for public health emergencies (PHEs)
6	Traditional and complementary medicines	Streamline the regulation and application of traditional and complementary medicines in Uganda
7	Local manufacture of health commodities	Promote local pharmaceutical manufacturing in Uganda Support regional and international collaboration for technology transfer
8	Pharmaceutical services financing and pricing	Strengthen sustainable financing and pricing mechanisms for the pharmaceutical sector in Uganda
9	Pharmaceutical management information system	Strengthen the pharmaceutical information management systems Increase HR capacity to collect, analyse, disseminate, and use data
10	Multisectoral collaboration and engagement (Sectoral, National and International)	Strengthen multisectoral collaboration and engagement for the pharmaceutical sector
11	Research, development, and innovation	Promote basic and applied research that enhances the effective implementation of the NMP at all levels

Public-private partnership framework policy in Uganda

The GoU Cabinet approved a PPP policy on March 10, 2010. This policy was envisaged to work as a tool for the private sector to provide public services and public infrastructure. The overall objective of this PPP policy was to obtain better quality services at competitive costs; employ private sector expertise and finance when beneficial; and reduce costs, delivery times, and risks inherent in infrastructure projects and service delivery. Through this policy framework, the GoU pledged to promote and encourage the various forms of PPP in implementing the development of sector plans, medium-term expenditure framework, and annual budgets based on a rigorous value for money assessment. It is determined that the private sector provision of public services, public infrastructure, and related services will deliver better value for money. The PPP partners would be sought for through a consistent and transparent system of competitive tendering and ensuring value for money.

Over the years, Uganda's health policy framework has recognised the role of the private sector as a significant partner in the national health sector development. This is articulated in the national health policies (1999; 2010); the Uganda national minimum health care package; the Health Sector Strategic Plans (HSSP) I, II, and III (2000/1-2004/5; 2005/06-2009/10; 2010/11-2014/15); the Health Sector Quality Improvement Framework and Strategic Plan (2010/11 – 2014/15); the Health Sector Strategic Investment Plan (HSSIP) (2010/11-2014/15); and the Health Sector Development Plans (HSDP) I and II (2010/11 – 2014/15; 2015/16 – 2019/20). The policy, regulatory, and national development frameworks guide the operations of the private sector in health and also the contribution of the private sector to the national health sector agenda.

2.3 KEY PROGRESS MADE IN UGANDA'S HEALTH SUPPLY CHAIN

The Uganda health supply chain is an outgrowth from pharmaceutical products management that has gone through multiple transformations since independence. The period since the turn of the millennium has been a key driver towards the tremendous growth and capacity of the health supply chain in the country. Management of medicines and medical products has improved significantly in

recent years due to strong leadership and regulation within MoH and NDA as well as strengthened supply chain management systems at the NMS and JMS²³.

Total expenditure on medicines, technologies and other products has continued to rise over the years. The donor/partner resource mobilisation efforts from the government have shown a steady rise from 2010 to 2018 as illustrated in figure 3 below.

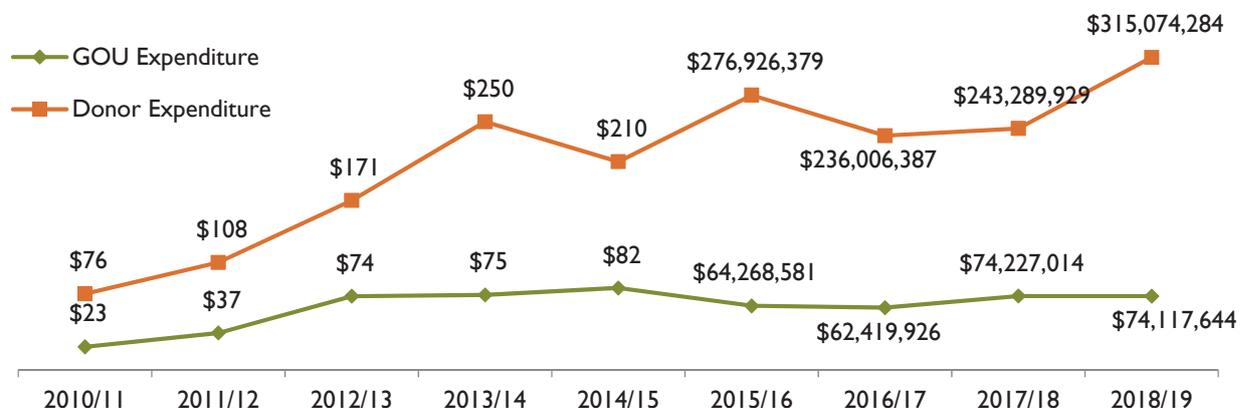


Figure 3: Total government vs. donor funding contribution from 2010 to 2018 (USD millions)

Since FY 2015/2016, there has been some improvement in government financing to NMS—from UGX 218,277,223,318.98 to UGX 362,685,956,516.00 in FY 2019/2020 (figure 4)²⁴. There is an upward trend, and this demonstrates government commitment and ability to take on the national needs over time with proper planning.

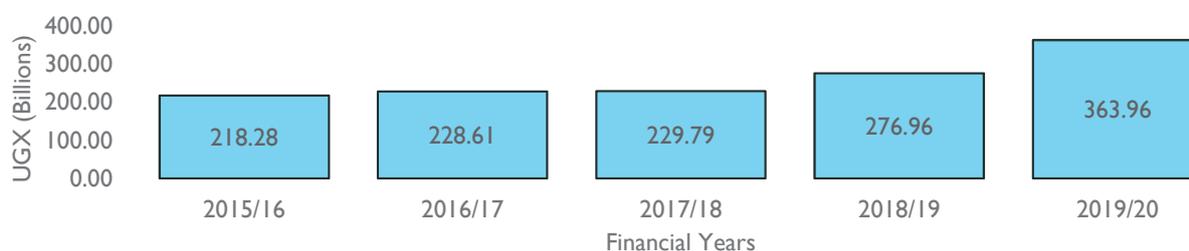


Figure 4: Trend in government financing to NMS (Source: NMS Corporate Plan 2020/2021 – 2024/2025)

NMS has consistently achieved 100% absorption rate of the funds allocated by government in the national budget. This financing support has enabled NMS to have 98% of staffing norms filled (2021) as well as to attain a significant improvement in the availability of EMHS.

The warehousing capacity and national, sub-national and health facility level has been expanded and refurbished significantly. As of 2021, a new warehouse for NMS has been built in Kajjansi on the outskirts of Kampala at a cost of UGX 70B with the government providing UGX 40B and the balance coming from the Global Fund²⁵. This expanded warehouse is expected to increase the stock holding capacity of NMS as well as strengthen downstream commodity security considering that Uganda is a

²³ MoH, 2020; Ministry of Health Strategic Plan 2020/21 – 2024/25. Page 47. Accessed on October 20, 2021, from: <http://library.health.go.ug/publications/work-plans/ministry-health-strategic-plan-202021-202425>

²⁴ NMS, 2021; National Medical Stores Corporate Plan 2020/2021 – 2024/2025. Page 7

²⁵ Ibid, page 7

landlocked country. In addition, this warehouse (figure 5) has focussed on use of renewable energy as part of national guidance²⁶ on greenhouse emissions reduction. Likewise, the proportion of health facilities with ambient storage has been increasing since the 2013 intervention into the health facilities storage situation.



Figure 5: The new NMS ultra-modern warehouse at Kajjansi (Photo Credit: NMS)

The national LMIS has been enhanced with increased use of appropriate tools, despite not being up to required level. HIV/AIDS and TB medicines as well as EMHS are now ordered through web-enabled ordering systems that improve turn-around time as well as more accurate data transmission. Likewise, an automated notification system for deliveries is now in place to strengthen accountability. NMS has undertaken the development of an enterprise resource planning system (ERP) with joint GoU and US government support. JMS is already receiving similar significant support for the same from the US government to strengthen alternative channels and the PNFP sector.

The GoU made inroads into the protection of local manufacturers of health products and commodities, especially through the Buy Uganda, Build Uganda (BUBU) initiative as promoted by the Ministry of Trade Industry and Cooperatives (MoTIC). NMS procures a good proportion of EMHS from local manufacturers in Uganda²⁷. Of particular importance has been the reservation of a certain proportion of government tenders for locally manufactured products and the introduction of a 12% verification surcharge on products considered readily available locally and in adequate quantities. The country continues to ensure zero taxation on medicines, health products, medical technologies, and products of public health importance to optimise availability and access.

There has been a steady rise in the availability of a basket of products at both national and sub-national level despite challenges including the impact of the COVID-19 pandemic. Both NMS and JMS have over last five years consistently achieved higher than target scores including for stock turn-over ratios.

²⁶ Ministry of Water and Environment, 2015; Uganda National Climate Change Policy. Accessed on October 11, 2021, from: <https://www.mwe.go.ug/sites/default/files/library/National%20Climate%20Change%20Policy%20April%202015%20final.pdf>

²⁷ ²⁷ NMS Corporate Plan 200/2021 – 2024/2025. Page 11

However, residual challenges persist and overcoming them is critical in ensuring that the meeting UHC targets are sustained. This is further looked at in detail in the subsequent sub-sections.

The pharmaceutical manufacturing sector has shown steady growth with the country now having 26 manufacturing facilities with 13 being of medium to large scale²⁸. However, this only provides for approximately 20% of the current demand for the health products needs in the country²⁹. A medicines and essential health supplies management system including a financial and commodity tracking system designed and implemented at NMS and central ministerial levels has been put in place. The MoH has published clinical guidelines, national formulary, and list of essential medicines to guide the rational use of medicines.

2.4 HEALTH SERVICES DELIVERY ARRANGEMENTS

Design, ownership, and governance

Health services in Uganda are delivered through a mix of public, PNFP, and private for-profit (PFP) providers. The public health sector is comprised of a cascading system of health facilities including health services of the uniformed forces (army, police, wildlife authority, and prisons). The structure is made up of the national referral hospitals (NRHs) at the national level, regional referral hospitals (RRHs) at the regional level, general hospitals at the district level, health centre (HC)-IVs at the county level, HC-IIIs at the health sub-district level, HC-IIs at the parish level, and HC-Is/village health teams at the village level³⁰. The private health sector is comprised of both PNFP and PHPs/practitioners' including traditional and complementary medicine practitioners. About 70% of PNFP facilities exist under umbrella organisations of the Uganda Catholic Medical Bureau (UCMB), Uganda Protestant Medical Bureau (UPMB), Uganda Orthodox Medical Bureau, and Uganda Muslim Medical Bureau³¹. The PHPs comprise hospitals, clinics, pharmacies, and drug shops. Table 2 provides a summary of numbers of facilities as coded in the DHIS2; however, several private clinics and all pharmacies and drug shops are not included in the table. (As of 31st October 2021, there were a total of 17,510 pharmaceutical outlets, of which, 810 were wholesale pharmacies, 1,723 retail pharmacies, and 14,677 drug shops³².)

Table 2: Health facilities coded for reporting through the DHIS2 as of June 2020³³

Level	Number registered in DHIS2			
	Public	PNFP	Private	Total
National (NRH)	5	0	0	5
RRHs	14	0	0	14
General Hospitals	55	70	51	176
HC-IVs	180	23	25	228

²⁸ NDA; Statistics of licensed outlets as of Licensed Outlets Statistics as of 6th October 2020, 2021. Available from:

<https://www.nda.or.ug/licensed-outlets-statistics/>

²⁹ MoH, 2020; Health Sector Strategic Plan 2020/21 – 2024/25. Page 47 <https://www.health.go.ug/cause/annual-health-sector-performance-report-financial-year-2020-21/>

³⁰ MoH, 2020; Health Sector Strategic Plan 2020/21 – 2024/25. Page 25. Accessed from <https://www.health.go.ug/cause/annual-health-sector-performance-report-financial-year-2020-21/>

³¹ MoH, 2018. Health Facilities Inventory. <http://library.health.go.ug/publications/health-facility-inventory/national-health-facility-master-facility-list-2018>

³² NDA; Annual report ending October 31, 2021.

³³ MoH, 2020; Annual Health Sector Performance Report FY 2019/2020. Page 2

<http://library.health.go.ug/publications/performance-management/annual-health-sector-performance-report-financial-year-201920>

Level	Number registered in DHIS2			
	Public	PNFP	Private	Total
HC-IIIs	1,041	338	213	1,592
HC-IIs	1,816	717	1,126	3,659
Clinics	86	81	394	561
Total	3,192	1,229	1,809	6,232

The GoU through the MoH is directly responsible for NRHs, RRHs, specialised hospitals and national autonomous institutions such as the Uganda Blood Transfusion Service, NMS, NDA, National Public Health Laboratories, and Uganda Natural Chemotherapeutic Research Laboratory. As part of the decentralisation arrangements, the district local government is responsible for health services delivery from general hospitals down to the community level, represented by the village health teams. Coordination of health services at district level is spearheaded by the Chief Administrative Officer (CAO) and District Health Officer (DHO), but without the critical linkage of a district pharmacist³⁴. An additional current challenge that exacerbates HSC issues is the non-functionality of medicines and therapeutics committees (MTCs) at most levels.

Human resources for health supply chain

Uganda's HSDP aims to strengthen primary health care (PHC) and health promotion services through the acquisition of adequate HRH, which is a high priority area for the health system³⁵. Although the staffing level of essential health cadres—anaesthetic officers, dispensers, pharmacists, theatre assistants, and public health nurses—has improved to 77.5% in GoU and PNFP facilities³⁶, to address the persistent critical shortages, the sector needs to escalate training at all levels.

Even as staffing growth is being registered among other cadres, the pharmacy services and supply chain HR levels remain inadequate. This critical gap has reduced the functionality of many health facilities at all levels, especially in the rural areas³⁷, thus creating situations of inferior overall supply chain performance and pharmaceutical care in health facilities. At the district level, there is no pharmacist³⁸ while the district stores continue to have significant disparity in the staffing norms and levels³⁹. Pharmacists hold the responsibility for providing essential medicines to the patients. They are a cornerstone to UHC. By this role, for governments to achieve a component of Sustainable Development Goal 3, they must ensure equitable national distribution of pharmacists, pharmacy technicians/technologists, and related cadres.

The sector urgently needs to review and learn from the roles of the District Medicines Management Supervisors (DMMS) and District Assistant Drug Inspectors (DADIs), which currently hold task-shifted responsibilities that are considered as temporary and a stopgap measure in the absence of suitably qualified personnel to appropriately manage health commodities. The DMMS position was meant to be a stopgap to reduce the lack of a cadre responsible for pharmaceutical services in the district. However, due to reduced donor support, DMMS are now inactive due to either lack of funding or shortage of staff to task-shift to, resulting in the reversal of performance indicator scores in supply

³⁴ MoH, 2020; HRH Audit Report 2019/20. Available from: <https://www.health.go.ug/cause/human-resources-for-health-audit-report-2019-2020/>

³⁵ MoH, 2020; Ministry of Health Sector Strategic Plan 2020/21 – 2024/25. Accessed from <https://www.health.go.ug/cause/annual-health-sector-performance-report-financial-year-2020-21/>

³⁶ MoH, Human Resources for Health Audit Report 2017/18, 2018

³⁷ NPA, 2010; Third National Development Plan 2020/2021 – 2024/2025; MoFPED. Page 8

³⁸ MoH, 2020; National Pharmaceutical Services Strategic Plan: Summary of priority areas and strategic objectives. Page 35

³⁹ MoH, 2021; Assessment of Commodity Management and Infrastructural Needs at District Stores in Uganda

chain management. To achieve high performance and productivity of pharmacists and related supply chain personnel, the health sector requires well-defined organisational and staffing structures at all levels⁴⁰.

Public sector pharmacist and pharmacy technician position staffing remains very low⁴¹, with filled anaesthetists, theatre assistants, pharmacists, and radiographers' positions at less than 40% staffing rate⁴². A critical shortage of the HSC workforce persists, with 3.2% pharmacists per 100,000 populations in 2019, increasing from 2.7 in 2017. By 2019, the total number of registered pharmaceutical staff in the public sector was 1,124, of which 50% were pharmacists and 44% were pharmacy technicians and dispensers, mostly employed by agencies like NMS, NDA, and higher-level facilities like national and regional referral hospitals. With the currently approved staffing norms at HC-IV and higher, the in-post pharmaceutical staff stands at 50% for pharmacists and 44% for dispensers⁴³. There are no approved pharmaceutical staffing norms at HC-III and lower. Significant staffing gaps exist at HC-IIIs (47%) and general hospitals (32%), leading to approximately 2.6% of patients seeking care from other sources, including the traditional and complementary medicine practitioners (TCMPs)⁴⁴. As a result, pharmaceutical tasks are shifted to nurses, who support task-shifted activities, despite technical limitations in their pre-service and in-service pharmaceutical training not to mention their high workload. Task-shifting is clearly being implemented without guidelines, adequate and structured complementary training, and capacity- building efforts to support the tasked role holders. Furthermore, task-shifting does not consider the actual norms required for nursing cadres at health facilities.

Between 2015 and 2019, the investments in training pharmacy assistants at diploma and certificate pharmacy level had increased by 635%⁴⁵. Many new certificate pharmacy programmes have emerged in the country and remain poorly regulated, and there are inadequate guidelines to ensure balanced training of diplomas, certificates, and degree holders, who face limited training in specialised areas of pharmacy due to limited post-graduate training opportunities. Furthermore, there is a low pharmacist to population ratio of only 3.2 per 100,000, hence leaving critical roles unattended with little separation of connected roles with other health workers⁴⁶.

The private sector facilities make up about 48% of all health facilities and employ about 50% of the total Ugandan health workforce⁴⁷. The absence of formal regulatory coordination between public and private sector agencies with mandates in the management, development, and planning of the HSC workforce remains a critical challenge. To strengthen effectiveness, the MoH Department of Pharmaceuticals and Natural Medicines (DPNM) needs to and will coordinate the activities performed by private health facilities through their recognised umbrella organisations, especially the medical bureaus, PSU, Allied Health Professionals Council, Dispensers' Association, Uganda Pharmacy Owners' Association (UPOA), Uganda Pharmaceutical Manufacturers' Association, etc.

⁴⁰ Nene, Sinqobile & Pillay, Alan. (2019). an Investigation of the Impact of Organisational Structure on Organisational Performance. *Financial Risk and Management Reviews*. 5. 10-24. 10.18488/journal.89.2019.51.10.24

⁴¹ MoH, 2020; Draft National Pharmaceutical Services Strategic Plan. Page 28

⁴² MoH, 2020; Human Resources for Health Audit Report 2019/20. Page 4

⁴³ MoH, 2020; Ministry of Health Strategic Plan 2020/21 – 2024/25. Page 24, Accessed from <https://www.health.go.ug/cause/annual-health-sector-performance-report-financial-year-2020-21/>

⁴⁴ Ibid, Page 47

⁴⁵ MoH, 2019; Uganda Health Labour Market Analysis 2019

⁴⁶ MoH, 2020; Ministry of Health Sector Strategic Plan 2020/21 – 2024/25, Accessed from <https://www.health.go.ug/cause/annual-health-sector-performance-report-financial-year-2020-21/>

⁴⁷ MoH, 2019; Uganda Health Labour Market Analysis 2019

In October 2020, the MoH reviewed the pharmaceutical organisational and functional structure covering autonomous agencies, NRHs, RRHs, general hospitals, and HC-IVs to HC-Is to align it to vision 2040, NDP-III, MoH Strategic Plan 2020/21 – 2024/225, NPSSP, HRH Strategic Plan, public service standing orders, and HRH Policy and Strategic Plan commitments. The MoH top management has yet to receive, discuss, and approve the recommendations and then forward them to the broader government for approval and recommendation to MoPS. The proposed staffing also caters to the donor-supported pharmaceutical cadres' absorption after donors have pulled out. To date, the MoH has filled existing approved positions at the MoH headquarters to enable DPNM to effectively execute its tasks and roles. The implementation of the structure needs further assessment considering the digitalisation of the processes and priorities unique to local governments, particularly cities, and densely populated district LGs before MoPS approval.

Health care purchasing

There are multiple purchasers of health care services in Uganda, namely, the public sector through the MoH and LGs, which represent 24% of total purchasing; nongovernmental organisations, which represent 28%; individual purchasing by households through direct OOP payments, which represents 42%; and health insurers purchases contributing about 1%. The Ugandan system relies primarily on input-based financing mechanisms in which government pays for health services through direct provision of resources for staff salaries, pharmaceuticals, supplies, operations, and investments in health infrastructure. Government also purchases health services from PNFP health facilities through subventions for specified services based on an agreed memorandum of understanding (MoU). The input-based financing mechanisms are centrally controlled and use static formulae that are not in line with health needs.

Output-based approaches for purchasing have been introduced under donor-funded programmes. They include community-based health insurance, reproductive health voucher programmes and performance-based financing. Experience with implementing these approaches offers important insights and opportunities for strategic purchasing reforms within government systems and processes.

There is still no rational pricing of medicines, with very high price mark-ups by private sector actors. At the same time, the quality of health care services purchased from PHPs remains unmeasured and undocumented. This exposes households to the risk of exploitative pricing and substandard services. Government purchases too are susceptible to above-market pricing, largely due to limited capacity for specialised procurements.

2.5 UGANDA HEALTH SUPPLY CHAIN SYSTEM

Design of the supply chain system

Improving access to EMHS, vaccines, and other health technologies is vital in achieving UHC. The Uganda health supply chain consists of the public sector and the private sector (PHP, PNFP, and other non-state players). The public sector HSC is coordinated by the DPNM, while NDA and NMS carry out the delegated roles of regulation and procurement, warehousing, and distribution, respectively. The PNFP sector consists mainly of one major warehouse, JMS, and a series of health facilities mainly under the faith-based medical bureaus and other organised chains. In addition, there are many private for-profit health facilities as well as pharmaceutical outlets, all of which are distributed disproportionately in the country. Private warehouses exist but are mainly contracted by donors and

development partners as alternatives to NMS and JMS to cater for extra stock that cannot be held in the two warehouses due to space inadequacies. In the long run, the government needs to activate the options for effective sub-contracting of such functions under a PPP. The pharmaceutical manufacturing sector is consistently growing, with 18 manufacturing facilities (additional 12 pending licensing) contributing 230 out of the 5,267 products in the national drug register⁴⁸.

In the public sector, the flow of products is based on two models, a pull system for HC-IVs and above and assisted push or kit system for lower levels (HC II and HC III). Health product distribution is designed along the decentralised model with products for HC-IV and below being delivered to the office of the DHO for last-mile delivery. Not all districts have district medicines stores. Facilities report through the HMIS, which is also used to aggregate medicines orders. With the emphasis on health promotion, there will be need to review and expand the Essential Medicines and Diagnostics List to match the strategic shift.

The health supply chain in particular faces several challenges that include but are not limited to regular stock outs of EMHS as illustrated in a Global Fund audit in 2019 that reported that 70% of 50 health facilities visited had a stock-out of antiretroviral medicines (ARVs) and HIV test kits among other EMHS of between three to four months⁴⁹. Analysis of data from HMIS form 105 indicates that on average, 40% of health facilities had over 95% availability of a basket of 41 commodities as of July 2021, a decline from a year earlier (figure 6), while 63% (n=4198) of public and PNFP health facilities submitted monthly stock status reports with three essential data elements with only 43% reporting completeness of all data.

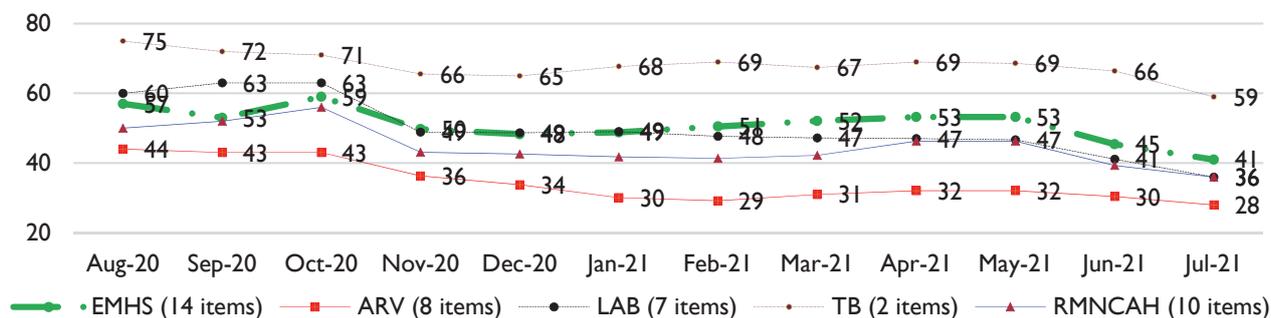


Figure 6: Availability of basket of 41 commodities: August 2020-July 2021 (Source HMIS 105 – Section 6)

Overall, the average availability for the basket of 41 commodities routinely tracked through HMIS 105 section 6 was 80% as of July 2021, with EMHS at 79%; ARVs at 79%; laboratory commodities at 76%; TB medicines at 83%; and reproductive maternal, new-born, child, and adolescent health at 83% (Figure 7).

⁴⁸ NDA; Statistics of licensed outlets as of September 6, 2021. Available from: <https://www.nda.or.ug/licensed-outlets/>

⁴⁹ The Global Fund Office of the Inspector General third audit of Uganda (September 26, 2019). Available from https://www.theglobalfund.org/media/8804/oig_gf-oig-19-017_report_en.pdf

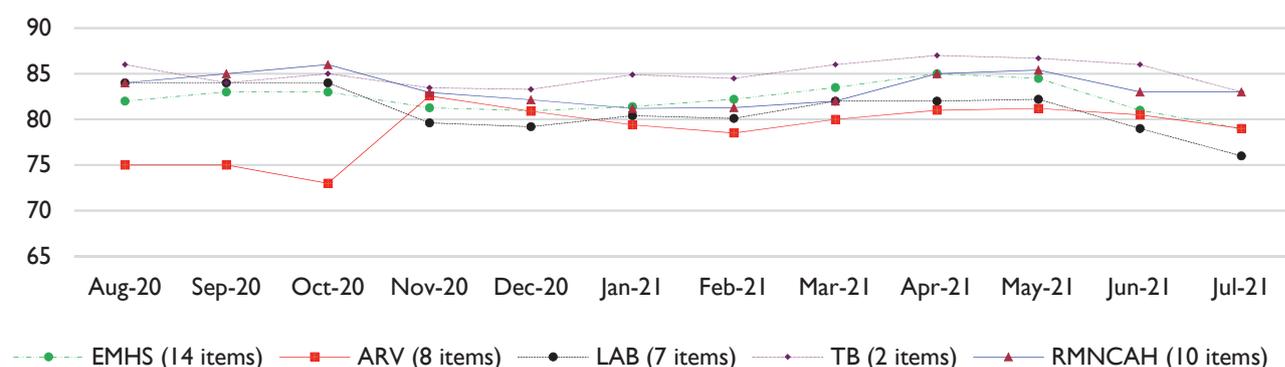


Figure 7: Availability of basket of 41 commodities: August 2020-July 2021 (Source HMIS 105 – Section 6)

There are also shortfalls in HR capacity, with more than half of the supply chain positions in most high-level health facilities (HC-IV and above) remaining vacant. There is also limited domestic financing of EMHS evidenced by the fact that more than 70% of public sector funding for commodities, especially for priority programmes such as HIV/AIDS, malaria, and TB is financed by donors⁵⁰. Governance issues revolving around inadequacies of coordination, transparency, and accountability (despite existence of a generally good framework) of supply chain actors at national and sub-national levels jeopardise the optimal functioning of the HSC system in Uganda⁵¹.

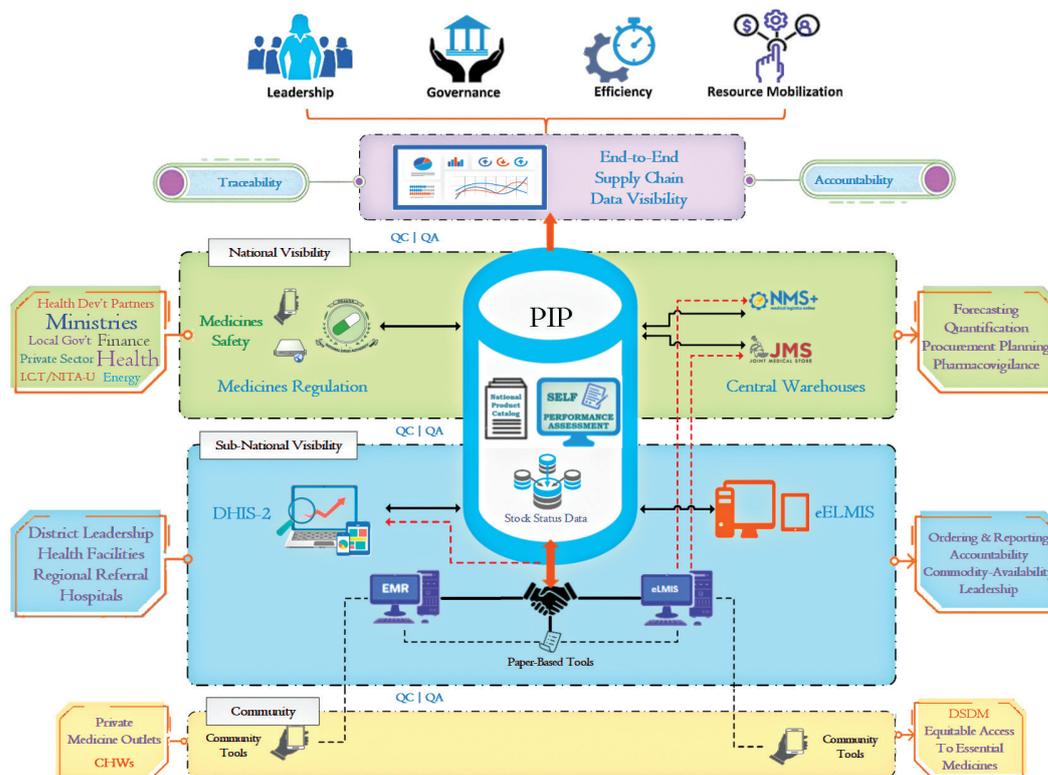
LMIS and information systems for HSC

A reliable, low-cost, routine information system along with disease surveillance and research programmes are necessary to inform priorities for UHC and to track progress. The proposed architecture for an HSC information system is provided in figure 8. The MoH, 2020; Ministry of Health Strategic Plan 2020/21 – 2024/225 emphasises information tracking trends on population health to guide policy choices, disease surveillance to aid evaluating the success of programmes, effectiveness and efficiency of service delivery, epidemic alert to detect and enable rapid response and containment, identification of changing risk factors or intermediate determinants of disease and, improving accountability for health expenditures⁵². The GoU and partners have continued to support the LMIS and the ERP evolution at health facilities and warehouses respectively.

⁵⁰ MoH, Annual Pharmaceutical Sector Performance Report 2018/2019, <http://library.health.go.ug/publications/performance-management/annual-health-sector-performance-report-20182019>

⁵¹ USAID/UGANDA SSCS Baseline Report, January 2020

⁵² MoH, 2020; HSD-II. Page 40



PIP = Pharmaceutical Information Portal | DSDM = Differentiated Service Delivery Model | CHW = Community Health Worker | QC = Quality Control | QA = Quality Assurance

Figure 8: Integrated Health Supply Chain System

Significant efforts have been made to transform the manual and paper-based LMIS tools at the health facilities to electronic versions as well as to strengthen ordering. Since 2010, the MoH with support from partners has migrated a good number of health facilities to RxSolution for stores as well as for some dispensing areas. Most recently, the government opted to look for a locally developed integrated hospital management information system in its search for a comprehensive solution to multiple service delivery issues. The NMS is currently migrating to a new ERP, named NMS+, replacing the Macs and Sage systems that has been in place since 2009. Transforming paper medical records into electronic medical records (EMRs), started in the previous HSDP, will continue up to the community level. Since a large percentage of medical products are donor funded, having a transition plan to more government funding will be important to sustain interventions. Similarly, establishing an electronic logistics management information system (eLMIS) that is interoperable with NMS+ not only improves visibility, but also facilitates accountability of medical products in health facilities and links supply and demand sides. The long-term development of the Pharmaceutical Information Portal (PIP) is expected to provide a one-stop facility for access to health supply chain data, information, and insights. All this calls for utilising information, communication, and technology (ICT) tools and solutions that enable the acceleration and improvement in quality, efficiency, and effectiveness in data collection, analysis, visualisation, and dissemination for action.

Financing of pharmaceutical services and the health supply chain

The GoU’s budget allocation to the health sub-programme as a proportion of the national budget remains far below the 2001 Abuja Declaration target of 15%, stagnating on average at 7% for decades⁵³. While the aspirations of the Abuja Declaration were good, it did not consider the integrated

⁵³ Uganda’s Health Financing Strategy FY2015/16 – FY2024/25 (HFS) accessed from <http://library.health.go.ug/publications/health-financing-accounting/health-financing-strategy-201516-%E2%80%93-202425>

investments in health beyond health ministries, something essential to a complete and one government approach. Uganda’s inadequate health services financing is further compounded by inefficiencies that translates into inadequate service provision, characterised by stock outs of EMHS, limited staffing, inadequate infrastructure, high OOP payments for households, and inequitable access to health services⁵⁴. This situation is underpinned by several factors in the health financing system. Uganda’s Health Financing Strategy FY 2015/16 – FY 2024/25 (HFS) presents these factors in terms of i) revenue collection, ii) pooling of resources, and iii) purchasing of services. Adopting this financing strategy to ensure proper alignment with this 10-year Roadmap is important. The WHO resolution WHA58.33 on sustainable health financing⁵⁵, universal coverage, and social health insurance urged member states to, among others, ensure equitable financial access to quality health services and protection from financial catastrophe and impoverishment because of using health services. This resolution has been at the centre of the HFS that aims to facilitate the attainment of UHC in Uganda through enabling the better delivery of and access to the essential package of health services while reducing exposure to financial risk by 2025. Uganda is currently heavily dependent on donors for financing the health supply chain. It is expected that donor support to the sector will gradually wind down from the current level of about 70% to 41.7% within the period of this plan. This means that the government will have to increase its contribution from 15.7% to 56.4% to cover this gap without passing on additional costs to households.

Revenue mobilisation

Overall, health services remain grossly underfunded. The per capita current health expenditure for Uganda is about USD 51. This is far below the WHO recommendation of USD 84 for provision of the minimum health care package or the USD 271 per capita estimated for achieving UHC by 2030. Furthermore, the share of the annual government budget allocated to health remains below 10% despite efforts to advocate for more resources. It is indeed surprising that even with the COVID-19 pandemic, the allocation to health in the budget for FY 2021/2022 was only UGX 2,789B out of 45,493B (6%). The trend of the government’s contribution to health through the budget appears to have moved counter to contribution by partners (figure 9).

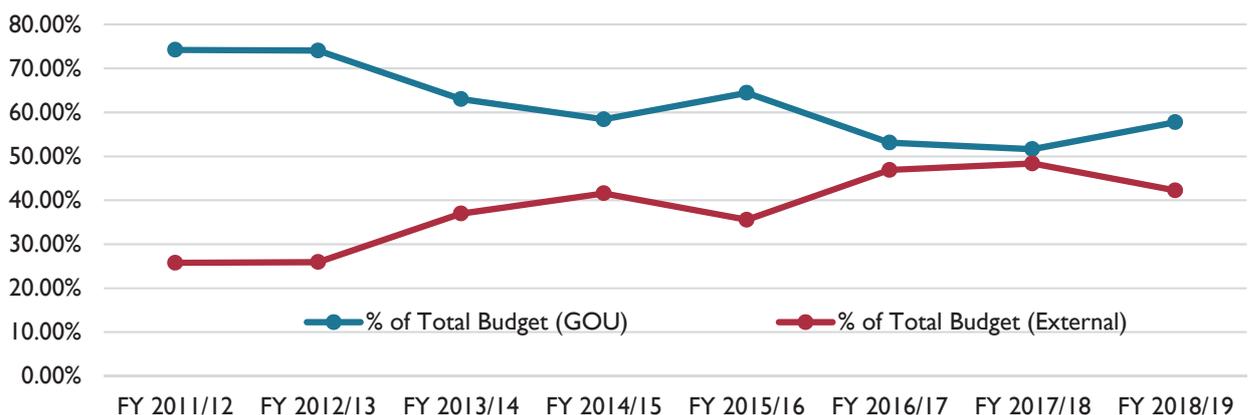


Figure 9: Contribution to health sector budgets FY 2011/12 to FY 2018/19

⁵⁴ Ibid, page 14

⁵⁵ WHO, Sustainable Health Financing, Universal Health Coverage and Social Health Insurance. Available from: http://apps.who.int/iris/bitstream/handle/10665/20383/WHA58_33-en.pdf;jsessionid=658D73430FE050DEE81EE776AFE53796?sequence=1

Expenditure on EMHS too remains far below the desired levels, with per capita expenditure estimated at USD 8.4 with donor and GoU expenditure being USD 6.4 and USD 2.0 respectively (figure 10). This is far below the WHO recommended USD 12.

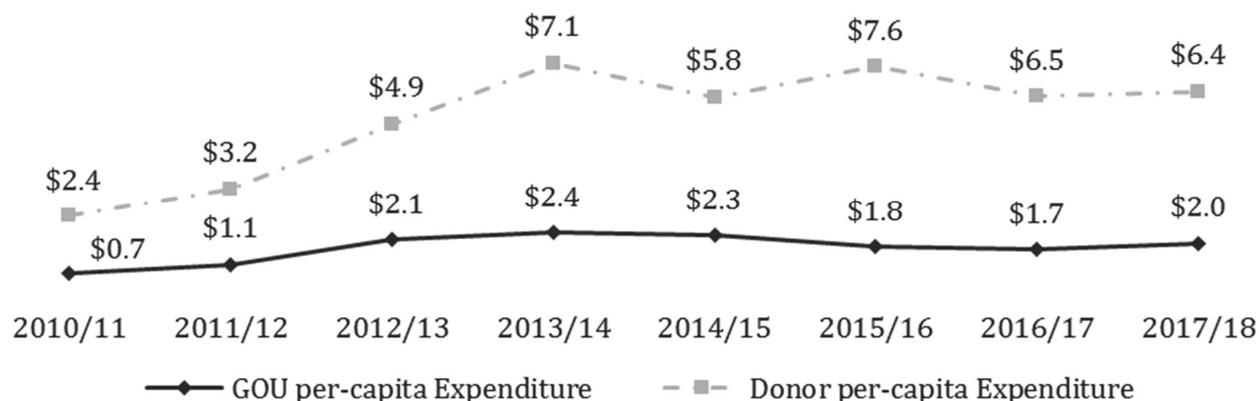


Figure 10: Donor and government per capita expenditure on EMHS FY 2010/11 to FY 2017/18

The above graphs further demonstrate Uganda’s continued dependence on external funds for financing the health response and HSC. Between FY 2010/11 and FY 2018/19, donor expenditure on EMHS increased more than fourfold from USD 76M to USD 315M compared to government expenditure which increased from USD 23M to USD 74M. This means that for every three dollars spent by donors on EMHS, the government spent only one dollar.

OOP payments are still very dominant in Uganda, contributing a significant proportion of total health service expenditure. OOP payment constitutes 42.6% of current health expenditure with over 20% of the population spending more than 10% of their total household consumption expenditure on health care. This level of OOP health spending compromises households’ consumption of other basic needs. It is estimated that more than 4% of the population have been pushed below the poverty line (USD 1.25/day) due to these health care payments⁵⁶. Specifically, over 50% of total OOP health expenditure is being spent on drugs⁵⁷. Over the past two financial years (2019/2020 and 2020/2021), government through MoFPED followed through its commitment to increase allocation to EMHS year on year by about UGX 50B. Overall, UGX 100B additional funding was provided to the health sector for EMHS through the FY 2020/2021 budget. Considering that such budgetary increases also cause constraints in other needy social sectors/national programmes, it is imperative that in the short to medium term a deliberate programme to roll out alternative financing mechanisms is vigorously sought. They include but are not limited to the creation of a national health fund, implementation of the national health insurance scheme (NHIS) and community-based health insurance, and earmarking taxes for the health sector.

Utilisation of credit line funds at NMS

In the HFS, pooling of resources refers to the accumulation of prepaid funds for the health sector to finance sector priorities necessary to address the population health challenges including procurement of EMHS. It also has the potential to redistribute funds between different pools to promote income and risk subsidisation to enhance equity. The HFS also points out that OOP payments, which

⁵⁶ Uganda’s Health Financing Strategy FY 2015/16 – FY 2024/25 (HFS)

⁵⁷ UBOS, 2021; Uganda National Household Survey 2019/2020. Page 45. Available from: https://www.ubos.org/wp-content/uploads/publications/09_2021Uganda-National-Survey-Report-2019-2020.pdf

contribute significantly to the health sector resource envelope, represent the most extreme form of fragmentation. Implementing mandatory health insurance will enhance risk-pooling and promote cross-subsidisation of OOP resources. Furthermore, NMS sometimes does not fully realise the government budget allocation it has, which is a critical transition issue⁵⁸.

While there is some cross-subsidisation of financing EMHS through GoU and donor project funding, there is also fragmentation between the two and within donor project funds, which negatively impacts the creation of larger pools. The government funding to EMHS constitutes 23% funding for ARVs, 50% funding for TB commodities, 27% funding for reproductive health commodities, 9% funding for lab commodities, and 4% funding for malaria commodities. Table 3 shows GoU and donor contributions to EMHS for FY 2020/2021.

Table 3: Government and donor contributions to programme-specific products for FY 2020/2021

Commodity type	GOU Contribution	Partner Contribution
ARVs	23%	77%
Malaria	4%	96%
TB	50%	50%
Lab	9%	91%
Reproductive health	27%	73%

Contribution mechanisms for donor project funds result in many fragmented small funding pools that do not promote cross-subsidisation, and which lead to inefficiency and inequity. Moreover, the resources are retained by their respective funders and some bilateral partners and are characterised by weak predictability. In the absence of effective coordination, donor project funds are rife with inefficiencies and inequity. The aspiration of the health sector is to consolidate public sources of health care financing and introduce prepayments for health care while improving the predictability of donor sources, especially funding for health commodities.

Infrastructure, warehousing, and storage at national level

Infrastructure for the health supply chain consists of the physical structures and support inputs needed to ensure that the products are warehoused, stored, and distributed up to the last mile under ambient conditions. Within the public and PNFP sectors, the country currently has NMS and JMS as the two key national-level warehouses with JMS operating regional warehouses. Generally, the country has the capacity to reach out to any district within 24 hours from central-level dispatch⁵⁹. At district level, each district is expected to have a district store for management of a wide range of commodities as well as cross-docking or holding for last-mile distribution to health centres. Partners outsource other private warehouses and third-party logistics agents to carry out a wide range of functions such as storage, distribution, and capacity building. MoH with support from donor-funded partners is ensuring that there are adequate capacity and capabilities to handle products without compromising product quality at all levels of care.

At central level, NMS supports the public sector, JMS supports the PNFP sector, while other private warehouses provide warehousing and distribution activities to private health providers. Given that both JMS and NMS continue to receive direct funding from the government through PHC funding arrangements and Vote 116, respectively, the focus of capacity will mainly be on the warehouses (JMS

⁵⁸ NMS Strategic Plan

⁵⁹ NPA, 2010; NDP-III

and NMS). The infrastructure and warehousing situation for both warehouses is summarised in the table below.

Table 4: Summary of infrastructures situation at JMS and NMS

Parameter	NMS	JMS
Mandate/ establishment	Established in 1993 by the NMS Act Cap (207) as an autonomous government corporation mandated to procure, store, and distribute EHMS to public health facilities in Uganda	Established in 1979 as a joint venture between UCMB and UPMB and is registered as a corporate body established under the Trustees Incorporation Act (Cap 165)
Number of warehouses	Two (new one in Kajjansi and existing one in Entebbe)	Five (2 in Nsambya and three regional warehouses in Arua, Fort Portal, and Mbarara)
Total pallet capacity	EUR type - I pallet positions; 30,000 in the new warehouse, 13,000 in existing warehouse	12,000 standard EUR type - I pallet positions
ERP in use	Transitioning from Macs and SAGE to Oracle (NMS+)	IFS (Industrial Financial Solutions)
Distribution model	Directly to hospitals, H-II-H-IV receive supplies through a hub and spoke model through the district stores	Last-mile distribution from the central warehouse to the beneficiary health facility
Min-max parameters	Minimum stock level: 3 months Maximum stock level: 6 months	Minimum stock level: 3 months Maximum stock level: 6 months
Cold chain capacity	About 857 cubic meters	About 400 cubic meters
Financing model	Mainly government financing from the consolidated fund through Vote 116 coupled with donor support and handling fees for third party commodities	Direct cost recovery model through sales of products and additional PHC funds from government as well as handling fees for third party commodities

In summary, the two warehouses given their unique circumstances have made some great steps towards making up for the gaps in national-level warehousing needs. However, it should be noted that most of the investments are donor dependent. For example, the construction of the new NMS warehouse needed significant investment that the GoU executed together with the Global Fund. On the other hand, the expanded cold storage and refrigerated distribution system still required external support despite previous investments by GoU, Gavi, the Vaccine Alliance, UNICEF, and other bilateral agencies. Over the last five years, there has been an upward trend of private-sector philanthropies contributing to enhancing the health supply chain infrastructure, albeit on an overall low scale.

At sub-national level, while 98% of districts have well-established permanent structures for district stores, 48% of the stores do not have storage shelves with a further 52% lacking pallets⁶⁰. In terms of information system, 67% of district stores do not have a functional computer with 88% not having an eLMIS system for managing commodities in the store; 84% of the districts do not have personnel trained in SCM of medicines and health supplies. The summary of the situation at district stores as of June 2021 is provided in Annex 2.

⁶⁰ MoH, 2021; Assessment of Commodity Management and Infrastructural Needs at District Stores in Uganda

Distribution systems at national level

The national distribution system is a mix of pull and kit replenishment systems. All warehouses are expected to adhere to the NDA regulatory requirements of Good Distribution Practices as well as standards for warehousing. To date, the two main national warehouses have relied mainly on delivery trucks to reach out to every district and eventually the health facilities. For the islands of mainly Lake Victoria and a few other lakes, use of private boats has been made in addition to the GoU ferry to ensure products reach the population irrespective of challenges. Vaccines are mainly stored and distributed by NMS and are delivered monthly to all district vaccine stores. With support from Gavi and UNICEF, the district vaccine stores have been equipped with cold chain capacity with dual power-supply options⁶¹. Vertical programme commodities for nutrition, condoms, malaria mass campaigns, and neglected tropical diseases have remained largely outside of the mainstream national supply chain creating lack of visibility and poor demand aggregation⁶². To date, use of unmanned aerial vehicles (UAVs) or drones for supply chain has only been piloted, and there is a potential to use it for delivery of critical products⁶³ such as blood, vaccines, and others to hard-to-reach areas.

NMS publishes a pre-approved distribution plan and communicates schedules to facilities for all range of products and facilities they serve. NMS operates under an approved distribution plan that captures downstream distribution and operations in a data management system. The other products are handled based on GoU allocation through Vote 116 from the national consolidated fund. NMS delivers using own transport to all hospitals and to district stores in bulk for the health centres. The last-mile distribution is carried out directly by NMS using outsourced transport from a third-party logistics provider. While the GoU covers 100% of the distribution budget for PHC products, NMS has used total cost data and specific interventions to target transportation cost reduction. The programme products for HIV, TB, malaria, reproductive health, among others that are mainly donor financed are stored and distributed at a cost estimated at 8.5% of the total value of commodities. The average lead time from ordering to delivery to the health facility was 35 days (range 6-63 days)⁶⁴.

JMS publishes an approved distribution plan and communicates schedules to facilities. The distribution routes are pre-planned with routes reviewed biannually. While routing at JMS does not consider truck capacity or product volumes, distribution is integrated whenever possible. Policies are in place at JMS that cover distribution and include cold chain, transport of expired drugs, security, storage during transport, and documentation, and outbound shipment stocks are reconciled with proof of delivery⁶⁵.

Infrastructure, storage, and distribution at district level

The decentralisation of governance and management of services to district LGs meant that districts and LG structures take responsibility for the EMHS management at their level. As such, this comes with the responsibility to have a district store, the equipment, the HR, and other required arrangements. In FY 2020/2021, GoU actualised the creation of new LG structures. Of big significance was the coming on board of 10 cities in addition to Kampala⁶⁶. Additional cities are in the pipeline to

⁶¹ PATH, 2016; Immunization Supply Chain Policy Environment in Uganda: Landscape Analysis and Advocacy Recommendations. Accessed on September 28, 2021, from:

https://path.azureedge.net/media/documents/APP_landscape_analysis_uganda_rpt.pdf

⁶² MoH, 2020; FY 2019/2020 Annual Pharmaceutical Sector Report

⁶³ DHL, Uganda; Unmanned Aerial Vehicles: Ready for Take-off? Accessed on September 28, 2021, from:

<https://www.dhl.com/ug-en/home/insights-and-innovation/thought-leadership/trend-reports/unmanned-aerial-vehicles.html>

⁶⁴ MoH, 2019; Annual Health Sector Performance Report 2018/2019

⁶⁵ JMS Strategic Plan 2021 - 2025

⁶⁶ Draku, Franklin (22 May 2019). "[Cabinet Elevates 15 Municipalities to Cities](#)". *Daily Monitor*. Kampala. Retrieved 23 May 2019.

be realised along the way as part of continued urbanisation harmonisation arrangements. While the new cities are welcome, many do not come with adequate plans for the accommodation of the last-mile delivery for the now rural districts within their previous focus. The cities automatically subsume the structures originally in place leaving the carved out new districts without infrastructure for the same services.

The 2021 assessment of district stores in 136 districts identified multiple opportunities, challenges, and key progress to date in management of EMHS. Results showed that the district stores are improving and continue to support essential supply chain functions. This is attributed to the systems and processes that ensure the stores support the availability of EMHS across health facilities in the districts. While 98% of districts have well-established permanent structures for district stores, as alluded to earlier in this Roadmap, 48% of the stores do not have storage shelves with a further 52% lacking pallets⁶⁷. In terms of information system, 67% of district stores do not have a functional computer with 88% not having an eLMIS system for managing commodities in the store. 84% of the districts do not have personnel trained in SCM of medicines and health supplies. It is notable that areas of eLMIS, retooling stores, human resources for stores management, and appropriate technology remain key to improvement. Equipping the stores includes pallets, racks, and availing functional computers connected to the internet and a 24-hour reliable power supply. However, internet infrastructure and power/energy are not under the domain of the MoH, but Ministry of ICT and Ministry of Energy and Minerals respectively.

Infrastructure, storage, and distribution at health facility level

As a standard, all health facilities irrespective of their level must have designated appropriate medicines storage areas to be able to store EMHS. The higher the level of the facility, the greater the storage volume required. In 2018, the optimal performance level of storage infrastructure at health centres, general hospitals, and RRHs were found to be 38%, 47%, and 50%, respectively⁶⁸. There is no distribution need at these levels as NMS/JMS deliver to both public and PNFP sectors up to the last mile. The availability and use of basic storage materials namely shelves, racks, temperature monitors, among others vary significantly from the higher level to the lower level. GoU in partnership with and with support from Gavi has deliberately improved cold chain capacity for vaccines leading to significant enhancement of the cold chain across the health system with most facilities having a functional vaccine cold chain system that runs on a mix of power sources (electricity, solar, and LPG gas). There has been a gradual process of upgrading HC-IIs to HC-IIIs and HC-IIIs to HC-IV depending on the prevailing situations.

Health product quality, pharmacovigilance, and waste management

Quality assurance (QA) within the Uganda health supply chain is spread across five regulatory pillars: market authorisation or product registration, post marketing surveillance, pharmacovigilance, regulatory inspection, and product and technologies quality control testing. Quality assurance is a wide-ranging concept covering all matters that individually or collectively influence the quality of a product, technology, or device. It is the totality of the arrangements made with the objective of

⁶⁷ MoH, 2021; Assessment of Commodity Management and Infrastructural Needs at District Stores in Uganda

⁶⁸ GHSC-PSM (2018). Uganda National Supply Chain Assessment Report: Capability and Performance. Submitted to the United States Agency for International Development by The Global Health Supply Chain-Procurement and Supply Management (GHSC-PSM) Project, under USAID Contract Number: AID-OAAI-15- 00004.

ensuring that pharmaceutical products are of the quality required for their intended use⁶⁹. The QA system focuses on ensuring that products in the supply chain system are monitored for any adverse effects, and that in event of significant issues, there is adequate capacity to recall it from the system while at the same time enabling remedial actions on the affected cases to be undertaken⁷⁰.

The GoU has made strategic shifts under a new proposed bill as well as the ideas from the mergers of ministries, departments, and agencies (MDAs) as an immediate action to strengthen the regulatory framework. However, this is not expected to address the wider issues of threats of antimicrobial resistance (AMR), inadequate reach of regulatory direction, health sector governance of pharmaceutical services' readiness for global health security, the failure to generate real-time data on PMS, among others.

Market authorisation/product registration

This regulatory/QA component focuses on ensuring that only appropriate, safe, efficacious, and quality products are allowed, marketed, and used in the country. NDA conducts processes of registration for medicines and medical devices and notification for herbal products and has in place systems for equivalence registration. There has been a noted increase in the number of dossier evaluations carried out in 2018/19 (1912) to a total of 1,788 dossiers (1,404 human, 225 herbal, and 159 veterinary) in 2019/20 with the average time taken to assess them substantially reduced from about 36 months to 18 months⁷¹. The quality of pharmaceutical products imported into the country has significantly improved as evidenced by the drop in products failing quality tests decreased to 4.3% (81 out of 1893) in 2018/19 from 13% (176 out of 1321) in 2017/18⁷². The advent of drug-resistant TB, HIV/AIDS new products transition⁷³, and the COVID-19 pandemic have tested the elasticity of the NDA to effectively regulate and manage new health products' introduction without placing the population at significant risk of unregulated and not fully tested products.

Post-marketing surveillance

PMS refers to the process of monitoring the safety of drugs, medical devices, and technologies once they reach the market after the successful completion of clinical trials⁷⁴. The primary purpose for conducting PMS is to identify previously unrecognised adverse effects as well as positive effects. The NDA enforcement functions have been significantly strengthened with eight regional offices to provide one-stop centres for most services⁷⁵. As part of ensuring effective PMS, NDA has strengthened adherence to Good Pharmacy Practices and Good Distribution Practices as key pillars in the implementation of PMS. Current PMS involves sampling products in the market and testing in the

⁶⁹ The WHO, 2007; A Model Quality Assurance System for Procurement Agencies. Accessed September 28, 2021 from: <https://www.who.int/medicines/publications/ModelQualityAssurance.pdf>

⁷⁰ Anastasia Petropoulou, 2018; Quality Assurance / Pharmaceutical Quality Systems in manufacturing medicinal products; European Pharmaceutical Review. Accessed September 12, 2021 from: <https://www.europeanpharmaceuticalreview.com/article/78981/quality-assurance-quality-systems-making-medicinal-products/>

⁷¹ NDA Strategic Plan 2020-2025 page 19

⁷² Ibid, page 12

⁷³ JSI Research institute, July 2021; Supporting Next Generation HIV-Prevention Options: Leveraging JSI's Experience in New Product Introduction. Accessed on September 4, 2021 from: <https://www.jsi.com/supporting-next-generation-hiv-prevention-options-leveraging-jsis-experience-in-new-product-introduction/>

⁷⁴ The WHO, 2020; Guidance for post-market surveillance and market surveillance of medical devices, including in vitro diagnostics. Accessed on September 28, 2021 from: <file:///C:/Users/user/AppData/Local/Temp/9789240015319-eng.pdf>

⁷⁵ NDA Strategic Plan 2020 – 2025 Accessed from https://www.nda.or.ug/nda/files/downloads/Strategic%20Plan_July2016-June2021_NDA_Uganda.pdf

laboratory to ascertain quality using risk-based criteria. PMS remains largely within the private sector pharmaceutical outlets and very little within the health facilities.

Pharmacovigilance

Medicines and vaccines have transformed the prevention and treatment of diseases. In addition to their benefits, medicinal products may also have side effects, some of which may be undesirable or unexpected. Pharmacovigilance is the science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other medicine/vaccine related problem⁷⁶. Uganda's NDA hosts the National Pharmacovigilance Centre with a mandate to collect, collate, and continually evaluate information relevant to the benefit-risk balance of medicinal products on the market. The country depends mainly on passive surveillance and more recently on active surveillance to generate and detect new safety signals but still struggles with low reporting despite the steady increase of about 50% in the annual reporting rates in the last four years⁷⁷. NDA reports an increase in the number of adverse drug reaction reports submitted to NDA from 192 in 2015/2016 to 439 in 2017/18 and 538 in 2018/19⁷⁸. A regulatory framework and guidelines guide the pharmacovigilance system for both health care professionals and pharmaceutical companies. Consumers can now report directly to the pharmacovigilance centre through the MedSafety mobile application since 2019 and a toll-free line in 2020. Key efforts made to strengthen pharmacovigilance functions include development of a four-year pharmacovigilance strategy, establishing regional pharmacovigilance centres in 13 RRHs, establishing several innovative reporting platforms to aid reporting for both the public and health care providers, and engaging market authorisation holders to meet their pharmacovigilance obligation through developing pharmacovigilance guidelines.

Regulatory inspection

Inspection of establishments across the medical product supply chain is an essential regulatory function. The supply chain includes manufacturers, distributors, re-packagers, re-labellers, importers, agents, traders, wholesalers, and retailers of medical products. The purpose of regulatory inspections is to ensure that operations at these establishments are carried out in accordance with approved standards, norms, and guidelines and follow the national medical products legislation and regulations. These, in turn, should be consistent with World Health Organization (WHO) recommendations and other internationally recognised guidelines. The scope of the function applies to different good practices and is not limited to Good Manufacturing Practices, Good Distribution Practices, Good Pharmacovigilance Practices, and Good Clinical Practices.⁷⁹ NDA has developed the capacity to conduct pre-market testing of domestically manufactured products including herbal medicine to meet quality standards⁸⁰.

Product and technologies quality control testing

NDA maintained a functional laboratory quality system and acquired ISO 17025 accreditation for the medical device unit and for the WHO prequalification re-audit. Products are now tested in the ISO-certified National Drug Quality Control Laboratory (NDQCL) to ensure they meet pharmacopeial

⁷⁶ WHO; What is Pharmacovigilance? Accessed on September 4, 2021 from: <https://www.who.int/teams/regulation-prequalification/regulation-and-safety/pharmacovigilance>

⁷⁷ NDA, 2019; Pharmacovigilance Strategy for Uganda.

⁷⁸ NDA Strategic Plan, Page 18

⁷⁹ The WHO; WHO global benchmarking tool rev. VI ver. 1, Regulatory Inspection (RI): indicators and fact sheet. Accessed on September 29, 2021, from: https://www.who.int/medicines/regulation/06_GBT_RI_RevVI.pdf

⁸⁰ NDA Strategic Plan, Page 18

standards. The NDQCL also widened the scope of medicines testing to encompass rapid diagnostic tests, sutures, hand sanitizers, and herbal medicine on the Ugandan market⁸¹. In addition, NDA's quality management system is ISO/IEC 9001:2018 certified and complies with other international standards. The certification scope includes registration of drugs, pharmacovigilance, control of clinical and field trials, control of publications and advertisement, and PMS⁸². NDA is constructing the 12-floor NDQCL tower to house all functions, and this is expected to be completed in FY 2022/2023 with further equipping to be done through to FY 2025/2026.

Health care waste management

Waste generated by health care activities includes a broad range of materials, from used needles and syringes to soiled dressings, body parts, diagnostic samples, blood, chemicals, pharmaceuticals, medical devices, and radioactive materials used in health services delivery^{83,84}. HCW is one of the most hazardous wastes globally, second to only radiation waste⁸⁵. In Uganda, HCW generation averages at 92kg per day in hospitals, while PHC facilities (HC-IV, III, and II) generate about 42Kg, 25 kg, and 20 kg, respectively⁸⁶. Every health supply chain system and health services delivery generate some degree of waste that is proportionate to its level of effectiveness and efficiency⁸⁷.

Efforts to comprehensively address HCW management have been enhanced starting with the USAID| AIDSTAR-One project. The MoH published the National Health Care Waste Management Plan 2009/10 – 2011/12 as well as the Approaches to Health Care Waste Management 2009. This included a series of training modules conducted throughout the country to enhance human capacity and strengthen practices. A series of assessments on practices in HCW management in the nation's health facilities indicated that they are failing to cope with the situation. This situation was further complicated by huge volumes of bulky wastes that came with the COVID-19 pandemic and other PHEs. Different approaches are being applied by health facilities and pharmaceutical outlets based on availability of resources as well as mechanisms to handle waste such as incineration, open burning, landfills, among others. These methods each have risks to the environment as well. Segregation of waste is a very poor practice across many facilities, and it is mainly practiced only in medical laboratories^{88,89}. The key players in the management of HCW include the NDA, National Environment Management Authority (NEMA), health services providers, and the Atomic Energy Council. To meet challenges posed by public health outbreaks and pandemics, the national medical countermeasure supply chain plan and a comprehensive health care Health Care Waste Management policy and costed implementation plan are under development.

⁸¹ Ibid, Page 20

⁸² Ibid, Page 21

⁸³ WHO. 2016; Guidance for health care Health Care Waste Management in Low Income Countries. Accessed September 23, 2021, from: <http://www.health-care-waste.org>

⁸⁴ WHO, 2011.

⁸⁵ Arab M, Baghbani RA, Tajvar M, Pourreza A, Omrani G, Mahmoudi M. The assessment of hospital waste management: a case study in Tehran. *Waste Manag Res.* 2008;26(3):304–8.

⁸⁶ AIDSTAR-One: Fact sheet: Health care Waste Manag in Uganda. In.; 2000. Accessed on September 15, 2021, from: https://publications.jsi.com/JSIInternet/Inc/Common/_download_pub.cfm?id=12675&lid=3

⁸⁷ International Committee of the Red Cross (ICRC), 2011; Medical Waste Management; Geneva, Switzerland. Accessed September 13, 2021, from: <https://www.icrc.org/en/doc/assets/files/publications/icrc-002-4032.pdf>

⁸⁸ Strengthening High Impact Interventions for an AIDS-free Generation (AIDS Free) Project. 2016. *Health Care Waste Characteristics in Selected Facilities in Mbarara District, Uganda*. Arlington, VA: AIDS Free Project.

⁸⁹ Katusiime C (2018) Making Health care Health Care Waste Management a Priority: The Reality of Solid Waste Disposal at an Urban Referral Hospital in Uganda. *J Public Health Dis Prev* 1: 105

Public-private partnerships

The national policy on public-private partnerships lays down a framework for promoting PPPs in all sectors of the economy, including in the health sector. The public-private partnership for health (PPPH) presents a spectrum of possible relationships between public and private actors for integrated planning, provision, and monitoring of health services. The Uganda private health sector consists of PHPs and TCMPs as well as the social enterprises, and corporate social responsibility entities. It is estimated that 45% of Uganda's population seeks care from private providers consisting of hospitals/clinics, pharmacies, and drug shops⁹⁰. Furthermore, seeking care from pharmacies has progressively increased from 7% in 2012/13, to 14% in 2016/17 and 18% in 2019/20⁹¹. This calls for increased collaboration between PHPs and the public sector. The PHP sub-sector is the most significant and fastest-growing sector with 2,833 registered facilities as at end of October 2021. Of these, 2,533 are licensed pharmacies, and 14,677 licensed drug shops, among others. The pharmaceutical manufacturing sector is consistently growing, with 18 manufacturing facilities (and 12 more pending licensing) contributing 230 of the 5,267 products in the national drug register. It is notable that the PHP sub-sector is inadequately regulated, while TCMPs still work outside the law pending enactment of the TMCP Bill. There is limited supervision and distribution of pharmacies in rural communities, where there is need, compared with an over concentration in urban centres where people have more disposable income to afford OOP purchases of medicines and other health products.

Uganda's National Policy on PPP in Health outlines the priority areas consisting of policy development, HSSP monitoring and evaluation (M&E), coordination and planning, financial resource mobilisation and allocation, HRH management, capacity building, community empowerment and involvement, service delivery, and research and innovation. The current PPPH policy creates a limited framework for collaboration between the public and the private sectors that does not focus on harnessing the private sector's full potential to enhance the health sector's effectiveness and efficiency. The policy remains limited in scope, which is further worsened by inadequate dissemination to various stakeholders. The complex functionality of the private sector needs to be strengthened given its potential roles in the supply chain. There is limited engagement of the private sector in the transportation and distribution of health commodities for the public sector; the private sector is hired to handle the last-mile distribution of EMHS and during long-lasting insecticide-treated mosquito nets campaigns. Furthermore, the private sector takes leadership in the discovery and manufacture of medicines, health technologies, and related products in a complex environment riddled with lack of appropriate financing, rebates, and expensive inputs from the government, such as equipment. It appears that the private sector has little knowledge of what PPPs entail and the opportunities involved. Government interest in PPP is perceived as being limited to coordination, regulation, and taxation. There is a need to conduct due diligence on private sector engagement and enhance standards, coordination, and regulatory functions. The current frameworks do not provide for effective price regulation in an open economy making it challenging to protect consumers from excessive cost recovery.

⁹⁰ UBOS, 2021; Uganda National Household Survey 2019/2020. Page 40. Available from: https://www.ubos.org/wp-content/uploads/publications/09_2021Uganda-National-Survey-Report-2019-2020.pdf

⁹¹ *ibid*

3 DEVELOPMENT PROCESS OF THE UHSC ROADMAP

3.1 APPROACH/STEPS APPLIED IN ROADMAP DEVELOPMENT

This Roadmap was developed collaboratively under the guidance of the inter-ministerial task force on the health supply chain consisting of MoFPED as chair, MoPS, MoH, MoLG, Office of the Prime Minister, and the semi-autonomous agencies, namely NPA, NDA, NMS, PSU, among others. The IMTF agreed to develop this document as a critical tool for Uganda's journey to self-reliance in relation to the milestones of Vision 2040 and NDP-III. The document's development required the following key activities and processes:

- (i) Constitution of the IMTF Sub-Committee (IMSC): In November 2019, the IMTF approved the formation of a sub-committee to prepare a 10-year GoU health supply chain leadership and ownership Roadmap. This sub-committee took leadership in designing and writing the Roadmap.
- (ii) Agenda and priority setting: The IMSC conducted the consultations to set an agenda and priorities for the Roadmap over the second half of 2020 following the COVID-19 disruption of activities.
- (iii) First consultative workshop/retreat (June 15-18, 2021): With support from the USAID-Uganda office, the USAID/SSCS Activity as secretariat worked closely with the MoH DPNM to organise the first retreat physically/virtually. The retreat participants conceptualised the 10-year supply chain Roadmap and jointly drafted the chapters with a zero draft shared for review and inputs.
- (iv) Technical consultations, alignment, and updating: A team of five consultants were hired to help improve the zero draft of the Roadmap including its cost implications to become a national working document of Uganda. This version supported consultations with the IMTF, IMSC, and other key stakeholders.
- (v) IMTF consultations: Significant consultations were made with the IMTF and IMSC for their inputs. Furthermore, consultations reached out to other stakeholders. The list of all the people consulted in provided in annex 5 of this document.
- (vi) Second retreat to ratify and complete the document: The IMTF with support from the USAID-Uganda office through the USAID/SSCS Activity organised a second retreat to conclude the drafting process of the Roadmap, engage with the consultants (subject matter experts) who supported the writing and costing of the Roadmap chapters, and review and fine tune the latest draft of the Roadmap to prepare for its launch as a national working document of Uganda.
- (vii) Approval and sign-off: The final draft was circulated through the various structures for further review and decisions. It was then launched as a working national document by the IMTF and the IMSC.

3.2 GUIDING PRINCIPLES APPLIED

In developing this Roadmap, key guiding principles were applied to ensure that this GoU Health Supply Chain Leadership and Ownership Roadmap 2021/2022 – 2031/2032 and the other GoU strategic

approaches have a common approach in the short, medium, and long term. The guiding principles applied were:

- (i) **One government approach:** The consideration of this approach implies that all processes, propositions, and interventions are aimed at maximising the existing capabilities and capacities of all government MDAs as one.
- (ii) **Addressing equity and efficiencies in earlier years:** In the first five years, focus is to address already identified equity and efficiencies issues through optimisation, strengthen capacity for decision-making, and ensure increased government control and ownership.
- (iii) **Gradual and prioritised transition:** Over the years, the government should increase both financial allocation and leadership to the different aspects of the supply chain. It is envisaged that the increase will be 5% in year 1, 10% in year 2, 30% in year 3, and up to 95% in year 10.
- (iv) **Innovations and ambitious targeting:** The programmes, interventions, and activities considered integration through innovations and being ambitious.

SECTION II: CHAPTERS, STRATEGIC OBJECTIVES, AND INTERVENTIONS

Chapters:

Health Commodities Supply Chain Management

Health Supply Chain Information Systems

Human Resources for HSC

Infrastructure, Warehousing, Storage, and Distribution

Quality Assurance and Waste Management

Public-Private Partnerships

Resource Mobilisation and Financing of the HSC

Health Supply Chain Policy and Governance

4 CHAPTERS

4.1 HEALTH COMMODITY SUPPLY CHAIN MANAGEMENT

4.1.1. Overview/Summary situation

The Uganda health supply chain has demonstrated remarkable progress over the last 20 years along multiple dimensions. This progress has been linked to policy shift by GoU, significant donor investments, the rollout of ART which required a lot of systems building, and increased stability within the sector⁹². Health technologies include items needed for the provision of health services including medicines; vaccines; medical supplies such as contraceptives, dressings, needles, and syringes; and laboratory/diagnostic consumables⁹³. Though high prices and affordability of medicines are frequently highlighted as challenges to access

Effective and well-functioning health supply chains should ensure:

- Visibility and continuous availability of the right products
- Reliable stock levels
- Cost-effective choices for health
- Appropriate product use and management
- Total integration and coordination of all actors and components at all levels

to essential medicines, the weakness of health supply chains has remained a consistent barrier across a range of low- and middle-income countries⁹⁴. Addressing supply chain bottlenecks, inequities, poor performance, and inefficiency is key in this Roadmap.

4.1.2. Disparities/Challenges to be addressed

The key problems and challenges related to health supply chain management are:

- (i) The current supply chain management for health programme commodities is heavily reliant on donor support, placing sustainable services delivery at risk. Likewise, overall funding for EMHS remains inadequate and does not provide for some product lines (e.g., neglected tropical disease needs, therapeutic products, etc.) and products for emergencies not catered for as needed.
- (ii) There is lack of visibility of the EHMS and commodities at sub-national level due to most processes being predominantly manual. The timeliness of reporting for health programme products and EHMS remain a very challenging issue within the context of the national supply chain, leading to inadequacies in forecasts, quantifications, and replenishment.
- (iii) Health commodity availability varies across all levels with a skewed distribution of stock across all levels of care in the national health system. Across different levels of the supply chain, there are different situations of over or understocking that creates an imbalance in quantities, while elsewhere, stocks are lacking altogether. If effectively optimised, these stock imbalances could cover significant national needs across the board.
- (iv) There is low adherence to the use of the standard treatment guidelines in managing cases across all levels of the health system leading to irrational medicines use. This together with other factors continue to propagate AMR, which limits future antimicrobial treatment options.

⁹² MoH, 2020; National Pharmaceutical Services Strategic Plan 2020/2021 – 2024/2025, Final Draft

⁹³ Family Health International. Strategies for Expanded and Comprehensive Response (ECR) to a National HIV/AIDS epidemic. Module 7-Managing the Supply of Drugs and Commodities.

⁹⁴ The Gavi Alliance, May 2015; The Path to Supply Chain Management Professionalization: Case Study Portfolio. Accessed on September 28, 2021, from:

<file:///C:/Users/user/AppData/Local/Temp/The%20Path%20to%20SCM%20Professionalization.pdf>

- (v) The continued use of the push system at government HC-IIIs and HC-IIIIs with the inflexible kits (despite its convenience in distribution) continues to hamper HR capacity growth and applies a one-size-fits-all principle. This leads to both stockpiles and stock insufficiencies at health facilities when we consider the weak implementation of the redistribution guidelines. Therefore, there is inevitable failure to use consumption data from health facilities leading to inefficiencies alluded to in the various areas of this Roadmap.
- (vi) The linkage is weak between quantification plans, procurement plans, and annual budgets for EHMS and laboratory supplies. Currently the DPNM has limited input into the decisions on how funds are appropriated or used under Vote 116 at NMS or the EHMS credit line at JMS.
- (vii) Limited use of available information for decision-making affects the quality and timing of all the decisions for the supply chain. In situations where information exists, access and utilisation remain low, and most are considered for reports and ordering purposes only.
- (viii) The national reverse logistics system remains at best theoretical, ineffective, and more complex in situations of getting obsolete, expired, or unwanted products out of health facilities. Health facilities are continuously clogged with unusable stocks, yet an effective reverse logistics/redistribution system can help improve efficiencies and prevent a lot of systemic wastage. Key in this is the need for enhanced leadership and governance of the supply chain for health at all levels.
- (ix) There continues to be fragmentation of supply chain management along the pseudo-vertical programmes or areas of interest by partners that is mostly rigid, with certain commodities overfunded and funding that cannot be realigned or re-allocated to cover other deficit areas. This coupled with the differences in funding approach, disbursement mechanism, and cycles makes stock-outs inevitable despite availability of funds.
- (x) Currently there is no system for quantifying and tracking consumption in the PHP sector beyond the importation reports from the NDA that track the whole spectrum of imports.
- (xi) The health commodities needed for neglected, orphaned, or near elimination diseases and other programmes like nutrition are either grossly inadequate or not even on the list of prioritised products for procurement.
- (xii) Emerging diseases, re-emerging diseases, and pandemics such as COVID-19 and other PHEs continue to impact the quality and reliability of national quantifications including reduced budget allocations and increased commodities demand.
- (xiii) Numerous gaps in the specifications for medical and diagnostic supplies continue to hamper the cost-effective use of platforms and tools leading to high costs of delivery.
- (xiv) Some commodities such as those for non-communicable diseases do not have sufficient financing at NMS, hence are never sufficient compared with the need.
- (xv) Refugees and migrants continue to create a surge in demand for all health products and supplies. Given their special context, their needs are either excluded from or minimised in planning.
- (xvi) The absence of price control for health products and supplies within the private sector continue to lead to higher sourcing and service delivery costs.
- (xvii) Health sector strategic shifts, particularly towards community health services, self-care, and other form of patient-led treatment, affects demand for health commodities. There is limited mechanism to control health commodities at community and home-based care levels.
- (xviii) Traditional and alternative medicines are inadequately included within the overall national health services delivery system.
- (xix) Prescription-only medicines are widely available without prescription, and there are no systems in place to promote rational use of antimicrobials.

4.1.3. Strategic objectives

For GoU to address these challenges, the strategic objectives from NPSSP that shall be applied over the 10 years of this Roadmap follow. The different high-level activities or interventions to achieve their different aspirations are described in the annual implementation plan.

SO-4.1.3.1. Guarantee that the health commodities, technologies, and relevant supplies selected, quantified, and used for delivery of UHC are aligned and responsive to the priority needs of the country

Delivery of the minimum health care package is central to UHC, which also requires the timely availability of the right quantity and quality of inputs, particularly the EHMS, technologies, equipment, and related commodities. Overall, strengthening and optimising the selection, quantification, procurement, and handling of the products at health facility level where they are used are needed. A strategic shift is to align the products to the disease patterns, prevention needs, and appropriate diagnostics and services delivery needs by level of care. Standardisation of schedule, list, and guidelines for treatment and other product selection shall be central to ensuring that procedures for product selection, quantification, and others are aligned to national strategies.

SO-4.1.3.2. Strengthen and harmonise the national and sub-national quantification and procurement planning processes to ensure that health commodities, technologies and supplies provided in a cost-effective and efficient manner

Specifically, the conduct of national quantifications, annual procurement planning, supply planning, new products introduction, and transitioning of products out of the system, among others are critical to ensure right mix, quantity, and quality of health commodities are in the system. This should systematically be done across all levels with focus being at streamlining processes at national level, referral and specialist facilities, hospitals, and high-volume health facilities. Health facilities must transition from making annual procurement plans to ensuring capacity for effective evidence-based demand generation as opposed to aligning with budgetary ceilings and other stopgap measures.

SO-4.1.3.3. Strengthen and implement comprehensive rational health commodities use programme at national and health facility level

Appropriate use of the products remains a strong component in ensuring proper services delivery. This strategic action looks at how the functionality of the MTCs, rollout of the national drug formulary, and all associated quality of practice standards are maintained. This will link up with key health supply chain functions to ensure that quality of care and affordability are enhanced.

SO-4.1.3.4. Strengthen supervision of health facilities to improve availability of quality data for decision making, quantification, and capacity strengthening.

Effective supervision of the health supply chain and health facilities will play a critical role in enhancing quality of performance using the Supervision, Performance, Assessment and Recognition Strategy (SPARS). This will support health facilities to improve availability of quality data for decision-making across health facilities and at national levels. Focus will be on institutionalising supervision best practices and improving the quality of manually collected data as the country transitions to digital platforms.

4.2 HEALTH SUPPLY CHAIN INFORMATION SYSTEMS

4.2.1 Overview/Summary situation

The GoU uses health information generated from health supply chain data in three main areas (a) to inform sector planning, (b) to inform day-to-day decision-making, and (c) to inform reporting at all levels of health service delivery. The dividend is seen in planning and sector reporting. This chapter of the 10-year HSC Roadmap subscribes to the National Health Information and Digital Health Strategy 2021 – 2025⁹⁵. Its primary aim is to recommend necessary actions to rectify present deficiencies in the supply chain health information system and to put in place a framework of commitments and priorities for the next 10 years to ensure that those in need of access and use of HSC-related information get the right information, of the right quality, and at the right time and are in position to use it competently, confidently, and effectively. The aspirations for the HSC information systems are well in line with other key national policies within the health sector. Reliable, timely, and quality data is an essential and central element in the HSC designs, decision-making, and processes optimisation. The term HSC information is employed throughout this chapter to refer to any information used to help make an informed HSC-related decision or to inform on HSC-related issues, whether at the personal, professional, managerial, or political level. An integrated HSC information system ensures the connectivity of all supply chain functions for efficiency and effectiveness.

Appropriate health supply chain information system should:

- Transform raw data into usable information
- Support the timely collection, use, and availability of correct and quality data for decision-making
- Drive use of strategic information to provide impact on HSC
- Ensure end-to-end data visibility and transmission
- Protect the integrity and confidentiality of data

4.2.2 Disparities/challenges to be addressed

The key problems and challenges related to health supply chain information systems are:

- (i) Data use in day-to-day decision-making is still significantly weak and requires improvement at all levels of the supply chain in the country. Sustainable data demand and information use remains inherently an integral part of Uganda's health supply chain system.
- (ii) The health supply chain data continues to have very low reporting rates in the HMIS through the DHIS2. As such, the continued use of extrapolation provides a challenge to the overall reliability of outcomes for which the data is intended to be used.
- (iii) The lack of supply chain data visibility and systems integration of data from the community level and other parallel mass interventions continues to create challenges in supply chain planning and decision-making at all levels.
- (iv) The availability and appropriate use of paper-based data tools and functions at point of collection remain very low, are increasingly expensive, and are normally only for purposes of meeting routine work and reporting.
- (v) The multiplicity of many information systems to collect, transmit, and aggregate data at all levels continues to hamper the need for an integrated and interoperable system that meets the core needs and mandates at every level. The multiple systems within the same space are collecting/maintaining siloed datasets.

⁹⁵ Health Information and Digital Health Strategy 2021 – 2025

- (vi) Though targeted interoperability has created some level of visibility, the lack of integration with other health information systems like the DHIS2, PIP, the respective warehouse ERPs, and LMIS at health facilities means that a lot of data cannot be freely shared across platforms for ease of decision-making, once processed. While considerable effort has been made to standardise master product information through the national product catalogue, the adoption and integration of health information systems with the national product catalogue remain low.
- (vii) The funding, adoption, and support of supply chain digital health information infrastructure remain low. Enabling a robust infrastructure base, including computing equipment, power, and internet connectivity, requires better coordination, funding, and establishment of a scalable and cost-effective and supportive infrastructure backbone. Despite increased government and donor investment in this effort, many health facilities with basic computerisation are unable to digitise and share stock status in a timely manner, affecting the analysis and use of such data at facility level.
- (viii) The LMIS and HMIS data continue to be incomparable and poorly linked, yet both are required for effective health sector supply chain decision-making and resource allocation.
- (ix) The health sector has continued to inadequately align itself to the bigger GoU investments in better ICT infrastructure. As such, benefits of economies of scale, integration within the one government approach, among others remains a high-level statement without appropriate sectoral actions linked to it.
- (x) General and widespread inadequacies and functionality of hardware, equipment, licenses, and human capacity to ensure HSC functions need to not only be aligned and integrated, but also better positioned for the future.
- (xi) Parallel introduction of information systems remains persistent and detrimental to the sustainability of already existing investments.

4.2.3 Strategic objectives

In addition to the overarching strategic commitments put forward in the National Health Information and Digital Health Strategy 2021 – 2025, the key interventions proposed below will complement and boost sector-wide transformations and acceleration required to achieve a desired HSC information system that promotes data-driven decision-making, improves visibility, and enables traceability of health care commodities to promote evidence-based planning and performance monitoring.

SO-4.2.3.1. Strengthen routine data collection, reporting, and information use in decision-making from point of collection through to national level to support performance monitoring, traceability, visibility, and accountability

This strategic objective aims at enhancing routine and effective use of health supply chain information by managers at various levels. The strategy recognises that effective use of information is dependent on the availability of relevant, accurate, and timely data in the correct format in accordance with the needs of a stakeholder. Different users need different information, level of synthesis, and presentation. To promote relevant use of collected data at each point of service, information products **MUST** be tailored to meet respective functional and business requirements, whilst guiding report generation. Through this intervention, relevant information needs for managers such as health facility in-charges, DADIs, DHO, CAO, and district local councils will be developed to support focused dissemination and interpretation of information to enable corrective decisions/actions.

The GoU through MoH will aim to develop and implement a data use framework that:

- (i) Identifies the different data users / stakeholders across the health supply chain.
- (ii) Identifies information needs for each of the data users to support decision making
- (iii) Develops information products for each of these data users/ stakeholders.
- (iv) Integrates information products into the pharmaceutical information portal and systems to generate custom reports for each of the unique data users / stakeholders.

The following intervention activities are proposed:

- (i) Develop and implement a data use framework that specifies unique stakeholder information needs.
- (ii) Develop a comprehensive implementation plan of actions for ensuring data visibility and access for stakeholders.
- (iii) Identify and train support champions at national and sub-national level to support the implementation of the framework.
- (iv) Customise the PIP to generate custom reports based on the information products.
- (v) Monitor and evaluate the performance of the framework.
- (vi) Undertake regular supportive supervision to improve data reliability and accuracy.
- (vii) Develop and implement standard operating procedures (SOPs) on electronic data integration as part of the framework.

SO-4.2.3.2. Prioritise the digitalisation of health supply chain processes at all levels

This strategic objective aims at attaining full automation of supply chain business processes at all levels to strengthen coordination and collaboration for efficient and effective health supply management. The strategy recognises the central role of a functional ICT in the management of supply chain functions and level of investment required to have a functional health supply chain information system. It therefore advocates for progressive steps and investments towards development of an integrated supply chain information system reliant on available technology.

These intervention activities will be undertaken:

- (i) Develop and implement a health supply chain digital health enterprise architecture (HSCEA) that links into the overarching enterprise architecture to rationalise and guide digitalisation efforts.
- (ii) Design and implement the health supply chain data exchange bridge to enable data exchange and interoperability. This will be a product of the HSCEA.
- (iii) Upgrade the existing national product catalogue design and implement an electronic national health product registry to support interoperability and data exchange across health systems in alignment with HSCEA.
- (iv) Develop and implement an annualised ICT infrastructure capacity management and investment plan in alignment with HSCEA. The plan should be comprehensive enough to include end user needs, including computer hardware, software licenses, server hardware and storage capacity, local area network and wide area network, and alternative power arrangements required for the next 10 years.
- (v) Prioritise the phased rollout of ICT infrastructure and access to eLMIS with a focus on lower-level facilities.
- (vi) Develop an implementation plan to gradually integrate private health facilities into the supply chain data exchange.
- (vii) Strengthen the use of information portals to enhance reports generation and presentation of information based on unique stakeholder information needs across the supply chain.
- (viii) Conduct periodic ICT capacity assessments to determine resource needs based on an increase in data processing needs.

- (ix) Develop an annualised plan to address of ICT infrastructure maintenance needs.
- (x) Guide investments in the energy sector to prioritise health facilities in the rollout of energy infrastructure across the country to power health facilities in general and their supply chain infrastructure in particular.

SO-4.2.3.3. Adopt the use of GSI global standard to enhance traceability in the health supply chain

Under this strategic objective, the following intervention activities will be undertaken:

- (i) Develop a GSI global traceability standard framework and implementation plan to guide the adoption and use of the standard.
- (ii) Set up a special work group to direct the adoption of the standard.
- (iii) Identify and train champions to support the implementation of the standard.
- (iv) Conduct a systems landscape assessment to determine opportunities to leverage existing systems or to integrate new technology to achieve the implementation of the standard.

SO-4.2.3.4. Strengthen governance and leadership over health supply chain information system management

This strategic objective aims at setting up an enabling environment to support the implementation of a functional supply chain information system. The intervention activities to be undertaken will include the following:

- (i) Review information and digital health strategies to address changes in local and global practices, technology, and governing laws.
- (ii) Review policy guidelines and SOPs to address changes in local and global practices, technology, and governing laws.
- (iii) Develop data exchange protocols to govern interoperability between systems.
- (iv) Establish data governance council to advocate for supply chain data quality-related issues and process optimisation at all levels.
- (v) Strengthen the technical working group (TWG) framework to discuss health supply chain data use requirements and align its mandate to MoH policy to ensure effectiveness in providing policy oversight, guidance, and feedback to higher levels.
- (vi) Establish service-level standards to govern services of ICT vendors.
- (vii) Establish a national product catalogue to standardise reporting for all commodities.
- (viii) Review the national product catalogue to address changes in health commodities and supplies.

SO-4.2.3.5. Strengthen human resource capacity to the efficiently manage and use supply chain Information systems

This strategic objective aims at building human resource capacity to support the implementation of a functional supply chain information system. These intervention activities will be undertaken:

- (i) Dedicate adequate and competent core teams of information technology (IT) personal at national and sub-national levels who are trained to support all approved government software applications and supporting infrastructure within the supply chain system.
- (ii) Adopt a pre-service training programme for human resources through the councils to train on supply chain applications before they are introduced into in-service practice.
- (iii) Scale up the implementation of electronic SPARS (eSPARS) to enhance quality of service.
- (iv) Undertake regular training for health supply chain staff on SOPs and systems in use.

4.3. HUMAN RESOURCES FOR HSC

4.3.1. Overview/Summary situation

Strong supply chains are essential for positive health outcomes, and they require a competent, recognised, and supported workforce with significant technical and managerial capacity. Successful implementation of the targets enshrined in the different strategic documents and policies rely on the adequate availability of a well-recruited, deployed, and equitably distributed workforce. Uganda Vision 2040 acknowledged science, technology, engineering, and innovation are required in meeting health care needs, building industries, and facilitating economic development. This calls for increased need to invest in HR to address emerging industry and country specific needs. All national and sector-specific plans have emphasised and committed to addressing HRH and HR for supply chain shortages through appropriate and sustainable approaches. Pharmacy technical staff on the one hand hold responsibility for accessing essential medicines to the patients, a cornerstone to UHC, and on the other hand, they are critical contributors to the innovation and production of new molecules that are needed for health care. To achieve high performance and productivity of pharmaceutical personnel, the health sector requires well-defined organisational and staffing structures at all health services delivery levels ⁹⁶.

An effective health supply chain workforce requires:

- That right HR are recruited, deployed, and equitably distributed and rewarded
- That all core functions of HSC are managed by the right personnel/staff
- Effective HR planning and information management
- That appropriate tools and resources to perform their roles are in place
- That effective safety and common interest of the patients and the public are addressed
- Better HSC services delivery and performance
- Continuous capacity development and support

4.3.2. Disparities/Challenges to be addressed

The key problems and challenges related to human resources for the health supply chain are:

- (i) Continued gaps in fulfilment of the already-approved staffing norms at all levels of the health system that continue to hamper the effectiveness of services delivery. Out of the 67 general hospitals, 42 employ 59 pharmacists to manage the hospital pharmaceutical care needs of the health facilities with an average of one pharmacist per hospital.
- (ii) Public sector pharmacist and pharmacy technician positions have less than a 40% staffing rate. A critical shortage of the HSC workforce persists, with 4.79 pharmacists per 100,000 populations in 2019, increasing from 2.7 in 2017. Significant staffing gaps exist at HC-IIIs (47%) and general hospitals (32%), leading to approximately 2.6% of patients seeking care from other sources, including TCMPs.
- (iii) At the district level, there is no pharmacist despite the consistent growth of the pharmaceutical manufacturing sector.
- (iv) The absence of formal regulatory coordination between public and private sector agencies with mandates in the management, development, and planning of the HSC workforce has been a critical challenge. In addition, the inadequate capacity of health regulatory and enforcement

⁹⁶ Nene, Sinqobile & Pillay, Alan. (2019). an Investigation of the Impact of Organisational Structure on Organisational Performance. *Financial Risk and Management Reviews*. 5. 10-24. 10.18488/journal.89.2019.51.10.24

mechanisms at all levels means that in lieu of effective systems, frameworks, and strategic directions, self-regulation will slowly threaten the safety of the population.

- (v) Chronic absenteeism of critical HSC workforce at many levels continues to aggravate an already challenged health delivery system. There is limited capacity to track workforce performance outside of routine reviews.
- (vi) In-service capacity building and professional development remains largely a mix of multiple regulations, namely compulsory requirements, self-regulation, and voluntary schemes designed by different associations. The professional councils need to define and develop appropriate standards as well as self-managed quality improvement system tools for QA in private health facilities.
- (vii) Even as other cadres and facilities are growing, pharmacy services and supply chains remain unattended with institutionalised task-shifting at all levels of the health system.
- (viii) There is a lack of an HR development plan for the health supply chain and the pharmaceutical sector making it challenging for MoPS to identify the capacity needs, match norms, and ensure alignment to broader health sector needs.
- (ix) Health supply chain spans beyond the human health and enters the multisectoral one health space. As such, most HSC personnel are inadequately skilled to deliver services for PHEs and other related health security interventions.
- (x) The structure of HSC and pharmaceutical cadres at all levels are not aligned to the actual needs for effective services delivery, while service quality continues to deteriorate. The expansion plan for current HRH establishment in the DPNM and different institutions are determined using non-standard approaches.
- (xi) The general health supply chain staffing remains unaligned to the actual demand and value of the products being handled. With large in-patient flows, clinical, nursing, and pharmacy staff in hospitals are inadequate to cover the tasks to serve both patients and health workers. This is attributed to the old hospital staffing norms that are no longer commensurate with the existing workload changes, which have taken place over time due to population growth, changes in disease burden, and health services demand⁹⁷.
- (xii) There are multiple irregularities in reporting lines at various levels. At RRHs, some Pharmacists report to Directors while others report to the Head of Clinical Services. The Inventory Manager who oversees medicines stores in hospitals reports to Hospital Administrators. Countrywide, some HC-Is, IIS, and IVs report to the DHO who consistently loops in the Sub-County Chiefs who have a direct supervisory role over them.

4.3.3. Strategic objectives

The health sector is committed to strengthening the country's capability to respond to outbreaks, emergencies, and pandemics by implementing the national medical countermeasures supply chain plan. The sector has comprehensively reviewed the HSC workforce structures at national, sub-national, and district levels and in the private sector. Together with strategic players, the MoH needs to advocate for approval of the proposed structure to urgently recruit qualified staff at all levels. In the next 10 years, the HRH Roadmap will address the following three strategic priorities:

- (i) Enhance HSC workforce performance, productivity, and accountability for efficient resource use at all levels.
- (ii) Undertake targeted recruitment and retain optimal HSC workforce.

⁹⁷ MoH - Organizational and functional structures of the pharmaceutical function in the health sector- page 21.

- (iii) Strengthen HSC workforce training and capacity building.

These three strategic priorities shall be implemented in line with the full-scale implementation of the 10-year HRH Strategic Plan guided by the following imperatives:

- (i) To achieve efficiency gains, the DPNM shall review the district local government staffing structures to redeploy excess staff in critical HSC cadres identified in the HRH Audit Report of 2019 – viz. Clinical Officers (104%); laboratory staff (102%); nursing staff (100%); and midwifery staff (94%).
- (ii) To enhance HSC workforce productivity, targeted recruitment shall be undertaken for pharmacy cadres below 50%, which the HRH Audit for 2019 established as pharmacy staff (50%); dispensers (44%); and Anaesthetic Officers (30%).
- (iii) Where applicable, the DPNM shall streamline and build the capacities of nurses, midwives, and other cadres who have been performing task-shifted roles in HSC through training and capacity-building programmes and issuance of task-shifting guidelines.

Specifically, the HSC workforce plan shall address the following three strategic objectives:

SO-4.3.3.1. To enhance HSC workforce performance, productivity, and accountability for the attainment of efficient resource use at all levels

- (i) Review and update HSC workforce cadres job descriptions / person specifications at MoH, NRHs, RRHs, Uganda Cancer Institute (UCI), Uganda Heart Institute (UHI); DHOs; general hospitals; and HCIV-IIs.
- (ii) Undertake a critical analysis of HSC staffing and structure analysis at all levels.
- (iii) Carry out annual HSC workforce audits in public and private sector facilities.
- (iv) Enhance digitalisation of HSC inspection, licensure, and continuing professional development (CPD) updates.
- (v) Review policy guidelines to align PNFP and PFP staffing levels.

SO-4.3.3.2. To recruit and retain optimal HSC workforce for increased national supply chain resources

- (i) Prioritise recruitment of approved HSC workforce staffing structures at the central level (MoH, UCI, UHI, NRHs, RRHs).
- (ii) Prioritise recruitment of approved HSC workforce staffing structures at district local government levels (DHOs, HCIV-IIs).
- (iii) Recruit to fill gaps based on replacement.
- (iv) Align PNFP and PFP staffing norms to the standard level of public health facilities.
- (v) Implement the HSC cadre's attraction and retention strategy in hard-to-reach areas (Karamoja Region).
- (vi) Recruit and deploy super specialists, specialists, and critical care support cadres, including laboratory staff.

SO-4.3.3.3. Strengthen HSC workforce training and development to deliver innovative and sustainable HSC

- (i) Undertake a targeted training and capacity-building needs assessment of in-service HSC cadres.

- (ii) Support the development of an innovative education curriculum and packages for pre-service and in-service HSC workforce cadres with Ministry of Education and Sport (MoES) training institutions.
- (iii) Implement the recommendations from the training and capacity-building needs assessment of in-service HSC cadres.
- (iv) Strengthen the integration of HSC workforce services with other clinical support functions.
- (v) Undertake annual on-boarding, induction, and staff engagement mechanisms.
- (vi) Print, disseminate, and popularise the HSC workforce Roadmap for implementation.

4.4. INFRASTRUCTURE, WAREHOUSING, STORAGE, AND DISTRIBUTION

4.4.1. Overview/Summary situation

Effective warehousing, storage, and distribution systems form an essential component of ensuring that the integrity of products in storage is maintained and delivered to the end user. The infrastructure for health supply chain consists of the physical structures and support inputs to ensure that the products are warehoused, stored, and distributed up to last mile under ambient conditions as expected. Generally, the country is motorable with capacity to reach out to any district within 24 hours from dispatch at central level⁹⁸ and henceforth no destination should suffer delays in deliveries except under specific circumstances. Irrespective of whether it is NMS, JMS or any outsourced third part storage and distribution agent, performance remains central in achieving results.

A well-functioning infrastructure, warehouse/storage, and distribution ensure that:

- Quality and integrity of the products are maintained in the supply chain
- Products are delivered in the right quantity and at the right time
- There is continuous capacity development and support
- Safety of both products and human resources are kept at the highest level
- Reverse logistics plan is functioning at optimal level
- Lowest possible level of obsolete or redundant stocks are held at all levels of the supply chain

At central level, NMS supports the public sector, JMS supports the PNFP sector, while other private warehouses provide warehousing and distribution activities to private health providers. Most national- and district-level warehousing and storage investments are dependent on partner support. The 2021 district stores assessment in 136 districts identified multiple opportunities, challenges, and key progress in management of EMHS at that level. Results show that the district stores are improving and continue to support essential supply chain functions. It is notable that areas of eLMIS, retooling stores, human resources for stores management, and appropriate technology are key to improvement. Procurement of health products is conducted along the financing mechanism and to some extent the distribution mechanism.

4.4.2. Disparities/Challenges to be addressed

The key challenges related to infrastructure, warehousing/storage, and distribution are the:

- (i) Fragmented distribution through regional implementing partners for some commodities such as for voluntary medical male circumcision; the need to move to one-warehouse one-facility distribution.
- (ii) Low level of optimisation of existing storage capacity across all levels with high level of stock and space redundancies. Application of stores principles aimed at ensuring better performances remains limited.
- (iii) Limited interoperability of warehouse information systems with key MoH and health facilities systems and information portals. This continues to weaken the capabilities for real-time data for effective supply chain decision-making.
- (iv) Poor state of district stores with inadequacies in the; human resources (number, skills, and positioning); and computerisation of those stores to function optimally. Some district stores

⁹⁸ NPA, 2010; NDP-III

lack basic handling equipment. With advent of new cities, it is expected that many more districts will remain without a district medicines store.

- (v) Continued reliance on privately outsourced warehouse spaces that deny JMS and NMS the much-needed revenue to internally improve their functions and performance.
- (vi) Inadequate and uncoordinated power and power back-up capabilities at health centres for cold chain coupled with poor functionality of cold-chain equipment outside of vaccines.
- (vii) Capacity to handle bulky products across all levels. Key products such as condoms, gloves, mosquito nets, etc. remain largely outside the systems of JMS and NMS with most of their storage and distribution outsourced.
- (viii) Limited interoperability and lack of a common product coding system/design for national warehouses prevents ensuring end-to-end visibility across platforms at national level. This in turn makes it impossible to provide real-time comparisons.
- (ix) The rapid growth of districts and proliferation of local governments normally do not align to the broader health sector or health supply chain.
- (x) Lack of transparency in procurement has made it difficult to move to pooled procurement.
- (xi) The BUBU approaches have increased procurement lead time, however, the challenge may be in obtaining active pharmaceutical ingredients that meet minimum quality standards.

4.4.3. Strategic objectives

In order to address these challenges, four strategic objectives from NPSSP shall be applied to form interventions over the 10-year period of this Roadmap. The different high-level activities or interventions to achieve their different aspirations are described in the annual implementation plan.

SO-4.4.3.1. Strengthen national warehouse capacity and coordination mechanisms to meet the desired performance standards and needs of the country

Strengthening the national warehouses to come to a common architecture of coordination, efficiency models in operations and distribution, and being able to continuously meet the country's needs in a cost-effective manner is critical. In the short term (1-3 years), issues to do with operational efficiencies and overall alignment shall be addressed. In the long term (over 5 years), alignment to development needs and focus on outsourced services and reducing stock redundancies remain critical and of focus. Within this framework, interoperability, coordination, and quality management shall be central to capacity strengthening.

SO-4.4.3.2. Rationalise and strengthen the district level storage and infrastructure to be better placed to support the expanded district supply chain needs

District stores have continued to play critical role in providing the storage for health commodities for emergencies and handling general products for mass campaigns and population-based interventions for both prevention and response to emerging diseases and challenges. Currently they also provide potential storage for reverse logistics and intra-district redistribution arrangements. This strategic intervention will focus on strengthening the operations and structural and managerial capacity at the district stores, including the district vaccines stores, to effectively support the district health team (DHT) (or equivalent) and the local governments to meet minimum standards for handling EHMS and commodities for emergencies, among others. This intervention is linked to the investment by NMS to put in place containers at district headquarters to serve as cross-docking stores as a measure to strengthen commodity accountability throughout the distribution chain.

SO-4.4.3.3. Align and strengthen the storage, handling, and inventory control practices at health facility level

Health facility storage should be aligned to level of care. In this Roadmap, there is urgent need to address facilities without basic handling and then integrate the needs of storage into the sector infrastructure development plans. The rapid urbanisation, introduction of new districts, and upgrading of health facilities need to be effectively aligned to the needs of the population, health supply chain, and services delivery arrangements. Every health facility therefore needs the right standard of infrastructure and storage to be able to address the load they should fully handle before effective referral. Each facility should have adequate design, shelving, pallets, and better ambient storage arrangements for the products at their levels including vaccines, nutritional commodities, vertical programme commodities, and other bulky products. A common national framework for how health facilities are created, constructed, upgraded, and redesignated should consider storage requirements. Finally, ensuring the accountability of products is critical and is aligned to the need to carefully consider the barcoding or QR coding as described in the QA chapter of this Roadmap. It is important to make it mandatory for all persons handling products to integrate the different tracking mechanisms into their routine operations and plans.

SO-4.4.3.4. Ensure essential health products and technologies are sourced, handled, and distributed in a cost effective and efficient manner

Ineffective procurement and limited competitiveness are key drivers of heightened costs of health products acquisition beyond Uganda. There is an urgent need to scale up capacity of local manufacturers of key products and ensure that rebates and other local industry protection remain well-integrated into the sustainable supply of EMHS and other products in the country. Embracing the total value chain approach will ensure that a vibrant production sector can over time meet the local needs and support import substitution while enhancing cost-efficiencies in the health supply chain. However, cost-effectiveness of existing procurement systems remains central to ensuring that the national and sub-national needs are met within the confines of the existing laws as well as not stifling the agenda on access to products. Increasing transparency to procurement data and moving towards pooled procurement in the long term is central to sustainable direction under this strategy. The MoH in collaboration with other stakeholders such as MoICT, MoFPED, and other ministries will accelerate the exploitation of TRIPS Agreement flexibilities towards making EMHS and related products available and affordable within the next five years.

4.5. QUALITY ASSURANCE, PHARMACOVIGILANCE AND HEALTH CARE WASTE MANAGEMENT

4.5.1. Overview/Summary situation

Quality assurance, pharmacovigilance, and health care waste management are highly interlinked supply chain functions whose aim is ensuring that right quality products are made available at all levels. To achieve this, multiple actors and players are involved at national, local government, health facility and community levels. Effective health care waste management ensures that obsolete and unusable products, technologies, or devices are systematically segregated, excluded, withdrawn, and effectively disposed. The collective outcome of effective QA and HCW management is to ensure that the population is assured of availability of essential, appropriate, safe, and efficacious health products, technologies, and devices.

Quality assurance, pharmacovigilance, and health care waste management ensure that:

- Only products and technologies of appropriate standards are made available to the population
- Obsolete and undesirable products are excluded from use at all levels
- Appropriate standards and consumer protections are in place and always applied
- National systems are fully responsive and able to manage wastes from services delivery
- Adverse effects and toxicity of medicines and technologies are effectively documented and managed

4.5.2. Disparities/Challenges to be addressed

The key challenges that need to be addressed by this 10-year Roadmap include the following:

- (i) Despite Uganda having improved the reporting number of adverse drug reactions from 428 in FY 2017/2018 to 1824 in FY 2019/2020, the reporting of 44 per 1,000,000 is still low per the WHO recommended estimate of 200:1,000,000⁹⁹. Only 9% of the total adverse drug reaction reports submitted were from private-sector entities, namely private facilities, pharmacies, and pharmaceutical companies¹⁰⁰.
- (ii) Pharmacovigilance practices currently are vertical and driven by priorities of the disease programmes and funding partners. The heavy reliance on external support for the activities continue to create significant gaps in sustainability. Likewise, the ownership of the practices remains low at the lower health facilities.
- (iii) There is limited integration of electronic HMIS for clinical care and health facility structures like the MTCs with those of pharmacovigilance and PMS.
- (iv) The capacity of market authorisation holders to effectively conduct pharmacovigilance and PMS remains low without statutory instruments to compel them to act in place.
- (v) There is suboptimal capacity for quality control for emerging new products as well as slow adaptability of the NDQCL to changing product standards and specifications.
- (vi) The absence of approved updated Health Care Waste Management guidelines and policies continue to hamper the coordinated HCW efforts at all levels including at health facility level. The efforts to develop these documents should be fast-tracked.

⁹⁹ National Drug Authority Pharmacovigilance Annual Report 2020 page 3

¹⁰⁰ Ibid, page 3-4

- (vii) Despite high knowledge in health care Health Care Waste Management (71.5%) and the knowledge of risks (91%)¹⁰¹, the practice remained challenged by inadequacy of supplies and continuous capacity building.
- (viii) There is limited structure for HCW management across all levels as well as differences in health facilities' level of adherence to standardisation.
- (ix) There is lack of funding for the disposal of health care waste especially waste related to donations, PHEs, and mass campaign exercises across the country.
- (x) Products continue to face dual regulation by both NDA and Uganda National Bureau of Standards (UNBS) leading to the risk of sub-standard products making market entry. Certain products are considered food supplements and non-medical, and yet they play a central role in ensuring the delivery of therapeutic support.
- (xi) NDA has suboptimal capacity of to provide adequate market authorisation, quality testing, and PMS for new products/technologies, especially with change of treatment guidelines and PHEs due to lack of guiding frameworks for registration of products in emergency response.
- (xii) Funding for testing for products including mosquito nets, condoms, etc. is heavily donor dependent with QA testing for locally manufactured products in line with BUBU principles not up to required standards.

4.5.3. Strategic objectives

To address these challenges, the following four strategic objectives shall be used to design interventions. The different high-level activities or interventions to achieve their different aspirations are described in the annual implementation plan.

SO-4.5.3.1. Enhance the national pharmacovigilance framework and implementation mechanism to effectively collect quality data about adverse effects or any other health product-related issues and to appropriately act on it to improve patient safety.

The development of the national pharmacovigilance strategy is the entry point in ensuring that there is a coordinated national pharmacovigilance approach that is comprehensive, and data driven. Given that the current pharmacovigilance practices are heavily donor dependent and mainly vertical and top-down in design, the focus of improvement will be to enhance collection of data; strengthen reporting quality (timelines, completeness, accuracy, and quantity); and optimise functions for better efficiency. This strategic objective shall focus on activities to be jointly implemented by NDA, MoH, health facilities, and other key players in the policy and implementation space. The ultimate outcome is to have increased numbers of reports from both public and private health providers as well as a stronger and sustainable pharmacovigilance system.

SO-4.5.3.2. Transform the post-marketing, registration, regulatory inspection, and quality testing to align emerging challenges, changing landscape and strategic shifts locally and globally

Evidence shows that currently the implementation of PMS, regulatory inspection, and quality testing continues to grapple with constant challenges from a contextual environment. The COVID-19 pandemic was such a key issue. This strategic objective aims to create resilience to respond to rapid

¹⁰¹ Wafula, S.T., Musiime, J. & Oporia, F. Health care Health Care Waste Management among health workers and associated factors in primary health care facilities in Kampala City, Uganda: a cross-sectional study. *BMC Public Health* **19**, 203 (2019). <https://doi.org/10.1186/s12889-019-6528-4>

changes in design of products, threats of AMR, need for effective traceability of products in the health supply chain, and better capacity to manage product quality in both public and private sectors in the country. With efficiency gains, the NDA will be able to expand its current capacity to manage all the required components and to transform the NDQCL into a sustainable regional centre of excellence in products quality control testing and evaluation.

SO-4.5.3.3. Address the legal, policy, and regulatory loopholes for effective quality assurance and health care waste management in the country

The current loopholes in the legal, policy and regulatory environment promotes inability to fully implement the much-needed implementation of strict requirements. This strategic objective aims to address the issues of stalled laws, legal reforms, addressing missing gaps in policies and related instruments and ensuring adequacy of national guiding documents.

SO-4.5.3.4. Enhance the existing Health Care Waste Management systems and practices to be able to manage health care wastes sustainably

The existing HCW management systems capacity and implementation practices need to be strengthened to better respond to and provide sustainable solutions in the long-term. This strategic objective looks at activities to reduce burden of waste, build and sustain capacity at all levels, and ensure standardisation of practices.

4.6. PUBLIC-PRIVATE PARTNERSHIPS

4.6.1. Overview/Summary situation

Sound and active private sector participation in health is a critical element for Uganda's self-reliance and economic growth. GoU continues to recognise the role the private sector plays in health development and has put in place requisite policy and guiding documents to provide direction. The private sector includes all actors generally independent of routine national fiduciary support and those that are accredited and financed through other government mechanisms. MoH's Strategic Plan 2020/21 – 2024/225 defines the private sector as comprising the PNFP providers, PHPs, and TCMPs. Over the years, Uganda's health policy framework has recognised the role of the private sector as a significant partner in the national health sector development. In moving forward, the HSC will consider the private sector as a key partner in promoting efficient services delivery. Over the 10-year period of this Roadmap, the GoU will explore all options of increasing domestic financing for health commodities

through private sector participation and involvement. Such options will include but not limited to tapping health insurance and community schemes where they exist and leveraging and streamlining private sector cooperate social responsibility initiatives, to mention but a few.

The right public-private mix and partnership for HSC ensures that:

- Private providers are effectively involved and included in the provision of health supply chain and pharmaceutical services
- Quality of services delivered by private sector meet the desired and ultimate standards
- Private sector adequately meets the requisite reporting needs for proper health planning and services delivery
- Private providers of both health services and product imports and manufacturing are adequately protected from undue challenges
- Local capacity of private sector is enhanced for better national health and economic outcome

4.6.2. Disparities/Challenges to be addressed

Despite the existing rich policy and regulatory framework for PPP in health, private sector participation and engagement in the health supply chain is still inadequate. There is a general observation among private sector actors that GoU has not established an adequate enabling environment to operate and thrive in the national health supply chain system. Moreover, there is a general feeling among the private sector actors that GoU does not consider them as partners in the health sector, but rather as a source of taxation, licensing, strict regulations, etc. Recognising and engaging the private sector in areas where the government has known weaknesses and where the private sector has reputable expertise/competencies should be the way forward for meaningful PPPs in health supply chain management.

Although the importance of the private sector in the health supply chain is undisputed, often there are critical concerns—both evidence-based and otherwise—that remain unaddressed¹⁰². These include the private health sector's highly heterogeneous and fragmented nature and highly variable quality of care. The private sector is known to be challenging to evaluate owing to different information systems and poor self-regulation. In addition, health services in the private sector are considered expensive, driven by commercialisation and exploitative behaviours that are at odds with UHC objectives of equity.

¹⁰² The Advisory Group on the Governance of the Private Sector for UHC, 2020

There are risks associated with private sector engagement in health that need monitoring and control, such as high profit motivation evidenced by unregulated commodity and supply chain-related prices, counterfeit infiltration into the health supply chain, commodity quality challenges, and non-adherence to Good Dispensing Practices/Good Pharmacy Practices, especially with smaller private sector players.

Uganda has a strong legal and policy framework for PPPH that was adopted in 2012 and later formed the PPP Act (2015). On the other hand, the PPP for LG policy that specifically addresses PPP arrangements does not offer any guidance specific to PPPHs. The last PPPH Strategy (2017/18 – 2021/22) was hardly implemented.

Despite a long experience of promoting PPPH, GoU's efforts have revolved almost entirely around faith based PNFPs through their umbrella organisations known as religious medical bureaus. Government supports them through PHC funding and recently added results-based financing projects. PHPs have hardly been engaged in health programmes save for a few cases like representation on the Health Policy Advisory Committee and in TWGs and the palliative care programme and in Cipla Quality Chemicals Ltd production of ARVs and artemisinin-based combination therapies.

Whereas many PPPs have been used in developing, financing, and providing public health infrastructure and service delivery or in providing products, agreements associated with health promotion have been weak. This is probably because the private sector has limited interest in health promotion initiatives. The public tends not to spend on health promotion services.

Glaring PPPH gaps in Uganda include a growing reliance on public funds to finance private sector involvement in the health sector, which may be seen as diverting public resources meant especially for PHC; failure to shift risk and initial cost outlays onto the proliferating PHPs; a weak regulatory framework for PPPs, which is not enforced at national level, coupled with LGs' lack of formal PPP mechanisms; and the predominantly urban-based PFP units, which generally have little direct role in improving health care equity and access for the poor or rural and remote people.

Furthermore, the private sector is highly fragmented; governance structures to foster public-private dialogue are weak; and the tools for the government to monitor, supervise, and evaluate accountability are lacking. There are multiple private-sector regulatory bodies with overlapping roles, poor coordination, and duplicated licensing procedures.

The country lacks a coordinated developmental strategy for the private health sector, including training dominated by the private sector. In most cases, beyond being recognised as the private sector, there is little support and oversight provided by MoH in this area, and limited partnership exists between the private for-profit health practitioners and the MoH.

There is a multitude of illegal/unlicensed PHPs, including drug shops. Likewise, there are many TCMP "quacks" masquerading as genuine practitioners; yet it is estimated that 6% of Ugandans seek care from them¹⁰³. Another growing unregulated group in the country that needs attention is faith-based "healers".

Most private-sector health facilities' do not report in the national health information systems such as HMIS 105 (6). This is particularly true in the PNFPs and PFP health facilities (which receive PHC and health commodities from GoU). Without closer engagement, the gaps above will only widen, leading

¹⁰³ MoH, 2019; Uganda Health Labour Market Analysis 2019

to population exploitation by the private sector, irrational use of medicines through polypharmacy, inability to harness the private sector to promote equity, especially in areas underserved by government facilities, and failure to tap into the private sector resources to improve health service inputs and delivery gaps for better health outcomes.

4.6.3. Strategic objectives

The strategic interventions target the challenges and gaps identified and examined in the 11.3 subsections below. They are based on the four priority issues that have been identified for PPPH related to the HSC:

- (i) Engaging the private sector HSC players based on their expertise and interests
- (ii) Continuously reviewing HSC partnerships' legal and policy frameworks
- (iii) Continuously building capacity of the HSC private sector players
- (iv) Strengthening regular reporting of HSC private players' activities into the HMIS for evidence

The above priority issues call for action in the form of short-term interventions, medium-term interventions, and long-term interventions. These four priority issues address four major strategic objectives relating to PPP for HSC as follows below.

SO-4.6.3.1. Strengthen the engagement of the private sector in HSC based on their expertise and interests

To achieve this strategic objective, the following are the strategic interventions and corresponding activities:

- (i) Build and sustain a working relationship with umbrella organisations for private sector players:
 - Identify umbrella organisations for private sector players
 - Develop guidelines for accreditation of private sector players
 - Conduct a baseline survey to establish private sector interests, expertise/competencies
- (ii) Contract private sector players according to their competencies (transport, warehouse, etc.):
 - Develop standards for contracting out services to the private sector
 - Review legal and policy guidelines to permit contracting out
 - Build capacity for contract management (agreements, contracts, MoUs)

SO-4.6.3.2. Continuously review HSC partnerships legal and policy frameworks

- (i) Regularly review and update the legal and policy frameworks surrounding PPPH:
 - Establishing the existing legal and policy instruments
 - Carry out adequate consultations with private sector players to identify gaps in the frameworks
 - Develop minimum standards and policy guidelines for PPPH
 - Carry out consultations on the practice of alternative medicine practitioners
 - Setting standards for alternative medicine practice
- (ii) Continuously disseminate updated legal and policy frameworks relating to PPPH:
 - Publish and distribute updated versions of PPPH legal and policy frameworks

- Publish and disseminate standards for alternative medicine practitioners
- Conduct stakeholder meetings to popularise updated legal and policy frameworks

SO-4.6.3.3. Continuously build the capacities of the private sector players in HSC

This strategic objective will require implementing the following interventions:

- (i) Continuously assess the capacity needs of the private sector players in HSC:
 - Select team/institutions to conduct a capacity needs assessment of private sector players
 - Undertake capacity needs assessment for the private sector players
 - Compile a capacity needs report for private sector players
- (ii) Develop and update training packages for capacity strengthening of private sector players:
 - Develop capacity-building packages for targeted private sector players
 - Implement capacity-building activities arising out of the needs assessment
 - Evaluate the effectiveness of the private sector players' capacity-building interventions

SO-4.6.3.4. Strengthen regular reporting of HSC private players' activities into the HMIS for evidence

This requires support to private-sector research and data generation:

- (i) Create a dialogue between private sector and government on data generation
- (ii) Develop and share digital tools
- (iii) Engage private sector players in the role of self-reporting

4.7. HEALTH SUPPLY CHAIN FINANCING AND RESOURCES MOBILISATION

4.7.1. Overview/Summary situation

Uganda is currently heavily dependent on donors for financing its health supply chain. It is expected that donor support to the sector will be gradually wound down from the current 70% to 41.7% within the period of this plan. This means that the government will have to increase its contribution from 30% to 56.4% to cover this gap without passing on additional costs to households in form of OOP expenditure. A government contribution of up to 80% in the absence of donor contribution would reduce OOP to the WHO's recommended 20%. This chapter focuses on approaches to financing EMHS through improving efficiencies in the short to medium term (immediately to 5 years) and gradually increasing financing for EMHS in the medium to long term (5-10 years). It is important to note that improving efficiencies in the overall management of the HSC would translate into higher returns per shilling by relieving the system of financing pressures.

Reliable and sustainable HSC financing and resource mobilisation is essential for:

- Improving efficiencies and appropriate use of already available resources for health commodities and products
- Sustainable financing of EMHS needs in line with ambitions to attain UHC
- Effective transition from partner support to domestic financing and management without hampering quality of health services delivery
- Cost-effective approaches for delivery of essential services
- Activating innovative financing mechanisms and alternative health sector revenue streams
- Building sustainability into resource allocation and use
- Preventing catastrophic costs

4.7.2. Disparities/Challenges to be addressed

Uganda's inadequate health services financing coupled with inefficiencies translates into inadequate service provision characterised by frequent stock out of EMHS, limited staffing, inadequate infrastructure, impoverishing OOP payments for poor households, and inequitable access to health services. This situation is underpinned by several factors in the health financing system. The HFS presents these factors in terms of (a) revenue collection, (b) pooling of resources and (c) purchasing of services. We adopt that framework here.

Inefficient financing of medicines and health supplies

According to the HFS, the multiple purchasers of health care services in Uganda include the public sector through the MoH and local governments (which represents 24% of total purchasing); nongovernmental organisations, which represent 28%; individual purchasing by households through direct OOP payments representing 42%; and health insurers representing just about 1%.

The Ugandan public health system relies primarily on input-based financing mechanisms in which government pays for health services through resources for staff salaries, pharmaceuticals, supplies, and operations. Government also purchases health services from PNFP health facilities through grants for specified services based on an MoU. The input-based financing mechanisms are centrally controlled and use static formulae that are not in line with health needs, which results in rigid resource use and inefficiencies.

Uganda has had some experience with output-based approaches for purchasing introduced under donor-funded programmes. They include community-based health insurance, reproductive health

voucher programmes, and performance-based financing. This experience offers important insights for strategic purchasing reforms within government systems and processes.

Finally, there are very high price mark-ups by private sector actors whose services remain largely unmeasured and undocumented. This exposes households to the risk of exploitative pricing and substandard services. Government purchases too are susceptible to above-market pricing largely due to limited capacity for specialised procurements. There is therefore an urgent need for a rational medicines pricing policy and related mechanisms.

4.7.3. Strategic objectives

This Roadmap has identified two strategic objectives for resource mobilisation as follows

SO-4.7.3.1. Increase funding for EMHS and reduce OOP spending amidst decreasing donor funding

As donor support to EMHS winds down, there will be need to step up government funding to avoid stock outs and an escalation of OOP payments by households beyond the current 42.6%. This translates to increasing government contribution to a target of 56.4% over the long term. The proposed NHIS should contribute at least 22.6% of the cost of EMHS which would bring down OOP spending to the recommended 20%. Achieving this strategic objective will require commitment from government to provide the required resources. However, there is need for credible information to justify the requests for increasing funding for EMHS. The priority interventions under this strategic objective will ensure that this information is available to inform resource allocation decisions. They are:

- Revising the UMHC package and related costs
- Undertaking an annual review of HSC financing
- Undertaking evidence-based advocacy
- Rolling out the NHIS

SO-4.7.3.2. Enhance efficiency and equity in the utilisation of available resources for EMHS

As already indicated, increasing the value per shilling spent on EMHS can come from reducing inefficiencies. This will be through monitoring and auditing the use of EMHS funds, improving the procurement system(s) for EMHS by reviewing the applicable laws, promoting local manufacture of EMHS, revising the formulary, expanding the classification of materials and supplies as health commodities, and regulating prices. It is important to note that many of these interventions will require policy backing and hence necessitate review of laws, regulations, and guidelines.

4.8. HEALTH SUPPLY CHAIN POLICY AND GOVERNANCE

4.8.1. Overview/Summary situation

Leadership, governance, and stewardship are part of the six essential building blocks which together make up a functional health system¹⁰⁴. Governance is described as the systematic, patterned way in which decisions are made and implemented. The governance of a health system therefore shapes its ability to respond to challenges that health systems face. It includes determining the vision in terms of targets, allocation, and deployment of available resources for purposes of achieving set objectives in an efficient and equitable manner. This chapter focuses on critical governance aspects of the HSC and their implications for achieving UHC as well as those that may arise because of planned transitions. Broadly, governance of Uganda's HSC is underpinned by several interrelated aspects, namely limited/constrained decentralisation, high dependence on donor financing, limited capacities of actors especially at sub-national levels, multiple actors including public and private entities coupled with weak coordination, fragmented or inadequate policy frameworks, weak enforcement of standards, a dearth of information on HSC performance in the public domain, and weak accountability.

Appropriate HSC policy and governance is essential to attain:

- Effective oversight of the health supply chain at all levels of the health system
- Stronger accountability and governance for health products and EHMS
- Better decision-making on EHMS and health products by duty bearers and managers
- Equitable resource allocation, use, and management for sustainable health supply chain
- Mutual relationships between central and decentralised governance and supply chain mechanisms
- Reforms aligned to long-term strategies, development needs, and services delivery arrangements

4.8.2. Disparities/challenges to be addressed

This Roadmap should address the following key gaps, disparities, and challenges in HSC governance, leadership, and policy:

- (i) Limited capacity to guide conduct of other actors, especially non-government entities including donors and the private sector. This is largely due to gaps in the legal and policy framework and inadequate access to reliable information coupled with limited focus on the plans and performance of actors by the leadership organs at different levels.
- (ii) Limited commitment to the policy objectives and targets by the leadership which breeds implementation failure. Commitment of the leadership should be demonstrated by allocation of actual resources for attainment of HSC objectives, consistent review of performance, and follow up with interventions aimed at improving performance. There are concerns that HSC issues may be far removed from the leadership of the newly created Human Capital Development Programme.
- (iii) Unclear reporting and coordination between supply chain actors at national level especially in relation to reporting lines, decision-making, and oversight. While the TWGs are in existence, their functionality and limited linkages remain a common challenge. The working groups are

¹⁰⁴ GHSC-PSM (2018). Uganda National Supply Chain Assessment Report: Capability and Performance. Submitted to the United States Agency for International Development by The Global Health Supply Chain-Procurement and Supply Management (GHSC-PSM) Project, under USAID Contract Number: AID-OAAI-15- 00004.

administrative mechanisms with limited force of the law and therefore are ineffective in linking disparate actions of the myriad of actors in the HSC.

- (iv) Multiple laws, policies, and guidelines that are outdated, unapproved, or in early draft stages. The key legal components in draft/bill stages are the National Food and Medicines Authority bill, the Pharmacy Profession and Practice bill, and the National Health Insurance bill, among others. These together with many incomplete policies and guidelines make it challenging for the sector to effectively manage the supply chain.
- (v) Dual regulation of products and multiple regulation of key personnel in the HSC. Currently both NDA and UNBS regulate similar products and create possible opportunities for entry of sub-standard products. Within the HR aspects and considering the continued task-shifting, there are multiple regulators of the personnel working in the health supply chain with different mandates and standards.
- (vi) Standards to guide planning, service delivery, and user expectations that are not up to requirements. The most basic standards deficiency that beset the HSC is the outdated Uganda Minimum Health Care Package. There are gaps related to HSC data, health commodities standards, and standards for local manufacturing of health commodities. There is a need to review standards to ensure appropriate resourcing of the HSC and health facilities for attainment of UHC.
- (vii) Limited link between upgrade of health facilities and administrative units and the need for health service delivery within which health supply chain is embedded. Many health facilities that have been upgraded lack the resourcing needed for their newly acquired status.
- (viii) Inadequate stewardship of the health supply chain at local government level. This leaves a challenge in effectively making leaders and duty bearers accountable for their actions. It is critical to make the CAO, DHO, and other district level staff in charge of overall accountability for the supply chain. At district level, district health services do not have established pharmaceutical positions.
- (ix) Accountability organs that do not adequately report on expectations regarding oversight. There is a lack of separation between the roles of purchaser and provider of health services within the MoH. In the medium- to long-term, reforms to alter mandates and relationships among actors can be implemented. Specifically, there is a need for a split in the roles between purchaser and provider of health services.

4.8.3. Strategic objectives

This Roadmap has identified three strategic objectives for policy and governance:

SO-4.8.3.1. Strengthened HSC leadership, standards, policies, and regulations

This will involve reviewing HSC policies and laws as well as formulating others to cover aspects of the HSC not adequately addressed in the current framework, reviewing, and streamlining HSC responsibilities and oversight roles, and strengthening supervision of the HSC.

SO-4.8.3.2. Strengthened coordination among actors

Weak coordination of the HSC actors and actions is a critical challenge. The priority interventions under this strategic objective are conducting joint annual performance reviews of the HSC including performance of coordination mechanisms (the annual pharmaceutical sector performance reviews can focus on performance of the existing coordination mechanisms); establishing a coordination

mechanism in the DPNM for private sector actors; and strengthening TWGs related to HSC management (i.e., Medicines Procurement and Management TWG, Commodities Security Group, and Pharmaceutical Logistics Working Group).

SO-4.8.3.3. Strengthened accountability at different levels of the HSC

The starting point on this strategic objective is to assess the efficacy of the existing HSC accountability systems to identify the weaknesses that exist along the chain. The findings of this assessment will then be used to review relationships as well as designate accountability responsibilities particularly at the sub-national levels. Other interventions include improving access to HSC performance information by external stakeholders, conducting periodic HSC performance assessments to identify service delivery gaps, and reporting annually on HSC performance reviews by actors at MoH, NDA, NMS, health facilities, and districts.

SECTION III: FINANCIAL IMPLICATIONS AND IMPLEMENTATION ARRANGEMENT

Sub-sections

Resource Needs for the HSC Roadmap

Implementation Arrangements

Monitoring and Evaluation

5. RESOURCE NEEDS FOR THE HSC ROADMAP

This section highlights the estimates of the resources needed for the health supply chain over the period of 10 years, funding mechanisms, and measures to ensure equitable and efficient use of the resources. This section describes:

- (i) A transition towards GoU ownership of the HSC
- (ii) Promotion of efficient use of resources
- (iii) Advocacy to increase national supply chain resources
- (iv) Identification of innovative and sustainable approaches to financing EMHS

5.1. Costing process/approach for the HSC Roadmap

To address some of the challenges as illustrated in previous chapters, interventions were developed for the 10-year Roadmap. These were designed to address the efficient use of health commodities and increasing government leadership in planning, financing, and management of the HSC as part of the strategies for resource mobilisation.

The resources reflected here are incremental costs to ensure the smooth implementation of the Roadmap interventions. The resources were estimated using the ingredients costing approach. This approach focuses on all key inputs required for the proposed interventions for the improvements. The costing used the year 2019/20 as the base year for the programme implementation and the proposed interventions were prioritised for the most effective and impactful interventions.

5.2. Key cost drivers and assumptions

The key cost driver for this incremental Roadmap are the investments in HR with 43% of the planned resources; followed by investments in the warehousing and distribution infrastructure with 21%; and investments in QA, pharmacovigilance, and Health Care Waste Management with 9%. The area with the fewest investment requirements was PPPs with 3% of the total Roadmap investments.

Key cost drivers included:

- (i) Human resources
 - Recruitment of key human resources at the health centres, RRHs, specialised facilities, and district health offices
 - Training programmes at national and sub-national levels in HSC functions, quantifications, data management, among others
- (ii) Infrastructure warehousing and distribution
 - Development and implementation of a strategy to use UAVs or drones for distribution of critical products to hard-to-reach areas in the country
 - Procurement of computer systems, shelving, and pallets in health facilities
 - Strengthening inventory management and control through training, supportive supervision, mentoring, and data quality reviews at all health system levels
 - Training for district stores personnel in use of eLMIS to manage PHE commodities in 71 districts without trained personnel
- (iii) Health commodities functions

- Assessments reviews and analysis of health commodities rational use
 - Conducting antimicrobial stewardship activities at all levels of the health system
 - Capacity building and training in quantifications, stock management, and the supply chain system
- (iv) Quality assurance, pharmacovigilance, and waste management
- Biennial capacity building for small industries to support implementation of pharmacovigilance and PMS
 - Capacity strengthening for effective product recall across the public and private sectors
 - Strengthening management for pharmaceutical waste in public and private sector
 - Plan and conduct mentorship for health facilities
 - Building of health care waste management infrastructure across regional centres

Key cost assumptions

Key assumptions included:

- (i) Population projections based on 2020 UNBS estimates
- (ii) 145 district and 17 regions used in the computations
- (iii) Currencies in USD
- (iv) Default inflation rate of 3% used on all estimates beyond year 2
- (v) Human resource remuneration based on 2019 payment rates
- (vi) Unit cost based on the Uganda public service standing pay orders

5.3. Resource needs for the roadmap

The Roadmap would require an estimated sum of USD 44.8M over the 10-year period. The resources in the first years are estimated at USD 5.7M, increasing to 6.4M in the second year, and gradually reducing to USD 3.4M in the tenth year. The first four years would require about 50% of the Roadmap sum as this will be a period of infrastructural developments and refurbishments (figure 11).

Costs of interventions needed to ensure adequate inventories within the health supply chain systems considered the persistent commodity financing gaps following improvements in efficiency. The cost of health commodities is expected to grow from USD 529.8M to USD 988.7M over the period of the Roadmap.

Thematic Areas	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 6	Yr. 7	Yr. 8	Yr. 9	Yr. 10	Totals
	US \$ '000'										
Health commodities Supply Chain Management	263	431	460	252	331	384	331	252	405	310	3,422
Information systems	526.8	420.7	260.3	105.4	190.1	260.3	105.4	105.4	292.1	105.4	2,372
Governance and Leadership	663.0	165.6	210.2	283.5	472.8	128.1	170.9	283.5	408.5	128.1	2,914
Human resources	1,282.9	1,592.7	1,568.9	1,706.0	2,293.9	2,211.8	2,155.4	2,301.3	2,155.4	2,155.4	19,424
Resource Mobilization	248.7	105.3	182.6	108.4	186.4	108.4	182.6	108.4	182.6	108.4	1,522
Warehousing	1,740.1	2,659.5	1,844.7	1,717.7	268.2	523.5	222.7	160.9	295.0	187.7	9,620
Quality, pharmacovigilance, and waste management	650.7	763.1	376.1	374.0	253.4	363.3	249.2	363.3	249.2	363.3	4,006
Public Private Partnership	325.8	323.7	269.1	205.5	101.0	50.9	50.9	50.9	101.0	50.9	1,530
Total Estimates	5,701	6,462	5,173	4,753	4,097	4,031	3,469	3,626	4,089	3,410	44,809

Figure 11: Resource estimates to implement the 10-year Roadmap

5.4. Financing of the HSC roadmap

The estimated USD 44.8M is expected to be financed with contributions from the GoU, development partners, and the private sector. It is anticipated that as is the case now, the government will be the main funder for human resources through the wage bill and will also fill vacant positions in the current human resource structure. New positions where applicable are proposed to be supported in part by development partners initially, as GoU arranges to have these positions formally approved in the public services structures and funded. The key cadres to prioritise to enable effective implementation of this Roadmap include Pharmacy Assistant positions at the HC-III's where they will be the main HSC cadre and Pharmacy Assistant positions at HC-IV's to support Pharmacy Technicians at this level; Pharmacists at RRHs, specialised units, and general hospitals; and DHOs in charge of the HSC. These are estimated to cost an annual average of USD 2.2M. To maintain a competent and vibrant workforce, it is anticipated that government will invest in capacity building, supportive supervision, and mentorships through its health sector budget. These investments are estimated to cost an annual average of USD 1.4M. Following realisation of efficiencies in the supply chain system, these funds will be reinvested in other Roadmap interventions. Other financing strategies will include advocacy to increase national HSC resources and identification of innovative and sustainable approaches to financing EMHS.

In addition, the HSC implementation will include the interventions that are proposed in the NPSSP. The costs for the NPSSP were estimated to require USD 3.304B over the five years. Estimates for the additional five years in this Roadmap were made based on projected population growth, disease burden and trends, providing for emergencies and epidemics. These have been estimated to cost USD 7.850B including procurement of EMHS over the 10-year period.

Table 5: Total financing needs including EMHS procurement (USD 000)

Estimates	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
10-year Roadmap	5452	6818	5105	4492	4210	3913	3608	3690	4127	3446	44,861
NPSSP resources	529,768	573,313	738,146	647,003	815,934	856,731	985,241	788,193	882,776	988,709	7,805,814
Total resources	535,221	580,131	743,251	651,495	820,144	860,644	988,848	791,882	886,903	992,155	7,850,675

The desire for this Roadmap is to reverse the donor dependence on HSC commitments and requirements. GoU will engage with the development partners to implement the proposed financing plan in this Roadmap to attain a mutually acceptable balance between the partners and the GoU. Three financing scenarios were developed to guide the policy and decision-making for the Roadmap implementation. The scenarios focused specifically on government funding modalities for the supply chain over the 10-year period as follows:

Scenario 1: GoU increases funding by allocating an additional 3% of the annual total HSC resource need. This will require a commitment of at least USD 123.1M in the second year of the plan growing to USD 324M over the 10 years. Under this scenario, GoU will meet the 50:50 funding equilibrium with donors in the ninth year of the Roadmap.

Scenario 2: GoU maintains an additional allocation of UGX 50B annually as was the case in 2018/19. This will translate into a commitment of USD 119.6M in the second year, growing to USD 229M over the 10 years. Under this scenario, the 50:50 funding equilibrium would not be achieved within the 10 years.

Scenario 3: GoU continues to allocate an additional UGX 100B annually as was done in FY 2020/21. Under this scenario, GoU would meet the 50:50 funding equilibrium in the sixth year of the Roadmap.

It is anticipated that on attainment of equilibrium between the GoU and the partners, government will fill the remaining financing gaps through innovative approaches to mobilising additional domestic resources from the private sector (figure 12).

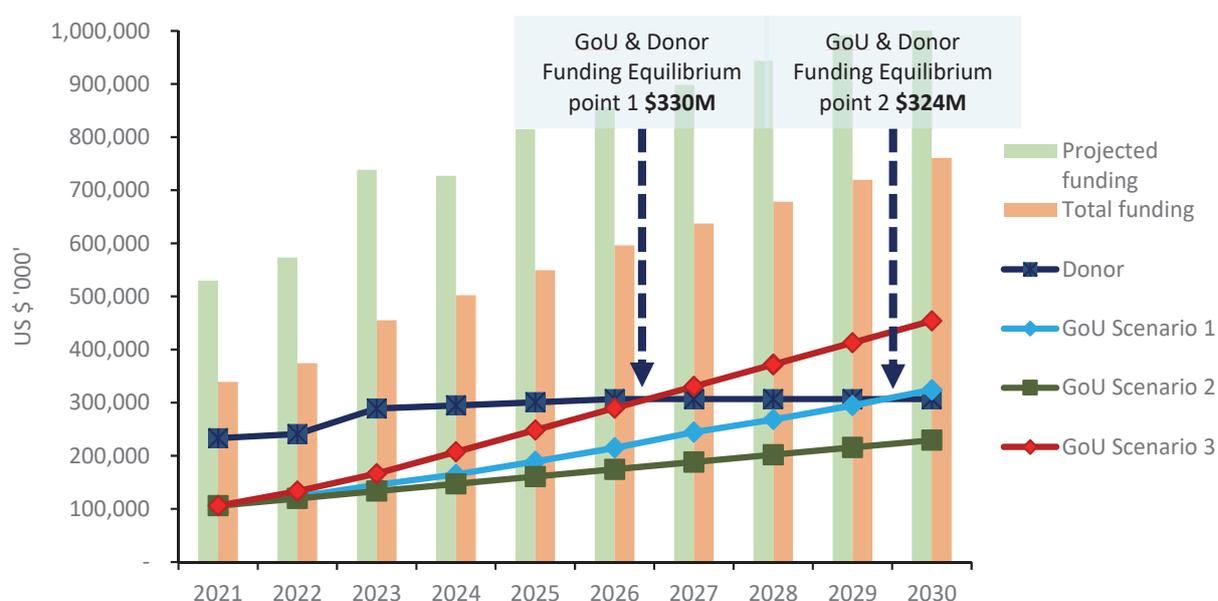


Figure 12: Health commodities financing options over the 10-year Roadmap period

6. IMPLEMENTATION ARRANGEMENTS

6.1. Coordination arrangements for the 10-Year Supply Chain Roadmap

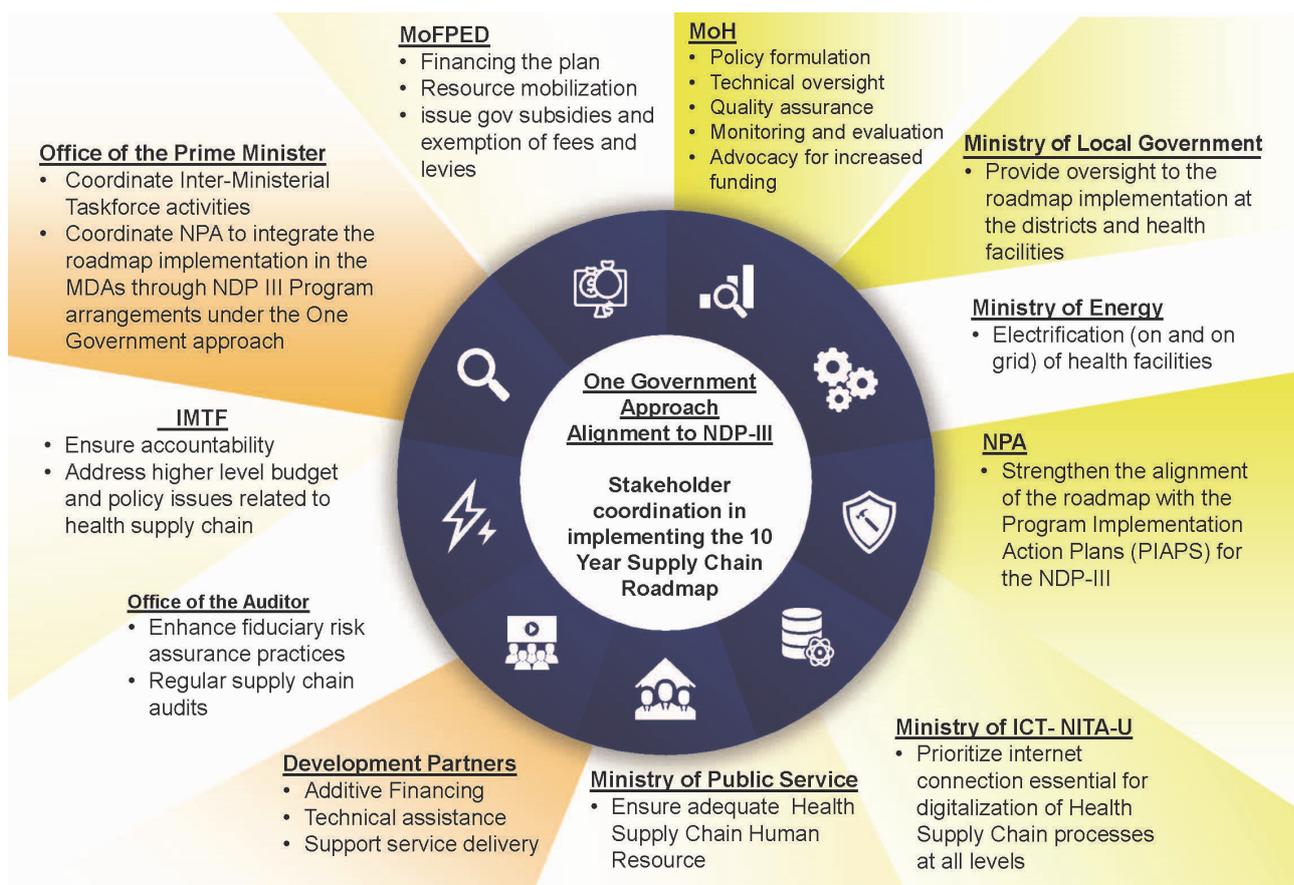
The coordination of implementation of the Roadmap shall be through already existing structures established through government mechanisms, with the IMTF retaining the overall mandate for implementation. The roles and responsibilities of the different coordination mechanisms are outlined in table 5 below.

Table 6: Roadmap coordination mechanisms and roles

#	Entity	Roles in implementation
1	IMTF (under OPM and MoFPED)	<ul style="list-style-type: none"> ▪ Take overall lead in ensuring the planned interventions within the Roadmap are implemented and appropriate accountability mechanisms are in place across all sectors involved in this Roadmap ▪ Coordinate the integration of key health supply chain parameters and allocations with different sector budgets and plans ▪ Lead the integrated inter-ministerial review and management of the Uganda health supply chain ▪ Monitor and evaluate performance of budgetary allocations, disbursements, and alignment to common one government approach and modalities ▪ Lead the enhancement on fiduciary risk assurance practices across all levels
2	USAID/SSCS Activity	<ul style="list-style-type: none"> ▪ Support the IMTF in implementation, monitoring, reviews, and follow-up of the critical milestones of the 10-year supply chain Roadmap ▪ Engage the structures of the different MDAs to ensure the required performance
3	Ministries within the IMTF	<ul style="list-style-type: none"> ▪ Lead the implementation of planned activities within their own sector ▪ Align the planned results to their sector mandates, strategies, and other strategic documents and normative guidance ▪ Continuously provide updates to the IMTF for purposes of progress reporting as well as for continuous quality improvement
4	Development partners	<ul style="list-style-type: none"> ▪ Continue to provide required direct technical and financial support in the short term (1-3 years) and medium term (3-5 years) to build a strong foundation for this health supply chain Roadmap ▪ Provide the required inputs in the different working groups and committees ▪ Support the secretariat to perform during the short- and medium-term period
5	Health Policy Advisory Committee under MoH	<ul style="list-style-type: none"> ▪ Lead the health sector policy decisions and directions in relation to the 10-year supply chain Roadmap ▪ Ratify and approve critical sector decisions, guidelines (including changes), and policies related to the 10-year health supply chain Roadmap
6	NPA through programme implementation action plans	<ul style="list-style-type: none"> ▪ Strengthen the alignment of the Roadmap with the program implementation action plans for the NDP-III ▪ Coordinate the integration of key health supply chain parameters and allocations with different sector budgets and plans ▪ Coordinate one government monitoring and review of the Roadmap
7	Medicines Procurement and Management TWG	<ul style="list-style-type: none"> ▪ Provide technical guidance on the specific aspects of health products procurement, management, and related components at regular intervals

#	Entity	Roles in implementation
		<ul style="list-style-type: none"> ▪ Ensure that appropriate standards and regulatory aspects for health products and technologies are aligned and implemented as proposed in this Roadmap ▪ Coordinate all actors in the national health supply chain to guarantee their complete alignment to this Roadmap
8	Commodity Security Group at MoH	<ul style="list-style-type: none"> ▪ Coordinate and continuously harmonise all funding mechanisms to ensure high-level alignment, efficiency, and better use of resources for EMHS ▪ Continuously review commodity security risks associated with the transition processes and develop appropriate action plans ▪ Coordinate the national warehouses (NMS, JMS) and the rented warehouses to ensure effective redistribution and management of EMHS at all levels ▪ Lead the review processes for health commodities security across all levels
9	Office of the Auditor General	<ul style="list-style-type: none"> ▪ Lead the enhancement on fiduciary risk assurance practices across all levels ▪ Conduct regular health commodity supply chain audits to inform government and partners of required improvements and level of efficiency gains ▪ Strengthen performance reporting and management at all levels
10	Warehouses	<ul style="list-style-type: none"> ▪ Procure quality medicines and health supplies for the public and PNFP health facilities
11	District Local Governments	<ul style="list-style-type: none"> ▪ Overall leadership oversight and ownership of all key health supply chain activities (planning, financing, and management) at the district beyond the district health officers (DHOs)
12	N/RRHs	<ul style="list-style-type: none"> ▪ Overall leadership oversight and ownership of all key health supply chain activities (planning, financing, and management) at the hospitals and facilities under their catchment areas beyond the pharmacists.

Figure 13: Multi-sectoral roles in implementing the roadmap



6.2. MANAGEMENT OF THE IMPLEMENTATION OF THE ROADMAP

Implementation of the Roadmap shall regularly be managed by the secretariat under the Department of Pharmaceuticals and Natural Medicines of the Ministry of Health. The entire IMTF shall be responsible for the results. The key actors in the health supply chain are shown in table 6 below.

Table 7: Actors in the health supply chain and their roles

Stakeholder	Roles	Implementation/ partnership tools
MoH and MoH DPNM	Policy formulation, technical oversight, quality assurance, M&E	Information management, systems, reports studies
MoFPED	Overarching policy direction; financing the plan resource mobilisation; provision of subsidies and exemption of levies and fees	Budget reports
OPM and NPA	Overall coordination and ensuring inter-sectoral collaboration for effective implementation of the roadmap through integrated sectoral planning and budget frameworks.	NDP-III
Uganda Revenue Authority	Import and export of EMHS and pharmaceutical equipment	

Stakeholder	Roles	Implementation/ partnership tools
Health Monitoring Unit	Monitoring medicines management in the public health sector	
NDA	Enforcement of medicine regulations and policies	National Drug Policy and Authority Act, reports
NMS	Procure quality medicines and health supplies for the public health sector	NMS Act, reports, invoices, delivery notes
Uganda National Council for Science and Technology	Research, biosafety, and biotechnology	
Other government MDAs	Guide and provide support on cross-cutting health and pharmaceutical issues; integrate interventions into their sectoral plans	MoUs, implementation memos/letters
Professional councils	Registration of professionals	
Professional associations (PSU, Allied Health Professionals Council)	Streamlining professional practice; establishing standards of practice and ensuring that they are upheld	
Non-governmental central warehouses	Procure quality medicines and health supplies for the private health sector	Reports
Academic institutions	Research to inform best practices, develop implementation models, and capacity building	MoUs
Private sector	Implementation, advocacy, and resource mobilisation	
Civil society organisations	Technical assistance, advocacy, resource mobilisation, Implementation	
Local government (CAOs and DHTs)	Leadership and administrative oversight for all HSC activities in the district, ensure service delivery in the districts and health facilities under their jurisdiction	MoUs
Law enforcement agencies	Enforcement and compliance to the law	
Health development partners	Financing, technical assistance, and service delivery	

Figure 14; A Snapshot of the 10-YR HSC Roadmap

Snapshot of the 10 Year Health Supply Chain Roadmap			
Thematic Areas	3 Years (Short term)	5 Years (Medium Term)	10 Years (Long Term)
Commodities	<ul style="list-style-type: none"> GoU to increase funding for national health commodities from the current 30% > 40% 	<ul style="list-style-type: none"> GoU to increase funding for national health commodities to 60% 	<ul style="list-style-type: none"> GoU for to increase funding for national health commodities to > 90%
Resource Mobilization / Financing	<ul style="list-style-type: none"> > 20% incremental local funding towards supply chain operations Integrated planning and budget MDA frameworks in place 	<ul style="list-style-type: none"> > 50% incremental local funding towards supply chain operations Integrated planning and budget MDA frameworks implemented 	
HSC Management	<ul style="list-style-type: none"> National health commodities consumption data collection systems built 	<ul style="list-style-type: none"> Patient consumption data used in national health commodities quantification and procurement planning 	
Digital Systems	<ul style="list-style-type: none"> Integration of supply chain digital systems Electrification of > 40% of public and private not for profit health facilities Internet connection at > 40% of all public and private not for profit health facilities Institutionalize routine use of QR –codes to enable visibility and and bar traceability of health commodities within the supply chain 	<ul style="list-style-type: none"> Electrification of > 60% of all public and private not for profit health facilities Internet connection at > 60% of all public and private not for profit health facilities QR and bar- code use to view and trace health commodities within the supply chain 	<ul style="list-style-type: none"> Electrification of all public and private not for profit health facilities Internet connection to all public and private not for profit health facilities Complete visibility and traceability if all health commodities within the national supply chain
Human Resources	<ul style="list-style-type: none"> Recruitment of critical health supply chain staff at all healthcare levels > 55% Staffing norms increased from 32% to >50% (District level staff: pharmacist, stores & ICT) 	<ul style="list-style-type: none"> Approved staffing norms > 80% Filled staffing norms > 70% 	<ul style="list-style-type: none"> Approved staffing norms > 90% Filled staffing norms > 90%
Infrastructure, Warehousing and Distribution	<ul style="list-style-type: none"> Completion of NMS warehouse 	<ul style="list-style-type: none"> All of districts use pharma-compliant storage spaces to store health supplies (emergency commodities, mass immunization etc.) Optimize use of private sector medicine warehouse space 	<ul style="list-style-type: none"> All health facilities have pharma-compliant medicine storage spaces
Quality Assurance, Pharmacovigilance and Healthcare Waste Management	<ul style="list-style-type: none"> Waste management policies and related documentation approved. All drug safety monitoring centers reactivated and fully functional 70% of products on the market pass laboratory and quality tests 	<ul style="list-style-type: none"> Relevant infrastructure for disposal of all forms of waste in place at districts, national and Regional Referral Hospitals All public and private not for profit hospitals are drug safety centers 85% of products on the market pass laboratory and quality tests 	<ul style="list-style-type: none"> Health facilities generate less than 5% health commodities waste All public and public not for profit facilities are drug safety centers 90% of products on the market pass laboratory and quality tests
Public Private Partnership	<ul style="list-style-type: none"> Use of third-party warehousing and distribution systems framework in place Health insurance Law (public and community health insurance) in place Revise the PPP strategy 	<ul style="list-style-type: none"> Health insurance Law (public and community health insurance) instruments for implementation in place 	<ul style="list-style-type: none"> > 50% of the population on the national health insurance cover
Governance	<ul style="list-style-type: none"> Coordinated governance structures at levels Adequate health supply chain standards, policies and legal framework in place Management and financial accountability/accurate district health commodities reports > 55% District plans that include health commodities security 	<ul style="list-style-type: none"> Review supply chain policies and guidelines Demonstrated district leadership oversight for supply chain services District plans and budgets that include health commodity security 	<ul style="list-style-type: none"> All district plans and budgets include health commodity security
Total Resource Estimates	US \$ 1.858 Billion	US \$ 3.33 Billion	US \$ 7.85 Billion

7. MONITORING AND EVALUATION FRAMEWORK

M&E will constitute a key pillar of implementation of this Roadmap. The purpose of the M&E will be to systematically collect, analyse, and use information to track progress towards reaching the objectives and targets of the Roadmap and to guide management decisions. This will ensure the following:

- (i) Promotion of learning and enhancement of policies' efficiency and effectiveness.
- (ii) Enhanced accountability and provision of legitimacy for the use of funds and resources.
- (iii) Support to strategic planning and policy making by improving the links between policy interventions and their outcomes and impact.

7.1. Monitoring the progress of the roadmap implementation

Routine progress monitoring shall be done to ensure that the aspirations of this Roadmap are all on track and aligned to national plans and targets. The key monitoring activities shall include:

- (i) Regular updates and reviews with the IMTF and IMSC to ensure progress is being attained as per planned activities.
- (ii) Biannual performance reviews and assessment of progress.
- (iii) Annual reporting on progress across different pillars and key areas.

Monitoring arrangements

This Roadmap shall be monitored through a monthly and quarterly progress arrangement that includes compilation of key progress data from different sources. The MoH DPNM shall maintain the database of monitoring indices and indicators as part of its regular M&E function.

Monitoring and evaluation plan

An M&E plan detailing the definition of indicators, monitoring processes, evaluation processes, and key related aspects will be developed.

7.2. Evaluation of the roadmap

This Roadmap shall be evaluated at year 3, year 5, year 7, and year 10 to check progress, accelerate activities, change course, and make corrective actions as applicable.

ANNEXES FOR THE ROADMAP

List of Annexes:

Annex 1: Operational Definitions

Annex 2: Infrastructure Situation at Districts

Annex 3: Annualised Implementation Plan

Annex 4: Monitoring and Evaluation Matrix

ANNEX I: OPERATIONAL DEFINITIONS

Access to health commodities: People’s ability to obtain and use good quality health commodities when they are needed. In this strategic plan, ACCESS is interpreted as a continuous phenomenon premised on different actors and actions over time, not as a discrete event¹⁰⁵.

Antimicrobial medicine: A medicine that selectively destroys or inhibits the growth of susceptible microorganisms. Sometimes, it is referred to as an ‘antimicrobial agent’.

Appropriate treatment: Receiving the recommended drug, in the recommended dose, and for the recommended frequency and duration. Other words used include appropriate medicine use¹⁰⁶.

Child medicines: Medicines of appropriate strengths with dosage form attributes that permit dosing, dispensing, and administering the right dose for age or weight of the child. Other words used include ‘child-friendly medicines’, ‘child-appropriate dosage forms’, ‘child-size medicines’¹⁰⁷.

Correct dose: Right number and strength of tablets and treatment frequency and duration according to the national standard guidelines¹⁰⁸.

Complex interventions: Those which contain several interacting components and their interaction within the context. Additional dimensions include the number and difficulty of behaviours required by interveners, the number of groups or organisational levels of beneficiaries, the number and variability of outcomes, and the degree of flexibility or tailoring of the intervention permitted¹⁰⁹.

Complementary/alternative medicine: often refers to a broad set of health care practices that are not part of a country’s own tradition and are not integrated into the dominant health care system.

Drug shops: Drug shops are lower-tier retail outlets, usually with no pharmacist on staff, which are granted licenses to sell a limited list of medicines (over-the counter drugs, chemical products, and household remedies) by the NDA following successful vetting of personnel, physical premises, and payment of prescribed fees¹¹⁰.

Health commodities: Refers to the application of organised knowledge and skills in the form of devices, medicines, vaccines, procedures, and systems developed to solve a health problem and improve quality of lives (WHO 60.29). They are also referred to as health technologies.

Health market: The environment in which all actors relevant to a particular health problem interact in a manner that these interactions determine the basis on which health related products and services are provided to the population. Public sector employees are considered part of this market since they are an option from whom users can seek health-related products and services.

¹⁰⁵ Frost & Reich, 2009: Creating Access to Health Technologies in Poor Countries.

¹⁰⁸ Nsungwa-Sabiiti et al., 2005: Community effectiveness of malaria treatment in Uganda - A long way to Abuja targets.

¹⁰⁷ WHO, 2012: WHO essential medicines for children 2011-2019: Age-appropriateness of enteral formulations.

¹⁰⁸ WHO, 1993: How to investigate drug use in health facilities – Selected drug use indicators.

¹⁰⁹ BMJ, 2008: Developing and evaluating complex interventions: the new Medical Research Council guidance

¹¹⁰ Pamela et al: Regulation of drug shops and Pharmacies relevant to Family Planning: A scan of 32 developing countries

Herbal medicine: Refers to plant-derived material or preparations with therapeutic or other human health benefits, which contain either raw or processed ingredients from one or more plants¹.

Intervention: In this strategic plan, it refers to combinations of technologies (e.g., medicines and rapid diagnostics), inputs into service delivery, organizational changes, and modifications in processes related to decision-making, planning, and service delivery¹¹¹.

Mixed health systems: Health systems where commercialized provision of health services in the private sector coexists with free or low-cost care in the public sector as observed in Uganda and many other low- and middle-income countries.

Pharmaceutical (medicine or drug): It is any substance or product for human or veterinary use that is intended to modify or explore physiological systems or pathological states for the benefit of the recipient. In this document, the terms drug, medicine, and pharmaceutical are used interchangeably.

Pharmaceutical services: A set of actions by a pharmacist directed towards the promotion, protection, and recovery of health, for the individual as well as the society, using quality-assured medicines and health commodities and seeking to achieve access to and appropriate use of them. This set of actions includes roles in research, development, and production of quality-assured medicines and health commodities, their selection, as well as the programming, regulation, procurement and supply planning, distribution, dispensation, and the follow-up and evaluation of their use.

Recommended medicine: Medicines recommended for illness based on the national standard treatment guidelines and community health worker's treatment guidelines¹¹². It is also referred to as the correct medicine.

Traditional medicine: Traditional medicine is the sum of knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in prevention, diagnosis, improvement, or treatment of physical and mental illnesses.

¹ The United Nations (UN) Department of Economic and Social Affairs Sustainable Development, 2015; The 2030 Agenda for Sustainable Development, available from <https://sdgs.un.org/goals>

¹¹¹ Health Policy and Planning, Volume 25, Issue 2, March 2010, Pages 104–111.; Integration of targeted health interventions into health systems: a conceptual framework for analysis; Rifat et al.

¹¹² Ministry of Health, 2010: National Treatment Guidelines

ANNEX 2: INFRASTRUCTURE SITUATION AT DISTRICTS

Core area	Improvement area	Intervention	No. districts in need
Stores infrastructure	District store infrastructure availability	Support establishment of permanent structures for three district stores and refurbish cross-dock containers to improve internal storage conditions	3 districts
	Shelf availability	Provide shelves to district stores that do not have shelves to strengthen commodity management	65 districts
	Pallet availability	Provide pallets to all the district stores that do not have pallets to maintain the EHMS integrity	71 districts
eLMIS use	Computer availability	Provide computers to district stores without functional computer	91 districts
	eLMIS availability	Connect district stores to eLMIS	120 districts
	Internet access	Support district stores without internet access with internet data	80 districts
	IT support	Extending of IT support to district stores by regional implementing partners	65 districts
HR capacity	SCM capacity for EMHS	SCM training of stores personnel in medicines and health supplies	114 districts
	Incorporation of supply chain in HR management plan	Support incorporation of a section of supply chain into HR management plans of districts without SCM component.	98 districts
	Availability of district stores personnel SCM capacity building plan	Support districts to develop SCM capacity building plans for their store's personnel	98 districts
SCM quality improvement interventions	Support supervision structure availability	Support districts to develop a commodity management supervision structure for their district stores	83 districts
	Availability of standard assessment tool for district stores	Support development of a standard tool for assessment of district stores	106 districts
	PHE commodity management	Train district stores personnel in PHE commodities management in districts without strained personnel	71 districts
	eELMIS system use	Train district stores personnel in use of eELMIS system to support management of PHE commodities in districts without trained personnel in eELMIS	71 districts

ANNEX 3: ANNUALISED ACTIVITY PLANS BY STRATEGIC OBJECTIVES AND INTERVENTIONS

The table below provides the annualised implementation plan for the different activities under the HSC Roadmap.

Interventions/high level activities	Key Entities involved	Yr										
		1	2	3	4	5	6	7	8	9	10	
Goal 1: Strengthen the national health supply chain management systems												
SO-4.1.3.1. Guarantee that the health commodities, technologies, and relevant supplies selected, quantified, and used for delivery of UHC are aligned and responsive to the priority needs of the country												
i. Conduct joint national quantification of EMHS, health technologies and key products required for meeting UHC targets	MoH, NMS, JMS, DHTs	X	X	X	X	X	X	X	X	X	X	X
ii. Conduct quarterly reviews of the national quantification	MoH, NMS, JMS, DHTs	X	X	X	X	X	X	X	X	X	X	X
iii. Strengthen data driven rationalisation of the health supply chain to identify opportunities to improve efficiencies	MoH, NMS, JMS, NPA	X	X	X	X	X	X	X	X	X	X	X
iv. Build capacity for health facilities to improve quantity and quality of stock status and strategic information management	MoH, NMS, JMS, DHTs	X	X	X	X	X	X	X	X	X	X	X
v. Develop a framework for introduction and transition of new technologies and products	MoH, NDA, NMS, JMS	X	X									
vi. Implement a framework for introduction and transition of new technologies and products	MoH, NDA, NMS, DHTs		X	X	X	X	X	X	X	X	X	X
vii. Conduct biennial review and rationalisation of national laboratory equipment platforms and supply systems	MoH, NHLs, DHTs		X		X		X		X		X	X
viii. Automate the current demand system to reduce errors as well as increase reproducibility and visibility of information along the entire processes	MoH, NMS, JMS, DHTs	X	X	X	X							
ix. Update the national standard treatment guidelines, EML and key guidelines	MoH, DHTs, NDA				X				X			X
SO-4.1.3.2. Strengthen and harmonise the national and sub-national quantification and procurement planning processes to ensure that health commodities, technologies and supplies provided in a cost-effective and efficient manner												
i. Strengthen the leadership of MoH Commodity Security Group in ensuring timely decision on stock rationalisation	MoH, NMS, JMS, partners	X	X	X	X							
ii. Harmonise the quantification approaches at NMS to focus on the procurement planning while MoH takes leadership in needs estimation	MoH, NMS, DHTs, health facilities		X	X								
iii. Conduct medicines and health supplies pricing and access assessments (end-user verifications, availability reviews, etc)	MoH, NMS, JMS, NDA			X	X	X	X	X	X	X	X	X

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
iv.	Ensure essential health products and technologies are sourced in a cost effective and efficient manner	X	X	X	X	X	X	X	X	X	X
v.	Define and provide incentives for promoting local production of health commodities, technologies, and related supplies		X	X	X	X	X	X	X	X	X
vi.	Automate the current quantification and procurement planning processes at national level and at high volume facilities		X								
vii.	Strengthen and mainstream under the MoH DPNM the allocation of resources to allow for rational application of equity principles for all financing sources including Vote 116	X	X	X	X	X	X	X	X	X	X
viii.	Conduct regular ABC and VEN analysis to inform the supply chain risks at all levels	X	X	X	X	X	X	X	X	X	X
ix.	Conduct biennial assessment and reviews of the handling charges for EHMS, third party/programme commodities and other costs in delivery of the health supply chain functions		X		X		X		X		X
x.	Develop and roll out appropriate instruments for instituting the maximum retail price restrictions across the country				X	X	X	X	X	X	X
SO-4.1.3.3. Strengthen and implement comprehensive rational health commodities use programme at national and health facility level											
i.	Strengthen the functionality of the MTCs at hospitals and HC-IV across the country	X	X	X	X	X	X	X	X	X	X
ii.	Update the national formulary to include emerging data and alignment to the national programmes			X			X			X	
iii.	Institutionalise health technology assessment in the national health supply chain management			X	X	X	X	X	X	X	X
iv.	Carry out a systems landscape assessment to determine opportunities to leverage on existing systems or integrate new health technology	X	X								
v.	Strengthen the coordination between technical programmes, warehouses, donors and DPNM in management of health supply chain and products		X	X	X	X	X	X	X	X	X
vi.	Conduct annual health commodities rational use assessments, reviews, and analysis		X	X	X	X	X	X	X	X	X
vii.	Conduct antimicrobial stewardship activities at all levels of the health system	X	X	X	X	X	X	X	X	X	X

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
viii.	Optimise the contribution of traditional and alternative Medicines while protecting the public from any negative effects			X	X	X	X	X	X	X	X
SO-4.1.3.4 Strengthen supervision of health facilities to improve availability of quality data for decision making, quantification, and capacity strengthening											
i.	Enhance capacity of the division of HPT, MoH to coordinate capacity building on HPT supply chain	MoH, NMS, MoPS, DHTs, MoFPED,	X	X							
ii.	Establish and maintain an updated electronic health products and commodities supply chain capacity building database	MoH, DHTs		X	X	X	X	X	X	X	X
iii.	Review pre-service curriculum for health workers to ensure that courses covering principles of health supply chain are fully integrated	MoH, MoES, NCDC, NCHE		X	X	X	X				
iv.	Conduct the health supply chain related data reviews and quality assessments	MoH, DHTs, HFs, NMS, JMS		X	X	X	X	X	X	X	X
v.	Conduct health facility supervisions and support functions using the SPARS approach with standardised tools	MoH, DHTs	X	X	X	X	X	X	X	X	X
vi.	Support the implementation of the reverse logistics and redistribution processes to improve commodities management	MoH, NMS, JMS, DHTs	X	X							
vii.	Standardise reporting for all commodities through the national system for both private and public sectors	MoH, NDA, NMS, JMS, DHTs		X	X						
viii.	Enhanced HSC and commodities resources accountability including efficiency of use of available resources	MoH, NMS, JMS, DHTs, Ministry of Internal Affairs	X	X	X						
Goal 2: Strengthen the health supply chain information system at all levels to support evidence-based decision-making											
SO-4.2.3.1. Strengthen routine reporting and data use in decision making from point of collection through to national level to support performance monitoring, traceability, visibility, and accountability											
i.	Develop and implement a data use framework that specifies unique stakeholder information needs	MoH	X	X					X		
ii.	Develop a comprehensive implementation plan of actions for ensuring data visibility and access for stakeholders	MoH	X	X							
iii.	Identify and train champions at national and subnational to support the implementation of the framework	MoH, DHTs	X	X	X	X			X		X
iv.	Customise the different information portals to generate custom reports based on the information products	MoH	X								

Interventions/high level activities		Key Entities involved									
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
v.	Undertake regular supportive supervision to improve data reliability and accuracy		X	X	X	X	X	X	X	X	X
SO-4.2.3.2. Prioritise the digitalisation of health supply chain processes at all levels											
I.	Develop and implement a HSCEA to rationalise and guide digitalisation efforts	X	X								
II.	Design and implement the health supply chain data exchange bridge to enable data exchange and Interoperability as a product of the HSCEA	X	X								
III.	Design and implement an electronic national health product registry to support interoperability and data exchange across health systems in alignment with HSCEA	X	X								
IV.	Develop and implement an annualised ICT Infrastructure Capacity Management and Investment Plan in alignment with HSCEA. The plan will be comprehensive enough to include end user computer hardware needs, software license needs, server hardware and storage capacity needs, LAN and WAN and alternative power arrangements required for the next 10 years	X	X	X	X	X	X	X	X	X	X
V.	Prioritise the phased roll out of ICT infrastructure and access to eLMIS starting with higher level public health facilities and gradually scaling to lower-level facilities		X	X	X	X	X	X	X	X	X
VI.	Develop an implementation plan to gradually integrate private health facilities into supply chain data exchange		X	X	X	X	X	X	X	X	X
VII.	Develop and Improve Information portals to enhance report generation and information presentation based on unique stakeholder information needs across the supply chain system	X	X	X	X	X	X	X	X	X	X
VIII.	Beef up or set up call centres with ICT infrastructure to provide user support		X	X							
IX.	Conduct periodic ICT capacity assessments to determine resource needs based on increase in data processing needs			X			X			X	
X.	Develop an annualised plan to address ICT infrastructure maintenance needs and related energy needs		X	X	X	X	X	X	X	X	X

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	
SO-4.2.3.3. Adopt the use of GSI Global Standard to enhance traceability in the health supply chain												
I.	Develop a GSI global traceability standard framework and implementation plan to guide the adoption and use of the standard		X									
II.	Set up a special work group to direct the adoption of the standard		X	X	X	X	X	X	X	X	X	X
III.	Identify and train GSI champions to support the implementation of the standard		X									
IV.	Conduct a systems landscape assessment to determine opportunities to leverage on existing systems or to integrate new technology to achieve the implementation of the standard		X									
SO-4.2.3.4. Strengthen Governance and Leadership over health supply chain information system management												
i.	Undertake to review the Information and digital health strategies to address changes in local and global practices, technology, and governing laws			X								X
ii.	Undertake to review policy guidelines, standard operating procedures to address changes in local and global practices, technology, and governing laws.	X		X			X				X	
iii.	Develop data exchange protocols to govern Interoperability between systems	X										
iv.	Establish data governance council to advocate for supply chain data quality related issues and process optimisation at all levels		X	X	X	X	X	X	X	X	X	X
v.	Strengthen the TWG framework to discuss health supply chain data use requirements and align its mandate to MoH policy to ensure effectiveness in providing policy oversight, guidance, and feedback to higher levels	X	X	X	X	X	X	X	X	X	X	X
vi.	Establish service level standards to govern services of ICT vendors		X									
vii.	Establish a National Product Catalogue to Standardise reporting for all commodities	X										
viii.	Undertake review of the National Product Catalogue to address changes in health commodities and supplies		X	X	X	X	X	X	X	X	X	X
ix.	Undertake to review the Information and digital health strategies to address changes in local and global practices, technology, and governing laws			X			X				X	
x.	Undertake to review policy guidelines, SOPs to address changes in local and global practices, technology, and governing laws			X			X				X	
xi.	Develop data exchange protocols to govern Interoperability between systems	X										

Interventions/high level activities		Key Entities involved	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
xii. Establish data governance council to advocate for supply chain data quality related issues and process optimisation at all levels		MoH	X	X	X	X	X	X	X	X	X	X
SO-4.2.3.5. Strengthen human resource capacity to efficiently manage and use supply chain Information systems												
i. Dedicate adequate and competent core team of IT personal at national and sub-national level who are trained to support all approved government software applications and supporting infrastructure within the supply chain system		MoH		X								
ii. Adopt a pre-service training programme for human resources through the councils to train on adopted and implemented supply chain applications before they are introduced into in-service practice		MoH		X	X	X	X	X	X	X	X	X
iii. Scale up the implementation of eSPARS to enhance quality of service		MoH		X	X	X	X	X	X	X	X	X
iv. Undertake regular training for health supply chain staff on standard operating procedures and systems used		MoH		X	X	X	X	X	X	X	X	X
Goal 3: Strengthen and enhance overall human resources capacity, capabilities, and numbers for the health supply chain												
SO-4.3.3.1: To enhance HSC workforce performance, productivity, and accountability for the attainment of efficient resource use at all levels												
i. Review and update HSC workforce Job Descriptions/person specifications for MoH, NRH, RRHs, UCI, UHI, DHOs, general hospitals, HCIV-II		MoPS, MoH, MoFPED, MoLG, HSC, District Service Commissions	X									
ii. Undertake a critical analysis of HSC staffing and structure analysis at all levels		MoPS, MoH, MoFPED, MoLG, HSC, DSCs	X	X	X	X	X	X	X	X	X	X
iii. Carry out annual HSC workforce audits in the public and private sector facilities		MoPS, district LGs, Bureaux, PSU, District Pharmacists	X	X	X	X	X	X	X	X	X	X
iv. Enhance digitalisation of HSC Inspection, licensure and CPD updates		Councils, MoH, MoPS	X	X	X	X	X	X	X	X	X	X
v. Review and align PNFP and PFP staffing norms to the standard level of health facilities		Bureaux		X	X	X	X	X	X	X	X	X
SO-4.3.3.2. To recruit and retain optimal HSC workforce for increased national supply chain resources												
i. Carry out targeted recruitment of prioritised approved HSC workforce staffing structures at Central level: NRHs, RRHs, UCI, UHI		MoLG, MoPS, MoFPED, HSC, DSCs	X	X	X	X	X	X	X	X	X	X
ii. Carry out targeted recruitment of prioritised approved HSC workforce staffing structures at district local government level: DHO; HC-IV-II		MoLG, MoPS, MoFPED, HSC, DSCs	X	X	X	X	X	X	X	X	X	X

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
iii.	Carry out recruitment of critical staff to fill gaps on replacement basis	X	X	X	X	X	X	X	X	X	X
iv.	Align PNFP and PFP staffing norms to standard public sector approved norms			X	X						
v.	Implement the HSC cadres attraction and retention in hard-to-reach areas (Karamoja Region)	X	X	X	X	X	X	X	X	X	X
vi.	Recruit and deploy super specialists, specialists, and critical care support cadres, including laboratory staff		X				X				X
SO-4.3.3. Strengthen HSC workforce training and development to deliver innovative and sustainable HSC											
i.	Undertake targeted training and capacity building needs assessment for in-service training HSC cadres							X			
ii.	Implement training and capacity building needs assessment for in-service training HSC cadres		X								
iii.	Support the development of an innovative education curriculum and packages for pre-service and in-service HSC workforce cadres with the MoES training institutions	X	X	X	X	X	X	X	X	X	X
iv.	Strengthen integration of HSC workforce services with other clinical support functions	X	X	X	X	X	X	X	X	X	X
v.	Undertake annual on-boarding, induction, and staff engagement mechanisms	X	X	X	X	X	X	X	X	X	X
vi.	Publish, disseminate, and popularise the National HSC workforce Roadmap for implementation		X	X							
Goal 4: Ensure a sustainable human resources capacity, norms, and skills for high impact health supply chain in the country											
SO-4.4.3.1. Strengthen national warehouse capacity and coordination mechanisms to meet the desired performance standards and needs of the country											
i.	Support the roll-out of the NIMS+ and other warehouse vendor-managed inventory systems	X	X	X							
ii.	Conduct technology readiness of all warehouses to adapt to changing needs and environment	X	X					X			

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
iii.	Implement a national product catalogue/registry to centrally manage products and is interoperable with warehouse ERPs and NDA.		X	X	X						
iv.	Develop a sustainability plan for the cross-docking and last mile delivery of the EHMS for NMS and other warehouses		X	X	X						
v.	Develop the sustainability plan for the existing ERPs at the warehouses to ensure self-financing of management and technical support			X	X						
vi.	Continuously support the distribution capacity of NMS and JMS to have effective transportation and distribution infrastructure		X	X	X	X	X	X	X	X	X
vii.	Develop an effective reverse logistics strategy for all warehouses to be able to align to need of the country		X	X							
viii.	Put in place a strategy for use of UAV or drones for distribution of low volume, low weight, and critical products to hard-to-reach areas in the country		X	X	X						
ix.	Develop the overarching strategy for involvement of PHPs in the provision of warehousing, distribution, and last mile delivery										
SO-4.4.3.2. Rationalise and strengthen the district level storage and infrastructure to be better placed to support the expanded district supply chain needs											
i.	Provide a framework for capacity building, commodity management and infrastructure in the district stores (commodity management in 83 districts, SCM tools in 106 districts, training in 114 districts)		X	X							
ii.	Support all districts to have a standard infrastructure for management of health commodities and supplies beyond the EHMS and health facility-based products (shelving: 65 districts, computerisation: 91 districts, pallets: 71 district)		X	X	X	X	X	X	X	X	X
iii.	Strengthen inventory management and control through training, supportive supervision, mentoring, and data quality reviews at all health system levels		X	X	X						
iv.	Train district stores personnel in use of eLMIS system to improve their knowledge and capacity to manage PHE commodities in 71 districts without trained personnel		X	X			X			X	

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
v.	Conduct an equipment and records assessment to determine the requirements for cold chain backup, monitoring, and tracking and raise funds to equip HCs with inverters and solar equipment		X								
vi.	Create a separate space and conduct an optimisation assessment to accommodate planned stock levels		X		X	X	X	X	X	X	X
SO-4.3.3. Align and strengthen the storage, handling, and inventory control practices at health facility level											
i.	Update the health facilities EHMS manual to align for integration of all products including programme products	X	X							X	X
ii.	Strengthen the use of medicines management supervisors and other supervisory structures to provide adequate supervision and capacity building for health facility staff		X	X	X	X	X	X	X	X	X
iii.	Support all high-volume facilities to be able to institute standard stores management practices to perform the critical activities and functions	X	X	X	X						
iv.	Standardise tools and system that can track and account for commodities at the health facilities		X	X							
v.	Engage districts to include a budget for continuous improvement of health facilities storage and infrastructure	X	X	X	X	X	X	X	X	X	X
vi.	Provide shelving for all hospitals and HC-IV across the country based on the national gap analysis	X	X	X	X	X	X	X	X	X	X
vii.	Expand storage capacity in high volume health facilities with storage challenges	X	X	X	X	X	X	X	X	X	X
SO-4.4.3.4. Ensure essential health products and technologies are sourced in a cost effective and efficient manner											
i.	Digitalise the existing procurement systems to be able to provide both digital footprint and efficiency in processes	X	X	X							
ii.	Strengthen planning capacity to phase out emergency procurement practices at all levels of the system		X	X	X	X					
iii.	Build capacity of entities to handle procurement using donor funds, pooled procurement for both (NMS and JMS) for donor funded commodities and EMHS, oversight role of MoH on NMS	X	X	X	X	X					
iv.	Adapt the PPDA instruments to strengthen procurement practices at national and sub-national levels	X	X	X							

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
v.	Introduce and roll-out rebates to support local manufacturers to meet the national quota for supply of the key products for UHC			X	X	X	X	X	X	X	X
vi.	Monitor local manufacturers' ability to meet the local market consumption trends, quality standards and demand levels		X	X	X	X	X	X	X	X	X
Goal 5: Ensure that only quality, efficacious and usable medicines, health technologies, equipment and diagnostics are used in a waste-free health services delivery environment in the country											
SO-4.5.3.1. Enhance the national pharmacovigilance framework and implementation mechanism to be able to effectively collect quality data to drive product safety and post-marketing surveillance (PMS)											
i.	Develop and implement a decentralised pharmacovigilance management approach/policy that will allow for complete loop of data collection and causality analysis to inform clinical practice	X	X	X							
ii.	Develop statutory instrument for mandatory reporting requirement for all high-risk products by Local Technical Representatives/importer		X	X							
iii.	Integrate existing pharmacovigilance tools into the electronic HMS and PIP reporting architecture	X	X	X	X						
iv.	Supporting NDA to incrementally put budget for broader pharmacovigilance	X	X	X	X	X	X	X	X	X	X
v.	Conduct biennial capacity building for small industries to support implementation of pharmacovigilance and PMS		X	X	X	X	X				X
vi.	Conduct process optimisation of existing reporting mechanisms through technology adoption		X	X							
vii.	Disseminate the pharmacovigilance strategy to all stakeholders for purpose of joint implementation	X									
viii.	Establish a pharmacovigilance coordination unit in MoH to strengthen the link between health facilities and the National Pharmacovigilance Centre	X	X								
ix.	Strengthen the inclusion of Pharmacovigilance in the national and regional referral strategic supply chain plans		X	X	X	X					
x.	Provide legal framework to integrate blood and blood products, medical oxygen, medical devices, and emerging health commodities into the national pharmacovigilance programme	X	X	X							
xi.	Harmonise the Pharmacovigilance Centre to cater for all medicines out of vertical support	X	X	X							

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
xii.	Review the regional pharmacovigilance centres to identify challenges and opportunities for expansion	X	X								
xiii.	Expand the pharmacovigilance centres to gradually all hospitals in the country		X	X	X	X	X	X	X		
SO-4.5.3.2. Transform the post-marketing, registration, regulatory inspection, and quality testing to align emerging challenges, changing landscape and strategic shifts locally and globally											
i.	Develop and disseminate the guidelines for emergency use authorisation of new products and registration of orphan medicines	X	X								
ii.	Complete and equip the NDA laboratory tower	X	X	X	X						
iii.	Develop and implement a sustainability strategy for the NDQCL			X	X	X	X	X	X	X	X
iv.	Enhancing PMS through digitalisation and use of QR/ Barcodes in the private sector (product track and trace)		X	X	X	X	X	X	X	X	X
v.	Transforming the NDQCL into a source of Non Tax Revenue through regional sample testing			X	X	X	X	X	X	X	X
vi.	Strengthen capacity for effective product recall across the public and private sectors	X	X	X	X	X	X	X	X	X	X
vii.	Expand the enforcement activities to fully include all major points of entry		X	X	X	X	X	X	X	X	X
SO-4.5.3.3. Address the legal and regulatory loopholes for effective QA and health care waste management in the country											
i.	Engage the MoH and Ministry of Trade/industry and cooperatives to address the dual product regulation between NDA and UNBS	X	X								
ii.	Fast-track the passing of stalled bills in parliament namely the PPPP bill and the National Food and Drug Authority bill	X	X	X	X						
iii.	Finalise and disseminate the development of a policy and guidelines on health care waste management	X	X								
iv.	Revitalisation of MTC at regional referrals and district hospitals		X	X	X	X	X	X	X	X	X
v.	Establish a system for collection, storage, and final disposal of pharmaceutical waste in public and private sector	X	X								
vi.	Put in place appropriate Statutory Instrument to ensure stringent HCW Management in the private sector	X	X								

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
vii.	Advocate for pre-service curriculum review for health care professionals to focus on QA and pharmacovigilance	X	X	X							
SO-4.5.3.4. Enhance the existing health care waste management systems, policies, and practices to be able to manage HCW sustainably											
i.	Conduct comprehensive country HCW management infrastructure assessment for all form of health care wastes	X									
ii.	Disseminate guidelines and SOPs for pharmaceutical HCW management in public and private sector	X	X								
iii.	Build HCW management infrastructure across regional centres to support effective disposal of pharmaceutical waste		X	X	X	X					
iv.	Coordinate the expansion of appropriate HCW management structures (incinerators, pits, etc) at hospitals, HC-IV, and HC-III		X	X	X	X	X	X	X	X	X
v.	Conduct training on appropriate HCW management for all health care workers countrywide		X			X			X		
Goal 6: Enhance participation, coordination, and leverage of quality partnership with the private sector for a sustainable national HSC and products access											
SO-4.6.3.1. To strengthen the engagement of the private sector in HSC based on their expertise and interests											
i.	Identify umbrella organisations for private sector players	X	X								
ii.	Develop guidelines for accreditation of private sector players	X	X								
iii.	Conduct a baseline survey to establish private sector interests, expertise, and competencies in health supply chain	X	X								
iv.	Develop standards of contracting out services to the private sector	X	X								
v.	Review procurement, legal and policy guidelines to permit contracting out supply chain services to the private sector providers	X	X				X	X			
vi.	Build capacity for contract management (agreements, contracts, MOUs)	X	X	X	X	X	X	X	X	X	X

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
Key Entities involved		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
SO-4.6.3.2. Continuously review HSC partnerships legal and policy frameworks											
i.	Establishing the existing legal and policy instruments	MoH, MoPS, MojCA	X								
ii.	Carry out adequate consultations with private sector players to identify gaps in the frameworks	MoH, MoPS, PSFU, MojCA, councils	X	X			X				
iii.	Develop minimum standards and policy guidelines for PPPH	MoH, MoPS, PSFU, MojCA, councils		X							
iv.	Carry out consultations on the practice of alternative medicine practitioners	MoH, MoPS, PSFU, MojCA, councils		X	X						
v.	Setting standards for alternative medicine practice	MoH, MoPS, PSFU, MojCA, CA, councils				X					
vi.	Publish and distribute updated versions of PPPH legal and policy frameworks	MoH, PSFU, councils			X						
vii.	Publish and disseminate standards for alternative medicine practitioners	MoH, PSFU, councils				X	X				
viii.	Conduct stakeholder meetings to popularise updated legal and policy frameworks	MoH, MoPS, PSFU, MojCA, CA, councils					X	X			
SO-4.6.3.3. To continuously build the capacities of the private sector players in HSC											
i.	Select team/institutions to conduct a capacity needs assessment of private sector players/key institutions	MoH, UHCF, PSFU, councils	X	X							
ii.	Undertake capacity needs assessment for the private sector players	MoH, UHCF, PSFU	X	X							
iii.	Compile a capacity needs report for private sector players	MoH, UHCF, PSFU		X							
iv.	Develop capacity-building packages for target private sector players	MoH PPDA, PSFU, professional bodies		X	X						
v.	Implement capacity-building activities arising out of the needs assessment	MoH, MoFPED, PPDA, NMS, JMS, PSFU, professional bodies				X	X	X	X	X	X
vi.	Evaluate the effectiveness of the private sector players' capacity building interventions	MoH, UHCF, PSFU				X					X
SO-4.6.3.4. To Strengthen regular reporting of HSC private players' activities into the HMIS for evidence											
i.	Create a dialogue between private sector and Government on data generation	MoH, PSFU, UHCF, associations	X	X	X	X	X	X	X	X	X
ii.	Develop and share digital tools	MoH, PSFU, UHCF, associations		X							

Interventions/high level activities		Key Entities involved	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
iii.	Engage private sector players on the role of self-reporting	MoH, PSFU, UHCF, associations		X		X	X	X	X	X	X	X
Goal 7: Adopt innovative financing and resources mobilisation approaches to significantly narrow the financing gap for Uganda's health supply chain												
SO-4.7.3.1. Increase funding for EMHS amid reducing donor funding and reduce OOP expenditures												
i.	Revise the cost of a basket of appropriate EMHS for attainment of UHC for the population considering the vertical and horizontal equities	MoH, NPA, MoFPED	X	X								
ii.	Advocate for gradual increase of government allocation for EMHS to meet the WHO USD 12 per capita threshold	MoH, NPA	X	X	X	X	X	X	X	X	X	X
iii.	Implement the National Health Insurance Scheme which is expected to increase the resource envelope for financing health services and reduce OOP (Determine the share of pooled funds under the NHIS that will be used for financing EMHS)	MoH			X	X	X	X	X	X	X	X
iv.	Annual review of HSC financing (as part of the budgeting process involving the donor working group) with the view of ensuring adequate financing, efficient utilisation of available resources and implementation of related interventions.	MoH, MoFPED	X	X	X	X	X	X	X	X	X	X
SO-4.7.3.2. Enhance efficiency and equity in the utilisation of available resources for EMHS, technologies and products												
i.	Conduct review of legal and policy framework for procurement of EMHS	MoH, MoFPED, PPDA	X									
ii.	Conduct periodic (biannually) pharmaceutical and health supply chain financing landscape and health supplies price reviews.	MoH, MoFPED	X		X		X		X		X	
iii.	Facilitate the implementation of the National Medicines Formulary including indicative prices	MoH	X	X								
iv.	Engagements with Uganda Development Corporation to prioritise Local manufacturing of EMHS	MoH, MoTIC	X	X	X	X	X	X	X	X	X	X
v.	Establishment of mechanisms for pooling of government and donor resources for EMHS	MoH, MoFPED,	X	X								
vi.	Undertake audits (receipt, utilisation, and stocks) of EMHS at district and lower levels of the health management system	MoH, NMS, JMS, DHO, Office of the Auditor General	X	X	X	X	X	X	X	X	X	X

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
Goal 8: Ensure a robust governance, leadership, coordination and accountability for the national and sub-national health supply chain and the associated products and resources											
SO-4.8.3.1. Strengthening the HSC leadership, standards, policies, and regulations											
i.	Review and/or reform the existing HSC-related policies, guidelines, laws, and regulations in line with the contemporary challenges, trends, and practices	X	X	X	X	X					
ii.	Formulate new HSC-related policies, guidelines, laws, and regulations to respond to the new emerging HSC challenges and practices	X	X	X	X	X					
iii.	Review and streamline responsibility and oversight roles of institutions for pharmaceutical services delivery	X	X	X	X	X					
iv.	Establish the HSC regional technical supervisory structure to support District Health Service delivery. This will require restructuring Community Health Departments and RRHs	X	X	X							
v.	Periodic supportive supervision, monitoring and inspection activities to improve oversight over pharmaceutical services delivery at national, district and health facility levels	X	X	X	X	X	X	X	X	X	X
vi.	Conduct periodic multi-sectoral engagements in pharmaceutical sector planning, budgeting, and policy processes to improve coordination of HSC management (MDAs—MoH, MoLG, MoPS, MoFPED, MoICT, NPA, private sector, civil society, etc)	X	X	X	X	X	X	X	X	X	X
vii.	Conduct periodic orientation sessions on HSC policy and governance at RRHs and district levels.	X	X	X	X	X	X	X	X	X	X
viii.	Enforcement of supply chain regulations.	X	X	X	X	X	X	X	X	X	X
SO-4.8.3.2. Strengthening coordination among actors											
i.	Conduct annual joint HSC performance reviews (including coordination mechanisms) at national, regional, district and HC levels.	X	X	X	X	X	X	X	X	X	X
ii.	Establish a coordination mechanism in the DPNM for private sector actors in the pharmaceutical sector.	X	X	X							
iii.	Strengthen the effectiveness of the HSC related TWGs and coordination mechanisms (clarify roles, leadership, constitution, functionality, and review of performance)	X	X	X	X	X	X	X	X	X	X

Interventions/high level activities		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10	
SO-4.8.3.3. Strengthening accountability at different levels of the HSC		Key Entities involved										
i.	Assessment of HSC accountability system(s)	X	X									
ii.	Review HSC accountability relationships and designation of accountability responsibility centres especially at district level and below	X	X									
iii.	Improve access to HSC performance information by external stakeholders and the public	X	X									
iv.	Conduct periodic (biennial) HSC performance assessments to identify service delivery gaps	X		X		X				X		
v.	Annual reporting on HSC performance reviews by actors at MoH, NDA, NMS, health centres, and districts	X	X	X	X	X	X	X	X	X	X	
vi.	Design and implement a rewards and sanctions framework for HSC actors			X		X		X		X		

ANNEX 4: MONITORING AND EVALUATION MATRIX

The table below presents the monitoring and evaluation indicators, baseline, and proposed milestones for the 10 years. Targets for year 2 have not been included because they are expected to be identical to either first or third years of the Roadmap.

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year 2021/22	Year 1 2023/24	Year 3 2025/26	Year 5 2027/28	Year 10 2030/31
SO-4.1.3.1. Guarantee that the health commodities, technologies, and relevant supplies selected, quantified, and used for delivery of the minimum health care package are aligned and responsive to the priority needs of the country	Proportion of facilities that had over 95% availability of a basket of commodities in the previous quarter	Health facility surveys, HMIS, and PIP	46%, 2020; annual health sector performance report (AHSR) 2019/20	60%	65%	80%	85%
	Average percent availability of a basket of 41 commodities based on all reporting facilities in the previous quarter	Health facility surveys, HMIS, and PIP	79%, 2020; AHSR 2019/20	85%	86.5%	87.5%	90%
Strengthen data driven rationalisation of the health supply chain to identify opportunities to improve efficiencies	Proportion of health facilities within min-max parameters for tracer health products	HMIS/LMIS, field surveys	TBD	60%	75%	90%	95%
Build capacity for health facilities to improve quantity and quality of stock status and strategic information	Proportion of health facilities reporting stock data within 7 days of deadline	eLMIS, HMIS	TBD	50%	80%	95%	98%
Implement a framework for introduction and transition of new technologies and products	Proportion of new products that are introduced with all requirements met	TWG minutes, assessment reports	TBD	50%	75%	100%	100%

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Conduct biennial review and rationalisation of national laboratory equipment platforms and supply systems in health facilities	Availability of tracer basic equipment in health facilities (%)	Biennial review reports	TBD	50%	75%	80%	90%
Automate the ordering systems to improve quality and visibility of information along the entire HSC processes	Proportion of health facilities reporting and ordering through eLMIS	PIP, DHIS2, NMS+	TBD	50%	60%	80%	100%
SO-4.1.3.2. Strengthen and harmonise the national and sub-national quantification and procurement planning processes to ensure that health commodities, technologies and supplies provided in a cost-effective & efficient manner	Proportion of quantified annual national products procurement needs that are procured annually	Annual reports, stores reports, reviews	TBD	TBD	75%	85%	90%
Strengthen the leadership of MoH Commodity Security Group in ensuring timely decision on stock rationalisation	Proportion of districts that conduct annual evidence-based quantifications	Annual reports, stores reports, reviews	N/A	TBD	35%	75%	95%
Harmonise the quantification approaches at NMS to focus on the procurement planning while MoH takes leadership in needs estimation	Proportion of value of procured health products that expire annually	Warehouse and health facilities reports	N/A	TBD	8%	5%	2%
Ensure essential health products and technologies are sourced in a cost effective and efficient manner	Proportion of hospitals with actual health commodities needs defined	Hospital quantification reports	N/A	TBD	50%	95%	95%
	Mean percentage variation between local procurements and global procurements for similar products	Procurement reports, National Health Accounts reviews	TBD	TBD	10%	5%	5%

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Develop and roll out appropriate instruments for instituting the maximum retail price restrictions across the country	Proportion of medicines in private sector (hospitals and pharmacies) and GoJ hospital private wings that are within maximum retail price	Maximum retail price instrument, surveys	N/A	NA	NA	TBD	TBD
SO-4.1.3.3. Strengthen and implement comprehensive rational health commodities use programme at national and health facility level	Proportion of prescriptions for different conditions complying with approved STG and protocols; and EML	Surveys, data analyses					
Strengthen the functionality of the MTCs at hospitals and HC-IV across the country	Proportion of functional MTCs at hospital level	Hospital annual reports	TBD	75%	85%	95%	95%
Strengthen the coordination between technical programmes, warehouses, donors and DPNM in management of health supply chain and products	Number of monthly coordination meetings conducted	Signed minutes of coordination meetings	12	12	12	12	12
SO-4.1.3.4. Strengthen supervision of health facilities to improve availability of quality data for decision making quantification, and capacity building	Proportion of health facilities with an up-to-date stock card for tracer commodities	SPARS and supervision reports	TBD	75%	85%	95%	95%
Review pre-service curriculum for health workers to ensure that courses covering principles of health supply chain management are fully integrated	Proportion of relevant training curricula that includes health SCM	Institution curriculum	TBD	50%	60%	75%	100%

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Conduct health facility supervisions and support functions using the SPARS approach with standardised tools	Proportion of health facilities supervised by an appropriate HSC personnel each quarter	SPARS/SC quality improvement reports	TBD	50%	75%	100%	100%
Standardise reporting for all commodities through the national system for both private and public sectors	Proportion of health facilities reporting or ordering their commodities on time	DHIS2, NMS+, PIP	TBD	75%	90%	95%	95%
SO-4.2.3.1. Strengthen routine reporting and data use in decision making from point of collection through to national level to support performance monitoring, traceability, visibility, and accountability							
Develop and implement a data use framework that specifies unique stakeholder information need	Approved framework	Activity report					
Develop a comprehensive implementation plan of actions for ensuring data visibility and access for stakeholders	Approved implementation plan	Activity report					
Enhance functionality of integrated HSC information portal to improve report generation and information presentation based on unique stakeholder information needs across the Supply chain system.	Functional Information portal	Annual health sector performance reports					
Customise and implement different stakeholders report in all HSC information portals to improve access and visibility of HSC data	Proportion of stakeholders accessing reports in the various HSC information portals	Annual pharmaceutical sector reports/ annual health sector performance reports	25%	25%	50%	50%	100%

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Undertake regular supportive supervision to improve data quality	Number of quarterly supportive supervisions undertaken	Annual pharmaceutical sector reports/ annual health sector performance reports	4	4	4	4	4
Implement the health supply chain data exchange bridges across all levels to enable data exchange and interoperability.	Existence of functional health supply chain data exchange bridges across all levels	Annual pharmaceutical sector reports/ annual health sector performance reports	I	I	I	I	I
SO-4.2.3.2. Prioritise the Digitalisation of Health Supply Chain processes at all levels							
Develop a health supply chain Digital Health Enterprise Architecture (HSCEA) to rationalise and guide digitalisation efforts	Approved HSCEA	Annual pharmaceutical sector reports/ annual health sector performance reports	I	I	I	I	I
Develop and implement an annualised ICT/digital infrastructure capacity management and investment plan in alignment with HSCEA. The plan will be comprehensive enough to include end user computer hardware needs, software license needs, server hardware and storage capacity needs, LAN and WAN and alternative power arrangements	Approved ICT/digital infrastructure capacity management and investment plan	Annual pharmaceutical sector reports/ annual health sector performance reports	I	I	I	I	I

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Prioritise the phased rollout of ICT infrastructure and access to functional eLMIS starting with higher level public health facilities	Proportion of public health facilities using a functional eLMIS in main store and pharmacy	Annual pharmaceutical sector reports/ annual health sector performance reports	0	10%	25%	40%	60%
Develop an implementation plan to gradually integrate private health facilities into supply chain data exchange	Proportion of private health facilities using a functional eLMIS in main store and pharmacy	Annual pharmaceutical sector reports/ annual health sector performance reports	0	10%	25%	40%	60%
Conduct periodic ICT/digital HSC capacity assessments to determine resource needs based on increase in data processing needs	Number of annual assessment reports	Annual assessment report	0	1	3	5	10
Develop a plan to address ICT/digital maintenance needs	Approved ICT/digital maintenance plan	Annual health sector performance reports	0	1	1	1	1
SO-4.2.3.3. Adapt the use of GSI Global Standard to enhance traceability in the health supply chain							
Adapt supply chain global traceability standards for national implementation	Approved framework	Annual health sector performance reports	1	1	1	1	1
Conduct a systems landscape assessment to determine opportunities to leverage on existing systems or to integrate new technology to achieve the implementation of the standard.	Landscape assessment report	Annual health sector performance reports	1	1	1	1	1

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
SO-4.2.3.4. Strengthen Governance and Leadership over health supply chain information system management							
Review policy guidelines, standard operating procedures to address changes in local and global practices, technology, and governing laws	Number of policy and SOP reviews	HMIS policy	I	I	I	I	I
Review the information and digital health strategies to address changes in local and global practices, technology, and governing laws	Number of reviews conducted	Health supply chain information system strategy	I	I	I	I	I
Develop data exchange protocols to govern interoperability between systems	Number of protocols guidelines developed and used	Annual health sector performance reports	I	I	I	I	I
Establish data governance council to advocate for supply chain data quality related issues and process optimisation at all levels	Monthly meetings conducted	Annual health sector performance reports	0	12	12	12	12
Strengthen the TWGs framework to discuss health supply chain data use requirements and align its mandate to MoH policy to ensure effectiveness in providing policy oversight, guidance, and feedback to higher levels.	Monthly meetings conducted	Annual health sector performance reports	0	12	12	12	12

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Establish service level standards to govern services of ICT vendors	Approved service level standards and review meetings held with vendors	Annual health sector performance reports	I	I	I	I	I
Establish and undertake reviews of the national product catalogue to address changes in health commodities and supplies	Number of reviews undertaken	Annual health sector performance reports	I	I	I	I	I
Enhance and implement an electronic national health product registry to support interoperability and data exchange across health systems	Functional electronic national health product registry	Annual health sector performance reports	I	I	I	I	I
SO-4.2.3.5. Strengthen Human Resource Capacity to the efficiently manage and use supply chain Information systems							
Dedicate adequate and competent core team of IT personal at national and subnational who are trained to support all approved government software applications and supporting infrastructure within the supply chain system	% of IT staff recruited and trained	HR recruitment and training reports	TBD	25%	25%	50%	100%
Adopt a pre-service training programme for human resources to train on adopted and implemented supply chain applications before they are introduced into in-service practice	% of training institutions implementing the programme	Training institutions reports	0	10%	25%	50%	100%

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Scale up the implementation of HSC quality improvement through self-assessment and eLearning	Proportion of facilities conducting self-assessment and eLearning	Annual health sector performance reports	0	10%	40%	100%	100%
SO-4.3.3.1. To enhance HSC workforce performance, productivity, and accountability for the attainment of efficient resource use at all levels	Annual health sector performance reports, HLMA, Ministerial Policy Statements						
Review and update HSC workforce job descriptions/person specifications for MoH, NRH, RRHs, UCI, UHI, DHOs, general hospitals, HCIV-II	Proportion of HSC workforce cadres with job descriptions/person specifications	Cadre schemes of service	N/A	100%	100%	100%	100%
Carry out annual HSC workforce audits in the public and private sector facilities	Proportion of HSC workforce cadres with streamlined schemes of service	Survey reports	N/A	N/A	80%	90%	100%
	Proportion of approved positions or vacancies in public sector HSC workforce staffing norms filled	HRH audit reports	TBD	65%	75%	85%	90%
	Proportion of approved positions or vacancies in private sector HSC workforce staffing norms filled		TBD	65%	75%	85%	100%
Progressively implement the recommended HSC staffing structure at all levels (central, district local governments)	Proportion of staffing norms filled by approved structures at all levels	Wage bill returns	TBD	65%	75%	85%	100%
	Proportion of wage bill allocated utilised for the approved HSC recommended structure		TBD	65%	75%	85%	100%

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Enhance digitalisation of HSC Inspection, licensure and CPD updates	Proportion of regulatory councils with digitized registration and licensure procedure	HSC registers at the regulatory councils	TBD	75%	80%	85%	90%
Review and align PNFP and PFP staffing norms to the standard level of health facilities	Proportion of PNFP / PFP health facilities whose staffing norms meet standard categorisation issued by MoH	HRH audit reports, HMIS records, DHIS II reports	N/A	TBD	40%	50%	75%
SO-4.3.3.2. To recruit and retain optimal HSC workforce for increased national supply chain resources		Ministerial policy statements, HRH audits, IPPS / IFMS reports					
Carry out targeted recruitment of prioritised approved HSC workforce staffing structures at central level	Proportion of donor supported /seconded staff absorbed into the approved staffing structures at central level	Payroll data, staff lists, wage bill returns, HMIS reports, DHIS II reports, minutes of the HSC	0	0	TBD	TBD	TBD
Carry out targeted recruitment of prioritised approved HSC workforce staffing structures at district local government level	Proportion of districts with at least a pharmacist at district health office level	payroll data, staff lists, wage bill returns	0%	0%	20%	75%	95%
Carry out recruitment of critical staff to fill gaps on replacement basis	Approved ministerial restructuring /reorganisation reports	Approved ministerial restructuring /reorganisation reports	N/A	TBD	20%	50%	85%
Align PNFP and PFP staffing norms to standard public sector approved norms	Proportion of PNFP facilities aligning their staffing norms to the public sector approved norms	Health facility inventories,	NA	NA	TBD	TBD	TBD
Implement the HSC cadres attraction and retention in hard-to-reach areas	Proportion of HSC workforce attracted and retained in approved staffing norms in hard-to-reach areas	Wage bill returns, staff lists	NA	NA	50%	75%	100%

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
SO-4.3.3.3. Strengthen HSC workforce training and development to deliver innovative and sustainable HSC.							
Undertake capacity building needs assessment for in-service training of HSC cadres	Number of HSC staff training needs assessment reports conducted to inform CPDs and continuing medical education and associated policy, plans and guidelines development	HSC minutes (study leave approvals); ministerial policy Statements (MoES, MoH, NCDC), training needs assessment reports, staffing norms, HRH annual audit reports	TBD	I	I	I	I
Implement targeted training-based capacity building needs assessment for in-service training HSC cadres	Proportion of HSC workers trained by year and by cadre to meet staffing norms and WHO standards factors that determine supply (qualitative data)	In-service and pre-service HSC workforce trainings based on developed curriculum, ministerial policy statements, minutes of the HRH and Pharmacy TWGs	N/A	TBD	60%	80%	90%
Support the development of an innovative education curriculum and packages for pre-service and in-service HSC workforce cadres with the MoES training institutions	HSC curriculum for HSC pre-service and in-service cadres for health training institutions developed	Availability of HSC training curricula and materials (trainers and learners)	Yes	Yes	Yes	Yes	Yes
Undertake annual on-boarding, induction, and staff engagement mechanisms	Number of newly recruited HSC cadres completing onboarding and probationary periods (confirmed) Number of HSC workforce cadres entering both the public and private facilities inducted	Induction training reports and probation review reports Induction reports	N/A	TBD	4	4	4
			N/A	I	I	I	I

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Publish, disseminate, and popularise the national HSC workforce Roadmap for implementation	National HSC workforce Roadmap disseminated	Distribution Lists, national HSC workforce dissemination	N/A	1	1	N/A	N/A
	Number of participants attending dissemination meetings	Activity reports	N/A	2	4	N/A	N/A
SO-4.4.3.1. Strengthen national warehouse capacity and coordination mechanisms to meet the desired performance standards and needs of the country	Order fill rate for tracer EMHS and commodities (%)	NMS+/JMS ERP, monthly reports					
Support the roll-out of the NMS+ and other warehouse vendor-managed inventory systems	Average lead time from ordering to delivery at health facility	Order and delivery reports, PIP, ERPs					
Implement a national product catalogue/registry to centrally manage products and is interoperable with warehouse ERPs and NDA	Proportion of health facilities using the NMS+ software	ERP, reports	TBD	10%	50%	100%	100%
Continuously support the distribution capacity of NMS and JMS to have effective transportation and distribution infrastructure	Proportion of warehouses that use a common national product catalogue/coding system	ERPs, PIP, MoH report	0%	0%	100%	100%	100%
Put in place a strategy for use of UAV or drones for distribution of low volume, low weight, and critical products to hard-to-reach areas in the country	Proportion of Health facilities with stock out for the tracer commodities for 7 consecutive days in a month	PIP, eLMIS, ERPs, surveys	46%, 2020 AHSPR	TBD	10%	10%	5%
	Proportion of hard-to-reach districts enrolled on to use of UAV	Distribution reports, annual reports	N/A	0%	25%	50%	100%

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
SO-4.4.3.2. Rationalise and strengthen the district level storage and infrastructure to be better placed to support the expanded district supply chain needs	Proportion of district health stores meeting minimum standards for HPT storage	Annual Pharmaceutical Sector Reports, AHSPR, Surveys	TBD, 2020	N/A	75%	90%	100%
Provide a framework for capacity building, commodity management and infrastructure in the district stores (commodity management in 83 districts, SCM tools in 106 districts, training in 114 districts)	Proportion of district stores with appropriate framework for HSC management capacity in place	Annual pharmaceutical sector reports, AHSPR, surveys	TBD	N/A	75%	90%	100%
Support all districts to have a standard infrastructure for management of health commodities and supplies beyond the EHMS and health facility-based products	Proportion of district stores with appropriate product handling infrastructure in place	Annual pharmaceutical sector reports, AHSPR, surveys	52%, 2021	60%	90%	95%	100%
Strengthen inventory management and control through training, supportive supervision, mentoring, and data quality reviews at all health system levels	Proportion of district stores with an up-to-date stock card for all tracer products	Annual pharmaceutical sector reports, AHSPR, surveys	N/A	50%	90%	95%	100%
Train district stores personnel in use of eLMIS to improve their knowledge and capacity to manage PHE commodities in 71 districts without trained personnel	Proportion of districts with at least one district stores personnel trained in use of eLMIS	Annual pharmaceutical sector reports, AHSPR, surveys	N/A	50%	90%	100%	100%

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Conduct an equipment and records assessments to determine the requirements for cold chain backup, monitoring, and tracking and raise funds to equip HCs with inverters and solar equipment	Proportion of health facilities with appropriate and functioning cold chain facilities	Annual pharmaceutical sector reports, AHSPR, surveys	TBD	80%	90%	100%	100%
SO-4.4.3.3. Align and strengthen the storage, handling, and inventory control practices at health facility level	Proportion of health facilities meeting minimum standards for HPT storage	Annual Pharmaceutical Sector Reports, AHSPR, Surveys	TBD		90%	95%	100%
Strengthen the use of medicines management supervisors and other supervisory structures to provide adequate supervision and capacity building for health facility staff	Proportion of health facilities with an up-to-date stock card for tracer products	Annual pharmaceutical sector reports, AHSPR, surveys	TBD	75%	85%	95%	95%
Support all high-volume facilities to be able to institute standard stores management practices to perform the critical activities and functions	Proportion of high-volume health facilities adhering to standard stores management practices	Annual pharmaceutical sector reports, AHSPR, surveys	TBD	TBD	50%	75%	100%
Engage districts to include a budget for continuous improvement of health facilities storage and infrastructure	Proportion of districts with a budget for continuous improvement of health facilities storage and infrastructure	Annual pharmaceutical sector reports, AHSPR, surveys	TBD	10%	25%	75%	90%
Provide shelving for all hospitals and HC-IV across the country based on the national gap analysis	Proportion of health facilities with appropriate shelving	Annual pharmaceutical sector reports, AHSPR, surveys	NA	NA	TBD	75%	90%

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
SO-4.4.3.4. Ensure essential Health Products and Technologies are sourced in a cost effective and efficient manner.	Proportion of international indicator price paid by bulk purchasers for a defined basket of essential health products	Annual pharmaceutical sector reports, AHSPR, surveys					
Digitalise the existing procurement systems to be able to provide both digital footprint and efficiency in processes	Proportion of procurements conducted through digital platforms	Annual pharmaceutical sector reports, AHSPR, surveys	TBD	TBD	25%	70%	95%
Strengthen planning capacity to phase out emergency procurement practices at all levels of the system	Proportion of emergency orders out of total procurement conducted	Annual pharmaceutical sector reports, AHSPR, surveys	TBD	TBD	10%	5%	5%
Build capacity of entities to handle procurement using donor funds, pooled procurement (for both NMS and JMS) for donor funded commodities and EMHS with oversight role of MoH on NMS	Proportion of donor funded commodities value that are procured by local entities	Annual pharmaceutical sector reports, AHSPR, surveys	TBD	TBD	10%	25%	50%
Introduce and roll-out rebates to support local manufacturers to meet the national quota for supply of the key products for UHC	Share of domestic market serviced by locally manufactured pharmaceutical and medical supplies	Annual pharmaceutical sector reports, AHSPR, surveys	20%, 2020	20%	25%	27%	35%
Monitor local manufacturers' ability to meet the local market consumption trends, quality standards and demand levels	Number of essential HPT whose demand can be met in full through local production	Annual pharmaceutical sector reports, AHSPR, surveys	TBD	TBD	TBD	TBD	TBD

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
SO-4.5.3.1. Enhance the national pharmacovigilance framework and implementation mechanism to effectively collect quality data about adverse effects or any other health product-related issues and to appropriately act on it to improve patient safety	Number of health facilities reporting adverse events to the National Pharmacovigilance Centre	Pharmacovigilance reports/database/training reports		TBD	TBD	TBD	TBD
Enhance decentralisation of pharmacovigilance approach/policy that will allow for complete loop of data collection and causality analysis to inform clinical practice	Proportion of total reports subjected to causality assessment at target health facilities in the previous calendar year	Pharmacovigilance annual reports, support supervision reports	TBD	TBD	TBD	TBD	TBD
Support NDA to incrementally budget for comprehensive pharmacovigilance support at all like levels	Proportion of projected pharmacovigilance budget met by NDA for pharmacovigilance	NDA annual Reports	TBD	TBD	TBD	TBD	TBD
Conduct biennial capacity building for local industries to support implementation of pharmacovigilance and PMS	Proportion of local pharmaceutical industries participating in pharmacovigilance and PMS	NDA annual reports	NA	NA	NA	TBD	TBD
Strengthen the inclusion of Pharmacovigilance in the national and regional referral strategic supply chain plans	Proportion of referral hospitals with pharmacovigilance in their strategic plans	Strategic plans of the NRHs and RRRHs	TBD	100%	100%	100%	100%

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Expand the pharmacovigilance centres to gradually all hospitals in the country	Number of pharmacovigilance centres in the country	NDA annual pharmacovigilance report	13	25	50	100	150
SO-4.5.3.2. Transform the PMS, registration, regulatory inspection, and quality testing to align emerging challenges, changing landscape and strategic shifts locally and globally							
Develop and disseminate the guidelines for emergency use authorisation of new products and registration of orphan medicines	Number of guidelines developed and put into use	NDA annual reports	1	1	N/A	N/A	N/A
Develop and implement a sustainability strategy for the NDQCL	Proportion of NDQCL costs funded through locally generated revenue	NDA annual reports	TBD	TBD/NDA	75%	75%	95%
Enhancing PMS through digitalisation and use of QR/barcodes in the private sector (product track and trace)	Proportion of products in the private sector using QR or bar codes for traceability	NDA annual reports; PMS reports	N/A	TBD	10%	30%	75%
Transforming the NDQCL into a source of Non-Tax Revenue through regional sample testing	Proportion of samples tested at the NDQCL that are not locally sourced	NDA/NDQCL annual reports	NA	NA	NA	TBD	TBD
Strengthen capacity for effective product recall across the public and private sectors	Proportion of market authorization holders with demonstrated capacity for product recall	NDA annual reports	N/A	20%	75%	80%	85%
Expand the enforcement activities to fully include all major points of entry	Number of high-volume points of entry with presence of NDA	NDA annual reports	5	5	5	7	14

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
SO-4.5.3.4. Enhance the existing HCW management systems, policies, and practices to be able to manage HCW sustainably	Proportion of health facilities and pharmaceutical outlets with appropriate health care waste management practices	NDA annual reports MoH annual reports	TBD	TBD	60%	75%	90%
Disseminate guidelines and SOPs for health care HCW management in public and private sector	Proportion of health facilities with guidelines for HCW management available	Annual pharmaceutical sector report	N/A	75%	100%	100%	100%
Build HCW management infrastructure across regional centres to support effective disposal of pharmaceutical waste	Number of regional centres equipped with capacity to manage pharmaceutical wastes	Annual pharmaceutical sector report	0	2	4	6	8
Coordinate the expansion of appropriate HCW management structures (incinerators, pits, etc) at hospitals, HC-IV, and HC-III	Proportion of health facilities with appropriate HCW management facilities for that level	Annual health sector performance reports	TBD	TBD	50%	100%	100%
Conduct training on appropriate HCW Management for all health care workers countrywide	Proportion of health facilities and DHTs that have at least one staff trained in HCW management over last 1 year	Annual pharmaceutical sector report	N/A	TBD	50%	100%	100%
SO-4.6.3.1. To strengthen regulation and engagement of the private sector in HSC based on their expertise and interests							
Review health private sector policy to include HSC comprehensively	MoH private sector policy revised with comprehensive HSC component	Revised MoH private sector policy	NA	I	I	I	I
Identify and support effective operations of umbrella organisations for health private sector players	Number of umbrella organisations identified	Annual inventory of umbrella organisations	N/A	TBD	TBD	TBD	TBD

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Review guidelines for accreditation of private health providers to include key supply chain components	Revised guidelines developed	Guidelines available	NA	NA	Yes	Yes	Yes
Conduct a baseline survey to establish private sector interests, expertise/competencies	HSC private sector player interests and opportunities detailed in baseline report	Baseline survey report	NA	NA	Yes	Yes	Yes
Conducts dialogue of HSC private sector on key public sector priorities and opportunities	Number of HSC private sector dialogues held on key public sector priorities and opportunities annually	Dialogue reports	NA	NA	#	#	#
SO-4. 6.3.2. To continuously review HSC partnerships legal and policy frameworks							
Establishing the existing legal and policy instruments	Number of legal and policy instruments established	Legal and policy instruments available	NA	Yes	Yes	Yes	Yes
Conduct consultations with private sector players to identify gaps in the frameworks	Number of private sector players consulted	Consultation report	NA	NA	Yes	Yes	Yes
Develop minimum standards and policy guidelines for PPPH in the HSC	Standards and policy guidelines developed	Minimum standards and policy guidelines are available	NA	NA	Yes	Yes	YEs
Carry out consultations on the HSC practices of alternative medicine practitioners	Number of alternative medicine practitioners consulted	Consultation reports available	NA	NA	Yes	Yes	Yes
Setting standards for the HSC for alternative medicine practice	Standards set for alternative medicine practice	Standards available	NA	NA	Yes	Yes	Yes
Publish and distribute updated versions of PPPH legal and policy frameworks	Updated versions and policy frameworks published	Publications available with updated policy frameworks	NA	NA	Yes	Yes	Yes

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Publish and disseminate standards for HSC for alternative medicine practitioners	HSC standards for alternative medicine practitioners published	Standards publications available	NA	NA	Yes	Yes	Yes
SO- 4. 6.3.3. To continuously build the capacities of the private sector players in HSC							
Select team/institutions to conduct a capacity needs assessment of players	Number of people or institutions selected to conduct capacity needs assessed	List of people/institutions selected	NA	NA	Yes	Yes	Yes
Undertake capacity needs assessment for the private sector players	Number of private sector players with capacity needs assessed	Needs assessment report available	NA	NA	Yes	Yes	Yes
Develop capacity-building packages for target private sector players	Number of capacity building packages developed	Capacity building packages are available	NA	NA	Yes	Yes	Yes
Implement capacity-building activities arising out of the needs assessment	Proportion of assessed HSC private sector players reached with targeted capacity building activities	Capacity-building activities report	NA	NA	60%	80%	100%
Evaluate the effectiveness of the private sector players' capacity building interventions	Number of capacity building interventions evaluated	Evaluation report	NA	Na	NA	Yes	YEs
SO- 4.6.3.4. To strengthen regular reporting of HSC private players' activities into the HMIS for evidence							
Create a dialogue between private sector and GoU on data generation and reporting	Number of dialogue meetings between private sector and MoH	Dialogue reports	NA	NA	Yes	Yes	Yes
Develop and share digital reporting tools	Number of digital tools developed and shared	Digital tools available	NA	NA	TBD	TBD	TBD

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
Engage private sector players on the role in HSC self-reporting	Number of private sector players engaged to conduct HSC self-reporting	Self-reports available	NA	NA	TBD	TBD	TBD
SO- 4. 7.3.1. Increase funding for EMHS amid reducing donor funding and reduce OOP	General government allocation for EMHS as percentage of total EMHS budget	NHA	19% (2018/19)		25%	35%	50%
	OOP health expenditure as a percentage of total health expenditure	NHA	42.6 (2018/19)	TBD	42.6	35%	20%
	Contributory scheme contribution as a percentage of EMHS expenditure	NHA	NA	NA	5%	15%	30%
	Increase of per capita expenditure on EMHS USD	NHA	8.4 (2018/19)		8.4	10	12
SO- 4. 7.3.2. Efficient and equitable utilisation of available resources for EMHS	Incidence of catastrophic health expenditure (at 10% of household total income)	NHA	15% (2019/20)	12%	6%	5%	5%
	Proportion of population accessing health insurance	NHA	2% (2019/20)	7%	17%	25%	50%
	Value of expired EMHS as a percentage of value of purchase	NHA	TBD	TBD	10%	7.5%	5%
SO- 4. 8.3.1. Strengthening the HSC leadership, standards, policies, and regulations	Publication of a comprehensive review of HSC policies and guidelines	HSC policy review report		Operational			
	HSC policies adopted to among others streamline responsibility and oversight roles of institutions for pharmaceutical services delivery	MoH policy catalogue Parliament of Uganda Hansard	NA	Formulation	Formulation	Formulation	Formulation

Strategic Objective/ Key Activity	Performance Indicator(s)	Method of verification	Baseline & Year	Year 1 2021/22	Year 3 2023/24	Year 5 2025/26	Year 10 2030/31
	HSC regional technical supervisory structure to support district health service delivery established	HSC structure	NA	Formulation	Operational	Operational	Operational
	Annual amalgamated HSC forecast and budgets	Annual amalgamated budget for the HSC	NA	Formulation	Operational	Operational	Operational
	Commitment of government to the 10-year HSC Roadmap	Statement of commitment GoU		Operational			
SO- 4. 8.3.2. Strengthening coordination among actors	Creation of a coordination forum by the DPNM for private sector actors in the pharmaceutical sector	MoH DPNM	NA	Formulation	Operational	Operational	Operational
	Joint reviews of performance of the HSC conducted and findings published publicly	HSC joint review report	NA	Formulation	Operational	Operational	Operational
	Reporting on performance of MoH TWGs especially the ones related to the HSC	MoH annual health sector report	NA	Formulation	Operational	Operational	Operational
SO-4.8.3.3. Strengthening accountability at different levels of the HSC	Review of accountability framework for the HSC	Institutional framework and roles		Formulation	Operational	Operational	Operational
	Availability of up-to-date information on performance of HSC institutions on the MoH website	MoH website NMS website JMS website NDA website		Formulation	Operational	Operational	Operational
	Percentage of health facilities with an error-to-data ratio of less than 5% in HSC parameter	MoH data quality report	36% (2019/20)	40%	50%	60%	80%
	Percentage of hospitals and HC IVs with a functional eMRS and eLMIS	MoH AHSPR	0% (2019/20)	10%	30%	50%	80%

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