



Final Report

Supply Chain Assessment in Guatemala

The Global Fund to Fight AIDS, Tuberculosis and Malaria

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Brief Description

Guatemala is classified as a "core" country in the LAC region within the Global Fund's differentiated system, with two transition grants (Malaria and Tuberculosis) and a continuation grant for the HIV program for which it includes a CI9RM mechanism. In previous years, and due to different studies conducted by The Global Fund or partner organizations, challenges in the supply chain and management of health products were identified. Based on this, an in-depth assessment is required to investigate new opportunities to strengthen supply chain systems of Guatemala, in order to prepare the country to organize a sustainable supply chain system when Global Fund grants are completely phased out.

About GIS Grupo Consultor

GIS Grupo Consultor is a private research and consulting firm founded in 2016 in the Dominican Republic and registered in the United States, Peru, and Panama. GIS provides technical assistance in healthcare with an emphasis on supply chain management. For more information, visit [the GIS web site](#).

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Disclaimer

The views of the authors expressed in this publication do not necessarily reflect the views of The Global Fund to Fight AIDS, Tuberculosis and Malaria.

Acronyms

BRES	Balance and Requisitioning of Health Facilities (per its acronym in Spanish)
DATMECA	Department of Technical Assistance in Medicines, Clinical Equipment and Related Items
DATMECBA	Department of Technical Assistance in Medicines, Clinical Equipment, Biologicals and Related Items (per its acronym in Spanish) (per its acronym in Spanish)
DDRISS	Department Directorates of Integrated Health Services Networks (per its acronym in Spanish)
DMS	Municipal Health Districts (per its acronym in Spanish)
DNPAP	Directorate for the Standardization of Health Care Programs (per its acronym in Spanish)
DTI	Directorate of Information Technologies (per its acronym in Spanish)
GSP	Good Storage Practices
GDP	Good Distribution and Transportation Practices
HIV	Human Immunodeficiency Virus
HRD	Directorate of Human Resources (per its acronym in Spanish)
LBMM	Basic List of Medicines of the Ministry of Public Health and Social Assistance (per its acronym in Spanish)
LBPAAE	Basic List of Related Essential Products (per its acronym in Spanish)
LMIS	Logistics Management Information System
LMU	Logistics Management Unit
MSPAS	Ministry of Public Health and Social Assistance (per its acronym in Spanish)
NRHP	National Reproductive Health Program
PR	Principal Recipient
SIGESS	Integrated Management System for Health Products Supply
TB	Tuberculosis
UMPA	Medicines and Related Products Unit
USAID	U.S. Agency for International Development
UAI	Unidades de Atención Integral- Spanish
WMS	Warehouse Management System

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1. Introduction

In 2023, The Global Fund and the Ministry of Public Health and Social Assistance (MSPAS) planned an assessment of the supply chain at the central and department level in Guatemala aimed at developing a comprehensive strengthening plan for the 2023 - 2027 period to facilitate sustainability and transition towards the phasing out of Global Fund grants.

The terms of reference included a **situation analysis** identifying supply chain opportunities and challenges, an **initial report** with the strengthening plan and preliminary investments required, and a **final report** with a detailed analysis, improvement proposal and associated costs per supply chain segment at the central and peripheral levels for the 2023-2027 period.

This document is the final report and includes a detailed summary of the *situational analysis*¹ that emphasizes the strengths of the MSPAS to develop a sustainable and more robust supply system for medicines and related products; a costed improvement proposal agreed with national counterparts based on the implementation of an integrated supply chain system at the central and peripheral levels for the 2023-2027 period.

2. Methodology

Figure 1 summarizes the methodological approach. Documentary information was reviewed, and remote interviews were conducted to establish the current situation of the supply chains and the information gaps to be filled during the on-site visits to the country. At the end of July 2023, during the *first visit*, face-to-face interviews were conducted with the participation of 39 managers and technicians linked to the supply chain at the MSPAS and cooperation agencies. A workshop was held to analyze the current situation of the supply system and to outline possible improvement alternatives to be achieved by 2027.

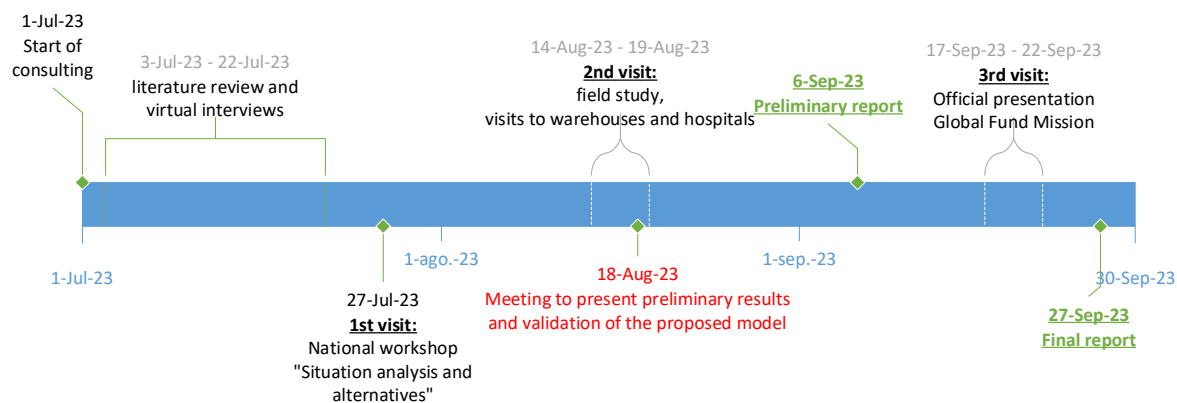
The *second visit* took place in August. The two (2) central warehouses, three (3) hospitals and seven (7) Integrated Health Networks Department Directorates (DDRIS)² were visited to collect complementary qualitative and quantitative information to help develop the proposal to strengthen the supply system. Also, through the Directorate of Integrated Health Services Networks (DRISS), a survey was sent to the 29 DDRIS to collect information on infrastructure, storage volume, human resources, available vehicles, and warehouse management procedures.

Based on the preliminary analysis and the information gathered during the field work, at the end of the second visit to the country, a proposal for a supply model and its implementation plan was presented to the MSPAS authorities and technicians. **At the meeting, the participants agreed by consensus to implement an integrated supply system for medicines and related products that leverages existing strengths and lays the groundwork for technical and financial sustainability when moving out of international support.**

Development of the supply model proposal and its implementation plan with activities, tasks, and costs for a five-year (2023-2027) period took place in the following days. Both proposals were presented, during the third visit to the country to MSPAS authorities and technicians, representatives of the Global Fund and other agencies, in working sessions held on September 19 and 20, 2023. The contributions received were incorporated into this version of the report.

¹ The Global Fund to Fight AIDS, Tuberculosis and Malaria (2023). *Análisis de situación: Cadena de suministro de Medicamentos e Insumos Médicos del sector público de Guatemala* (Situation Analysis: Supply Chain of Medicines and Medical Supplies in the Public Sector in Guatemala). Submitted to the Ministry of Public Health of Guatemala and the Global Fund by GIS Grupo Consultor. August 2023

² Places visited: DDRIS Alta Verapaz, Escuintla, Guatemala Central, Huehuetenango, Petén Norte, Retalhuleu and Quetzaltenango. Roosevelt, Rodolfo Robles, and Escuintla Hospitals.

Figure I. Methodological Approach

3. Situation Analysis

The organization and current situation of the supply system of the MSPAS in Guatemala is described further in detail. The summary is presented in Figure 2.

a. Governance

The MSPAS is responsible for the supply of medicines and related products used for health care programs and the network of primary health care facilities and hospitals.

By the end of 2022, the country had made progress in integrating supply systems by creating the Logistics Management Unit (UGL, by Spanish acronym), which is responsible for providing technical guidelines and monitoring the functions of the supply system, developing the [technical standard](#) and [procedures manual](#) for the management of medicines and related products in DDRISS, and [other regulatory documents](#) for the implementation and operation of the integrated system. The UGL, however, did not manage to integrate fully the supply of health care programs.

In March 2023, MSPAS approved the new Internal Organic Regulation (ROI, Spanish acronym)³ that eliminated the UGL and assigned the coordination of supply management to two technical bodies, the Department of Technical Assistance in Medicines, Clinical, Biological and Related Equipment (DATMECBA) under the Vice-Ministry of Primary Health Care and the Department of Technical Assistance in Medicines, Clinical and Related Equipment (DATMECA) under the Directorate of Hospital Management. This document does not clearly define the role of the stakeholders of each supply system at the central level and their forms of interaction, a situation that imposes an additional challenge for the implementation and management of an integrated supply system. The decision to eliminate the UGL was internal to the MSPAS team that worked on the Internal Organic Regulation proposal.

Currently, in 2023, MSPAS has three supply sub-systems that operate simultaneously: for the Programs, which is a [centralized](#) supply chain, and for the Hospitals and DDRISS, which is [decentralized](#). As part of the work carried out by the UGL in previous years, partial integration of the programs' supply systems is observed in the DDRISS, which is managed by Medicine Units⁴. A similar situation is observed in hospitals, but under the administration of the Pharmacy Departments.

At the central level of MSPAS, each supply subsystem has its own procedure manuals and staff to manage it. This may have possibly made it difficult to fully integrate the supply systems.

³ Government Agreement 59-2003 of 30 March 2023

⁴ Called Medicine Logistics Department Units in some locations.

At DDRISS there is no uniform organic structure to manage supply. The latter is managed by pharmacotherapeutic committees, administrative offices, or Medicines Units. During the field visits it was found that supply procedures were available in only 29% (2/7) of DDRISS and 33% (1/3) of hospitals.

In the DDRISS, insufficient staff was identified in supply management, only 43% (3/7) of the DDRISS have pharmaceutical chemists and none of them had staff responsible for supply information. In addition to this, there are weaknesses in staff training: only 43% (3/7) of the DDRISS and 33% (1/3) of the hospitals had staff who manage supply were trained in the 12 months prior to the visit. The absence of a standardized job and profile manual for supply staff and of a uniform organizational structure to manage supply could explain this situation.

b. Selection

There is a Basic List of Medicines (LBM, Spanish acronym) that is revised every two (2) years; there is a product authorization procedure not included in the LBM; the DDRISS and hospitals visited have pharmacotherapy committees (CFT, per its acronym in Spanish) which have elaborated institutional lists of essential medicines within the framework of the LBM. A National List of Related Essential Products (LBPAE, Spanish acronym)⁵ has not been developed. However, 100% of the CFTs of the DDRISS and hospitals have drawn up institutional lists of these products based on their usual consumption and services portfolio.

c. Procurement Programming and Financing

There are various procedures, methodologies, and calculation tools for the programming of each type of supply. The National Reproductive Health Program (NRHP) conducts a centralized quantification exercise. The HIV program consolidates the needs of the Comprehensive Care Units (Unidades de Atención Integral- UAI- Spanish acronym)⁶ and adds the medicines required for sexual violence, mother-to-child transmission of HIV, occupational accidents, and non-occupational exposure. In the DDRISS, hospitals and the TB Program the exercise is decentralized. The Vector Program carries out programming combining both levels.

The DDRISS quantify the medicines and related products required for the first level or primary care network, using various methodologies that combine data on: consumption and morbidity; consumption, morbidity, and actual demand; consumption and population; consumption, and actual demand; and only consumption. Hospitals quantify their medicines and related products using various methodologies that combine data on consumption; morbidity and population; consumption, morbidity, and actual demand; and only consumption. In the DDRISS and hospitals, differences are observed between the estimated quantity of products in 2022 and the consumption in the same period. The absence of standardized methodologies and calculation tools and of a national exercise supervised by the MSPAS could explain this situation.

Government funds finance most of the purchases of medicines and related products of health care Programs, the total purchases of hospitals and the DDRISS. Nonetheless, some donations of medicines and related products from cooperation agencies such as the United States Agency for International Development (USAID) and the Global Fund, are maintained.

Seventy-one percent (5/7) of interview respondents in the DDRISS reported budget shortfalls for the purchase of medicines and related products of general use, a situation that causes stock outs and affects the access of people. In the DDRISS, there are no specific budget lines to cover the operating costs of the supply chain⁷, which affects management, storage conditions, and timeliness of distribution.

⁵ Synonymous of medical device

⁶ Special clinics specializing in Infectious Diseases and HIV care.

⁷ Only 14% (1/7) of DDRISS indicated that they have a specific budget allocated for the operations of the supply system.

d. Procurement

The MSPAS purchases the Program's products centrally through agreements with procurement agents (PAHO and UNFPA) because of the advantages in quality and price. Purchases are made based on the quantification developed by each Program. Occasionally, delays in deliveries have been reported, resulting in intermittent shortages.

Medicines and related products for general use (non-program) are procured in a decentralized manner by the DDRISS and hospitals based on their estimates. They are procured through the *open contract*⁸, as a first option, or other procurement modalities established by law. The implementation of the open-procurement contract is a strength for the supply system; however, difficulties are noted, such as contracted quantities running out quickly, possibly due to insufficient estimation of needs. The suppliers make partial deliveries due to lack of stock.

DDRISS procures only 20-50% of the medicines and related products through the *open contract*. The difference is purchased directly and in some cases through small purchases.⁹ Hospitals purchase between 20 and 60% of their needs through the *open contract*. Similarly, the difference is purchased locally and in some cases through small purchases. High prices are identified in the local purchases of the DDRISS and hospitals. This situation makes procurement inefficient and at high prices, increasing the financial gaps mentioned above.

e. Storage

Central

The MSPAS has a central warehouse administered by the Administrative Directorate where all the Program products purchased with government resources are stored. The reception of these products is conducted under the supervision of officials from the Programs. This facility complies with 65% (13/20) of the minimum Good Storage Practices (GSP) criteria assessed. During the visit, deficiencies in infrastructure, equipment, personnel, and training were identified. The storage capacity of this facility is underutilized mainly due to the lack of high-volume shelving (see picture 1).

In the interview with the Principal Recipient (PR) of the Global Fund, they said that they have a private logistics operator that stores condoms, lubricants, and HIV rapid tests. They are also investing (USD 500,000) to activate a second MSPAS central warehouse where mosquito nets, insecticides and other products donated by donors will be stored. At the request of the PR, an [internal organization proposal](#) was developed, storage equipment was quantified and the investment costs for equipping this warehouse were estimated.

⁸ It is a procurement modality that aims to select suppliers of goods, supplies and services of general and constant use or of considerable demand, after qualification and award, through a public tender, at the request of two or more state institutions. Through this mechanism, the participating entities can purchase the products at a standardized price for a given period of time.

⁹ Low value purchase: The low value purchase modality deals with the direct procurement of goods, supplies, works and services, exempted from the requirements of the competitive processes of the other public procurement modalities contained in this Law, when the procurement is for an amount of up to ten thousand Quetzales (Q.10,000.00).

Picture 1. Central Medicine Warehouse Facilities

Description: facade and inside view of the medicine warehouse

In DDRISS (Department)

The MSPAS supply system has a network of 29 department warehouses that distribute products to 309 warehouses located in the Municipal Health Districts (DMS). An assessment conducted by MSPAS in 2022¹⁰ identified deficiencies in infrastructure, equipment, personnel, and training in DDRISS, DMS and hospitals. In 2023, the Global Fund donated some materials and equipment to improve conditions in DDRISS warehouses.

During the field visits, none of the DDRISS warehouses complied with the GSP criteria assessed, mean compliance was 68%. Deficiencies were observed in infrastructure, equipment, storage conditions and practices. The warehouses visited have several separate physical spaces for the storage of medicines and related products due to the absence of a warehouse of sufficient size to store all products. None of the department warehouses visited have electronic inventory management applications.

Hospitals

None of the three hospitals visited complied with all the GSP criteria assessed, the median compliance was 53%. Deficiencies were observed in infrastructure, equipment, storage conditions and practices. Like DDRISS, hospital warehouses have several separate physical spaces for the storage of medicines and related products due to the absence of a warehouse sufficiently sized to hold all products.

f. Distribution

Central to Periphery

For distribution, each Program has established its own procedures and schedules. TB products and vaccines are distributed from the central warehouse to the DDRISS and from the latter to the 46 hospitals and 1,587 primary health care facilities. NRHP products are distributed to the DDRISS and hospitals separately. The HIV program has implemented two distribution flows, one in which hospitals pick up antiretrovirals (ARVs) from the central warehouse without going through the DDRISS; and the second for condoms, lubricants and rapid tests in which DDRISS receive them from the private logistics operator financed with resources from the Global Fund.

In all cases, distribution is carried out by the central warehouse based on program authorizations, and a collection distribution system is used in which the DDRISS and hospitals come to the central

¹⁰ Report on the results obtained from the diagnosis to identify the need for furniture and equipment in the different warehouses and services that safeguard medicines, related products and biologicals at the central level, hospitals, health area directorates and municipal districts. Logistics Management Unit, Ministry of Public Health and Social Assistance. Guatemala, 29 July 2022

warehouse, often when making other arrangements, to collect the products using inappropriate vehicles such as ambulances or vans. According to information collected during the field visits, the DDRISS and hospitals often face difficulties with this distribution mode due to lack of vehicles and drivers. Staff at one hospital visited noted that they have sometimes used out-of-pocket resources for transport.

The time elapsed from the moment that the DDRISS prepares its request until it receives the goods from the warehouse varies from 1 to 10 days due to the lack of vehicles. During the visit to the central warehouse, three trucks used to clear medicines from customs, purchased through agreements with Cooperation Agencies, were identified. Sporadically these trucks are used to transport products to DDRISS near the capital. MSPAS officials indicated that it is feasible to implement final destination drop-off if new vehicles are purchased. They also indicated that it is legally prohibited to outsource distribution operations ([See Annex I, Legal opinion on outsourcing](#)).

Departments to facilities

In the DDRISS warehouses, TB, HIV (condoms, lubricants, and rapid tests) and NRHP products are distributed along with locally procured medicines and related products. Malaria products have different distribution flows.

Seventy-six percent (76% -22/29-) of the DDRISS warehouses distribute products to DMS warehouses and from DMS warehouses to health facilities; this modality is called indirect distribution. Twenty-four percent (24% -7/29-) of the DDRISS distribute products directly to health facilities without going through the DMS (direct distribution). The collection distribution system is used mostly, whereby requesters come to the DDRISS warehouse to collect the commodities using inappropriate vehicles, such as ambulances, vans, personal transportation, or public transportation. Some DDRISS have established schedules to distribute products to their network of facilities while others distribute commodities on demand. During the visits to the DDRISS, it was found that 57% (4/7) transport the products to their district warehouses or health facilities. This diversity of dispatch procedures makes it difficult to distribute with accuracy that would prevent stock-outs, even when central warehouses were well stocked, and results in out-of-pocket expenses for health personnel.

In recent years, the NRHP earmarked resources from the tax on alcoholic beverages for the procurement of vehicles to transport medicines in the DDRISS. During the field visits 6 DDRISS (Guatemala Central, Guatemala Noroccidente, Ixcán, Jutiapa, Peten Norte and Totonicapán) were identified to have vehicles assigned for the transport of medicines and 4 had vehicles that could be assigned in the short term to this activity (Alta Verapaz, Retalhuleu, Santa Rosa, and Zacapa).

g. Dispensing

Hospitals

Hospitals have pharmacies that dispense medicines used in unit doses to inpatients only. They do not dispense products to outpatients who are seen in the outpatient areas, with the exception of Roosevelt Hospital, which has a prevention program that delivers medicines to patients with chronic conditions such as hypertension and diabetes.

The products of the Programs enter the hospital warehouse and are then delivered to the clinics where they are dispensed according to technical treatment guidelines. The HIV Program has set up UAI within the hospitals that have pharmacy services. The hospital pharmacy department does not supervise the storage and dispensing of program products.

Primary Health Care

Primary care facilities do not have pharmacy or equivalent services. In these facilities, medicines and related products are dispensed by the same person attending the patient.

Second-level care facilities have so-called post-consultation rooms where dispensing takes place. General use products are delivered directly to the patient and those to be assigned to programs are delivered to the clinics for their administration and use in accordance with the technical treatment guidelines. Good dispensing practice guidelines were not identified in hospitals. For the DDRISS there is Procedure Manual No. 15 that covers the dispensing of medicines for the first and second level of care services.

h. Logistics Management Information System (LMIS)

There is a deep-seated culture of recording and reporting supply data, which is a strength. However, there are four logistics tools that operate independently:

- First and second-level health facilities record the actual demand daily on paper, i.e., the quantity prescribed to each patient, and the quantity dispensed. Once a month, facility staff go to the DMS with this information where, with the support of a data entry clerk, the data is entered into an Excel table called Balance¹¹. In addition, bi-weekly consumption and stock reports are prepared. The DMS sends the digital information to the DDRISS where it is consolidated in Excel spreadsheets (aggregates that do not identify the facilities) and sent to the DATMECBA within MSPAS. Up to a few years ago, the Balance and Requisition of Health Facilities (BRES) was in use; however, in interviews with MSPAS technicians, they stated that the Comptroller's Office recommended not using BRES because there was a standard official document called Requisition that all facilities must use for their orders.
- Hospitals record the movement of products on Kardex cards or in some cases in local software. Every fortnight and at the end of month they prepare a Balance sheet form that they send directly to the Vice-Ministry of Hospitals. The Balance sheet does not include data on HIV program products.
- The HIV IHCUs report their data monthly to the Vice-Ministry of Hospitals and the National HIV Program.

The central warehouse records the movement of products on manual Kardex cards and does not have warehouse management software.

None of the above-mentioned systems has warehouse management system software that integrates the management of all warehouses, the pharmacies and data entering of hard copy reports. This could explain the lengthy staff time and effort on data recording and reporting that was observed in the field visits.

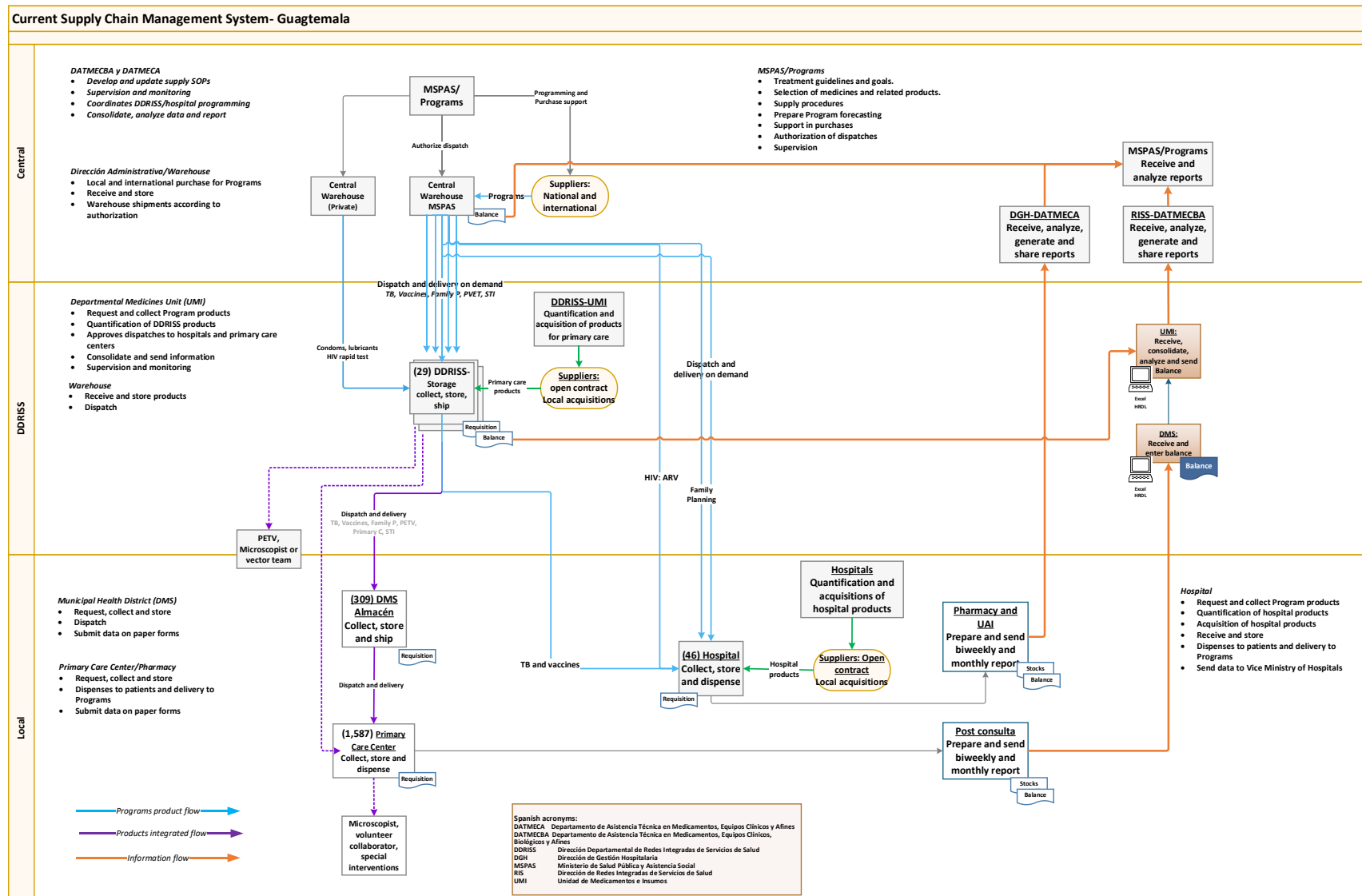
The DDRISS receive a higher percentage of monthly reports with general use products and a lower share of reports with Program products.

The situation described above could explain the incomplete information and many delays reported by interviewees at the central level.

Figure 2 shows the wide variety of vertical and non-integrated flows of Guatemala's current supply system. Situation that contributes to inefficiencies, delays, and stockouts at the last mile level.

¹¹ Some locations have simple electronic data entry applications.

Figure 2. Current Supply Chain Management System- Guatemala-



4. Proposal for the Improvement of the Supply System

4.1. Integrated Supply Model

At the meeting of 18 August 2023, MSPAS authorities and technicians agreed by consensus the need to implement an *integrated supply system for medicines and related products*, as an efficient intervention that contributes to technical and financial sustainability at the time when the financial assistance of cooperating partners dwindles. The proposal for an integrated supply system includes:

- A five-year phased implementation starting with governance.
- A Ministry Decree establishing the integrated supply system and a Supply Management Coordination Committee that articulates all stakeholders at the central level.
- Integrated supply management in DDRISS and hospitals by strengthened Medicines and Related Products Units (UMPAs) and Pharmacy Departments, respectively.
- Standard Operating Procedures (SOPs) for each level (central, department, hospitals, and primary care facilities) with optimized forms, timelines, and requirements.
- Profiling manual for supply chain staff at each level and low-cost, effective, and sustainable and permanent training mechanisms.
- Allocation of specific and sufficient funds for recurrent supply chain operations.
- Interventions to improve planning, efficiency, and transparency of procurement at central level, DDRISS and hospitals.
- Gradual implementation at the central level, DDRISS and hospitals of specialized warehouses for medicines and supplies that comply with GSP.
- The phased implementation of a destination-delivery transport system from the central level to the DDRISS and from the latter to hospitals and primary health care facilities.
- The phased implementation of a supply LMIS with standardized forms and catalogues, real-time reporting of data to the servers of the MSPAS' Directorate of Information Technology (DTI) and online dashboards with reports and indicators accessible to the stakeholders at the different levels

4.2. Description of the Integrated Supply Model

The following is a proposal for an "*Integrated Supply Chain Management System (SIGESS, Spanish acronym)*" that closes the identified gaps and builds on existing strengths (Figure 3). The activities and tasks are described in the implementation plan section per year and per supply component.

a. Governance

According to the new Internal Organic Regulation of MSPAS, at the central level, the DATMECBA under the Vice-Ministry of Primary Health Care and the DATMECA under the Vice-Ministry of Hospitals, are responsible for carrying out, articulating, and supervising the supply chain management system in their respective areas. At the department level, this function lies with the DDRISS and the hospitals. For the implementation of the model, the establishment of a Supply Management Coordination Committee is proposed, as a body to bring together a representative of each technical and administrative area related to supply management and with clear-cut lead and monitoring functions in the implementation of the SIGESS. In the framework of governance, it is proposed that SIGESS be based on single SOPs at three levels: central, department and local (facilities), and strengthened UMPAs with staff trained in supply management.

b. Selection

Selection is carried out within the framework of the list of essential medicines and related products, updated every two years. The development of the List of Essential Medical Devices or Related Products (LBPAE) is proposed for the first time as a health cost containment strategy that helps to optimize available resources and reduce out-of-pocket expenses. The Pharmacotherapy Committees of the DDRISS and the hospitals continue periodically to update the institutional lists that guide the planning and purchasing processes.

c. Procurement Programming and Financing

Programming is proposed to be carried out simultaneously under a nationally established timeline. The programming exercise of Programs would be carried out at the central level in a coordinated manner between DATMECBA, DATMECA and the Programs, using epidemiological data (morbidity/cases), consumption and stocks reported periodically by the health facilities. The DDRISS and the hospitals maintain their decentralized programming of general use products (not Programs) under the technical assistance of the central level. This exercise is planned and coordinated by the Supply Management Coordination Committee and should be carried out based on standardized procedures, methodologies, and IT tools. The results are included in the budgets and procurement plans of each executing unit, as well as in updating or preparing open-procurement contracts for a higher percentage of medicines and related products.

d. Procurement

Two procurement levels are defined: **centralized** procurement for the Programs and **decentralized** purchasing of general use products in hospitals and first level. Program procurements are made at the central level through agreements with cooperation agencies or through local purchases, in both cases following standardized procedures in accordance with current regulations.

Decentralized procurements of general use products are those made by DDRISS and the hospitals. It is proposed they be maintained through open contract, as a first option, or other procurement modalities established by law, in both cases following standardized procedures, under the current regulatory framework and the permanent supervision of DATMECBA and DATMECA.

e. Storage

This process considers the existing prohibitions in the country to outsource storage and transport, according to the opinion issued by the Administrative Department of MSPAS in October 2023. ([See Annex I, Legal Opinion on Outsourcing](#)).

Central Level

It is proposed that the Programs products are kept in the central warehouse of the MSPAS adapted to function as a **specialized warehouse**¹². The products are received, inspected, and stored following GSP procedures under the technical supervision of assigned pharmaceutical personnel. Inventories (inputs, outputs, expiry dates, etc.) are managed in the warehouse module of the LMIS software that automatically sends data to the central level of MSPAS.

¹² A specialized warehouse is a space set up for the safe storage of medicines, biologicals, laboratory reagents and related products at the central level, in the DDRISS and in hospitals. It is staffed by a pharmacist and complies with the infrastructure, equipment, human resources, and documentation requirements of GSP.

Department Level

Products procured directly by the DDRISS and those received from the Programs enter the **specialized department warehouse** where they are received, inspected, and stored following GSP procedures and under the technical supervision of pharmaceutical personnel. Inventories are managed in the warehouse module of the LMIS software, which automatically sends data to the central level of MSPAS.

Hospitals

In hospitals, products procured directly and those distributed by the department warehouse enter the **specialized warehouse** where they are received, inspected, and stored following GSP procedures and under the technical supervision of pharmaceutical personnel. Inventories are managed in the warehouse module of the LMIS software, which automatically sends data to the central level of the MSPAS.

f. Distribution

An important proposal for improvement is the **final destination delivery** in two modalities:

- **From the central warehouse to the warehouses of the DDRISS**, for Program products, with planned distribution timelines and in accordance with SOPs that include Good Distribution and Transport Practices (BDP). The UMPAs of the DDRISS will send their requisitions through the LMIS software to DATMECBA, where they will be analyzed, approved, and sent to the central warehouse for dispatch, transport, and drop-off delivery to the department warehouses. Exceptionally, direct distributions will be made from the central warehouse to hospitals of HIV Program products that are solely for hospital use.
- **From the department warehouse to the first and second-level care facilities**, in an integrated manner with planned distribution timelines and in accordance with SOPs that include BPD. The persons in charge of the pharmacies (or post-consultation areas) send their requisitions in hard copy or through the LMIS software to the UMPAs, where they are analyzed, approved, and sent to the department warehouse for dispatch, transport, and delivery to the premises of the facilities. Similarly, Program products are distributed from this level to the hospitals (except HIV).

g. Dispensing

It is proposed that in primary care facilities, products are received and entered into the pharmacy module of the LMIS software or on inventory control cards. They are **dispensed** directly to patients and delivered to clinics for supervised treatment or other internal areas.

In hospitals, the warehouse **distributes products to pharmacies and other internal areas**. Hospital pharmacies **dispense** products in accordance with SOPs that incorporate Good Dispensing Practices and unit dose dispensing. Dispensing is recorded by name in the pharmacy module of the LMIS software. In the Program clinics, products are used in accordance with the technical standards or treatment protocols established by the Directorate of Standards of Health Care Programs (DNPAP, per its acronym in Spanish).

h. Logistics Management Information System (LMIS)

A single Logistics Management Information System (LMIS) is proposed to collect, process, and report data on medicines and related products from overall health system levels. Data from the LMIS will be essential to schedule and plan distribution along the supply chain, avoiding overstocks and stock-outs. The LMIS will require software proposed to be developed in a modular, phased approach that includes:

- **Module 1.** Warehouse Management Systems (WMS) for inventory control in warehouses, reporting data, ordering, or allocating products, managing inventory, and visualizing stock.
- **Module 2.** Manual form data entering.
- **Module 3.** Pharmacy, dispensing or point-of-service systems for inventory control, recording dispensing, reporting data, and ordering products in health facility pharmacies.
- **Module 4.** Reports that provide data for overall supply management and monitoring levels.

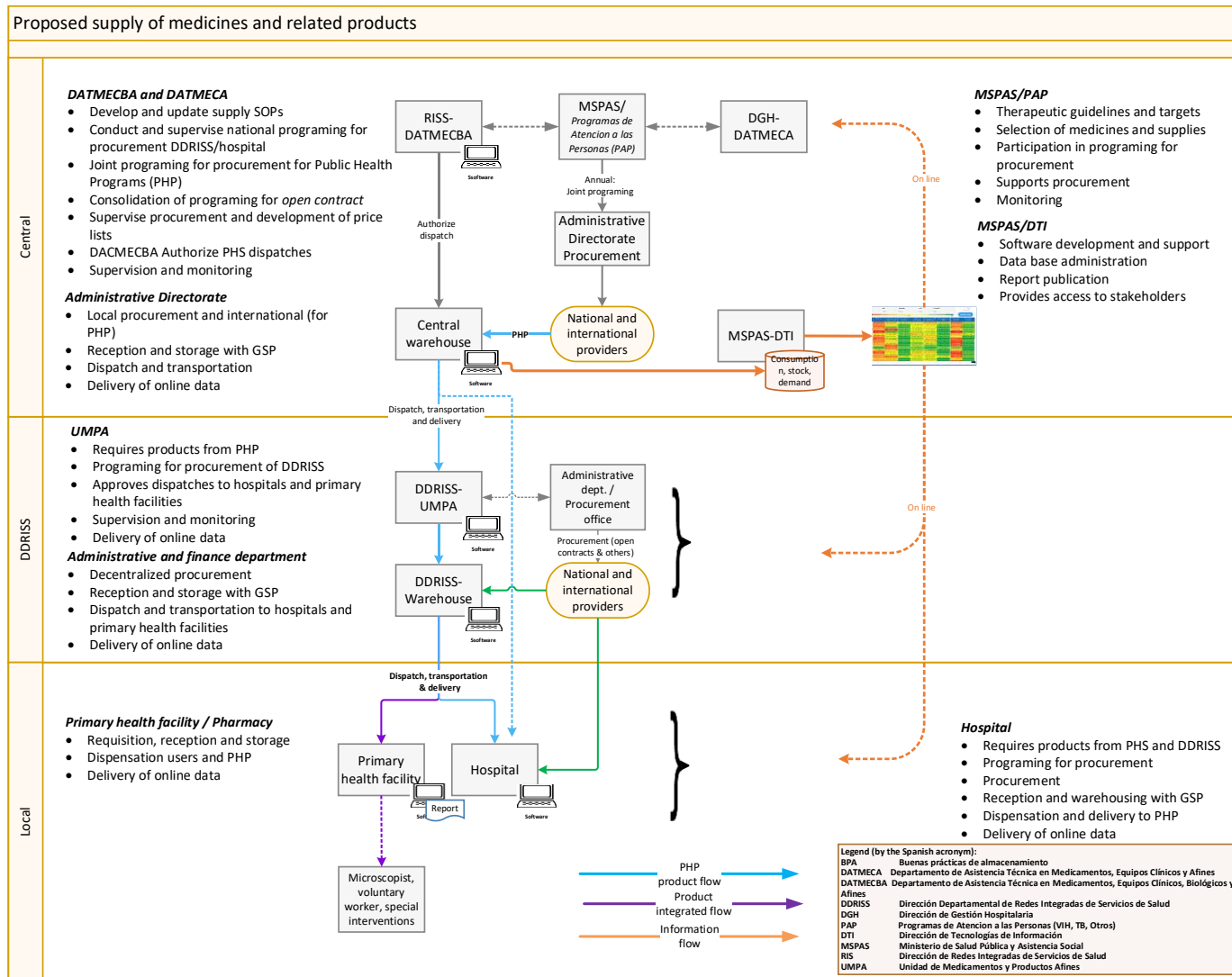
This software will be installed at different levels gradually and will be interconnected with other electronic applications developed by MSPAS. Using the proprietary LMIS software, the DDRISS, hospitals, primary health care facilities and other supply chain management units register and send data on all products to a central server managed by the DTI of MSPAS. Facilities that do not have the conditions to use the software, keep manual records on inventory control cards and other standardized records and at the end of the month complete reports that are entered into the LMIS software in the DMS. Information from across the supply system is automatically processed and presented in online dashboards that display reports and indicators accessible to stockholders at different levels of the supply system for use in management and performance monitoring.

For the LMIS software, local development is proposed under the leadership of the DTI of MSPAS with external support. The tools currently in operation should be analyzed to explore interoperability between the platforms all of which should have basic indicators and outputs with routine real-time data reporting from the different levels, including:

- Consumption and stock reports at different levels.
- Availability reports in percentages and months.

Considering the strengthening proposal for all components, figure 3 shows the flow of the proposed integrated system, with optimized, more efficient, harmonized, and coordinated processes, compared to the current flow in (figure 2).

Figure 3. Model of the integrated Supply System for Medicines and Related Products



5. Plan for the Implementation of the Supply Model

The plan is conceived around the implementation of a nationwide integrated supply system that aims to improve people's access to medicines and related products. It builds on available strengths and resources, proposes a phased implementation starting with governance, and retains the functions set out in the MSPAS ROI ([Annex 2. 5-year implementation plan flowchart](#)). The activities, tasks, responsibilities, and deadlines are described below:

5.1. Year 1- October-December 2023

In the first year, October-December 2023, the work plan is institutionalized, the SIGESS is created and the Coordination Committee responsible for the implementation of the plan is appointed.

Governance

5.1.1. Establishment of the Supply Management Coordinating Committee

The Committee is responsible for designing the Ministry Decree creating SIGESS, driving the plan for its implementation, and providing technical and administrative support to all supply levels. The Committee will be formally appointed by the health minister through a regulatory provision. Among its functions, it will disseminate the SIGESS proposal at the request of external cooperation agencies, department levels and health facilities. It will elaborate the Ministry Provision or Decree that creates the SIGESS and approves a directive that identifies its members and delimits their functions and describes the general guidelines for each component of the supply chain. To achieve this, it is proposed that the Coordination Committee be established between October and November 2023.

5.2. Year 2- 2024

In the second year (2024), the issuance of technical and operational documents is completed and a set of preparatory actions to launch the SIGESS are developed.

Governance

5.2.1. To develop and formalize Standardized Operating Procedures

For the supply system to function uniformly, comprehensive SOP manuals should be developed, validated, and formalized for each level (central, department, hospitals, and facilities) with optimized and standardized forms, timelines, and requirements. The procedures should cover, where appropriate, the components of selection, programming, procurement, storage, distribution, dispensing, information system, supervision, monitoring, and training. They should be developed in the format established by the MSPAS and formalized with a Ministry Provision to facilitate their implementation and institutionalization. To achieve this, it is proposed that the Coordination Committee coordinate with the competent entities so that, with technical assistance from specialists, they carry out this activity between January and May 2024.

5.2.2. To develop and formalize a SIGESS 2024 Job and Profile Manual.

The job and profile manual will present the location of the posts within the organizational structure and describe the functions, competencies, requirements and demands of the organizational structure in order for a person to perform well. It will serve as a basis, among other things, for staff selection,

induction, training, and performance appraisal¹³. In order to develop and formalize the SIGESS job and profile manual, it is proposed that the Coordination Committee coordinate with HRD, with technical assistance from specialists, to carry out this activity between April and June 2024.

5.2.3. Strengthening UMPAs in the DDRISS

The SIGESS requires strengthened UMPAs with an adequate organizational structure within the DDRISS organizational chart, clearly defined functions and attributions, competent staff and indispensable material and financial resources. The minimum structure for the UMPAs must be adjusted to the manual of posts and profiles before its implementation. [Annex 3 shows the availability of human resources and the gap to be filled.](#)

To strengthen the UMPAs, it is proposed that during 2024, the DDRISS identify the financial source and place in the Annual Operating Plans (AOP), the staff they required and manage the inclusion of the objectives and activities of the UMPAs in the AOP and consequently in the budget. In this way, it will be possible to recruit and reassign staff to the new supply chain profiles.

5.2.4. Self-Instructional distance learning training modules

Once the SIGESS SOPs have been approved, it will be necessary to train all health personnel involved in it. To achieve greater reach in the shortest possible time and at the lowest possible cost, it is proposed to develop self-instructional and asynchronous online training modules. This activity should be carried out by DATMECBA for DDRISS staff and primary care facilities and by DATMECA for the hospitals; in both cases in coordination with the Department of Training and Staff Development within MSPAS and with technical assistance from specialists. Between June and September 2024, development of the methodological designs for SOP courses in DDRISS is proposed, in primary care facilities and hospitals.

5.2.5. Training for the implementation of procedures

The training will be the starting point for the implementation of the new SOPs and will be conducted through the online courses developed in the previous activity. With this objective, it is proposed that DATMECBA and DATMECA, in coordination with the Department of Training and Staff Development within MSPAS conduct the process between October and December 2024.

Selection

5.2.6. Elaboration of Basic List of Essential Related Products (LBPAE)

The plan proposes the development of a LBPAE to serve as a policy document in the procurement and use of related products at the different SIGESS levels. To achieve this, it is proposed that, between August and December 2024, the Department of Regulation and Control of Pharmaceutical and Related Products, in coordination with DATMECBA and DATMECA, form a technical committee to prepare the LBPAE proposal for its approval and dissemination by the MSPAS.

Programming and Financing

5.2.7. Annual procurement programming exercise

The SIGESS proposes a simultaneous national programming exercise planned and led by the Supply Management Coordinating Committee, including healthcare program products, the DDRISS and the

¹³ National Civil Service Authority. National School of Public Administration. The route of transition to the civil service regime. Elaboration of the Job Profile Manual. Lima, 2022.

hospitals, and using standardized procedures, methodologies, and IT tools. To achieve this, it is proposed that the Coordinating Committee, in coordination with the relevant area and with the help of specialists, draw up a plan for the national programming exercise, develop a Programming Methodology Manual, develop an electronic tool, and develop workshops for programming the products of the Programs, the DDRISS and the hospitals.

5.2.8. Budget management to close gaps

The national programming exercise, with a more robust methodology and trained staff, will identify the financial gap in the medicines and supplies needs of public health services. Closing this gap requires including the result of the programming in the institutional AOPs and budgets and carrying out advocacy actions to achieve their approval. To this end, it is proposed that between June and October 2024, each executing unit will take steps to include the results of the programming in their respective AOPs, budgets and procurement plans.

5.2.9. Recurrent operating expenditure in AOPs and budgets

To make SIGESS sustainable at all levels, funding for recurrent operations in 2025 (rentals, fuel, printing, maintenance, training, cleaning and office materials, personnel, insurance, utilities, taxes, per diem and vehicle renewal, equipment, and durable materials, etc.) should be incorporated into the institutional AOPs and budgets of each implementing unit during 2024 planning. The plan proposes that the central warehouse, UMPAs and hospital Pharmacy Departments, with technical assistance from DATMECBA, DATMECA and specialists, carry out the following tasks between April and August 2024:

- a. Quantify the operating costs of supply through a cost study.
- b. Manage with the Financial Administrative Departments of their institution, including the AOP of the activities and resources necessary for the optimal operation of SIGESS.
- c. Conduct policy and advocate actions to include the operating costs in the public budget of each executing unit.

Procurement

5.2.10. Open-contract products increase

The national programming exercise will provide more accurate estimates for all implementing units and all the outputs they manage. It is proposed that MSPAS coordinate with the General Directorate of State Procurement to procure a greater number of products through this mechanism, based on the results of the decentralized national programming.

Storage

5.2.11. Financing management to improve storage and transportation

The implementation of this plan requires significant investments in the improvement of infrastructure and equipment in the central warehouse, DDRISS and hospitals, and in the purchase of vehicles that allow implementation of the final destination drop-off delivery model. For the initial investments, in 2024 and 2025, financing is proposed to be shared between MSPAS and technical and financial cooperation agencies (such as the Global Fund, United States Agency for International Development -USAID-, Inter-American Development Bank-IDB, Japan International Cooperation Agency-JICA, among others). Donations from the private sector (public-private partnerships) can also be explored.

In the following years, financing should be included in the operational plans and institutional budgets of MSPAS, DDRISS and hospitals, guaranteeing the sustainability of the SIGESS. To achieve this, it is proposed that the Coordinating Committee, with the help of specialists between January and July

2024, develop arguments for policy and advocacy interventions, describing the situation of storage, distribution of medicines and the investments required in the next five years and how this impacts the access to quality products by the population. This should be followed by its presentation to the senior management of the MSPAS, Ministry of Public Finance, directors of the DDRISS, cooperation agencies linked to the provision of medicines and other external (private) sectors to mobilize resources to help close this gap.

5.2.12. Central warehouse refurbishment/ renovation and GSP implementation

The central warehouse should become a dedicated warehouse¹⁴ and store all Programs products in a single GSP-compliant facility, including products currently held by a logistics operator financed by the Global Fund. The plan proposes between March and December 2024, the refurbishment of the current medicines warehouse, provision of equipment, and assignment of pharmaceutical staff to implement and monitor the GSP. An architectural proposal and budget estimate is shown in [Annex 4. Architectural plans of the central warehouse.](#)

5.2.13. Technical specifications for hospital warehouses and pharmacies

During the situation analysis, initiatives were identified in the hospitals to improve the storage conditions and equipment in their pharmacies and warehouses, however, in the absence of a model of technical specifications, these have not been able to meet the requirements of the GSP. The plan proposes developing a standard model of technical specifications to guide and optimize local initiatives and investments. To achieve this, it is proposed that the Coordination Committee, in coordination with the Vice-Ministry of Hospitals and the Department of Project Formulation, with the technical assistance of specialists, prepare between August and December 2024, the proposal of technical specifications and their formalization.

Distribution

5.2.14. Procurement of vehicles for delivery from central level

The SIGESS proposes a final destination (drop-off) delivery model from the central warehouse to the DDRISS facilities and hospitals with appropriate vehicles and under procedures adjusted to the good practices. To achieve this, it is proposed that, between August and December 2024, the Coordinating Committee will negotiate with the Administrative Department of MSPAS, cooperation agencies or the private sector for the purchase/donation of four, 10-ton trucks and the hiring or reassignment of drivers.

Information System

5.2.14. Development and implementation of LMIS Software: Modules 1 and 2

The SIGESS should be supported by a modular LMIS that is able to share data with other MSPAS information systems, automatically report data to the DTI servers and produce online dashboards with reports and indicators accessible to stakeholders at different levels. The plan proposes that the DTI develop the LMIS software in house in a staggered manner based on the new procedure manuals, the experience accumulated by the MSPAS and other tools that are already in operation (e.g., the HIV logistics software supported by PEPFAR). The in-house development of the software will allow the use of MSPAS technology, facilitate interoperability with other systems and create better competencies for installation, technical support, and new developments. **By 2024, module 1 WMS for Central Warehouse and module 2 to enter manual forms reported by health facilities**

¹⁴ Dedicated warehouse is a space set up for the safe storage of medicines, biologicals, laboratory reagents and related products. It is staffed by a pharmacist and complies with the infrastructure, equipment, human resources and documentation requirements of the GSP.

are expected to be installed and operational. To achieve this, it is proposed that the DTI, with the Coordination Committee and the technical assistance of specialists, between February and December 2024, carry out the following tasks:

- a. Analysis of the procedure manuals, the experience accumulated by the MSPAS and the requirements of the user areas.
- b. Rapid assessment of existing tools for logistics management supported by donors.
- c. Elaboration of a single catalogue of medicines and related products.
- d. Design of the software in a first development phase that includes the manual form entry module and the central warehouse management module.
 - i. Recruitment of four computer programmers for eight (8) months.
 - ii. Testing of the modules in a warehouse and at a data entry point.
 - iii. Implementation of the central warehouse management module, including development of user manuals, installation, on-site training, inventory, data upload and technical support.
 - iv. Implementation of the data entry module in all DDRISS, including the development of user manuals, installation, online training, and technical support.

5.3. Third year- 2025-

In the third year (2025), SIGESS starts with new procedures while continuing to improve storage and transport conditions and developing and implementing pharmacy software.

Financing

5.3.1. Start of operation of new procedures

The new SOPs of the SIGESS system are expected to start operating at the national level in January 2025, following the completion of training. At this date, the central level, DDRISS, hospitals and primary health care facilities will develop their activities according to the new procedures. For optimal operation of the supply during 2025, the central level and the DDRISS will need to provide public resources to finance recurrent costs, including pharmaceutical staff, pilots, vehicle maintenance and fuel.

Storage

5.3.2. Refurbishing of DDRISS warehouses and selected hospitals

The plan proposes the gradual implementation of single specialized GSP-compliant warehouses for medicines and related products in DDRISS and hospitals by 2025. The first phase starts with the refurbishment of 13 departmental warehouses and two (2) hospitals. [Annex 5. Architectural includes plans of DDRISS and hospitals and Annex 6. includes Summary of estimated investments needed for the warehouses of 24 DDRISS](#), for which data were obtained, and the three hospitals visited. The source of funding in this annex should be updated with the results of activities 5.1.1 and 5.2.11, where funding is expected to be identified for storage and transport improvements¹⁵.

Distribution

5.3.3. Acquisition or reallocation of vehicles for delivery from DDRISS

- a. The plan proposes the gradual implementation of a final destination drop-off delivery system from the DDRISS warehouses with appropriate vehicles, under procedures adjusted to the GDP. The

¹⁵The size of department warehouses was estimated from 20-year projected population data and an adapted formula from Medicines Supply Management was applied. Second Edition. Management Sciences for Health, Inc., 2002. To determine investments, model warehouses were developed and costed using local market prices.

first stage begins with the 9 DDRISS that have vehicles to be assigned and used for the transport of medicines (Alta Verapaz, Central Guatemala, Guatemala Noroccidente, Ixcán, Petén Norte, Retalhuleu, Santa Rosa, Totonicapán, and Zacapa). Annex 7 presents an estimate of the number of vehicles needed, the availability of vehicles in the DDRISS and the investment gap ([Annex 7. Gap and investments to improve the transport of medicines in the DDRISS](#)). The source of funding in this annex should be updated with the results of activities 5.1.1 and 5.2.1, where funding is expected to be identified to improve storage and transport. The plan proposes to carry out the following tasks between January and December 2025:

For entities with vehicles (allocation)

- a. The Coordinating Committee identifies, together with the DRISS, the nine (9) entities that have vehicles available for the exclusive transport of medicines.
- b. The director of the DDRISS signs a document with representatives of the DATMECBA where the allocation of vehicles for the exclusive transport of medicines is carried out.
- c. The director of the DDRISS reassigns drivers to drive the vehicles that will transport the medicines.

For entities that have funding

- a. The Coordinating Committee identifies the entities that have public or cooperative funding for the purchase of vehicles.
- b. The Coordinating Committee provides technical assistance to entities that have funding for the purchase of vehicles. [Annex 8 presents a proposal for technical specifications of vehicles for the transport of medicines.](#)
- c. The director of the DDRISS hires or reassigns drivers for the vehicles that will transport the medicines.

Information System

5.3.4. Development and implementation of departmental warehouses and pharmacy software

At this stage, the plan proposes to continue the development and implementation of the department warehouses and pharmacy management modules of the LMIS software. To achieve this, the DTI, with technical assistance from specialists, should conduct the following tasks between January and December 2025:

- a. Develop the department warehouses and pharmacy management modules.
- b. Testing of the modules in a warehouse, a hospital pharmacy, and a pharmacy in a primary care center.
- c. DTI, in coordination with DDRISS and hospitals, procure computers and printers.
- d. Implementation of the department warehouse management module in all 29 DDRISS, including face-to-face training, installation, inventory, data upload and technical support.
- e. The IT teams of the DDRISS to develop an implementation plan for the pharmacy management module for hospitals in their respective areas, including training, installation, inventory, data upload and technical support. The roll-out should be done on a hospital-by-hospital basis.

5.3.5 Development of online decision-making dashboards

The plan proposes, at this stage, the development and implementation of the LMIS reporting module that includes online dashboards with reports and indicators to support decision making. To achieve this, the DTI, with programmers and technical assistance from specialists, should carry out the following tasks between January and May 2025:

- a. Identify supply indicators for the central level.
- b. Develop a proposed dashboard using the data reported by the central warehouse module and the data entry module.

- c. Validate the dashboard with representatives from DATMECBA, DATMECA and Health Programs.
- d. Present the dashboard to representatives of DATMECBA, DATMECA, Health Programs, DDRISS and hospitals for dissemination and use.

5.4. Year 4- 2026-

In the fourth year (2026), in addition to routine activities, the procedures and basic lists of essential medicines and related products are updated, the refurbishment or construction of warehouses in DDRISS, selected hospitals and the procurement of vehicles for onward distribution from DDRISS and implementation of LMIS software in primary health care facilities continue.

Governance

5.3.6 Updating of procedures

In order to update the procedures, it is proposed that the Coordinating Committee work with the relevant entities to review and update the procedures between January and July 2026.

Selection

5.4.2. Updating the LBM and LBPAE

To update the LBM and LBPAE, it is proposed, between July and December 2026, that the Department of Regulation and Control of Pharmaceuticals and Related Products, in coordination with DATMECBA and DATMECA, form a technical committee for medicines and a technical committee for related products, to update the lists. The updated lists are approved by Ministry Provisions and disseminated.

Financing

5.4.3. Financing for supply chain operations

The SIGESS continues to operate at the national level. To this end, by 2026, the central level and the DDRISS will have to provide public resources to finance recurrent costs, including pharmaceutical staff, pilots, vehicle maintenance and fuel.

Storage

5.4.4. Refurbishment or construction of DDRISS warehouses and selected hospitals

At this stage, the construction of seven **(7) department warehouses and one (1) hospital** that have obtained public funding and have or can obtain land continues. It is proposed that, between January and December 2026, the Coordinating Committee identify, together with the DRISS, the entities that have funding for refurbishment or construction of warehouses.

Distribution

5.4.5. Procurement of vehicles for delivery from DDRISS

At this stage, the purchase of **17 vehicles** for the DDRISS warehouses that have obtained public funding continues. It is proposed that between January and December 2026, the Coordinating Committee identifies the entities that have funding for the purchase of vehicles and the director of the DDRISS hires or reassigns drivers to drive the vehicles that will transport the medicines.

Information System

5.4.6. Implementation of software in pharmacies in Primary Health Care facilities

At this stage, the IT teams of the DDRISS start the implementation of the pharmacy module of the LMIS in the health centers located in the head offices of the 309 DMS. The following tasks are proposed to be carried out between January and December 2026, the DDRISS acquire computers and printers and IT teams of the DDRISS implement the pharmacy module in the selected facilities, including face-to-face training, installation, inventory, data upload and technical support.

5.5. Year 5- 2027-

In the fifth year (2027), continue the operation of the SIGESS and investments for the construction of department warehouses, procurement of vehicles for drop-off delivery and implementation of the supply management software in more pharmacies of primary health care facilities.

Financing

5.5.1. Financing for supply chain operations

SIGESS continues to operate at the national level. To this end, by 2027, the central level and DDRISS should provide public resources to finance recurrent costs, including pharmacist staff, pilots, vehicle maintenance and fuel.

Storage

5.5.2. Refurbishment or construction of warehouses in selected DDRISS and hospitals

At this stage, the construction of **4 department** warehouses that have secured public funding continues. It is proposed that, between January and December 2027, the Coordinating Committee identifies the entities that have funding for refurbishment or construction of warehouses.

Distribution

5.5.3. Procurement of vehicles for delivery from DDRISS

At this stage, the purchase of **8 vehicles** for the DDRISS warehouses that have obtained public funding will continue. It is proposed that between January and December 2027, the Coordinating Committee identify the entities that have funding for the procurement of vehicles and the director of the DDRISS hires or reassigns drivers to drive the vehicles that will transport the medicines.

Information System

5.5.4. Implementation of the software in pharmacies in primary health care facilities

At this stage, the IT teams of the DDRISS continue the implementation of the pharmacy module of the supply management software in primary care facilities with human resources, internet access and stable power supply. It is expected to be installed in 300 facilities. The following tasks are proposed to be carried out between January and December 2027, the DDRISS acquire computers and printers and IT teams of the DDRISS implement the pharmacy module in the selected facilities, including face-to-face training, installation, inventory, data upload and technical support.

6. Budget

The total budget to implement the plan amounts to **US \$26,941,412.01**. [Annex 9 shows the detailed budget](#). The first year of implementation requires US \$34,060.00 (0.1%), the second year US \$3,509,148.45 (13.0%), the third year US \$7,046,221.06 (26.2%), the fourth year US \$9,829,147.39 (36.5%) and the fifth year US \$6,522,835.11 (24.2%).

Table 1 shows the proposed implementation costs that could be assumed by the government over 5 years (MSPAS, DDRISS and Hospitals) and the categories that would remain unfunded. This proposal needs to be validated with MSPAS. The categories proposed to be financed from public sources during the 5-year plan include technical personnel (pharmacists, auxiliaries, among others) and pilots for an amount of US \$8,605,800.00 and recurrent fuel costs of US \$144,954.00 and vehicle maintenance of US\$124,000.00, categories that are currently partially covered by the government and that are feasible to expand in the short term through budget reallocations or additional allocations. The unfunded categories (US \$18,066,658.01) have no earmarked funding sources and could be financed with public, cooperation or private sector resources.

Table 2 shows the budget grouped by the supply chain process. 47.2% (US \$12,706,456.01) corresponds to Storage, 30.1% (US \$8,113,965.00) to Governance, 11.1% (US \$2,988,204.00) to Distribution, 10.5% (US \$2,820,462.00) to the Information System and the remaining 1.2% (US \$312,325) to the financing, selection, programming, and procurement processes.

31.9% (US \$8,605,800.00) corresponds to human resources, 24.5% (US \$6,606,438.16) to the construction of new warehouses, 11.9% (US \$3,216,010.96) to the refurbishment of existing warehouses, 10.3% (US \$2,779,606.89) to the equipment of improved warehouses, 7.1% (US \$1,900,000.00) to the purchase of new cargo trucks and the difference to other items for the implementation, technical assistance, and operation of SIGESS.

Table 1. Proposal for the Funding of the Implementation Plan

Items by levels	1. First Year		2. Second Year		3. Third Year		4. Fourth Year		5. Fifth Year		Total	%
	No Funding	Proposed Public	No Funding	Proposed public	No Funding	Proposed Public	No Funding	Proposed Public	No Funding	Proposed Public		
DDRISS staff		1,922,400		1,931,400		2,289,600		2,095,200			8,238,600	30.6%
DDRISS warehouse construction							3,570,482		2,437,933		6,008,415	22.3%
DDRISS warehouse equipment					1,094,029		886,474		470,754		2,451,256	9.1%
DDRISS warehouse refurbishment					1,976,608		210,921				2,187,530	8.1%
DDRISS information system					14,250		816,954		816,054		1,647,258	6.1%
DDRISS vehicles					120,000		1,020,000		480,000		1,620,000	6.0%
MSPAS information system			181,450		991,754		0		0		1,173,204	4.4%
Construction of hospital warehouse							598,023				598,023	2.2%
MSPAS Consultancy (technical assistance)	33,000		458,000				68,000				559,000	2.1%
Hospital warehouse refurbishment						529,863					529,863	2.0%
Central warehouse refurbishment			498,618								498,618	1.9%
MSPAS staff		21,600		115,200		115,200		115,200			367,200	1.4%
Hospital warehouse equipment					215,701		112,650				328,351	1.2%
MSPAS vehicles			280,000								280,000	1.0%
DDRISS vehicle maintenance				19,200		46,400		46,400		46,400	112,000	0.4%
DDRISS fuel				19,008		45,936		45,936			110,880	0.4%
DDRISS equipment			104,400								104,400	0.4%
MSPAS printing			16,000				27,000				43,000	0.2%
MSPAS equipment				11,358		11,358		11,358			34,074	0.1%
MSPAS implementation operating expenses	1,060		20,275		1,600		3,300				26,235	0.1%
MSPAS vehicle maintenance				4,000		4,000		4,000			12,000	0.04%
DDRISS travel			2,250				2,250				4,500	0.02%
MSPAS travel			2,250		2,250						4,500	0.02%
DDRISS implementation operating expenses			1,905				600				2,505	0.01%
Hospital staff											0	0.00%
Hospital IT system											0	0.00%
Total general	34,060	1,944,000	1,565,148	2,100,166	4,946,055	2,512,494	7,316,653	2,318,094	4,204,741	4,204,741	26,941,412	100.0%

Table 2. Funding of the Implementation Plan per Supply Processes

Item per Process	1. First Year		2. Second Year		3. Third Year		4. Fourth Year		5. Fifth Year		Grand Total	%
	No Funding	Proposed Public	No Funding	Proposed public	No Funding	Proposed Public	No Funding	Proposed Public	No Funding	Proposed Public		
Governance	34,060	1,922,400	316,155	1,922,400		1,922,400	74,150	1,922,400			8,113,965	30.1%
Financing		0	93,000								93,000	0.3%
Selection			61,000				27,000				88,000	0.3%
Programming		0	123,325								123,325	0.5%
Procurement			8,000								8,000	0.03%
Storage		14,400	502,218	28,800	3,816,201	28,800	5,378,549	28,800	2,908,687		12,706,456	47.2%
Distribution		7,200	280,000	148,966	123,850	561,294	1,020,000	366,894	480,000		2,988,204	11.1%
IT system			181,450	0	1,006,004		816,954		816,054		2,820,462	10.5%
Grand Total	34,060	1,944,000	1,565,148	2,100,166	4,946,055	2,512,494	7,316,653	2,318,094	4,204,741	4,204,741	26,941,412	100.0%

7. Prioritization Process

The consensus reached with MSPAS authorities and technicians identifies the *progressive integration of supply chains* as a key strategy to improve operating efficiency and achieve financial sustainability. The proposal has a cost of **US \$26 million over a five-year implementation throughout the country**. Recurrent operating costs (staff salaries, fuel, maintenance, among others) were assigned to the Guatemalan government, while investment costs (construction or refurbishment of warehouses and procurement of vehicles, among others) do not have - for the moment - secured funding, and can be managed with public resources, cooperation agencies or donations from the private sector (public-private partnerships).

The plan proposes a staggered implementation and activities to obtain resources to cover investments and recurrent expenses, however, there is a possibility that resources may not be sufficient. In this scenario, the proposed phasing and budget breakdown allow strategically prioritizing the activities proposed and adjust the implementation time to public and donor funding flows. The following is a proposed prioritization by year:

- **High:** Critical activity for the development of the SIGESS, which should be carried out or initiated within six (6) months to one (1) year and is feasible to be fully funded by the government or co-financed with support from a donor agency or other sector.
- **Medium:** Activity that is directly related to the implementation of the SIGESS, can be carried out in the medium term (2-3 years) and can be co-financed between the government and support from a cooperation agency or another sector.
- **Low:** Activity that can be carried out in a period of three (3) years or longer according to funding capacity.

Year 1 October-December 2023

The central elements for governance is the appointment of a temporary Coordination Committee made up of technicians and authorities responsible for supply management. The establishment of the Coordinating Committee for the start-up of the SIGESS and the conduct of the implementation plan is a high priority. Identification of funding sources per year, follow up and updating the plan as activities are completed or rescheduled. As of November 2023, MSPAS has designated the members of the Coordinating Committee and has a draft Ministry Agreement that endorses the SIGESS proposal. [See Annex 10, Designation of the Committee.](#)

Component	Activity	USD Amount	Funding Source	Priority Level
Governance	5.1.1. Establishment of the Supply Management Coordination Committee and Ministry Resolution endorsing the SIGESS	34,060.00	MSPAS	High

Year 2 January-December 2024

By Year 2, **8 high-priority activities** are proposed, including the development of SIGESS SOPs, development and implementation of the first LMIS modules, staff training on the new SOPs, job profile manuals for the appointment of pharmaceutical staff, and the identification of resources for logistics operation and recurrent costs at the DDRISS and central warehouse level. These activities can be largely funded by the Government (MSPAS and DDRISS decentralized entities, and Hospitals) and receive less technical and financial support from donors. If these activities are implemented, Guatemala's supply system will continue take steps towards integration and sustainability. **Four (4) medium and three (3) low-priority activities** are proposed, including investments in infrastructure, vehicles, and online training platforms. These activities can be funded to a lesser extent by the government and require greater support from donors or other sectors and could be rescheduled depending on financing capacity.

Component	Activity	Amount USD	Financing Source	Priority Level
Governance	5.2.1. Develop and formalize standard operating procedures (Technical Assistance)	64,150.00	MSPAS/ Cooperation Support	High
Governance	5.2.2. Develop and formalize a SIGESS job and profile manual (Technical Assistance)	35,800.00	MSPAS/ with external support	High
Governance	5.2.3. Strengthening of the UMPAs in 29 DDRISS	1,944,000	MSPAS/ 29 DDRISS	High
Governance	5.2.4. Self-instructional distance training modules (Technical Assistance)	51,000.00	No funding	High
Governance	5.2.5. Training for implementation of procedures	5,000	No funding	High
Selection	5.2.6. Elaboration of Basic List of Essential Related Products (LBPAE)	61,000.00	No funding	Low
Programming	5.2.7. Annual procurement programming exercise	123,325.00	MSPAS/ Cooperation Support	Medium
Funding	5.2.8. Budget management to close gaps	3,000.00	MSPAS	High
Funding	5.2.9. Recurrent logistical operation costs in AOP and budgets	90,000.00	MSPAS	High
Procurement	5.2.10. Open-contract products increase	8,000	MSPAS	Low
Storage	5.2.11. Management of financing to improve storage and transport	3,000	MSPAS	Medium
Storage	5.2.12. Central warehouse renovation and equipment	499,218.45	MSPAS/ Cooperation support	Medium
Storage	5.2.13. Technical specifications for hospital warehouses and pharmacies	54,500.00	MSPAS/ Cooperation support	Low
Distribution	5.2.14. Acquisition of vehicles for delivery from central level	280,000.00	MSPAS/ Cooperation support or private-sector donation	Medium
LMIS	5.2.15. Development and implementation of LMIS Software: Modules 1 and 2	181,450.00	MSPAS/Cooperation support	High

Year 3 January-December 2025

By Year 3, **three (3) high-priority activities** are proposed, including the start of the implementation of the SIGESS SOPs and the implementation of the first LMIS modules in department warehouses and in selected hospitals. These activities can be largely funded by the Government (MSPAS, DDRISS and Hospitals) and receive less technical and financial support from donors. **Two medium-priority activities** are proposed, including investments in infrastructure and vehicles. These activities can be funded to a lesser extent by the government and require greater support from donors or other sectors and could be rescheduled depending on financing capacity.

Component	Activity	Amount USD	Financing Source	Priority Level
Governance	5.3.1. Start of operation of the new procedures	2,091,166.00	MSPAS/DDRISS/ Hospitals	High
Storage	5.3.2. Warehouse relocation of 13 DDRISS and 2 selected hospitals	3,816,201.06	MSPAS/ DDRISS/ Cooperation support	Medium
Distribution	5.3.3. Reallocation of 8 vehicles and acquisition of 2 for delivery from DDRISS	132,850.00	MSPAS/ Cooperation support or private-sector donations	Medium
LMIS	5.3.4. Development and implementation of 29 department warehouses and 43 hospital pharmacies	961,004.00	MSPAS/ Cooperation support	High
LMIS	5.3.5. Development of online dashboards for decision making (Technical assistance)	45,000.00	MSPAS/ Cooperation support	High

Year 4 January-December 2026

For year 4, **5 medium-priority activities** are proposed, including the update of the SIGESS SOPs, financing of the logistical operation and recurrent costs of DDRISS, investments in infrastructure and vehicles, and the implementation of the first LMIS modules in selected hospitals and first level centers. These activities can be largely financed by the Government (MSPAS and decentralized entities DDRISS and Hospitals) and receive less technical and financial support from donors. One low priority activity is proposed, the updating of the LBM and LBPAE. These activities can be funded to a lesser extent by

the government and require greater support from donors or other sectors and could be rescheduled depending on financing capacity.

Component	Activity	Amount USD	Funding Source	Priority Level
Governance	5.4.1. Updating of procedures	74,150.00	MSPAS/ Cooperation support	Medium
Selection	5.4.2. Updating of the LBM and LBPAE (Technical Assistance)	27,000.00	MSPAS/ Cooperation support	Low
Funding	5.4.3. Financing for the operation of supply	2,145,294.00	MSPAS/DDRISS/ Hospitals	Medium
Storage	5.4.4. Construction of 7 selected DDRISS warehouses and 1 hospital	5,378,549.39	MSPAS/ Cooperation support	Medium
Distribution	5.4.5. Procurement of 17 vehicles for delivery from DDRISS	1,387,200.00	MSPAS/ Cooperation support or private-sector donation	Medium
LMIS	5.4.6. Implementation of the software in pharmacies in primary health care establishments	816,954.00	MSPAS/ Cooperation support	Medium

Year 5 January-December 2027

By Year 5, **4 medium-priority activities** are proposed, funding of the logistics operation and recurrent costs of DDRISS, investments in infrastructure and vehicles, and the implementation of the first LMIS modules in selected first level centers. These activities can be largely funded by the Government (MSPAS and DDRISS decentralized entities and Hospitals) and receive less technical and financial support from donors. These activities may be financed to a lesser extent by the Government and require greater support from donors or other sectors.

Component	Activity	Amount USD	Funding Source	Priority Level
Governance	5.5.1. Financing for supply operation	2,145,294.00	MSPAS/DDRISS/ Hospitals	Medium
Storage	5.5.2. Construction of 4 selected DDRISS warehouses	2,908,687.11	MSPAS/ Cooperation support	Medium
Distribution	5.5.3. Acquisition of 8 vehicles for delivery from DDRISS	652,800.00	MSPAS/Cooperation support or private-sector donation	Medium
LMIS	5.5.4. Implementation of the software in 300 pharmacies in primary health care establishments	816,054.00	MSPAS/ Cooperation support	Medium

5. Recommendations

- Include the proposal for supply chain improvement in the transition agenda for the new government administration.
- By early 2024, the Coordination Committee should elaborate and present the national plan for the Integrated Supply System and initiate advocacy and lobbying interventions with the new authorities for the mobilization of financial resources from public sources, cooperation agencies or other (private) sector. *The results of this technical assistance provide a roadmap as an input to the national plan.*
- It is suggested that investments in infrastructure and the procurement of vehicles be prioritized by department according to MSPAS's or the new government health priorities and then scaled up as new financial resources are identified. The annexes to this report provide an overview of investments by department.
- The Coordinating Committee should identify possible sources of funding each year, and if no support donors or external sectors are identified, it should assess gradual placement in the budgets of MSPAS and decentralized entities.
- If resources are not identified to improve the infrastructure of department warehouses, the Coordinating Committee should consider other options such as: renting facilities, assignment of unused government facilities, reducing stock levels, or reducing restocking periods.

6. Timeline

The timeline shown in [Annex II](#), covers five (5) years, starting in October 2023, and ending in December 2027 and includes all the activities and tasks described in the plan.

7. Annexes

[Annex 1. Legal Opinion on outsourcing of warehousing and distribution services](#)

[Annex 2. 5-year implementation plan flowchart](#)

[Annex 3 Availability of human resources and the gap to be covered.](#)

[Annex 4. Architectural drawings of central warehouse](#)

[Annex 5. Architectural drawings of DDRISS and hospitals](#)

[Annex 6. Summary of estimated investment requirements for 24 DDRISS warehouses](#)

[Annex 7. Gap and investments to improve the transport of medicines in the DDRISS.](#)

[Annex 8. Technical specifications of vehicles to transport medicines.](#)

[Annex 9. Detailed budget \(electronic attachment\)](#)

[Annex 10. Proposed official designation of the Coordination Committee.](#)

[Annex 11. Implementation timeline](#)