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MOZAMBIQUE WAREHOUSE ASSESSMENT REPORT

May 13, 2016

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ACRONYMS

AC	Air conditioner
CCTV	Closed-circuit television
CMAM	Central De Medicamentos E Artigos Médicos
DPM	Provincial Medicines Depot
IV	Intravenous
LLIN	Long Lasting Insecticide Treated Nets
MISAU	Ministério de Saúde
MOH	Ministry of Health
PSM	Procurement and Supply Management
SCMS	Supply Chain Management System
USAID	U.S. Agency for International Development
WMIS	Warehouse Management Information System

EXECUTIVE SUMMARY

The USAID GHSC-PSM project at the request of USAID Mozambique, conducted a market survey and assessment of warehouses used to store and manage USAID donated commodities, including Long Lasting Insecticide Treated Bed Nets (LLINs). The warehouses included in the assessment include those owned and managed by the Ministry of Health through its Central de Medicamentos e Artigos Medicos (CMAM), as well as those warehouses, which are rented by SCMS on behalf of CMAM and managed by CMAM, or in the case of the LLINs, co-managed by CMAM and SCMS. The purpose was to assess warehouse conditions, identify needed upgrades and improvements, and to recommend suitable options for immediate, short and long-term actions for the warehouses in Nampula, Beira, and Maputo provinces.

The specific areas assessed included warehouse structure and storage, safety and security, housekeeping, and inventory management.

Major Findings

Warehouse Structure and Storage Capacity

The warehouses are solid, permanent structures, constructed with concrete and steel. Some warehouses have open spaces between the roof and walls for to allow for ventilation. As a result, insects, birds, and rodents are able to easily enter the warehouse. Some warehouses had ample space to store non-temperature sensitive health commodities, while others had grossly inadequate storage space with commodities crammed into small spaces in no particular order.

Safety and Security

Several warehouses had operated security at the main entrances, and functional CCTV equipment. The number of CCTVs were insufficient to cover all warehouse bays, and in some warehouses, the CCTVs are nonfunctional. Staff working in some warehouses were not provided with the appropriate safety kits. Staff are not trained on good warehouse practices and safety.

Housekeeping

In many warehouses, the conditions are not ideal for storing commodities or any other type of product destined for clinics or hospitals. Due to inadequate drainage pipes, and leakage from the roof, the floor was damp and wet. A large quantity of the cartons containing commodities were found to be wet and some commodities including Sterile IV preparations are stored on the bare floor for long periods of time.

All warehouses also have ventilation problems. Insulation has been installed on the roof to keep temperatures low; however, certain sections are exposed to the elements, causing the warehouses to experience high temperatures. In addition, some facilities have no temperature and humidity monitoring.

Electric lighting is provided for the warehouses, however, the warehouse area is typically not well lit, and lights periodically go off for long periods before turning back on.

Improper storage of commodities was noted in several warehouses. Although not applicable to USAID donated commodities, one warehouse compound had non – functional cold rooms. In another, highly flammable materials such as 90% alcohol, oxidizers, diesel, and a large gas cylinder are stored in the warehouse in close proximity to the cartons of medicines and other health commodities.

Inventory Management

No Inventory management tools are available in some warehouses. Entries are often made using temporary tools creating a risk of loss of data and inventory.

Other Considerations

The recommendations included in this report for each warehouse will support both the PSM project and the MISAU to clearly delineate their key roles and responsibilities moving forward. It will also allow PSM to negotiate improvements with current owners as the lease agreements with SCMS come to an end. PSM will be in a position to request warehouse owners for repairs and upgrades as new lease agreements are reached. With respect to the provision of inventory moving equipment and tools, PSM, using the results presented in this assessment report, will discuss with USAID the feasibility of PSM procuring additional inventory moving equipment and tools.

A. PURPOSE AND PRIMARY ACTIVITIES UNDERTAKEN

The purpose is to conduct a needs assessment of the warehouses owned and managed by the Ministry of Health through its Central de Medicamentos e Artigos Medicos (CMAM), as well as those warehouses that are rented by SCMS on behalf of CMAM and managed by CMAM, or in the case of the LLINs, managed co-managed by CMAM and SCMS. , to determine the current status of the warehouses, to ascertain the requirements for needed upgrades, and to suggest recommendations on best options for immediate, short-, and long-term transition of existing warehouse from the incumbent USAID SCMS project to GHSC-PSM, taking into consideration viable warehouse options, geographic needs, and the timing of moving existing commodities.

Because this reports provides short, mid and long term recommendations moving forward, the following table is included so that these recommendations can be best directed to the relevant party in a position to initiate actions for upgrades and improvements:

Table 1. – Warehouse Management, Roles and Responsibilities

Warehouse	Owned / Rented by	Commodities in Stock	Managed by	CMAM Support	SCMS / PSM Support	Support by either CMAM or SCMS or landlord or unclear or lacking
Nampula Province						
Provincial Medicines Warehouse	Rented by SCMS until Sept. 2016	All Medicines	DPM			
CMAM Regional Medicines Warehouse ("Medy")	Rented by SCMS until Sep 26, 2016	All Medicines	CMAM	Staff, security, cleaning	Rent, utilities, TA, MACS, internet	Infrastructure and Equipment maintenance and repairs; stationery
CMAM Regional Medicines Warehouse ("Wing Koon")	To be rented by PSM from Aug 1, 2016	All Medicines	CMAM	Staff, security, internet, cleaning	Rent, utilities, TA, MACS, security	Infrastructure and Equipment maintenance and repairs; stationery
Regional LLIN Warehouse	Rented by SCMS until Jun 30, 2016 and by PSM from Jul 01, 2016	LLINs	SCMS		Rent, utilities, staff, TA, security, cleaning, stationery	
Possible Construction Site	Private Project		NA		NA	
Beira Province						
LLIN Warehouse	Rented by SCMS until Jun 30, 2016 and by PSM	LLINs	SCMS		Rent, utilities, staff, TA, security, cleaning,	

	from Jul 01, 2016				stationery	
Wing Koon	Rented by SCMS until Sep 26, 2016 and by PSM from Sep 27, 2016	All Medicines	CMAM	Staff, security, cleaning	Rent, utilities, TA, security	Infrastructure and Equipment maintenance and repairs; stationery
MISAU Warehouse (MEDIMOC)	Owned by MISAU	All Medicines	CMAM	Staff, security, internet, cleaning	TA, MACS	Infrastructure and Equipment maintenance and repairs; stationery
Maputo Province						
Adil Warehouse	Rented by SCMS until June 26, 2016 and by PSM from June 27, 2016	All Medicines	CMAM	Staff, security, internet, cleaning	Rent, utilities, TA, MACS, security	Infrastructure and Equipment maintenance and repairs; stationery
CMAM Natl. Warehouse / Zimpeto	Owned by MISAU	All Medicines	CMAM	Staff, security, internet, cleaning	TA, MACS	Infrastructure and Equipment maintenance and repairs; stationery
LLIN Warehouse / Matola	Rented by SCMS until Jun 30, 2016 and by PSM from Jul 01, 2016	LLINs	SCMS		Rent, utilities, staff, TA, security, cleaning, stationery	

Assessment Methodology

The assessment team comprised representatives from the Ministry for Health Department for Medicines and Medicaments (Central De Medicamentos e Artigos Médicos - CMAM), USAID/Mozambique, the USAID SCMS Project, and the USAID GHSC-PSM project. Data collection instruments used for the assessment included checklists/structured questionnaires, and are included in Appendix 1: Summary Data from Warehouse Assessment Questionnaire.

Specific activities undertaken to conduct the assessment are as follows:

- Review reports and documentation.
- Pre-assessment discussions with relevant personnel of different organizations
- Identify and follow up on recommendations and action items for improving warehousing and distribution.
- Conduct site visits to the CMAM and SCMS/DELIVER incumbent project warehouses to assess risk areas and improvements needed.
- Conduct a market survey to determine market prices and identify alternative warehouse options, including site visits where feasible, to determine the best warehouses to use as well as the costs, risks, conditions and improvements needed. Review alternative options such as storage in a box options, and remodeling/rehabilitation of proposed facilities.
- Evaluate and recommended improvements on the cleanliness, orderliness, structural integrity and security of current warehouse facilities.
- Evaluate costs and leases of current warehouse facilities and review costs associated with transitioning to new facilities.

The following warehouse facilities were part of the assessment:

- Nampula: Regional CMAM, MOH Provincial, and Regional LLIN warehouses, the Wing Koon warehouse, and the proposed site for the construction of a new warehouse.
- Beira: Regional CMAM, Wing Koon, and Regional LLIN warehouses.
- Maputo: CMAM Central warehouse in Zimpeto, and the Adil Medicines and Regional LLIN warehouses in Matola.

In each of the provinces, the following activities were undertaken:

- Met with and briefed relevant warehouse management staff as well as the finance and technical staff from SCMS on the objectives of the visit.
- Conducted the assessment through direct observation of the warehouse operations, measured elements of the warehouse structure, and interviewed key staff using the questionnaire.
- Met with landlords of the rented warehouses, identified potential warehouses, and discussed the following issues:
  - Willingness of property owners to continue to maintain a relationship with GHSC-PSM as the new contractor.
  - Availability of the warehouses for continued rent/lease and cost.
  - The need to renovate the warehouses, ensure they are well maintained, and structurally sound at all times.

    - Improve and maintain a high level of responsiveness to issues raised regarding warehouse structure, and other identified owner/landlord responsibilities.
    - The need to provide additional infrastructure and services in the rented warehouses.
- De-briefed staff on key findings that were identified as a potential risk, requiring immediate actions.

Interviews were held with CMAM central technical and administrative staff to gather more data on warehouse and distribution operations. Additionally, a market survey of other warehouses was also conducted to identify alternative warehouse options, including obtaining information on rental costs. Information was also obtained from SCMS, USAID and CMAM on the progress regarding completion of the Warehouse-in-a-Box being constructed by USAID under the SCMS project.

B. KEY FINDINGS AND RECOMMENDATIONS

Nampula Province

a) Regional Medicines Warehouse

Key findings

Location. The Regional CMAM Medicines (RCM) warehouse is located off the main road traveling north out of Nampula. There is no perimeter fence surrounding the premises. There are three entrances and three exits from the warehouse (two entrances are located at the loading bays and the other at the main entrance of the offices) which opens directly onto the space in from of the building and by the main road that passes in front of the warehouse.

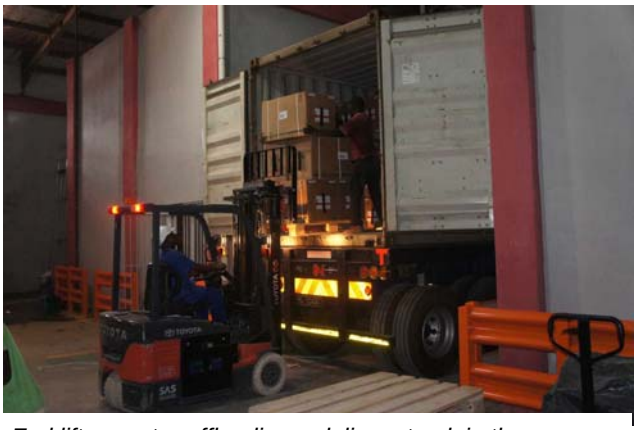
Structure

The RCM warehouse has the following measurement profiles:

Item	Measurement
Loading Bay Door (M^2)	25.20 x 2 = 50.40
Usable Floor storage space (M^2)	2,013.71
Office space (M^2)	170.72
Total WH floor space (M^2)	2,526.45
Height of WH @ sides (M)	6.00
Height of WH @ center (M)	6.00
Warehouse volume (M^3)	**15,158.70**

Design and Construction. The warehouse is a permanent structure, made of blocks and steel materials. Air extraction rotary fans, which serve as ventilation, have been installed in the roof of the warehouse. The floor is made of cement, but has peeled off in several places and needs rehabilitation.

Roof. The roof is constructed of aluminum material and sufficiently high to allow for adequate space requirements. The roof is collapsing in several places - both in the warehouse area as well as the office space areas. The floor was wet in several places due to leakage of water from the roof, and insufficient water drain pipes. Insulation has been installed on the roof to keep temperatures low; however, certain sections are exposed to the elements, causing the warehouse to experience high temperatures.



Forklift operator offloading a delivery truck in the loading/offloading bay

Utilities and Ventilation. Electric lighting is available; however, the warehouse area is quite dark and not well lit. The bulbs used are of an orange hue, and therefore provide inadequate lighting. They also periodically turn off for long

periods before turning back on. Separate restroom facilities are provided for males and females. The loading bay doors are always shut when not in use.

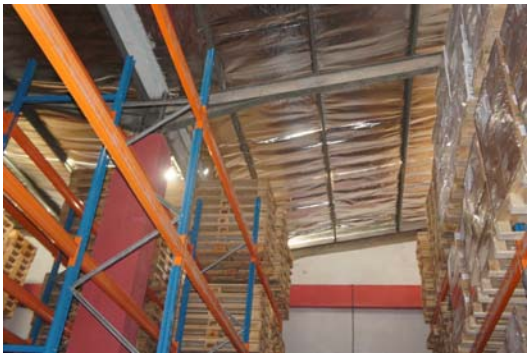
Water Drainage. The water drainpipes were found to be inadequate. The dimension of the pipes is on average 110cm in diameter, which is inadequate for proper draining of large volumes of water that periodically collect on the roof.

Commodities stacked to just below the roof in Nampula Regional Warehouse

Recommendations

It is recommended that commodities be removed from this facility and use of this facility be discontinued. The property owner has shown a lack of commitment to maintaining the facility and is unwilling to undertake repairs to the building unless he has a contract with the GHSC – PSM project.

Water reservoir constructed under the floor of the Regional Warehouse in Nampula



Rack installation around pillars & insulation appears to be damaged by excessive heat

b) Provincial MOH Medicines Depot (DPM)

The facility is located in the same warehouse facility as the Regional Warehouse in Nampula.

Key findings

Location. The DPM warehouse is located off the main road traveling north out of Nampula. There is no perimeter fence surrounding the premises. There are two entrances and exits leading from the warehouse, which opens almost directly onto the main access road in front of the warehouse.

Loading bay door of the DPM kept permanently open to allow in some light into the warehouse

Design and Construction. The DPM is a permanent structure, made of blocks and steel materials. Air extraction rotary fans, which serves as ventilation, have been installed in the roof

of the warehouse. The upper level of the concrete floor is completely damaged, and it is dusty and muddy.

Roof. The roof is made of aluminum material and sufficiently high to allow for adequate space requirements. The roof has collapsed in several places, causing the entire warehouse to be flooded with pools of water, which had collected in several places on the floor. A large quantity of the cartons containing commodities were wet and some condoms were floating in water. Insulation is installed on the roof to keep temperatures low; however, it is exposed in some sections resulting in warm temperature conditions in the warehouse.

Structure

The DPM Warehouse has the following measurement profiles:

Item	Measurement
Loading Bay Door (M^2)	25.20
Usable Floor storage space (M^2)	1,244.09
Office space (M^2)	189.74
Total WH floor space (M^2)	1,532.69
Height of WH @ sides (M)	6.00
Height of WH @ center (M)	6.00
Warehouse volume (M^3)	**9,196.14**

Utilities and Ventilation. Electric lighting is available, however, was not working at the time of the visit. The electrical system is damaged and is in dire need of repair. Separate restroom facilities are provided for both males and females. The loading bay door is permanently open to allow light to filter in and to remove the stench in the warehouse.

Stored IV Fluids in the DPM in Nampula

Water Drainage. There is no drainage system in the warehouse. As a result, water collects in pools and remains stagnant. The warehouse is quite damp and has a strong stench due to mold and mildew accumulation.

Recommendations

It is recommended that commodities be removed from this facility and use of this facility be discontinued. The property owner has shown a lack of commitment to maintaining the facility, and is unwilling to undertake repairs, unless he has a contract with the GHSC – PSM project.

IV Fluids stored out of cartons in the DPM

c) The Regional Bed Nets Warehouse in Nampula

Key findings

Location. The warehouse is located off the main traffic road traveling north out of Nampula. There is no perimeter fence surrounding the premises, and the rear of the building is a thoroughfare. The only entrance and exit from the warehouse opens directly onto the street that passes in front of the warehouse.

Design and Construction. The warehouse is a permanent structure, made of blocks and steel materials. There is open space between the roof and the walls, which serves as ventilation. As a result, rodents, insects, and birds enter the warehouse. Holes are visible at the base of the wall in the warehouse.

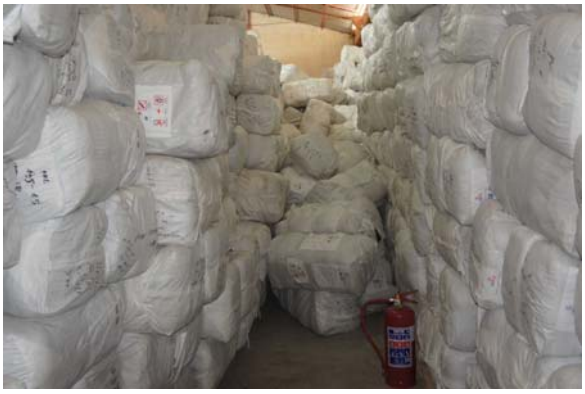
Structure

The warehouse has the following measurement profiles:

Item	Measurement
Loading Bay Door (M^2)	22.56
Usable Floor storage space (M^2)	983.17
Office space (M^2)	10.67
Total WH floor space (M^2)	1,194.83
Height of WH @ sides (M)	6.00
Height of WH @ center (M)	7.20
Warehouse volume (M^3)	**7,168.98**

Roof. The roof is made of aluminum material and sufficiently high to allow for adequate space requirements, and made of solid material thus preventing water and sunlight from filtering into the warehouse. However, no insulation is installed on the roof.

Utilities and Ventilation. Electricity lighting is available in the warehouse. The wiring is located on the metal materials, which are part of the roof. This is a fire hazard should any of the wiring become exposed, and comes into contact with the roof support. Washrooms and restrooms are provided in the warehouse.



Over-stacked mosquito nets bales collapsed into the aisle

Water Drainage. The roof of the warehouse is constructed to ensure that water does not collect on the roof, but runs down and drains off the building.

Recommendations

The warehouse requires renovations. The floor is damaged, the roof leaks, and the walls need repainting. The entrance door should be replaced with a more solid one. An emergency exit needs to be installed so that the loading bay door can be kept locked when not in use. The wiring should be properly insulated (consider plastic piping) to prevent fire hazard and risk of electric shock or worse, electrocution in the event of exposure.

Over-stacked bales of mosquito nets collapsing and supported with wooden pallets and metals

Nets should be installed to cover the ventilation openings near the roof to keep out pests. Extractors/rotary fans can improve ventilation and to help maintain a cool temperature. On final take over by PSM, project staff should be hired, trained, and posted to the warehouse to manage operations. Presently, an SCMS staff operates out of the warehouse, and oversees warehouse operations when needed. Staff should be trained in stacking of commodities, good warehousing practices, operating fire extinguishers, and in basic first aid. Safety kits such as hard hats, boots, hand gloves, facemasks and overalls are also needed.

d) Wing Koon Warehouse in Nampula

The Wing Koon warehouse is the most suitable alternative space available.

Key findings

Location. The warehouse is located in an industrial area, off the main road, in a secure environment. There is a perimeter fence surrounding the premises, with three entrances and exit gates, each sizeable enough to accommodate a large truck. The facility measures about 5,000m^2.

Design and Construction. The Wing Koon warehouse is a permanent structure, made of blocks and steel materials, and sealed to keep out vermin and environmental elements. No cracks are visible on the building.

Roof. The roof is constructed of asbestos material, strong enough to prevent water leakage and direct sunlight into the warehouse, and sufficiently high to allow for adequate space requirements. It was raining at the time of the assessment visit and very little leakages were visible at the time.

Utilities and Ventilation. Electric lighting is provided for the warehouses and clerestory windows have been installed to filter light into the bays. Restrooms are available in the offices provided.

Water Drainage. Water drainage channels have been constructed on the roof of all the bays in the warehouse, and drainpipes of adequate diameters have been installed. Additionally, water drainage has been constructed around the entire premises to ensure that the compound is not water logged during the rainy season.

Suggested Lease Terms

1. **Availability:** All three bays of the property are available for rent for commodity storage, either in part or in its entirety. If the space is not rented completely, the remaining space will be made available to other tenants who have expressed an interest in renting the remaining space.
2. **Lease Duration:** The lease will be for a minimum of 2 years initially, and renewable for an additional 2 years, if agreeable to both parties.

3. **Cost:** Rental costs are estimated at $10 - $15 (USD) per square meter of warehouse space per month and is negotiable.
4. **Occupancy Commencement:** The renovations will be completed and ready for occupancy in 30 to 45 days for bays 1 and 2, and in 60 days for bay 3, which houses the bakery equipment, which will be dismantled and removed from the premises. PSM should ensure that specific dates for completion of renovations are included in the contract agreement to be signed with the landlord and this should be monitored closely to ensure strict compliance.

Structure

There are 3 bays in the warehouse location are linked together, with the following dimensions:

Item	DIMENSIONS			
	Bay 1	**Bay 2**	**Bay 3 (Bakery)**	**Total/Remarks**
Loading Bay Door (M^2)	25.06	25.06	5.80	**55.92**
Usable Floor storage space (M^2)	1,111.84	1,003.9	334.68	**2,450.42**
Office space (M^2)	41.19	105.75	15.27	**162.21**
Total warehouse floor space (M^2)	1,185.00	1,181.84	380.48	**2,747.32**
Height of warehouse @ sides (M)	7.50	7.50	5.50	Height could not be verified
Height of warehouse @ center (M)	9.00	9.00	5.50	Height could not be verified
Warehouse volume (M^3)	**8,887.50**	**8,863.80**	**1,840.74**	**19,592.04**

Recommendations

1. Immediate discussions should be held with the property owner to secure the entire premises for possible use as regional and or district warehouses.
2. Engagement with USAID and CMAM, as well as other relevant Government Agencies to secure concurrence and commitment to the need for immediate commencement of activities by relocating from the current warehouse locations in Nampula.
3. The property owner should commit to carry out renovations concurrently on all bays, within a maximum 60-day completion.
4. Transfer of commodities need to be planned and implemented in phases, to avoid disrupting distribution of commodities and consequently, service delivery.

Interior of one of the bays of the Wing Koon warehouse in Nampula

5. The transition planning period should include an overlap from the time when the rent for the current Regional and DPM warehouses expire, to the time when the commodities are fully pulled out of the current Regional and DPM warehouses in Nampula. An overlapping period of between 2 and 3 months is highly recommended.
6. Part of the specifications for the warehouses should include provision of washrooms for the warehouse staff within the premises, but outside the storage area. Lockers are also needed.
7. Entrance doors should be installed within the warehouse bays to limit entrance from the office area into the actual warehouse storage space.
8. There is a fourth gate in the premises (measuring W=5.58m x H=3.21m) which opens onto another compound. This must be sealed off by during renovation, to further limit access and improve security of the premises.
9. Areas within the premises that are waterlogged and muddy should be cemented.

e) Potential Warehouse Construction Site, Nampula

This site, owned by a private investor/landlord, is being considered as one of the possible warehouse alternatives (when constructed) to be considered for storage of commodities. The property owner had previously agreed to have the space ready for occupation in a year. Warehouse specifications should be made available, so that the new construction can be compliant.

Observations
Not much construction work has been done to date, and it is doubtful that this site will be ready for occupation within 18 months, even with the best of efforts and injection of funds into the project by the owners.

Recommendations
Due to delays usually experienced in building the warehouse according to specifications, the recommendation is to discontinue the option of considerations for renting this warehouse space. This site is unlikely to be ready before 2018, if proper construction is to be undertaken. With the current state of the present Regional and Provincial MOH warehouses in Nampula, and the risk of damage of commodities, priority action needs to be taken to safeguard the commodities, as this site is not immediately habitable. A plan is in place to construct a new health commodities warehouse by 2018 (warehouse in a box). There is no need to rent a new warehouse.

Beira Province

a) Long Lasting Insecticide Treated Nets (LLIN) Warehouse, Beira

Key findings

Location. The LLIN Warehouse is located within an area that houses several warehouses. There is no drainage and the warehouse is waterlogged. There is no perimeter fence surrounding the premises. There are three loading and offloading gates into the warehouse, with only one in use, as well as four smaller entrances with only one in use. All entrances/exits open into the access road, which passes in front of the warehouse.

Design and Construction. The building is a permanent structure, made of blocks and steel materials. Air extraction rotary fans, which serve as ventilation, have been installed in the roof of the warehouse. The floor is made of cement, but has peeled off in several places and needs rehabilitation.

Roof. The roof is made of aluminum material and sufficiently high to allow for adequate space requirements. The roof requires some minor repairs, and due to leakage, water seeps in through the floor. The warehouse was very warm on the day of the visit.

Utilities and Ventilation. Electric lighting is installed in one bay, but the other bay has no light, which is attributed to a faulty metering system. No showers are provided, and the restrooms are old and in dire need of repairs or rebuilding. The loading bay doors are always closed when not in use.

Water Drainage. The water drain pipes from the roof gutters are damaged, and in need of replacement. The pipes in the restrooms are old and rusty and need replacing. There is no drainage around the perimeter of the warehouse; rainwater drains from the outside into the warehouse.

Structure

The LLIN warehouse has the following measurement profiles:

Item	Measurement (Bay 1)	Measurement (Bay 2)
Loading Bay Door (M^2)	9.24	NOT IN USE
Usable Floor storage space (M^2)	380.61	625.84
Office space (M^2)	46.25	0
Height of WH (M)	6.41	6.41
Warehouse volume (M^3)	**2,439.71**	**4,011.63**

Recommendations

1. A drainage system should be constructed around the building to keep rain water from flooding the warehouse
2. Repairs should be carried out to the roof and floor of the warehouse
3. Extractor rotary fans should be installed

4. Restrooms should be replaced with new ones
5. Electricity supply should be restored to the Bay 2 area by replacing the faulty electricity control unit
6. Repainting of interior and exterior of the building
7. Replacement of gutter drain pipes to improve water drainage from the roof of the building
8. Procurement and installation of safety and emergency kits:
   a) Fire extinguishers and sand buckets
   b) Fire blankets
   c) Fire alarm systems
   d) Smoke detectors
   e) Safety boots, overalls, hard hats, nose masks,
9. There is ample space in this warehouse to store other non-temperature sensitive health commodities. This warehouse can also be used as a temporary storage space when other warehouses are operating at full capacity.

b) Wing Koon Warehouse, Beira

Key findings

IV Sterile commodities stored directly on the floor for over 2 years

Location. The Wing Koon warehouse is located within an area that houses several warehouses. The environment is a bit waterlogged. The warehouse entrance is higher than the external ground level; there is no danger of water flowing into the warehouse when it rains. There is no perimeter fence surrounding the premises. There are two bays in the Wing Koon warehouse, and only one entrance and exit and this is the loading bay door. The entrances/exits open onto the access road, which passes in front of the warehouse.

Design and Construction. The building is a permanent structure, made of blocks and steel materials. Air extraction rotary fans, which serve as ventilation, have been installed in the roof of the warehouse. The floor is concrete and generally in good condition.

Structure

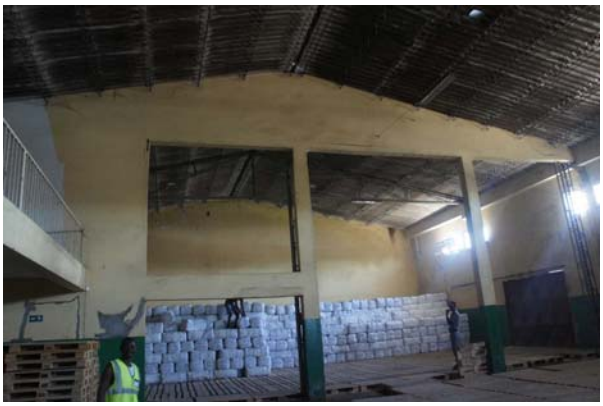
The warehouse has the following measurement profiles:

Item	Measurement (Bay 1)	Measurement (Bay 2)
Loading Bay Door (M^2)	14.93	15.23
Usable Floor storage space (M^2)	710.18	1,708.10
Office space (M^2)	89.65	0
Height of WH (M)	5.70	5.70
Warehouse volume (M^3)	**4,048.03**	**9,736.17**

Some portions of the walls are cracked and wet due to water leakages possibly from damaged piping in the wall or roof.

Roof. The roof is made of aluminum material and sufficiently high to allow for adequate space requirements. The roof requires some repairs as water leaks from the roof when it rains. There is insulation on the roof, but it is inadequate. The warehouse was warm on the day of the visit. There is no temperature and humidity monitoring.

Utilities and Ventilation. Electric lighting is available in some areas; however, some of the lighting was out due to non-functional bulbs, which need replacing. No showers are available. Restrooms are provided and functional. The loading bay doors are always open to provide additional lighting and ventilation.



2nd bay of the LLIN warehouse in Beira with commodities in storage

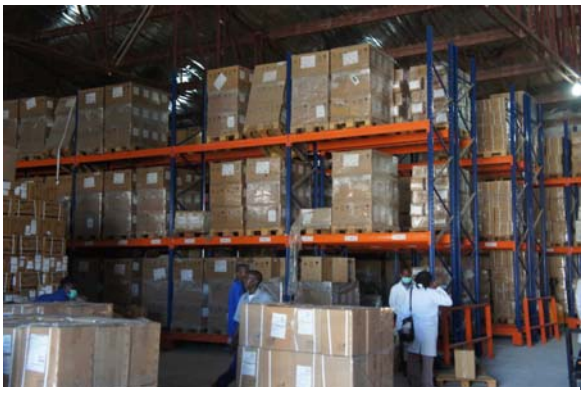
Water Drainage. The water drainpipes are installed. No drainage was seen around the perimeter of the warehouse.

Observations

IV Fluids damaged due to direct storage on the floor

1. Some commodities including Sterile IV preparations are stored on the bare floor for long periods of time
2. Commodities are stored the wrong end up
3. The warehouse is unacceptably warm for storage of temperature sensitive health commodities
4. There is no CCTV system
5. The floor is dusty
6. Some light bulbs were not working; the warehouse is dark and due to lack of visibility can lead to errors in commodity supply
7. No Inventory management tools are available
8. Inadequate pallets in the warehouse
9. Staff are not trained on good warehouse practices and safety
10. Non-availability of basic safety kits
11. No petty cash for warehouse operations
12. Some commodities stored on the racks are collapsing
13. Of 4 stackers available, only 2 are functional
14. Water seeps in through the wall and floor of the warehouse

Recommendations



Improperly stored pallets with commodities on top bins precariously tipped over

1. Provision of temperature control and monitoring equipment:
   - Installation of ACs with stabilizers
   - Thermometers and temperature recording charts
   - Hygrometers
2. Provision of petty cash for warehouse management
3. Provision of pallets for storage of commodities. A number of commodities are stored directly on the floor causing damage to cartons
4. Planning of procurement and supply management. Some IV Fluids are visible on the floor and are said to have been in storage on the floor for over 2 years without use
5. Provision of IT equipment and electronic warehouse management information system (e-WMIS), MACS^{R}. The practice of recording transactions on paper, which are then transferred into the e-WMIS (MACS^{R}) at the Central warehouse, is a potential risk to data errors and commodity loss.

c) MISAU Warehouse, Beira (MEDIMOC)

Key Findings

Location:

The MEDIMOC complex is located just beside a major street in Beira, allowing for easy access to the complex. There is ample space within the premises; it is accessible so that delivery vehicles can access the loading and off-loading docks. The entire premises are cemented and the immediate environment is clean. There are 4 storage bays in the complex with ample space for construction of additional storage spaces.

Design and Construction:

The building is a permanent structure, constructed of blocks and steel materials. Air extraction rotary fans, which serve as ventilation, have been installed in the roof of the warehouse. The floor is concrete and generally in good condition. Some portions of the floors are cracked and chipped.

Roof:

The roof is constructed of aluminum material and steel support structures. Some areas of the roof are sufficiently high to allow for adequate space requirements and ventilation, but too low

in some storage area, such as the quarantine areas and some smaller storage spaces. The roof is generally in good condition, and requires minor repairs to stop water leaking onto the floor. There is insulation on the roof in one of the bays, however, the insulation is old, is extensively damaged, and requires replacement. Birds are able to enter the warehouse through the openings in the roof. The warehouse was warm on the day of the visit. There is no temperature and humidity monitoring.

Utilities and Ventilation:

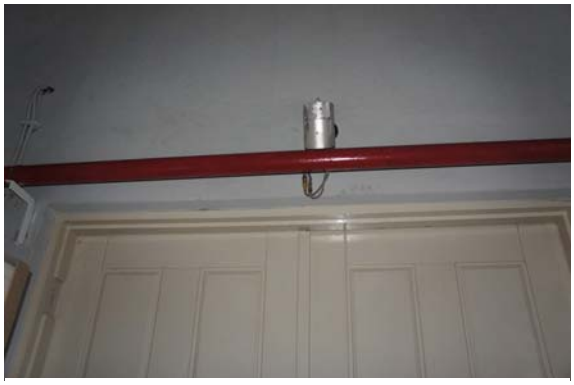
An elaborate firefighting water system has been installed in the MEDIMOC facility, and is said to be functional. This could not be tested at the time of the visit. Electric lighting is available in the complex. Several light bulbs were not working, and as a result some areas in the warehouse were not properly lit. The procurement of all items, including light bulbs are done centrally by MISAU. There are toilet and shower facilities. Loading bay doors are locked when not in use.

Water Drainage:

Appropriate drainage has been provided for the storage bays to allow the water to run off the roof when it rains. The drainage pipes are adequate for the buildings.

Observations

Most observations in the MISAU Regional warehouse are similar for the Wing Koon warehouse and the recommendations are very similar. Specific recommendations are highlighted below:



One of the non – functional CCTV cameras mounted in the MISAU warehouse

1. Storage space is grossly inadequate and commodities are crammed into small spaces in no particular order. This would make stock counts very difficult, if not impossible.
2. No emergency exits provided
3. No racks in the warehouse
4. CCTV is available but is old and non – functional
5. The warehouse complex has adequate space for construction of additional warehouse bays should the Government be interested in securing more space
6. Storage areas have unacceptably high temperatures
7. The complex has non – functional cold rooms
8. Trash is stored in the spaces meant for quarantined, damaged, and expired commodities
9. Storage of commodities does not encourage good warehousing practices, such as FEFO, etc. and this would lead to expiry of commodities

10. Birds are nesting in one of the bays with a large quantity of droppings on top of commodities
11. Loaded pallets are directly stacked on top of cartons, squeezing the cartons and the contents.
12. In some instances, commodities are stored directly on the floor in areas that are wet, thereby making the cartons wet.

Detailed and specific recommendations for all the warehouses visited are provided below.

Recommendations:

1. A permanent solid perimeter fence should be constructed around the MEDIMOC premises to properly secure the warehouses and commodities.
2. There is adequate space for construction of additional bays to increase the storage space. This should be considered in the mid to long term as the current space is inadequate.
3. All non-functional air-conditioners in the storage areas need to be fixed immediately.
4. The cold rooms are in dire need of repair, and put to use for storage of cold chain commodities.
5. The commodities in storage should be better arranged for ease of access and for implementation of good warehousing practices such as FEFO.
6. Housekeeping should be improved to make the storage environment more conducive.
7. An increase in the number of warehouse staff is desirable as the current number of staff are inadequate to properly maintain optimum services.
8. The warehouse should be provided with petty cash to maintain the warehouse operations.
9. An effective pest control plan should be put in place to prevent commodity damage due to pest infestations. In one of the bays, bird droppings have covered a vast portion of the commodities.
10. Areas designated as quarantine rooms are provided, however is used to store junk. A de-junking plan should be developed and implemented regularly to keep the storage areas free of junk.
11. All the obsolete CCTV equipment should be replaced for improved security.
12. Staff should be trained in good warehousing practices.
13. Stock counts should be carried out comprehensively and regularly.
14. Provision of temperature control and monitoring equipment in the storage area:
    - Installation of ACs with stabilizers
    - Thermometers and temperature recording charts
    - Hygrometers

Maputo Province

a) Adil Warehouse, Matola

Key findings

Location. The Adil warehouse is located in an area that houses several warehouses all owned by the same property owner. There is a fence around the entire complex, and security operated gates provided by the property owner for the complex. Three bays in the warehouse complex are rented, and used by CMAM as an annex of the national warehouse located in Zimpeto.

Structure

The Adil WH has the following measurement profiles:

Item	Measurement (Bay 1)	Measurement (Bay 2)	Measurement (Bay 3)
Loading Bay Door (M^2)	24.80	24.80	24.80
Usable Floor storage space (M^2)	2,657.70	2,657.70	2,657.70
Office space (M^2)	73.00	0	0
Height of WH (M)	5.50	5.50	5.50
Warehouse volume (M^3)	**14,617.40**	**14,617.40**	**14,617.40**

Design and Construction. The building is a permanent structure consisting of three bays of warehouse space, made of blocks and steel materials. Air extraction rotary fans, which serve as ventilation, have been installed in the roof of the warehouse. The floor is made of cement, but has peeled off, and has formed potholes in several places, and needs rehabilitation.

Roof. The roof is made of aluminum material and sufficiently high to allow for storage of commodities in stacks. The roof is covered on the inside with insulation materials to reduce the heat from sunlight. The roof requires repairs as water leaks through the roof and seeps through the floor. The warehouse was very warm on the day of the visit. Some team members suggested that temperatures in the warehouse on the day of the visit were between 90°F and 95°F.

Utilities and Ventilation. Electric lighting is provided, however, one of the three bays, used by the SCMS project has no lighting, attributed to faulty wiring. The property owner provides an alternative power supply from generators installed centrally. Shower facilities and restrooms are available. Air conditioners are only provided in the warehouse office space.

Water Drainage. Water drainpipes were not visible during the time of visit.

Other Observations

1. The warehouse contains thrash stored alongside medicines and other health commodities
2. The warehouse is quite untidy as evidenced by; water on the floor, dust is visible on top of cartons, and cobwebs are visible throughout the warehouse

3. There is no light in the bay of the warehouse used by JSI for the SCMS/DELIVER project.
4. Temperatures are unacceptably high in the warehouse. Team members estimated the temperatures to be in the range of 90°F and 95°F, which is in excess of acceptable temperatures for storage of medicinal products.
5. Highly flammable materials such as 90% alcohol, oxidizers, diesel, and a large gas cylinder are stored in the warehouse close to the cartons of medicines and other health commodities
6. Most commodities are not stored in any particular order. In this situation, correct stock count/verification would be nearly impossible in the warehouse.

Inflammable commodities stored mixed with other inventory in the Adil warehouse

7. Staff working in warehouses do not have appropriate safety kits.
8. Loaded pallets are stacked directly on top of other cartons resulting in possible damage to medicines contained in the cartons
9. Good warehousing practices are not followed:
    - Commodities are stacked above maximum allowed heights
    - Loaded pallets are stacked directly on top of cartons, damaging the cartons
    - Thrash is mixed with commodities
    - Very poor housing keeping practices
    - Rack aisles are inaccessible
    - Improper operation of warehouse equipment leading to collision of forklifts with walls and rack protection
    - Storage of commodities right side down
10. Walls were found to be very wet in the SCMS warehouse bay
11. The functional CCTV equipment is inadequate as it does not cover all the bays, and few cameras are installed.

Recommendations:

1. Staff should be trained in all aspects of good warehousing practices.
2. There is a need for proper housekeeping to ensure the storage area is kept clean.
3. Flammable materials must be segregated from the rest of the materials and stored in a controlled access area. This should be done immediately to minimize the risk of fires.
4. There should be immediate de-junking of the warehouse to keep the environment clean and reclaim storage spaces taken over by junk.
5. Light should immediately be restored to the bay used by the SCMS project.

6. Commodities should be rearranged in the warehouse and comprehensive stock count should be immediately conducted.
7. Discussions should be held with the landlord to carry out immediate repairs to the structure of the warehouse (walls, floors, roof, etc.).
8. Safety kits should be provided for all staff working in the warehouse.
9. The state of the insurance of the buildings and all commodities in storage should be verified and updated, or if not done, should be carried out as a matter of urgency. This information could not be ascertained at the time of the assessment.
10. CCTV security system should be expanded to cover all bays of the warehouse complex as will be recommended by a competent expert.

b) CMAM National Warehouse, Zimpeto

Key findings

Location. The CMAM warehouse complex is located in Zimpeto, just south of Maputo. There is a fence around the entire complex and security operated gates.

Collapsed beam of the Zimpeto warehouse rack system

Design and Construction. The building is a permanent structure made of blocks and steel materials. Air extraction rotary fans, which serve as ventilation, have been installed in the roof of the warehouse. The floor is made of cement, is damaged in some sections, and needs renovation of those failed areas.

Roof. The roof is made of aluminum material and sufficiently high to allow for storage of commodities in stacks. The roof is covered on the inside with insulation materials to reduce the heat from sunlight. The roof was previously repaired due to water damage from rainfall. The warehouse was warm on the day of the visit.

Structure

The CMAM Zimpeto WH has the following measurement profiles:

Item	Measurement
Loading Bay Door (M^2)	It impossible to take measurements in the WH because of the volume of commodities which virtually filled every floor space available. JSI has promised to provide the architectural diagrams but none has been received yet.
Usable Floor storage space (M^2)	
Office space (M^2)	
Height of WH (M)	
Warehouse volume (M^3)	

Utilities and Ventilation. Electricity lighting has been provided for the warehouse, but inappropriate street light bulbs are used. Alternative power supply generators have been installed centrally. Shower facilities are provided in addition to restrooms. No air conditioners are provided in the

warehouse storage space. The warehouse has cold room for storage of temperature sensitive commodities.

Water Drainage. There are no drainpipes.

Observations

1. The Zimpeto warehouse structure and operations are of a better quality compared to the other warehouses visited.
2. Commodities are stacked above reasonable heights; therefor light bulbs have to be removed to create a space for stacking to almost roof levels.
3. Some of the beams of the rack system have become weak and some have collapsed.
4. Commodities are not stored in order and the warehouse is overcrowded.
5. Some commodities stored on the racks were found to be dangerously tilted to the point of almost collapsing from over 5 meters high.
6. Security CCTV infrastructure is installed but is nonfunctional.
7. Comprehensive physical stock count is done only once a year.

Recommendations:

1. Alternative storage space should be considered to avoid overloading the Zimpeto complex as was the case. The Matola ITN warehouse could be upgraded and used for that purpose as recommended elsewhere in the report.
2. The security surveillance system should be made functional to complement the security personnel.
3. The racking system in the Zimpeto warehouse should be considered for replacement long term as this is falling apart due to pressure so as to avoid any serious injury or risk to life.
4. Training and retraining of staff should be undertaken constantly to keep staff updated with current trends in good warehousing practices.
5. There should be constant technical support and supervision of the operations of the Zimpeto warehouse by the PSM project.
6. The warehouse should be constantly de-junked to keep out thrash and maximize storage space.
7. Petty cash should be provided for operations management.
8. Appropriate lighting (white) conducive for warehouse operations should be provided to replace the present streetlight (orange) type installed.

c) LLIN Warehouse, Matola

Key findings

Location. The LLIN warehouse is located within a warehousing complex in Matola, owned by a private investor. There is a fence around the entire complex and security operated gates. The complex is well maintained and neat.

Design and Construction. The building is a permanent structure made of blocks and steel materials. Air extraction vents which serve as ventilation, have been installed in the walls of the warehouse. The floor is made of cement and is free of cracks and damages.

Roof. The roof is made of aluminum material and sufficiently high to allow for airflow within the warehouse. The warehouse was warm on the day of the visit.

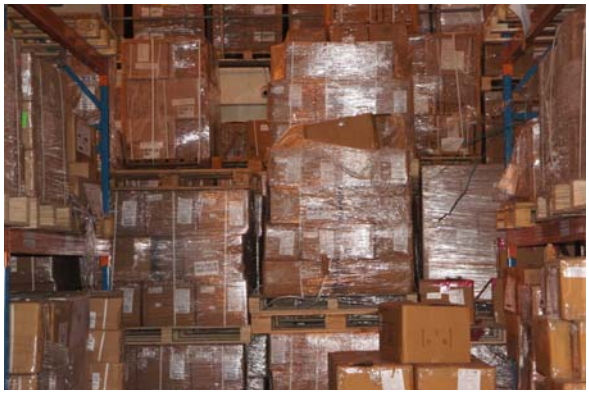
Structure

The LLIN warehouse in Matola has the following measurement profiles:

Item	Measurement
Loading Bay Door (M^2)	14.00
Usable Floor storage space (M^2)	911.60
Office space (M^2)	0
Height of WH (M)	5.50
Warehouse volume (M^3)	**5,013.80**

Utilities and Ventilation. Electric lighting has been provided for the warehouse. The generators installed by the property owner provide alternative power supply centrally. Restrooms are available. No air conditioners are provided in the warehouse storage space.

Water Drainage. Water drainpipes were not seen during the time of visit.



Commodities stored in the Zimpeto warehouse

Discussions with Landlord

1. The present warehouse space is still available for rent.
2. The property owner is willing to maintain the current rent of 8.5 USD/M^2/month.
3. He has also offered to provide cleaning services of the warehouse at no extra cost if the potters have access to the warehouse.
4. He is willing to construct an office space within the warehouse.
5. Two other warehouse bays are available within the complex for rent
6. The property owner also agreed to replace the torn nets covering the air vents to prevent birds from entering and nesting in the warehouse.

Observations

1. Warehouse is very untidy.
2. There is extra storage space available that can be used as a spill over storage space for the CMAM Zimpeto warehouse.
3. Birds and reptiles infest the warehouse.
4. Bales of LLINs are stacked directly on the bare floor.
5. Commodities are stored to the point of almost covering the emergency exit.

Recommendations

1. Immediate discussions with the owner of the potential warehouse identified to secure space

2. Short to long term, increase number of staff for the warehouse
3. Monitor and support the construction of the proposed new warehouse in Nampula, which will provide the required space for integrated commodities storage and management. Certain issues were raised which may negatively affect the completion of construction by the target date of 2018. These issues are as follows:
    - Responsiveness of government agencies regarding approvals required for the construction
    - Provision of access road to the proposed site
    - Provision of water supply to the area and the site
    - Provision of electricity
4. Maximum stack heights and weights for the racks (Regional warehouse) and weight for pallets (RBNWH) must be observed. Manufacturers' specifications should be maintained.
5. Air conditioning is needed for all warehouses storing medicines and other temperature sensitive commodities. The LLIN storage facilities should have adequate ventilation.
6. Minimum storage standards for all warehouses irrespective of their designation (Regional, Central, Provincial, District, etc.), should be defined and adhered to strictly.
7. Excess commodities that are not temperature sensitive, and stored in the CMAM warehouse in Zimpeto, should be moved to the USAID DELIVER LLIN warehouse in Matola. Additional commodities can be diverted to these warehouses.
8. Arrangements should be made to locate a full time staff in all the LLIN warehouses.
9. IT infrastructure and WIMS are lacking in all warehouses. To avoid errors in data entry, entries must be recorded immediately on completion, rather than recording entries on paper for transfer later into the system.
10. Inventory checks should be conducted more frequently to avoid loss of commodities. Monthly stock checks or at the worst quarterly checks should be conducted.
11. An alternative plan needs to be developed to renew the lease agreement, and pay the rent for warehouses to be taken over by CMAM, in the event that the plan fails so that this does not affect service delivery.
    It is strongly recommended that CMAM, PSM and USAID consider identifying and engaging a competent organization, with technical expertise in health commodity warehouse management to take on the management of the warehouses and commodities. This would ensure that, the commodities and storage infrastructure is well maintained and the risk of commodity losses to unconducive storage conditions and lack of proper monitoring.

Short, mid and long term recommendations for PSM moving forward

Short Term (1 to 3 years)

- Renegotiate renting terms and conditions with all present landlords to ensure adequate maintenance of structures are covered in the agreements.
- Stop renting the buildings at Nampula housing the Regional Medicines Warehouse and Provincial Medicines Warehouse locations and consider moving commodities to Z identified Wing Koon warehouse, Nampula.
- Ongoing monitoring of warehouse upgrades carried out as per agreement with warehouse owners
- Installation of fire alarms and smoke detectors
- Provide petty cash for WH operations
- Build/procure/repair and maintain cold storage facilities
- Provide petty cash for WH operations
- Install emergency, safety and warning signage, environmental health posters, etc.
- Procure and install IT equipment and e-WMIS (MACS^{R}) for better inventory management, where none exist
- Clean-up WHs and ensure continuously well maintained WH environment
- De-junk WHs and re-arrange commodities
- The status of insurance for stored commodities and the warehouse buildings should be verified and updated
- Highly flammable commodities should be segregated from general storage and secured
- Procure and install temperature and humidity maintenance and monitoring equipment such as ACs, thermometers, hygrometers, etc.
- Carry out a chemical analysis of a sample of commodities stored in the WH to validate potency
- Commodities in both the Regional and District Medicines WHs in Nampula, should be relocated as a matter of urgency as there is great risk both to the quality and chemical stability of the commodities and the safety and health of personnel working in the warehouses.
- Unsafe WH practices such as the use of the WH as parking space for motorcycles, gas canisters and diesel should be discontinued immediately
- Develop a WH operations monitoring strategy which will include a plan for support & supervisory visits to monitor appropriate KPIs using a checklist. This will help to assess performance and compliance with standard warehousing practices
- Develop WH equipment maintenance schedule and contracts
- Inspection and servicing of all expired fire extinguishers in the WHs
- Provision of adequate and appropriate lighting in the WHs
- SOPs for good warehousing practices should be reviewed and updated, placed in WHs and all staff trained to use SOPs
- Carry out a comprehensive physical stock count to verify inventory of useable and non-useable commodities
- Repair/replace/procure non-functional/damaged/obsolete/new CCTV equipment
- Staff should be trained on emergency and safety procedures: use of fire extinguishers, emergency first aid etc.

- Develop a supply and distribution vendor performance monitoring system and ensure strict monitoring and evaluation of implementation
- Procure/repair new/non-functional WH equipment such as inventory handling equipment, printers etc.
- Procure appropriate safety and operational kits for all staff and visitors

Mid-Term (3 to 5 years)

- Explore the feasibility of building Warehouse In a Box (WIBs)
- With USAID, address integration of supply chains within USAID funded Health Areas (HIV/AIDS, Malaria, TB, FP, and MNCH)
- With other USG agencies, explore possibilities for cooperation (TMI, PEPFAR, Other?)
- Monitor and support the construction of Intermediate Warehouses by CMAM as per the PELF
- Consider procurement of warehousing management services from competent technical experts to handle operations at all the warehouses. Consider the redesign of the warehousing and distribution system for Mozambique to include direct distribution to health facilities from suppliers.
- Procurement of rack wire decks and correction of errors in installation of racks. (Width too narrow and pallets extend well beyond rack width)
- Advocacy and training of CMAM central staff on procurement and supply planning

Long Term (5 to 10 years)

- Transfer all activities of managing warehouses operations to CMAM
- Build/procure/repair and maintain cold storage facilities at central, regional and provincial levels. Integrate the management of all health commodities in – country for all partners in Mozambique.

C. NEXT STEPS AND FOLLOW-UP ACTIVITIES

1. Most of the contract agreements for the rent of the warehouses space are about to expire. There is a need for PSM to engage in discussions with the property owners to review the contracts and renew current contracts as necessary. This should be taken as a priority activity, with completion within the next one month.
2. There is a need to immediately carry out a chemical analysis of the commodities in the warehouse since they were stored in conditions unconducive for medicines and health commodities. This should be done as a matter of urgency by USAID or PSM or both or at the very least, CMAM or MISAU should be compelled somehow to carry out the analysis. This is critical owing to the fact that, these commodities may have become denatured and therefore inactive or worse, toxic and lethal if ingested or administered topically or into the blood stream, as a result of the adverse storage conditions.
3. The property owner of the identified Wing Koon warehouse in Nampula, which is proposed to house the regional and provincial medicines depot, should be mobilized to commence renovations as soon as possible to ensure that the warehouse is ready for occupation within the 60-day period. The contract for this property should be immediately signed and the landlord given the green light to commence renovations.
4. A team should be set up by PSM to review the recommendations and develop a plan of action to ensure implementation of recommendations within the timeframe suggested. Recommendations which are for the CMAM managed warehouses should be discussed with the leadership of CMAM with strong advocacy for implementation by CMAM.
5. Relevant technical experts should be contracted to develop technical specifications for the renovation of the proposed Wing Koon premises in Nampula which is proposed to house the Regional and Provincial Medicines Warehouses specifically and generally for the plan of action to be developed from the recommendations.
6. PSM should consider engaging a competent consultant, with expertise in health commodity warehouse management to review the renovations to ensure the warehouse is in a prime condition for commodity storage. Additionally, the consultants should also supervise movement of commodities, installation of racks, and arrangement of commodities in the warehouses.

Observation and Feedback from Central Level Interviews

1. No provisions are made in the budget for petty cash for warehouse operations**.** This is responsible for non-availability of basic warehousing requirements and poor housekeeping observed at the warehouses.

2. Administrative bottlenecks are hindrance to effective and efficient operations in the warehouses.
3. Inadequate warehouse space is largely responsible for non-adherence to best practices in warehouse operations.
4. There is a gross inadequacy in number and capacity of technical staff.
5. Lack of funds prevent engaging of adequate number of ad-hoc/casual staff.
6. There is a need to develop a pool of Master Trainers to help build capacity of other staff in logistics on a continuous basis. This will counter the negative effect of staff attrition.
7. The quality of data from lower levels of the supply chain is not dependable for decision-making. There is need to improve M&E capacity for DQA. Chemonics International needs to provide support.
8. Commodity supply system is faulty and irregular and negatively impacts warehouse space utilization. Technical support to ensure better planning is required urgently.

Presentation of Results

Immediate observations and findings are as follows:

1. The space available for commodity storage is inadequate. Due to space constraints, Commodities are stacked in some instances to just below the roof, which is far in excess of maximum stack heights. This is a potentially risk to loss of life and of commodity damage
2. Commodities are stored beyond rack width, partially blocking aisles as well as beyond, height and weight
3. Leakages from the roof and floor were found in most of the warehouses. In some instances, large quantities of the commodities were wet and some were even seen in water: potential risk to commodity integrity
4. No air conditioners and temperature and humidity monitoring equipment which again is a risk of the integrity of the commodities
5. Low level of technical capacity of some of the staff managing and working in the warehouses
6. Security within and outside the warehouses is inadequate. Absence of CCTV equipment is a risk of commodity losses due to theft.
7. Absence of operational guidelines in some instances will potentially lead to in-proper warehouse practices and commodity losses
8. Some fire extinguishers in the warehouses are expired
9. Some of the owners have a poor attitude towards attending to defects in building
10. Absence of lighting in some areas in the warehouses. In some instances, light from GSM handsets were being used to select commodities.
11. No provision of staff safety clothing and gear
12. A potential warehouse location was identified for consideration

Appendices

APPENDIX 1: SUMMARY DATA FROM WAREHOUSE ASSESSMENT QUESTIONNAIRE

ELEMENT	RESPONSES								
LOCATION	**NAMPULA**			**BEIRA**			**MAPUTO**		
WAREHOUSE	**CMAM RWHN**	**DPMN**	**LLIN WH**	**MISAU RWH**	**MISAU Wing Koon WH**	**LLIN WH**	**CMAM ZIMPETO**	**Adil MATOLA**	**LLIN MATOLA**
1 LAYOUT									
1.1 Area is tidy and well kept	Y	N	Y	Y	Y	Y	Y	N	N
1.2 Adequate storage space is provided (Dimension)	N	N	N	N	Y	Y	N	N	Y
1.2 Floor is free of damage, level and clean	N	N	Y	N	Y	Y	Y	N	Y
1.4 Roof and ceiling is sealed and not leaking, with drainage?	N	N	N	N	N	Y	Y	Y	Y
1.5 Aisles are sufficiently wide for vehicular traffic/personnel movement and clearly marked (Dimension)	Y	N	N	Y	Y	Y	Y	Y	Y
1.6 Staging (receiving, sorting packing, dispatch) Area available and adequate (Dimension)	Y	Y	N	N	Y	N	Y	N	Y
1.7 Building made of solid materials e.g. blocks, steel to keep out vermin, water & dust?	Y	Y	Y	Y	Y	Y	Y	Y	Y
1.8 Service entrance to warehouse is adequate? (at least 4m^2)	Y	Y	Y	Y	Y	Y	Y	Y	Y
1.9 Office space available? (Dimension)	Y	Y	Y	Y	Y	Y	Y	Y	N
1.10 Space for storage of quarantined and damaged commodities available (dimension)	N	N	N/A	Y	N	N/A	N	Y	N/A
1.11 Space for storage of restricted items available (dimension)	N	N	N/A	Y	N	N/A	Y	N	N/A

2 ENVIRONMENT									
2.1 Lighting is adequate Min 4 of 3-4" Fluorescent tube bulbs/25m^2	N	N	Y	Y	Y	Y	Y	N	Y
2.2 Lighting covers and fittings are secure	Y	Y	Y	Y	Y	Y	Y	Y	Y
2.3 Noise level is acceptable/adequately controlled	Y	N	Y	Y	Y	Y	Y	Y	Y
2.4 Ventilation is adequate (sight air vents?)	N	N	N	Y	Y	N	Y	Y	N
2.5 Are ACs provided? Type and No. available	N	N	N	N	N	N	N	N	N
2.6 Are ACs connected to alterative Power source and Stabilizers? No & Type	N/A	N/A	N/A	N/A	N/A	N	N/A	N	N/A
2.7 Is wiring within walls and above the ceiling or covered if on top of walls and below ceiling?	Y	Y	N	N	Y	N	Y	Y	Y
2.8 Is temperature monitored and recorded? Number of thermometers & frequency (sight charts)	N	N	N	N	N	N	Y	N	N
2.9 Is humidity monitored and recorded? Number of hygrometers and frequency (sight charts)	N	N	N	N	N	N	N	N	N
2.10 Pest Control:									
a) Has there ever been incidence of damage of commodities by Pests (rodents, reptiles and birds)?	N	Y	N	Y	Y	N	Y	Y	N
b) Is there a pest control plan in place? (sight)	N	N	N	Y	N	N	Y	N	N
c) Type and frequency of implementation	N/A	N/A	N/A	2/Yr	N/A	N/A		N/A	N/A
3 EMERGENCY PROCEDURES									
3.1 Written emergency guides/procedures are available and displayed visibly	N	N	N	N	N	N	N	N	N
3.2 Fire extinguishers of appropriate type easily accessible and kept clear (Indicate Number)	Y (6 WH, 2 OFF)	Y (6 WH, 2 OFF)	Y (6)	Y	Y (15)	N	Y	Y (13)	N
3.3 Tag on extinguishers have been checked in the last 6 months	Y	N	Y	Y	Y	N/A	Y	Y	N
3.4 Sand buckets are available, visible and clearly marked (where used)	N	N	Y (1)	N	N	N	N	N	N
3.5 Fire Alarm can be heard throughout the warehouse (if applicable)	N	N	N	Y	N	N	N	N	N
3.6 Escape routes are clearly marked and Emergency	N	N	N	N	N	N	N	N	N

Assembly points pre-determined									
3.7 Emergency and hazard signage is clearly visible	N	N	N	N	N	N	N	N	N
3.8 Evacuation/Emergency drills carried out? Sight reports if done	N	N	N	N	N	N	Y	N	N
3.9 Availability of functional smoke detectors (Number)	N	N	N	N	N	N	Y	N	N
3.10 Fire handling training conducted for staff? Sight certificates and training reports	Y (2 trained No certificate)	N	N	N (95% not trained)	N	N	N	Y (2012)	N
4 FIRST AID & SAFETY FACILITIES									
4.1 Kits accessible within 5 minutes	N	N	N	Y	N	N	N	N	N
4.2 Kits are stocked and contents are in-date	N	N/A	N/A	N	N	N/A	N	N/A	N
4.3 Names and contacts of first aiders displayed	N	N	N	N	N	N	N	N	N
4.4 Staff trained in basic first aid (sight certificates and training reports)	N	N	N	N	N	N	N	N	N
4.5 Availability of the following safety clothing:									
a) Safety hard hats	Y (3)	N	N	Y	N	N	Y	Y	N
b) Safety boots	Y (3)	Y	N	N	N	N	Y	N	N
c) Safety coats or overall	Y (3)	N	N	Y	Y	N	Y	Y	N
d) Hand gloves	Y (3)	N	N	N	N	N	N	N	N
e) Nose masks	Y (13)	Y	Y	Y	Y	N	Y	Y	N
f) Fire blankets	N	N	N	N	N	N	N	N	N
5 GENERAL FACILITIES									
5.1 Washing facilities are clean and functional	N	N	Y	Y	N	N	Y	Y	N
5.2 Lockers or equivalent available for staff	N	Y	N	Y	N	N	Y	N	N
5.3 Eating areas clean, hygienic and adequately serviced	Y	N	N	Y	Y	N	Y	Y	N
5.4 Environmental Health & Safety posters and information is displayed	N	N	N	N	N	N	N	N	N
6 MANUAL HANDLING AND ERGONOMICS									
6.1 Frequently used items are within easy access	N	N	N/A	N	Y	Y	Y	Y	N/A

between knee and shoulder									
6.2 Heavy items stored at waist height	Y	N	N/A	N	Y	Y	Y	Y	N/A
6.3 Platform ladders are available to access items stored on higher shelves	N	Y	N	Y	N	N	Y	N	N
6.4 Trolleys are available for heavy items and loads	N	Y	Y	Y	N	N	Y	Y	N
6.5 Stored items adequately secured and stable	Y	N	Y	Y	Y	Y	Y	N	Y
6.6 Availability of the following equipment:									
a) Manual pallet jack (Number & functionality)	Y (5)	Y	Y	Y (7)	Y (5)	N	Y (6)	Y (5)	Y (2)
b) Refrigerators (Number & functionality)	N	N	N/A	N	N	N/A	Y (2)	N	N
c) Cold room (Number & functionality – CPD)	N	N	N/A	Y (NF)	N	N/A	Y	N	N/A
d) Stainless steel trolleys	N	N	N/A	Y	N	N/A	Y	N	N/A
e) Electronic stacker (CPD + PPD)	Y (2)	N	N	Y (1)	Y (4)	N	Y (4) 3 op	Y (2)	N
f) Wooden pallets	Y	Y	Y	Y	Y	Y	Y	Y	Y
g) Generator	Y (1)	N	N	Y	Y	N	Y	Y (Owner)	Y (Owner)
7 SECURITY									
7.1 Warehouse Perimeter is secured	N	N	N	N	N	N	Y	Y	Y
7.2 Security personnel available (Number)	Y (4/24hr shift)	Y (3)1 per shift	Y	Y (2 per shift)	Y	Y (2per shift)	Y (6 per shift)	Y (3 per shift)	N
7.3 Closed circuit cameras available (Number & Location)	N	N	N	Y (NF)	N	N	Y (NF)	Y	N
7.4 Closed circuit monitor in a secure location and manned	N	N	N	Y (NF)	N	N	Y (NF)	Y	N
7.5 All entrance and exits manned and monitored	Y	N	Y	Y	N	Y	Y	Y	Y
7.6 Facility for conducting physical search of all personnel exiting the warehouse	Y (manual)	N	N	Y	Y	N	Y	Y	N
8 HUMAN RESOURCES									
8.1 Number of permanent staff & qualifications (attach CVs)	Y (10)	Y (4)	Y (2)	Y	Y (2)	N	Y	Y (10)	N
8.2 Number of non-permanent/contract staff	N	N	N	N	N	N	N	Y (5)	N
8.3 Availability of ad-hoc labor	Y	Y	Y	N	N	Y	Y	Y	Y
8.4 Availability of Organogram	Y	N	N	Y	N	N	Y	Y	N
8.5 Availability of clear job descriptions	Y	N	N	Y	Y	N	Y	Y	N

9 GENERAL WAREHOUSE OPERATIONS									
9.1 Warning and safety signage in good condition	N	N	N	N	N	N	Y	N	N
9.2 Procedure, operational guidelines & manuals are current and available	Y	N	N	Y	N	N	Y	Y	N
9.3 Warehouse free of food and drink	Y	Y	Y	Y	Y	N	Y	Y	Y
9.4 Is shelving secured correctly and in safe condition?	Y	N/A	N/A	Y	Y	N/A	Y	Y	N/A
9.5 Are shelving load weights known and followed? (maximum shelf weight)	Y	N/A	N	N/A	Y	N/A	Y	Y	N/A
9.6 Are max shelving heights known and maintained? (Measure)	N	N/A	N	N/A	Y	Y	Y	Y	N/A
9.7 Portable loading ramps can be secured and can safely support loads	N/A	N/A	N/A	N/A	N	N	Y	N	N/A
9.8 Loading dock edges are clearly marked and guarded	Y	N	N/A	N/A	Y	Y	N	N	N
9.9 Loading dock gates are closed when not in use	Y	N	Y	Y	N	Y	Y	N	Y
9.10 Are shelve vertical and horizontal beams colored? (record color)	Y	N/A	N/A	Y	Y	N/A	Y	Y	N/A
9.11 What is distance of shelve from wall? Measure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9.12 What is height of lowest shelve from floor?	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9.13 Are bins clearly marked & compare to WMIS?	N	N/A	N/A	Y	Y	N/A	Y	Y	N/A
10 WAREHOUSE MANAGEMENT INFORMATION SYSTEMS (WMIS)									
10.1 e-WMIS available and functional (view demonstration)	Y	N	N	Y	N	N	Y	Y	N
10.2 How many staff trained in use of WMIS?	ALL	N/A	N/A	ALL Tech	N/A	N/A	ALL Tech	7	N/A
10.3 Availability of WMIS tool?									
a) e-WMIS	Y	N/A	Y	Y	N	N	Y	Y	N
b) Manual bin/stock cards	N/A	N/A	Y	N	N	Y	N	N	Y
c) PODs	Y	Y	Y	Y	Y	Y	Y	Y	Y
d) Issues Voucher	Y	Y	Y	Y	Y	Y	Y	Y	Y
e) X	X	X	X	X	X	X	X	X	X

11 PLANT AND EQUIPMENT									
11.1 Area around plant clean	Y	N/A	N/A	Y	Y	N/A	Y	N/A	N/A
11.2 Access to plant is clear	Y	N/A	N/A	Y	Y	N/A	Y	N/A	N/A
11.3 Safe working instructions displayed close to plant	N	N/A	N/A	N	N	N/A	N	N/A	N/A
11.4 Plant locked or cannot be accessed when left unattended	N	N/A	N/A	Y	Y	N/A	Y	N/A	N/A
11.5 Plant and equipment maintained and in good condition (sight maintenance record)	N	N/A	N/A	Y	N/A	N/A	N	N/A	N/A
11.6 Emergency stops are working	Y	N/A	N/A	Y	Y	N/A	Y	N/A	N/A
11.7 Plant guard in place	Y	N/A	N/A	Y	Y	N/A	Y	N/A	N/A
12 FORKLIFTS AND OTHER TRANSPORTS									
12.1 What SOPs, guidelines or policies are available in the warehouse?									
a) WH SOP	Y	N	N	Y	N	N	Y	Y	N
b) Logistics SOP	Y	N	N	Y	N	N	Y	Y	N
c) MACS^{R} SOP	Y	N	N	Y	N	N	Y	Y	N
d) Guidelines for MACS^{R} Reporting	Y	N	N	Y	N	N	Y	Y	N
e) Ops Guideline for plant & equipment	Y	N	N	N	N	N	N	Y	N
f) X				X	X	X	X	X	X
g) X				X	X	X	X	X	X
13 WASTE DISPOSAL									
13.1 Availability of clearly marked waste disposal containers and schedule for disposal	N	N	N	Y	N	N	Y	N	Y
13.2 Waste generated from operations are stored outside the warehouse away from drains	Y	N/A	Y	Y	Y	N	Y	Y	Y
13.3 Spill kits are available	N	N	N/A	N	N	N/A	N	N	N/A
13.4 Waste disposal guidelines are available and clearly displayed	N	N	N	Y	N	N	N	N	N
13.5 Waste is evacuated and disposed regularly and hygienically	Y	N	Y	Y	Y	N/A	Y	Y	Y
14 COMMODITY WASTES & SPECIAL STORAGE									
14.1 Damaged, expired or controlled commodities	N	N	N/A	Y	N	N	N	Y	N/A

are correctly labelled and stored in secure, segregated and clearly marked area									
14.2 Entry is strictly controlled and documented (sight control record)	N	N	N/A	Y	N/A	N	N	Y	N/A
14.3 Expiries disposal tool available (sight)	N	N	N/A	N	N/A	N	Y	N	N/A

APPENDIX 2: RESPONSES ON WAREHOUSE MANAGEMENT AND OPERATIONS

ELEMENT	CMAM RESPONSE	REMARKS
SECTION A: ORGANIZATION AND STAFFING		
1. Do you have a unit dedicated to the HIV, Malaria & RH program logistics and supply chain function?	Y	CMAM is the center for medication and medical articles and is a directorate under the Ministry of Health (MISAU). There is a separate department for PSM in CMAM
2. If "YES "above is the logistic unit autonomous? Skip to question 4 if "NO"	Y	
3.Is there a budget line for the logistics unit	N	CMAM holds budget for Directorate
4. What percentage of the budget was expended in the last COP year or Financial Year?	NA	
5. Is there a strategic plan for logistic system?	Y	10-year plan developed
6. How many staffs are in the logistic unit?	>100	Including field location staff
7. Are all the personnel positions completely filled? If they are not filled, why not?	N	Shortages in every department because CMAM recently made Directorate with more responsibilities.
8. Is there a documented Job description for the staffs in the logistic unit?	Y	Departmental basis not individual.
9.Are the following functions performed by the logistic unit indicate with Y/N:		
a. Forecasting and quantification	Y	
b. Procurement	Y	
c. Warehousing	Y	
d. Distribution	**Y**	
e. Budgeting for logistics	Y	Only in MISAU
f. Staffing of logistics position	N	Only in MISAU
g. Supervision	Y	
h. Logistics staff development	Y	Department of training in CMAM & MISAU
10. Is there capacity development plan in place for the logistic unit staff?	Y	Development Partners support planning for capacity development
11. What percentage of your Staff has been trained in any Supply Chain course in the last 2 years?	NA	
12. Do the following activities have guidelines available:		

a. Forecasting and quantification	Y	
b. Procurement	Y	
c. Warehousing	Y	
d. Distribution	Y	
e. Budgeting for logistics	N	General for all CMAM.
f. Product selection	Y	
g. Staffing of logistics positions	**Y**	
13. Is there a Support and supervisory visits plan for the WH?	Y	Budgetary constraints affect implementation.
14. Are records of Support and Supervisory visits kept?	Y	Not available for sighting.
15. Is there performance appraisal system for logistics staff?	Y	Quarterly and annually.
16. Is there any reward system in place to motivate staff?	Y	
17. Is there an equipment maintenance schedule?	N	Formalization in progress.
18. Is there a budget for operations at the warehouses?	N	CMAM handles all procurement centrally.
19. Are the warehouses Team Leads in control of the budgets?	NA	
SECTION B: FORECASTING AND QUANTIFICATION		
1. Indicate which of the following information is used for Forecasting:		Data from health facilities are sent to districts and then to provinces.
• Dispensed to user data	Y	
• Issues data	Y	
• Stock on hand at all levels	Y	
• Demographic data /morbidity data	Y	
• Service statistics	Y	
2. What other factors do you consider when preparing forecasts?		Forecasting is based on distribution and gaps in commodity storage in WHs at lower levels. Supply is a pull system from HF, district, province and region
3. What is your program forecast period/cycle?	1 Year	
4. Are forecast and quantification reviewed periodically? If yes, how often?	Y	Quarterly
5. Is comparison made using different methods for each forecast/quantification exercise?	Y	2 methods used
6. How do you make or collect forecast assumption?		Discussion with different program

		unit
7. Is the forecast information shared with other stake holders?	Y	Development partners involved in forecasting.
8. Are forecast quantities validated by comparing with actual consumption? If yes, what is the absolute percentage variation in the last COP Year?	Y	NA – Variations in terms of service statistics mortality and morbidity data.
9. What tool do you use for forecasting and quantification?		Specific for each program area (Quanti-TB, PIPELINE etc.).
10. Has there been training for staff responsible for forecasting and quantification	Y	All departments involved in quantification in South Africa in 2015.
SECTION C: PROCUREMENT		
1. Is there a procurement committee?	Y	
2. If "YES" above what is the composition of the committee?		Pharmacy Dept. rep., Planning Dept. rep., Procurement Dept. rep., Finance/Admin Dept rep., etc.
3. Is there procurement plan in place?	Y	Not available for sighting.
4. Is the pipeline regularly monitored so procurement decisions are made based on evidence of program needs?	Y	
5. Is a supplier performance monitoring procedure in place?	Y	WHs responsible.
6. What is the Average lead time for the following commodities in your programs?		
• ARV international procurement	14 months	
• Anti-Malarials/RH drugs international procurement	14 months	
• Anti-Malarials/RH local procurement	Not regular	
• Lab Consumables and Surgical local procurement	NA	
• OIs international Procurement	14 months	
• OIs local procurement	NA	
7. Are procurement transactions subjected to due process?	Y	Could not be verified.
SECTION D: LMIS		
1. Do you have an LMIS in place?	Y	Province and district only. HF in progress.
2. In what format is the LMIS at various levels manual or electronic?	Both	Regional, Province, District & Central hospitals – electronic. Other HFs – manual.
3. Does the information system include the following?		
• Stock keeping records at all levels	Y	
• Requisitions or issues records at all levels	Y	
• Dispensed to user records at service delivery points	Y	
• Summaries of consumption (aggregated report) at central level	Y	
• Stock on hand	Y	

4. List the LMIS tools at the warehouses?		MACS^{R} – Electronic. Integrated with SIP (Procurement tool)
5. List the LMIS tools at the Health facilities (HF)?		Stock cards, PoDs, Requisition & Issues Form
6. Are all reports from facilities and warehouses submitted on time? If NO what is the percentage of facilities reporting on time? Provide reasons for late submission of reports	N	Inadequate staff numbers and staff capacity. Lack of IT infrastructure. Excessive workload and schedules.
7. What indicators related to logistics does the information system track? How often are the indicators tracked?	NA	
8. Which of the following decisions are based on the information system reports?		
• Forecasting	Y	
• Procurement	Y	
• Transport / delivery	Y	
• Scheduling supervisory visits?	Y	
• Inventory management	Y	
• How much to resupply	Y	
9. Is there any information feedback mechanism to lower levels?	Y	Briefs to lower levels as well as M&E feedback.
10. Are dispensed to user data or issues data checked against other data sources? If yes specify the data sources.	NA	
11. Are warehouse staffs trained on LMIS?	Y	Refresher trainings planned for 2016.
12. Is the LMIS harmonised with other IM systems?	Y	
13. Do you carry out periodic Data quality audits (DQA)?	Y	M&E department.

Key:

Y - Yes
N - No
NA - Not Applicable
HF - Health Facility
Yr - Year
PoD - Proof of Delivery

APPENDIX 3: SUMMARY RECOMMENDATIONS FOR WAREHOUSES IN NAMPULA, BEIRA, AND MAPUTO

	PROVINCE	NAMPULA				BEIRA			MAPUTO				REMARKS
S/N	RECOMMENDATION	RWH	DWH	RLLIN	PROPOSED Wing Koon	RWH	Wing Koon	RLLIN	CMAMZ	Adil	RLLIN	CMAM ADMIN	
IMMEDIATE (1 – 6 months)													
1.	Re-negotiate contract to include renovation of entire WH to correct flaws in the floors, walls and roofs of the buildings as well as repairs of electrical faults in the warehouses. Renovation should also include (but not limited to) painting, plumbing work, electrical work etc.	N	N	Y	Y	N	Y	Y	N	N*	Y	NA	*This warehouse is earmarked for takeover by CMAM so is N but this may become Y if CMAM is unable to takeover financial obligations for the WH
2.	Clean-up WHs and ensure continuously well maintained WH environment	Y	Y	Y	NA	Y	Y	Y	Y	Y	Y	NA	
3.	De-junk WHs and re-arrange commodities	Y	Y	Y	NA	Y	Y	Y	Y	Y	Y	NA	
4.	The status of insurance for stored commodities and the warehouse buildings should be verified and updated	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	
5.	Highly flammable commodities should be segregated from general storage and secured	NA	NA	NA	NA	NA	NA	NA	NA	Y	NA	NA	

6.	Procure and install temperature and humidity maintenance and monitoring equipment such as ACs, thermometers, hygrometers, etc.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	
7.	Carry out a chemical analysis of a sample of commodities stored in the WH to validate potency	Y	Y	Y	NA	Y	Y	Y	Y	Y	Y	NA	
8.	Commodities in both the Regional and District Medicines WHs should be relocated as a matter of urgency as there is great risk both to the quality and chemical stability of the commodities and the safety and health of personnel working in the warehouses.	Y	Y	NA	NA	NA	NA	NA	NA	NA	NA	NA	
9.	Unsafe WH practices such as the use of the WH as parking space for motorcycles, gas canisters and diesel should be discontinued immediately	NA	Y	NA	NA	NA	NA	NA	NA	Y	NA	NA	
10.	Develop a WH operations monitoring strategy which will include a plan for support & supervisory visits to monitor appropriate KPIs using a checklist. This will help to assess performance and compliance with standard warehousing practices	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
11.	Develop WH equipment maintenance schedule and contracts	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
12.	Inspection and servicing of all expired fire extinguishers in the	Y	Y	Y	NA	Y	Y	Y	Y	Y	Y	NA	

	WHs												
13.	Provision of adequate and appropriate lighting in the WHs	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	
SHORT TERM (6 – 18 months)													
1.	SOPs for good warehousing practices should be reviewed and updated, placed in WHs and all staff trained to use SOPs	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
2.	Train all WH staff in good warehousing practice as well as operational guidelines and ensure continuous retraining	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
3.	Carry out a comprehensive physical stock count to verify inventory of useable and non-useable commodities	Y	Y	Y	NA	Y	Y	Y	Y	Y	Y	NA	At the point of transition from SCMS-DELIVER to PSM
4.	Repair/replace/procure non-functional/damaged/obsolete/new CCTV equipment	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	
5.	Over crowed warehouses should be decongested to other WH space such as the LLIN warehouses.	Y	N	NA	NA	Y	Y	NA	Y	Y	NA	NA	
6.	Better arrangement of commodities on racks and on pallets using a floor plan system to enhance better space utilization	Y	Y	Y	NA	Y	Y	Y	Y	Y	Y	NA	
7.	Staff should be trained on emergency and safety procedures: use of fire extinguishers, emergency first aid etc.	Y	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y*	*Pool of Master Trainers should be developed to train continuously
8.	Transfer of pallets from WHs with excess to those with none or inadequate quantities	Y	Y	Y	NA	Y	Y	Y	Y	Y	Y	NA	
9.	Advocacy and training of CMAM	N	N	N	NA	N	N	N	N	N	N	Y	

	central staff on procurement and supply planning												
10.	Develop a supply and distribution vendor performance monitoring system and ensure strict monitoring and evaluation of implementation	Y	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	
11.	Procure/repair new/non-functional WH equipment such as inventory handling equipment, printers etc.	Y	Y	NA	Y	Y	Y	NA	Y	Y	NA	NA	
12.	Procurement of rack wire decks and correction of errors in installation of racks. (Width too narrow and pallets extend well beyond rack width)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	
13.	Procure appropriate safety and operational kits for all staff and visitors	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	
LONG TERM (18 months and beyond)													
1.	Provide petty cash for WH operations	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Advocacy required for implementation in CMAM WHs
2.	Install emergency, safety and warning signage, environmental health posters, etc.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	
3.	Consider installing IT equipment and e-WMIS (MACS^{R}) for better inventory management where none exist	NA	Y	Y	Y	NA	Y	Y	NA	NA	Y	NA	
4.	Installation of fire alarms and smoke detectors	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	

5.	Build/procure/repair and maintain cold storage facilities	NA	NA	NA	Y	Y	Y	NA	Y	Y	NA	NA	
6.	Recruit additional staff for WHs	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	

KEY:

Y = YES

N = NO

NA = NOT APPLICABLE

Wing Koon = WING KOON

APPENDIX 4: WAREHOUSE ASSESSMENT TOOL

WAREHOUSE ASSESSMENT TOOL FOR GLOBAL HEALTH SUPPLY CHAIN – PROCUREMENT AND SUPPLY MANAGEMENT (GHSC – PSM) MOZAMBIQUE.

FACILITY INFORMATION Date: _____

NAME OF FACILITY:	Location (Including Province, District, Municipality & Locality):

ASSESSED BY:

DATA COLLECTOR: (name and signature)	FACILITY MANAGEMENT REP (Name and Signature):

ELEMENT	Y/N/NA	COMMENTS
Y = Up to standard (adequate), N = Below standard (action required), NA = Not Applicable		
1 LAYOUT		
1.3 Area is tidy and well kept		
1.2 Adequate storage space is provided (Dimension)		
1.4 Floor is free of damage, level and clean		
1.4 Roof and ceiling is sealed and not leaking, with drainage?		
1.5 Aisles are sufficiently wide for vehicular traffic/personnel movement and clearly marked (Dimension)		
1.6 Staging (receiving, sorting packing, dispatch) Area available and adequate (Dimension)		
1.7 Building made of solid materials e.g. blocks, steel to keep out vermin, water & dust?		

ELEMENT	Y/N/NA	COMMENTS
Y = Up to standard (adequate), N = Below standard (action required), NA = Not Applicable		
1.8 Service entrance to warehouse is adequate? (at least 4m^2)		
1.9 Office space available? (Dimension)		
1.10 Space for storage of quarantined and damaged commodities available (dimension)		
1.11 Space for storage of restricted items available (dimension)		
Actions: (include person responsible and target completion date)		
2 ENVIRONMENT		
2.1 Lighting is adequate Min 4 of 3-4" Fluorescent tube bulbs/25m^2		
2.2 Lighting covers and fittings are secure		
2.3 Noise level is acceptable/adequately controlled		
2.4 Ventilation is adequate (sight air vents?)		
2.5 Are ACs provided? Type and No. available		
2.6 Are ACs connected to alterative Power source and Stabilizers? No & Type		
2.7 Is wiring within walls and above the ceiling or covered if on top of walls and below ceiling?		
2.8 Is temperature monitored and recorded? Number of thermometers & frequency (sight charts)		
2.9 Is humidity monitored and recorded? Number of hygrometers and frequency (sight charts)		
9.3 Pest Control:		
d) Has there ever been incidence of damage of commodities by Pests (rodents, reptiles and birds)?		
e) Is there a pest control plan in place? (sight)		
f) Type and frequency of implementation		
Actions: (include person responsible and target completion date)		

ELEMENT	Y/N/NA	COMMENTS
Y = Up to standard (adequate), N = Below standard (action required), NA = Not Applicable		
3 EMERGENCY PROCEDURES		
3.1 Written emergency guides/procedures are available and displayed visibly		
3.2 Fire extinguishers of appropriate type easily accessible and kept clear (Indicate Number)		
3.3 Tag on extinguishers have been checked in the last 6 months		
3.4 Sand buckets are available, visible and clearly marked (where used)		
3.5 Fire Alarm can be heard throughout the warehouse (if applicable)		
3.6 Escape routes are clearly marked and Emergency Assembly points pre-determined		
3.7 Emergency and hazard signage is clearly visible		
3.8 Evacuation/Emergency drills carried out? Sight reports if done		
3.9 Availability of functional smoke detectors (Number)		
3.10 Fire handling training conducted for staff? Sight certificates and training reports		
Actions: (include person responsible and target completion date)		
4 FIRST AID & SAFETY FACILITIES		
4.1 Kits accessible within 5 minutes		
4.2 Kits are stocked and contents are in-date		
4.3 Names and contacts of first aiders displayed		
4.4 Staff trained in basic first aid (sight certificates and training reports)		
4.5 Availability of the following safety clothing:		
g) Safety hard hats		
h) Safety boots		
i) Safety coats or overall		
j) Hand gloves		
k) Nose masks		
l) Fire blankets		
Actions: (include person responsible and target completion date)		

ELEMENT	Y/N/NA	COMMENTS
Y = Up to standard (adequate), N = Below standard (action required), NA = Not Applicable		
5 GENERAL FACILITIES		
5.1 Washing facilities are clean and functional		
5.2 Lockers or equivalent available for staff		
5.3 Eating areas clean, hygienic and adequately serviced		
5.4 Environmental Health & Safety posters and information is displayed		
Actions: (include person responsible and target completion date)		
6 MANUAL HANDLING AND ERGONOMICS		
6.1 Frequently used items are within easy access between knee and shoulder		
6.2 Heavy items stored at waist height		
6.3 Platform ladders are available to access items stored on higher shelves		
6.4 Trolleys are available for heavy items and loads		
6.5 Stored items adequately secured and stable		
6.6 Availability of the following equipment:		
h) Manual pallet jack (Number & functionality)		
i) Refrigerators (Number & functionality)		
j) Cold room (Number & functionality – CPD)		
k) Stainless steel trolleys		
l) Electronic stacker (CPD + PPD)		
m) Wooden pallets		
n) Generator		
Actions: (include person responsible and target completion date)		
7 SECURITY		
7.1 Warehouse Perimeter is secured		
7.2 Security personnel available (Number)		
7.3 Closed circuit cameras available (Number & Location)		

ELEMENT	Y/N/NA	COMMENTS
Y = Up to standard (adequate), N = Below standard (action required), NA = Not Applicable		
7.4 Closed circuit monitor in a secure location and manned		
7.5 All entrance and exits manned and monitored		
7.6 Facility for conducting physical search of all personnel exiting the warehouse		
Actions: (include person responsible and target completion date)		
8 HUMAN RESOURCES		
8.1 Number of permanent staff & qualifications (attach CVs)		
8.2 Number of non-permanent/contract staff		
8.3 Availability of ad-hoc labor		
8.4 Availability of Organogram		
8.5 Availability of clear job descriptions		
Actions: (include person responsible and target completion date)		
9 GENERAL WAREHOUSE OPERATIONS		
9.1 Warning and safety signage in good condition		
9.2 Procedure, operational guidelines & manuals are current and available		
9.3 Warehouse free of food and drink		
9.4 Is shelving secured correctly and in safe condition?		
9.5 Are shelving load weights known and followed? (maximum shelf weight)		
9.6 Are max shelving heights known and maintained? (Measure)		
9.7 Portable loading ramps can be secured and can safely support loads		
9.8 Loading dock edges are clearly marked and guarded		
9.9 Loading dock gates are closed when not in use		
9.10 Are shelve vertical and horizontal beams colored? (record color)		
9.11 What is distance of shelve from wall? Measure		
9.12 What is height of lowest shelve from floor?		
9.13 Are bins clearly marked & compare to WMIS?		
Actions: (include person responsible and target completion date)		

ELEMENT	Y/N/NA	COMMENTS
Y = Up to standard (adequate), N = Below standard (action required), NA = Not Applicable		
10 WAREHOUSE MANAGEMENT INFORMATION SYSTEMS (WMIS)		
10.1 e-WMIS available and functional (view demonstration)		
10.2 How many staff trained in use of WMIS?		
10.3 Availability of WMIS tool?		
f)		
g)		
h)		
i)		
j)		
Actions: (include person responsible and target completion date)		
11 PLANT AND EQUIPMENT		
11.1 Area around plant clean		
11.2 Access to plant is clear		
11.3 Safe working instructions displayed close to plant		
11.4 Plant locked or cannot be accessed when left unattended		
11.5 Plant and equipment maintained and in good condition (sight maintenance record)		
11.6 Emergency stops are working		
11.7 Plant guard in place		
Actions: (include person responsible and target completion date)		
12 FORKLIFTS AND OTHER TRANSPORTS		
12.1 What SOPs, guidelines or policies are available in the warehouse?		
h)		

ELEMENT	Y/N/NA	COMMENTS
Y = Up to standard (adequate), N = Below standard (action required), NA = Not Applicable		
i)		
j)		
k)		
l)		
m)		
n)		
Actions: (include person responsible and target completion date)		
13 WASTE DISPOSAL		
13.1 Availability of clearly marked waste disposal containers and schedule for disposal		
13.2 Waste generated from operations are stored outside the warehouse away from drains		
13.3 Spill kits are available		
13.4 Waste disposal guidelines are available and clearly displayed		
13.5 Waste is evacuated and disposed regularly and hygienically		
Actions: (include person responsible and target completion date)		
14 COMMODITY WASTES & SPECIAL STORAGE		
14.1 Damaged, expired or controlled commodities are correctly labelled and stored in secure, segregated and clearly marked area		
14.2 Entry is strictly controlled and documented (sight control record)		
14.3 Expiries disposal tool available (sight)		
14.4		
Actions: (include person responsible and target completion date)		

Other Comments:

General Recommendations:

APPENDIX 5: SUGGESTED TRAINING LIST

1. Warehouse Operations Management Course by RTT Scriptworx South Africa
2. Inventory Management Course: Institute for Supply Management Contact Information: www.ism.ws/contact/RequestForm.cfm?navItemNumber=4915
3. Warehousing Short Course by Georgia Tech, Supply Chain & Logistics Institute Georgia USA www.scl.gatech.edu/professional-education/certificates/
4. Quantification of Health Commodities; Eastern and Southern Africa Management Institute (ESAMI) Arusha Tanzania
5. Inventory & Logistics Management- Crown Agent **www.crownagents.com/training**
6. Logistics Management of Drugs and Medical Commodities (AMREF- Kenya) **www.amref.org**
7. Procurement & Supply Management of Essential Laboratory Commodities (LAB)**- i+** Solutions; http://www.iplussolutions.org/index.php?page_id=1&language=EN

APPENDIX 6: CENTRAL LEVEL ASSESSMENT TOOL

Assessment Tool for Global Health Supply Chain – Procurement and Supply Management (GHSC – PSM) Mozambique.

CENTRAL ADMINISTRATION INFORMATION Date: _____

NAME OF FACILITY:	Address (Including Province, District, Municipality, Locality & Street):

ASSESSED BY:

DATA COLLECTOR: (Name and Signature)	MANAGEMENT REP (Name, Position and Signature):

Confidentiality and Consent Statement:

This interview is part of the processes needed to complete the assessment of the Warehouse system for the GHSC – PSM program for Mozambique on behalf of Chemonics. The assessment is meant to aid in understanding the structure of the PSM at the Central level and provide some insight to the operations of the Warehouse and other PSM components. This will enable us make appropriate recommendations to optimize the performance of the Supply Chain that will ultimately result in the improvement of health outcomes and service delivery.

The purpose of this consultation is to gather information in order to promote better understanding of the supply chain and the process will involve review of documents to validate information provided. The information you will provide is very important and valuable in strengthening the capacity of GHSC – PSM Mozambique to ensure quality service delivery through uninterrupted supply of relevant health commodities for HIV/AIDS, Malaria and Reproductive Health clients.

You are therefore assured that the information provided by you is strictly confidential and will only be used for the aforementioned purpose.
Kindly confirm that you understand the purpose of this consultation and give consent by signing the consent form before we proceed.

Section A: Organisation and Management

Question	Response	Means of verification	Observation and comments
1. Do you have a unit dedicated to the HIV, Malaria & RH program logistics and supply chain function?	Yes ☐ ☐	Organogram	
2. If "YES "above is the logistic unit autonomous? **Skip to question 4 if "NO"**	Yes ☐ No ☐	Organogram	
3.Is there a budget line for the logistics unit	Yes ☐ No ☐	Budget or accounting code for the unit	
4. What percentage of the budget was expended in the last COP year or Financial Year?			
5. Is there a strategic plan for logistic system?	Yes ☐ No ☐	A strategic plan or work plan with strategic objectives (Time frame for the plan)	
6. How many staffs are in the logistic unit?		Include Logistics Unit staff stationed in the zone or facilitates	
7. Are all the personnel positions completely filled? If they are not filled, why not?	Yes ☐ No ☐		
8. Is there a documented Job description for the staffs in the logistic unit?	Yes ☐ No ☐	Samples of job description detailing roles and responsibility.	
9.Are the following functions performed by the logistic unit indicate with Y/N: i. Forecasting and quantification j. Procurement k. Warehousing l. Distribution m. Budgeting for logistics n. Staffing of logistics position o. Supervision	 Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐		

p. Logistics staff development	Yes ☐ No ☐		
10. Is there capacity development plan in place for the logistic unit staff?	Yes ☐ No ☐	Training schedule or plan	
11. What percentage of your Staff has been trained in any Supply Chain course in the last 2 years?			
12. Do the following activities have guidelines available: h. Forecasting and quantification i. Procurement j. Warehousing k. Distribution l. Budgeting for logistics m. Product selection n. Staffing of logistics positions	 Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐	Sight Copies of SOPs	
13. Is there a Support and supervisory visits plan for the WH?	Yes ☐ No ☐	Reports of EQA.	
14. Are records of Support and Supervisory visits kept?	Yes ☐ No ☐	Sight documented report	
15. Is there performance appraisal system for logistics staff?	Yes ☐ No ☐	Documented staff performance appraisal report.	
16. Is there any reward system in place to motivate staff?	Yes ☐ No ☐		
17. Is there an equipment maintenance schedule?	Yes ☐ No ☐	Documented maintenance schedule	
18. Is there a budget for operations at the warehouses?	Yes ☐ No ☐		
19. Are the warehouses Team Leads in control of the budgets?	Yes ☐ No ☐		
20.			

18. Give a list of Trainings that Staff have attended by staff in the last two years: **Training Title** **Date**

Section B: Forecasting and Quantification

Question	Response	Means of verification	Observation and comments
1. Indicate which of the following information is used for Forecasting: • Dispensed to user data • Issues data • Stock on hand at all levels • Demographic data /morbidity data • Service statistics	Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐		
2. What other factors do you consider when preparing forecasts?			
3. What is your program forecast period/cycle?			
4. Are forecast and quantification reviewed periodically? If yes, how often?	Yes ☐ No ☐ How often?	Documented change in forecast or forecast review meeting	
5. Is comparison made using different methods for each forecast/quantification exercise?	Yes ☐ No ☐	Documented process of last COP year forecast	
6. How do you make or collect forecast assumption?		Meeting with medical unit, review of LMIS data	
7. Is the forecast information shared with other stake holders?	Yes ☐ No ☐	Meeting notes or emails	

8. Are forecast quantities validated by comparing with actual consumption? If yes, what is the absolute percentage variation in the last COP Year?	Yes ☐ No ☐ Absolute percentage =		
9. What tool do you use for forecasting and quantification?			
10. Has there been training for staff responsible for forecasting and quantification	Yes ☐ No ☐		

Section C: Procurement

Question	Response	Means of verification	Observation and comments
1. Is there a procurement committee?	Yes ☐ No ☐	Meeting notes	
2. If "YES" above what is the composition of the committee?		List members of committee by their designation	
3. Is there procurement plan in place?	Yes ☐ No ☐	Sight Procurement Plan	
4. Is the pipeline regularly monitored so procurement decisions are made based on evidence of program needs?	Yes ☐ No ☐ How often?	Stock Status Report	
5. Is a supplier performance monitoring procedure in place? **Note; emphasis on product specification and delivery time**.	Yes ☐ No ☐	Reports on supplier performance.	
6. What is the Average lead time for the following commodities in your program? • ARV international procurement • Anti-Malarials/RH drugs international procurement • Anti-Malarials/RH local procurement			

• Lab Consumables and Surgical local procurement • OIs international Procurement • OIs local procurement			
7. Are procurement transactions subjected to due process?		Sight Procurement Guidelines and Minutes of the Procurement Committee	
8. Take me through the processes you went through to carry out the last procurement?			

Section D: Logistic Management Information System (LMIS)

Question	Responses	Means of verification	Observation and comments
1. Do you have an LMIS in place?	Yes ☐ No ☐	LMIS forms or software	
2. In what format is the LMIS at various levels manual or electronic?			
3. Does the information system include the following? • Stock keeping records at all levels • Requisitions or issues records at all levels • Dispensed to user records at service delivery points	Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐		

• Summaries of consumption (aggregated report) at central level • Stock on hand	Yes ☐ No ☐ Yes ☐ No ☐		
4. List the LMIS tools at the warehouses?		Check for availability in the warehouse	
5. List the LMIS tools at the Health facilities (HF)?		Check for availability in the health facilities.	
6. Are all reports from facilities and warehouses submitted on time? If NO what is the percentage of facilities reporting on time? Provide reasons for late submission of reports	Yes ☐ No ☐		
7. What indicators related to logistics does the information system track? How often are the indicators tracked?		Sight documented previous tracking from the information system	
8. Which of the following decisions are based on the information system reports? • Forecasting • Procurement	 Yes ☐ No ☐ Yes ☐ No ☐		

• Transport / delivery • Scheduling supervisory visits? • Inventory management • How much to resupply	Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐		
9. Is there any information feedback mechanism to lower levels?	Yes ☐ No ☐	Evidence of feedback	
10. Are dispensed to user data or issues data checked against other data sources? If yes specify the data sources.	Yes ☐ No ☐		
11. Are warehouse staffs trained on LMIS?	Yes ☐ No ☐	Training attendance or schedule	
12. Is the LMIS harmonised with other IM systems?	Yes ☐ No ☐	LMIS reports and forms	
13. Do you carry out periodic Data quality audits (DQA)?	Yes ☐ No ☐	Reports of DQA	

Section E: Training Needs of Staffs

Give a summary of training Needs of Staff:

Other Comments/Questions:

General Recommendations: