**Review of Implementation of Pharmaceutical-Grade Warehouse Infrastructure Development Projects**

October 2024

**Objectives:**

The objective is to verify end-to-end implementation of pharmaceutical grade warehouse infrastructure development projects and to identify circumstances and risks that may impact the success of a new warehouse implementation project.

**Scope of Review *[detailed scope to be agreed with the Country Team prior to commencing the review]*:**

1. Desktop review: This will form part of the initial baseline mapping for the project. LFA to review the available documentation including but not limited to site investigation, detailed functional planning, concept designs, cost estimates, procurement documents, construction specifications, maintenance plans and allocated operational human resources pertaining to the implementation of one or more warehouse facilities funded by the Global Fund. The desktop review also aims to identify and mitigate project risks and while establishing the need for value-added technical support to increase the probability of timely and on-budget construction.
2. Site visits: Visit to country requesting a new warehouse facility or where there is an existing facility, discussion with key supply chain staff responsible for warehouse management and supply chain management and walkthrough of warehouse facility to observe potential environmental and geographic constraints.

**Tasks:**

As part of the desktop review and visit to the site, answer the following questions to verify the proposed warehouse site characteristics, operational and implementation plans are in place.

The questions below cover the following sections, from which the Country Team can select to focus on their primary areas of need. Ideally for a first warehouse infrastructure assessment, the Country Team would select to cover all sections.

1. General Information – *should be filled out for all reviews*
2. Readiness – examines if in-country actors have sufficient level of readiness for implementation of warehouse infrastructure investments. Covers areas such as budget and planning, institutional and organizational capacity, national planning and baseline data, regulatory framework, guidance, and training and competence,
3. Monitoring – examines the high-level state of progress on the warehouse infrastructure investment and if it can be monitored
4. Effectiveness – examines current operations at existing facilities and if they are operating effectively (at the high-level)
5. **Warehouse infrastructure Investments – primary area of focus for the ToR –** examines if areas such as Studies and Site Assessments; Planning and Design; Construction, Installation, and Commissioning; and Operations have been adequately prepared and planned and helps to identify any key gaps.
6. Material Handling Equipment Specifications – examines material handling equipment plans for the warehouse and if they will be adequate and appropriate for the planned needs
7. **General Information**

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| Question | Response |
| 1. Project or Warehouse name:
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| 1. Location (city, address, coordinates):
 |  |
| 1. Names and contact information of key informants and staff responsible for supply chain management or facility operation
 |  |

1. **Readiness**

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| Question | Response |
| Budget and Planning |
| 1. Is the warehouse infrastructure investment in line with the national warehousing/supply chain management plan or strategy?
 |  |
| 1. Is the warehouse infrastructure investment in line with The Global Fund Technical Brief on “Evaluating and Planning for Pharmaceutical Grade Warehousing”[[1]](#footnote-2)?
 |  |
| 1. Is the warehouse infrastructure investment budget confirmed?
 |  |
| 1. Have the warehouse infrastructure investment budget and associated expected outcomes (i.e. construction, equipment procurement, etc.) been communicated to all relevant actors?
 |  |
| 1. Has a detailed costed budget plan been developed to indicate how the warehouse infrastructure investment will be spent? If yes, how appropriate and complete is it? If not, please state briefly the shortalls and how they could be addressed.
 |  |
| 1. Is the allocated budget sufficient for the planned warehouse infrastructure investments? If yes, how appropriate is it? If not, please state briefly the shortalls and how they could be addressed.
 |  |
| 1. Has budget been allocated for ongoing implementation support (i.e. equipment & facility operations and maintenance) beyond the expiration of GF allocated funding?
 |  |
| 1. Have the relevant government actors and stakeholders been identified and confirmed for decision making on the proposed warehouse infrastructure investment?
 |  |
| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate):*  |

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| Question | Response |
| Institutional and Organizational Capacity |
| 1. Is the PR solely responsible for the warehouse infrastructure investment implementation? If yes, do you consider this adequate? Are there any specific risks? If no, please state which other entity(ies) are assigned to manage/implement the investment.
 |  |
| 1. If it is not the PR managing the implementation, is the department/entity assigned to manage and implement the warehouse infrastructure investment appropriate?
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|  |  |
| 1. Is the PR actively engaged with governmental actors and stakeholders in implementing the warehouse infrastructure investment?
 |  |
| 1. Is there political support from governmental decision makers for the warehouse infrastructure investment?
 |  |
| 1. Does the PR (and/or the entity assigned to manage the investment) have sufficient resources and capacities to implement the warehouse infrastructure investment?
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| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate)*:  |

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| Question | Response |
| National Planning and Baseline Data |
| 1. Is there a national warehousing/supply chain management plan or strategy?
 |  |
| 1. Is the national warehousing/supply chain management plan or strategy up-to-date?
 |  |
| 1. Has an entity been assigned within the public sector to implement the warehousing/supply chain management plan or strategy?
 |  |
| 1. Is there a robust baseline dataset to support the warehousing/supply chain management plan or strategy?
 |  |
| 1. Is there an adequate system in place to monitor the implementation of the warehousing/supply chain management plan?
 |  |
| 1. Has a steering group or committee been set up at national level to assess progress and evaluate systematic improvement of warehouse infrastructure? If yes, are the relevant stakeholders part of the steering group/committee and does it meet regularly?
 |  |
| 1. Is there a complete inventory of in-country warehouses and/or designated storage facilities? Is being regularly kept up to date?
 |  |
| 1. Have any technical or situational assessments been conducted at national level in the last five years?
 |  |
| 1. Have any technical or situational assessments been conducted at sub-national level in the last five years?
 |  |
| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate)*:  |

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| Question | Response |
| Regulatory Framework |
| 1. Is there specific national level legislation and regulation for pharmaceutical grade warehouse infrastructure development and operations?
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| 1. Are the warehouse infrastructure development or operations legislation and regulations adequate (i.e. do they include all relevant aspects related to warehouse infrastructure, is it updated)?
 |  |
| 1. Is the regulatory framework readily enforced?
 |  |
| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate)*: |

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| Question | Response |
| Guidance |
| 1. Is the PR aware of and consistently adhere to the GF Technical Brief on Evaluating and Planning for Pharmaceutical-Grade Warehousing?
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|  |  |
| 1. Is the PR aware of other international pharmaceutical grade warehouse infrastructure development and supply chain management guidance, such as WHO’s good storage and distribution practices (GSDP) for medical products?
 |  |
| 1. Are there national technical guidelines and/or SOPs for pharmaceutical grade warehouse infrastructure development and supply chain management?
 |  |
| 1. Are the national guidelines and/or SOPs adequate?
 |  |
| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate)*: |

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| Question | Response |
| Training and Competence |
| 1. Is there a national training programme for pharmaceutical grade warehouse infrastructure operation and overall supply chain management?
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| 1. Are all staff operating pharmaceutical grade warehouse infrastructure sites appropriately trained in all aspects of warehouse management?
 |  |
| 1. Are all warehouse staff trained on storage, handing and segregation of warehouse materials?
 |  |
| 1. Do warehouse sites have sufficient numbers of managers responsible for pharmaceutical grade warehouse management?
 |  |
| 1. How well the warehouse managers provide oversight in terms of processes and tools used.
 |  |
| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate)*: |

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| **Summary comments Section B Readiness**, including specific observations/insights related to key risks/bottlenecks and how they could be addressed: |

1. **Monitoring**

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| Question | Response |
| 1. What is the progress of implementation of the investment/related activities compared to the plan? Are there any delays/bottlenecks? If yes, what are their root causes and how can they be addressed??
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|  |  |
| 1. Is the warehouse infrastructure investment budget regularly monitored and updated?
 |  |
| 1. Does the PR have sufficient resources and capacity to adequately monitor the status of the warehouse infrastructure investment?
 |  |
| 1. Is there a method and system in place to record supply chain performance data in the warehouse being analyzed?
 |  |
| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate)*: |

1. **Effectiveness**

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| Question | Response |
| Warehouse Operations |
| 1. Do the warehouses included in the review have delivery and distribution schedules and what is the frequency of those. Are they planned or ad-hoc?
 |  |
| 1. Are the warehouses included in the review adequately secured and only accessible by authorized staff, vendors, agents and contractors?
 |  |
| 1. Are the warehouses accessible by adequately sized roadways and transportation networks?
 |  |
| 1. Are the warehouse operations carried out by a formal entity or an appointed contractor? As feasible, please comment on the adequacy.
 |  |
| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate)*: |

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| Question | Response |
| Storage Type and Distribution |
| 1. Do the warehouses included in the review have the correct type and size of storage (cold store, freezer, secure, hazardous etc.) for the stock keeping units (SKUs) being stored?
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1. **Warehouse Infrastructure Investments**

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| Question | Response |
| Studies and Site Assessments |
| 1. Has a needs assessment been conducted to establish the type and size of the warehouse facility required? Is it adequate and up to date?
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| 1. Has land been allocated?
 |  |
| 1. Is the size and footprint of the allocated land sufficient?
 |  |
| 1. Has an adequate feasibility study or options appraisal been conducted for the proposed warehouse facility?
 |  |
| 1. Has an EIA or ESIA been conducted?
 |  |
| 1. Has a detailed site assessment been conducted to determine the suitability of the site?
 |  |
| 1. Have all applicable permits and licenses been obtained?
 |  |
| 1. Have all preliminary technical studies been conducted for the ancillary infrastructure and connections (e.g. wastewater, access, utility connections)?
 |  |
| 1. Has an access route to the proposed site been mapped out for the required vehicles and equipment during construction and future operations?
 |  |
| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate)*: |

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| Question | Response |
| Planning and Design |
| 1. Has the PR planning and design criteria for the infrastructure project the appropriate standards according to the relevant national and international guidelines, laws and legislation?
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| 1. Has the usage of space been adequately designed?
 |  |
| 1. Has a workflow and adjacency diagram been developed and approved?
 |  |
| 1. Has the site been identified and selected in compliance with the Global Fund’s [Procurement Policy](https://www.theglobalfund.org/media/6389/corporate_procurement_policy_en.pdf) as well as with the [Code of Conduct](https://www.theglobalfund.org/media/6011/corporate_codeofconductforrecipients_policy_en.pdf) and [Conflicts of Interest](https://www.theglobalfund.org/media/6016/core_ethicsandconflictofinterest_policy_en.pdf) policies ?￼
 |  |
| 1. Have all preliminary technical studies been conducted for the ancillary infrastructure and connections (e.g. wastewater, access, utility connections)?
 |  |
| 1. Has a technical review of the site conditions presented in the geotechnical report been completed by a suitably licensed professional structural engineer?
 |  |
| 1. Has a seismic analysis of the site been completed by a suitably licensed professional structural engineer?
 |  |
| 1. Has the building concept been presented and approved by the appropriate entities/authorities (type of building system and materials to be used)?
 |  |
| 1. Have the requirements for various types of climate-controlled storage and associated facilities been determined and confirmed with the end user?
 |  |
| 1. Has the type of climate control and ventilation system to be used at the facility been determined and confirmed with the end user?
 |  |
| 1. Has an electrical load analysis been calculated for proposed building operations and future capacity?
 |  |
| 1. Has the IT and security infrastructure been considered in the design and planning?
 |  |
| 1. Has the site access and loading bay been planned and designed for the types of vehicles required?
 |  |
| 1. Has the floor plan been designed for standardized access to storage systems?
 |  |
| 1. Has a life and fire safety plan been created for the facility?
 |  |
| 1. Has the electrical generator(s) been designed and sized to support the proposed building and future use?
 |  |
| 1. Has a solid waste management plan been developed for the proposed operations?
 |  |
| 1. Has the exterior building envelope materials and details been designed and specified to withstand current and future expected climate conditions?
 |  |
| 1. Has a security plan been created for the facility? i.e. perimeter walls, guard stations, exterior lights, electronic monitoring systems etc.
 |  |
| 1. Are the design and construction plans organized and prepared to meet local code and regulatory requirements / standards?
 |  |
| 1. Are provisions provided for the warehouse staff, including offices, lunch room, meeting room and toilets?
 |  |
| 1. Is the site grading and civil works designed to direct storm water away from critical areas around the warehouse?
 |  |
| 1. Has renewable energy been considered?
 |  |
| 1. Have material specifications been prepared and provided for procurement?
 |  |
| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate)*: |

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| Question | Response |
| Construction, Installation and Commissioning |
| 1. Has a construction programme been developed? If yes, how appropriate/adequate is it? If no, please state briefly the reasons/potential bottlenecks and how they could be addressed.
 |  |
| 1. Has a bill of materials been developed? If yes, how appropriate and complete is it?
 |  |
| 1. Has a bill of quantities been developed? If yes, how appropriate and complete is it?
 |  |
| 1. Has an entity or individual been appointed to oversee construction and management of sub-contractors? Please describe details of appointment (i.e. expected start date, duration, potential bottlenecks).
 |  |
| 1. Has a master construction schedule been developed? If yes, how appropriate/adequate is it? If no, please state briefly the reasons/potential bottlenecks and how they could be addressed.
 |  |
| 1. Has a procurement schedule been developed? If yes, how appropriate/adequate is it? If no, please state briefly the reasons/potential bottlenecks and how they could be addressed.
 |  |
| 1. Has a payment schedule been developed? If yes, how appropriate/adequate is it? If no, please state briefly the reasons/potential bottlenecks and how they could be addressed.
 |  |
| 1. Have the necessary supplier workshop drawings been developed and approved? If yes, how appropriate/adequate is it? If no, please state briefly the reasons/potential bottlenecks and how they could be addressed.
 |  |
| 1. Has a commissioning plan been developed? If yes, how appropriate/adequate is it? If no, please state briefly the reasons/potential bottlenecks and how they could be addressed.
 |  |
| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate)*: |

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| Question | Response |
| Operations |
| 1. Has budget been allocated for ongoing operations, training, and maintenance?
 |  |
| 1. Has an operator been appointed?
 |  |
| 1. Has an operation and maintenance plan been developed?
 |  |
| 1. Has a training plan been developed?
 |  |
| 1. Has the training plan been followed and implemented?
 |  |
| 1. Is the warehouse management technology operational?
 |  |
| 1. Are there any teething issues with operation that need to be resolved?
 |  |
| Comments *(Please provide any additional information to substantiate your responses above and/or highlight any particular issues/risks, as appropriate)*: |

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| **Summary comments Section E Warehouse Infrastructure Investments**, including specific observations/insights related to key risks/bottlenecks and how they could be addressed: |

1. **Material Handling Equipment Specifications**

Verify the specifications for the new material handling equipment (e.g. forklifts, pallet trucks etc.) and provide details on the adequacy/completeness, noting any shortcomings and required corrections, as needed.:

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| --- | --- |
| **Type/name of equipment** | **Please comment on the adequacy of the equipment, including the number of the machines for use in the warehouse** |
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**Additional elements of a warehouse infrastructure quality assurance and quality monitoring:**

1. Maintenance plans: Details of maintenance plans inclusive of the list of activities (routine and preventative)
* Verify that the PR is in contact with the party under contract to perform ongoing maintenance, and understands the terms of the maintenance contract
* Verify the adequacy of maintenance activities
1. Provide your analysis on the existence and adequacy of training plans for capacity building of the designated human resources for operation and maintenance of the warehouse facilities
* Verify that the training provided by the plant installer is adequate or if additional training is needed for technical staff. If yes, what are those needs?

**Deliverable(s):**

The report should address each of the points listed under the scope of review/list of tasks above, as per the Global Fund request, and supplemented by other relevant information. It should include without limitation:

1. A detailed description and analysis of issues/risks identified. The LFA should comment on the context and root causes of the issues identified, providing background information as necessary and prioritise the list of issues in an executive summary according to their significance.
2. The LFA should review the budget for the above elements to identify any gaps in the budget that could pose a risk to full implementation, commissioning, maintenance, and continued operation of the warehouse facility.
3. Recommendations for addressing issues identified. Recommendations should be:
* Detailed – with all the relevant information included
* Specific and contextualised
* Time-bound
* Prioritized based on the level of risk
* Identifying the main entity responsible for implementation

**Service Delivery**:

This review will be executed by the designated LFA PSM expert in close collaboration with a Civil Engineering expert, who will be accountable for the technical content of this report. S/he can be supported by other LFA team members in the planning and capture of the information as well as during the verification. The LoE for this task, including report writing, depends on which elements of the ToR and the number and location of service delivery sites included in the review, as agreed between the Global Fund country team and the LFA.

If the review identifies clear evidence of fraud, the LFA should use the Global Fund Communication Protocol to inform the Global Fund Secretariat and the OIG to allow evidence collection and other issues relevant to a possible criminal investigation.

1. Note: the link to the technical brief will be added in December 2024 when it is planned to be released. [↑](#footnote-ref-2)