

## TERMS OF REFERENCE

### SHORT TITLE OF ASSIGNMENT

Long Term Agreement for engagement of individual consultants for Cold Chain Equipment Maintenance Strategy Development, Temperature monitoring studies in Pacific Island Countries

### BACKGROUND

Over the past few years, substantial investments were made in immunization supply chain management, including cold chain strengthening, capacity development in vaccine forecasting and stock management, and logistics support across Pacific Island Countries (PICs). To take stock of the current status of vaccine management practices following these investments and further improve the supply chain performance, Effective Vaccine Management Assessment (EVMA) was conducted in 11 PICs in 2023/4.

EVMA results from Fiji, Vanuatu, Papua New Guinea, Tuvalu, Samoa, Tonga, Tuvalu, and Kiribati showed large variation among countries in all criteria at various stages of the supply chain (primary stores, sub-national, lowest distribution, and service points). However, on average, the EVM standard of 80% is not met for any criteria except for financial resources (86%). The strongest criteria under facility operations were storage and transport capacity (72%) and vaccine management (70%), while the weakest criteria were **maintenance and repair** (61%) and stock management (53%). On average, facility management criteria scored low overall, while annual work planning (37%) and performance monitoring (38%) were particularly weak. For input categories, financial resources (86%) and equipment (76%) were strongest, and by far the weakest was policies and procedures (31%). In terms of system indicators, the EVM standard of 80% was met for Quality (90%) (the vaccines in the supply chain were of good quality [not expired, VVM good, labels intact, etc.]). Efficiency was scored 74% (unopened vial wastage rates were greater than 1% in more than 20% of facilities). Availability (46%) was the weakest aspect of supply chain performance (many facilities did not receive sufficient vaccines to meet expected demand).

To deliver potent and effective vaccines, they should be kept at optimal temperatures along the supply chain from manufacturer to end user. Improperly maintained or outdated refrigeration equipment, poor compliance with cold-chain procedures, inadequate monitoring, and poor understanding of the dangers of vaccine freezing contribute to the weakness in the supply chain and delivery of potent vaccines to the beneficiaries. The EVMA in PICs recommended conducting a temperature monitoring study and mapping of the cold rooms for the national vaccine store. The WHO recommended that a temperature monitoring study be conducted once every three years.

The above findings show that, despite the significant strides made to improve immunisation supply chain including through the recent investments such as procurement and installation of cold chain equipment, there are still some gaps in evidence-informed management practices such as equipment maintenance, stock management, planning and monitoring, and standardisation of the procedures.

Developing resilient and well-functioning health systems requires strengthening each component of the supply chain, starting from a definition of need and ending with monitoring, evaluation, and learning. In this context, the UNICEF Pacific Multi-country Office is assisting the PICs in: i) developing a robust maintenance strategy/system for cold chain equipment; and ii) conducting a temperature monitoring study to ensure that vaccines, medicines, and other medical supplies are stored and transported in well-functioning equipment.

### OBJECTIVE / SCOPE OF WORK

The overall objective is to set up a Long-Term Agreement to facilitate and expedite the process by which UNICEF in Pacific will hire individual consultants as required in specific PICs to: a) provide technical assistance in developing a Cold Chain Equipment Management and Maintenance Strategy for Pacific Island Countries; b)

conducting a temperature monitoring studies in 9 countries (Fiji, Samoa, Kiribati, Tonga, Vanuatu, Tuvalu, FSM, RMI and Cook Islands).

The selected consultants will work closely with the Ministry of Health (MoH) in the respective countries, with overall guidance and technical support from UNICEF Pacific Multi-Country Office (MCO). More specifically, the assignment in each country includes:

### **Task category A – Cold Chain Management and Maintenance Strategy Development**

#### 1. Assessment of current state

- Conduct a comprehensive assessment of existing cold chain equipment, including refrigeration units, storage facilities, transport vehicles, and monitoring systems.
- Evaluate maintenance records, historical performance data, and operational practices to identify strengths, weaknesses, and areas for improvement including in terms of: i) organization and leadership; ii) procurement, safe decommissioning and disposal; iii) preventive maintenance and corrective maintenance system; iv) human resources; and v) asset management information system.
- An overview of the magnitude of non-functional cold chain equipment piled around the facilities and their implications on the environment on their disposal
- Conduct a quick review of existing medical equipment maintenance and management system and determine the feasibility of integrated cold chain / medical equipment maintenance and management system

#### 2. Risk Analysis

- Identify potential risks and failure points within the cold chain infrastructure, such as equipment malfunctions, temperature excursions, power outages, and logistical bottlenecks.
- Assess the potential impact of these risks on product quality, compliance, operational efficiency, and customer satisfaction.

#### 3. Based on the above assessment and analysis, draft a country-specific cold chain management and maintenance strategy, considering the following components:

##### i) Regulatory Compliance:

- Ensure alignment with relevant regulatory standards and guidelines governing the maintenance and operation of medical equipment including cold chain equipment.
- Incorporate regulatory requirements into the maintenance strategy to ensure legal compliance and minimize the risk of penalties or regulatory sanctions.

##### ii) Maintenance Objectives and Key Performance Indicators (KPIs):

- Establish clear maintenance objectives aligned with organizational goals, such as preserving product quality, minimizing downtime, reducing costs, and enhancing customer satisfaction.
- Define measurable KPIs to track the performance and effectiveness of the maintenance strategy, such as equipment uptime, mean time between failures (MTBF), mean time to repair (MTTR), and adherence to temperature thresholds.

##### iii) Preventive Maintenance Planning

- Develop a preventive maintenance schedule based on equipment manufacturer recommendations, industry best practices, and operational requirements.
- Schedule routine inspections, calibration, cleaning, and servicing of cold chain equipment to proactively identify and address potential issues before they escalate into failures.

##### iv) Predictive Maintenance Implementation

- Implement predictive maintenance techniques, such as condition monitoring, sensor-based diagnostics, and predictive analytics, to anticipate equipment failures and optimize maintenance schedules.
- Utilize real-time data from temperature sensors, IoT devices, and monitoring systems to detect anomalies, deviations, or early signs of equipment deterioration.

##### v) Training and Skill Development

- Plan for comprehensive training and skill development programs for maintenance personnel to ensure proficiency in troubleshooting, diagnosis, and repair of cold chain equipment.

- Mechanism to empower staff with the knowledge and tools necessary to perform their roles effectively to foster a culture of proactive maintenance and continuous improvement.
- vi) Documentation
- Establish robust documentation and record-keeping processes to maintain accurate logs of maintenance activities, equipment performance, repairs, and compliance audits.
  - Document standard operating procedures (SOPs), maintenance protocols, and troubleshooting guides to facilitate consistency and knowledge sharing among maintenance teams.
- vii) Continuous Improvement and Optimization
- Monitor and analyze maintenance performance metrics and KPIs to identify trends, patterns, and areas for optimization.
  - Regularly review and update the maintenance strategy based on feedback, lessons learned, technological advancements, and changes in operational requirements to drive continuous improvement and adaptation to evolving circumstances.

**Task category B – Temperature Monitoring Study**

1. Facilitate the temperature monitoring study which will follow the WHO Protocol (WHO/IVB/05.01) and UNICEF Temperature Monitoring Study Handbook, developed in 2015 to help immunization programs and consultants collect, analyze, and report temperature monitoring study data more easily. Temperatures will be continuously monitored as vaccines move through the cold chain from primary stores to outreach delivery sites.
  - Identification of the sites for study based on geographical, coverage, and other factors
  - Identification of study vaccine (Hep B and Td) to be included in study boxes
  - Preparation of monitoring sheet and instruction sheet to accompany study boxes
  - Preparation of study boxes
  - Orientation of staff at National Vaccine Stores
  - Planned orientation of staff at Sub National level, and Health Centre about the study
  - Focus interview of staff at all levels at the end of the study
  - Conduct the shake test to confirm the study results
  - Consolidate data and finalize the report, including findings at all levels, identify factors affecting quality of cold chain and recommendations.

ACTIVITIES, DELIVERABLES AND TIMELINES, PLUS BUDGET PER DELIVERABLE			
ACTIVITY	DELIVERABLES	TOTAL ESTIMATED TIME TO COMPLETE	PAYMENT
<b>Task category A – Cold Chain Management and Maintenance strategy development in each country</b>			
<b>Inception</b> Outline approaches to undertake the assignment with a work plan, including: <ul style="list-style-type: none"> <li>• Conduct a desk review of existing documents to assess Current State Proposal for remaining component of the assignment</li> <li>• Specify key milestones under each component and their expected timelines</li> <li>• Describe the methodology for stakeholder consultation and engagement</li> </ul>	<ul style="list-style-type: none"> <li>• Inception report with a work plan</li> </ul>		
<ul style="list-style-type: none"> <li>• Facilitate site visits and consultative meeting sessions for information gathering in a respective country</li> <li>• Develop a country-specific CCE management and maintenance strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Robust cold chain equipment management and maintenance strategy</li> <li>• PPT presentation of the strategy</li> </ul>		

<ul style="list-style-type: none"> <li>• Prepare and present the strategy to MoH and other relevant stakeholders for feedback.</li> <li>• Finalise the strategy, incorporating the stakeholder feedback.</li> </ul>			
<b>Total</b>			
<b>Task category B – Temperature Monitoring study (TMS) in each country</b>			
<b>Inception</b> <ul style="list-style-type: none"> <li>• Identify a steering committee including representation from the Ministry of Health, UNICEF, and other relevant stakeholders.</li> <li>• Define the TMS methodology</li> <li>• Develop an inception report including a work plan with timeframe</li> </ul>	<ul style="list-style-type: none"> <li>• Inception report (work plan and timeline) for each country</li> <li>• Temperature monitoring study protocol</li> </ul>		
<ul style="list-style-type: none"> <li>• Training of TMS site teams</li> </ul>	<ul style="list-style-type: none"> <li>• Training materials and</li> <li>• In Countries TMS training completed</li> <li>• Data collection tools ready</li> <li>• Site selection completed</li> </ul>		
<ul style="list-style-type: none"> <li>• Data collection for temperature mapping and temperature monitoring study</li> <li>• Presenting the study findings and debriefing</li> <li>• Completion of study report</li> </ul>	<ul style="list-style-type: none"> <li>• Preparing/downloading data (logger, monitoring form, etc.)</li> <li>• Slide deck for presentation and recommendations</li> <li>• Final insights report</li> <li>• 2–3-page summary report/advocacy brief for each Country</li> </ul>		
<b>Total</b>			

Note: Consultants are free to apply to one or both task categories based on their qualifications and experience. UNICEF will award LTA to top ranked 3-5 candidates under each task category. A candidate may be awarded LTA for one or more than one category.

#### **QUALIFICATIONS, SPECIALIZED EXPERIENCE, AND ADDITIONAL COMPETENCIES**

Bachelors  Masters  PhD  Other

Preferably Public Health, Epidemiology, Engineering, Supply chain, Public Health Policy, Global/International Health/ or other related fields

#### **Knowledge/Expertise/Skills required:**

The consultant tasked should have the following experiences and essential skills:

- At least eight years of experience, at the national and international levels, in supply chain management, cold chain management, logistics, equipment maintenance and management, or operations management, and experience in immunization/public health programmes.
- Experience in planning, procurement, installation, commissioning, maintenance, training, monitoring, risk assessment and boarding of medical equipment is preferable.
- Familiarity with cold chain systems, effective vaccine management, inventory policies, logistics, outsourcing, segmentation strategies, integration of health products, and other system design strategies.
- Demonstrated experience in conducting EVM assessments, development of equipment maintenance plans, and temperature monitoring study.
- Proven expertise in providing training, implementing, and monitoring immunization and/or health programs.

- Ability to work in a multidisciplinary team and have the initiative to work independently to meet deadlines.
- Strong interpersonal communication and writing skills, with the ability to lead/train a group of individuals and impart knowledge.
- Skills in adult training methodology are strongly preferred.
- Proficiency in English, verbal and in writing
- Computer skills, including quantitative analysis and reporting tools.

**Language:**

- Fluency in English is required, and knowledge of a local language would be an asset.

<b>CONDITIONS OF WORK AND CLARIFICATION ON SUPERVISION</b>
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**Management, Organization, and Timeframe:**

The Long Term Agreement (LTA) will be established under each task category for a period of 24 months with the possibility of renewal for a subsequent year on the same rates, terms and conditions, subject to satisfactory performance evaluation and continuing need for the service. The LTA to be signed will have a fixed fee rate for 24 months. However, UNICEF does not warrant that any quantity of services will be purchased during the term of the LTA as this will depend on the individual country needs.

Contracts created against the LTA: Whenever Cold chain maintenance and Temperature monitoring study consultancy services are required, details of the requirement/deliverables including quantities<sup>1</sup> and deadlines will be presented to the top-ranking LTA holder. Should this consultant not be available for this assignment, UNICEF will contact the second ranked consultant and so on. Upon receipt of confirmation of availability and interest in the assignment, a contract will be issued based on the unit prices/fees agreed in the LTA. The consultant must sign the contract prior to commencement of work.

Payment will be made after completion of deliverables and submission of invoices for the actual work completed, subject to satisfactory performance.

The consultant will be based in a target country, with occasional travel within the country. All costs related to the work will be included in the financial proposal and subsequent contract. Monitoring and overall supervision will be provided by the Cold Chain Specialist, UNICEF Pacific Multi-Country Office, in close collaboration with the Country focals. While in-country with UNICEF Field Office staff presence (Samoa, FSM, Kiribati, Solomon, Vanuatu), day-to-day supervision would be provided by the relevant UNICEF staff in-country.

**ADMINISTRATIVE ISSUES**

- Individuals engaged under a consultancy will not be considered “staff members” under the Staff Regulations and Rules of the United Nations and UNICEF’s policies and procedures and will not be entitled to benefits provided therein (such as leave entitlements and medical insurance coverage). Their conditions of service will be governed by their contract and the General Conditions of Contracts for the Services of Consultants. Consultants are responsible for determining their tax liabilities and for the payment of any taxes and/or duties, in accordance with local or other applicable laws.
- The selected candidate is solely responsible for ensuring that the visa (applicable) and health insurance required to perform the duties of the contract are valid for the entire period of the contract. Selected candidates are subject to confirmation of fully vaccinated status against SARS-CoV-2 (Covid-19) with a World Health Organization (WHO)-endorsed vaccine, which must be met prior to taking up the assignment. It does not apply to consultants who will work remotely and are not expected to work on or visit UNICEF premises, program delivery locations or directly interact with communities UNICEF works with, nor to travel to perform functions for UNICEF for the duration of their consultancy contracts. UNICEF offers reasonable accommodation for consultants with disabilities. This may include, for example, accessible software, travel assistance for missions or personal

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<sup>1</sup> Depending on MoH immediate needs, some deliverables may be dropped.

attendants. We encourage you to disclose your disability during your application in case you need reasonable accommodation during the selection process and afterward in your assignment.

- No contract may commence unless the contract is signed by both UNICEF and the consultant.
- Consultant will be required to complete mandatory online courses (e.g. Ethics, Prevention of Sexual Exploitation and Abuse and Security) upon receipt of the offer and before the signature of the contract.
- Deliverables that require payment within less than 30 days should be lumped together for ease of transaction.

*The below is to be included in the advert.*

**NOTE FOR CONSULTANTS:**

Please submit the following application documents:

- A cover letter explaining suitability for position
- Curriculum Vitae (CV)
- Technical proposal
- Financial offer in a separate attachment, stating a **lump sum amount for all the deliverables under each of the interested task category (per country)** with a break down for the following:
  - ✓ Daily fees– based on the deliverables in the Terms of Reference
  - ✓ Travel (economy air ticket where applicable to take up assignment if in country support is required, as well as any in country travel)
  - ✓ Living allowance for international consultant that will need to relocate to PICTs, for the duration of in-country assignment
  - ✓ Miscellaneous- to cover visa, health insurance (including medical evacuation for international consultants), communications, and other costs.