System Integrator
Market Outreach Session

18TH SEPTEMBER 2024

Contents:

Pakistan Meteorological Department

Introduction:

National Meteorological & Hydrological Service of Pakistan responsible for providing meteorological services throughout Pakistan to wide variety of interest and for numerous public activities and projects which require climatic information.

PMD's Services

- Meteorology
- Hydrology/Drought/Seismology
- Agro-Meteorology
- Aviation Meteorology
- Marine Meteorology
- Glaciology (Glacier Monitoring)
- Climatology/Astronomy
- Research and Development

Multi-Hazards Early Warning

- Heavy Rain Warning System
- Flood Early Warning System
- Earthquake & Tsunami Early Warning System
- Cyclone Early Warning System
- Heat Wave & Marine Early Warning System
- GLOF Early Warning System
- Drought Monitoring & Early Warning System
- Fog, Smog, Dust/Thunderstorm, Visibility Warning

Financing Arrangements of the Project

Financing Arrangement	
Financer	World Bank IDA, Credit No. 7333-PK
Project Title	Integrated Flood Resilience and Adaptation Project (IFRAP) Component-II: Strengthening Hydromet and Climate Services
Implementation Agency	PMD through Project Implementation Unit PIU-PMD
Project Duration	04 Years
Committed Financing by WB	US$ 40 million (Phase-I)

Overview of Project

Objective: Strengthen hydromet and climate services in Pakistan through technological modernization and capacity building.

Main Components:

- **Modernization of Hydromet Services**:
  - **Procurement & Installation**:
    - 300 Automatic Weather Stations (AWS), including 50 with Agromet sensors.
    - 5 Radars: 2 S-Band (Gwadar, Lahore), 2 C-Band (D.I. Khan, Cherat), 1 X-Band (Quetta).
    - 3 Mobile Radars: X-Band
    - High Performance Computing System (220TFLOP or higher) for Numerical Modelling and Improved Forecast
  - **Civil Works**:
    - Construction of radar towers, AWS installation structures and rehabilitation/construction of HPC Building
- **Institutional Strengthening & Capacity Building**:
  - Upgrading PMD's core infrastructure, including the Institute of Meteorology & Geophysics (IMG), Met. Workshop, and Climate Data Processing Centre (CDPC).
  - Transitioning to a service-oriented department with enhanced forecasting capabilities (public weather services, early warnings, agromet services).

Key Procurement and Implementation Areas

- **Automatic Weather Stations (AWS)**: 300 units, with 50 equipped for agrometeorology.
- **Radar Systems**:
  - **2 S-Band Radars**: For long-range weather surveillance (Gwadar, Lahore).
  - **2 C-Band Radars**: For medium-range precipitation tracking (D.I. Khan, Cherat).
  - **1 X-Band Radar**: For high-resolution, local-scale monitoring (Quetta).
  - **3 X-Band Mobile Radars**: Mobile deployment for enhanced flexibility in weather tracking.
- **High Performance Computing System**: 220 TFLOPS or higher
  - Procurement and implementation of an HPC system for enhanced weather predictions.
  - Data Assimilation: Integrating observations from multiple sources to improve forecast accuracy.
  - Data Center: Centralized infrastructure for storage, processing, and management of large-scale weather and climate data.
  - Prediction System: Use of HPC for real-time numerical weather predictions (NWP) and model simulations to enhance weather forecasting accuracy.

Scope of Consultancy & Procurement Process

Scope/Deliverables of SI Consultants

1. To assist PMD-PIU in procurement, installation, operationalization and integration of high-tech equipment (AWS, Radars, Hybrid Weather Computing-HWC).

2. To assist PMD-PIU in contract management in the role of project manager (as prescribed in Standard Bidding/Contract Documents of the World Bank) of high-tech procurements and related consultancies.

3. To assist PMD-PIU in resolution of claims and issues relating to related contracts.

4. Onsite supervision of Installations, Networking and Data Communication as per contract, Design and budget

5. To assist PMD-PIU for the procurement and establishment of Climate Data Management System.

6. To assist PMD-PIU in Environmental and social safeguard standards, preparation, Implementations and reporting.

Scope/Deliverables of SI Consultants (contd.)

System Integration:

- Assess PMD's existing technical and operational capacity.
- Design and integrate a modernized meteorological system, connecting AWS, radars, data storage, and processing systems.
- Ensure **data ingestion and processing** capabilities for real-time weather data from multiple sources (radars, satellites, AWS, manual observatories, etc.).

Operational Support:

- Support **weather, flood, and agromet forecasting** with an improved, impact-based system.
- Assist in developing advanced **Numerical Weather Prediction (NWP)** and risk-based forecasting models.
- Capacity building: Ensure the transfer of knowledge through training of PMD staff for sustained operations.

Scope/Deliverables (contd.)

Civil Works Oversight:

- Will act as Project Manager in terms of requirement of WB Standard Bidding Documents on the review/approval of design of civil works related to radar towers and AWS installations.
- Ensure compliance with WB's environmental and social safeguard standards.

Service Delivery Enhancement:

- Develop a service delivery platform for PMD's weather and climate information, enhancing end-user decision-making.
- Establish a business model for sustainable PMD operations and service delivery improvement.
- Ensure **long-term sustainability** through a business model that includes strategic partnerships and cost recovery mechanisms.

Qualifications and Experience

General Requirements of Consultant:

Extensive Sector Experience: Demonstrated experience in the hydro-meteorological sector, with deep knowledge of both technical and operational aspects.

Proven Expertise in System Design & Delivery: Hands-on involvement in the design, delivery, and operationalization of hydro-met systems, including hardware and software components.

Post-Implementation Support: Strong track record of providing post-implementation support, ensuring sustainability and continuous improvement of systems.

Advisory & Practical Contributions: Capable of providing both strategic advice and actionable, practical solutions to hydro-met modernization efforts.

Project Completion References: History of successful project completions, with roles in design, implementation, and post-implementation phases highlighted in the team's references.

Indicative Team Composition

1. **Team Leader:**
   Extensive experience in Project Management, IT, and hydro-met projects, with expertise in NMHS operations and WMO standards.
2. **Meteorological Observing Systems Expert:**
   Experienced in meteorological observing systems, including AWS, with strong knowledge of WMO guidelines.
3. **Meteorological & Agro-met Forecasting Systems Expert:**
   Expertise in forecasting systems, Decision Support Systems, Climate Advisory Services, and impact-based weather forecasting.
4. **Hydrological Forecasting Systems Expert:**
   Skilled in hydrological and flood forecasting systems, with experience in deploying & tunning the models.
5. **Climate Information System Expert:**
   Expert in developing climate information products and managing data flows, with knowledge of WMO Information System (WIS) requirements.

Additional Key Experts

6. **ICT Expert – Instrumentation Networking & Decision Support Systems:**
   Experienced in integrating meteorological instruments into networks, with expertise in GIS and international data standards.

7. **HPC and NWP Expert:**
   Extensive expertise in High-Performance Computing (HPC) and Numerical Weather Prediction (NWP), with a focus on data assimilation, forecast validation, and system improvement.

8. **Radar Expert:**
   Experienced in latest radar systems, installation, operationalization, and staff training.

9. **Marine Forecasting Expert:**
   Expertise in marine weather prediction, storm surge modeling, and coastal observation systems.

10. **National Consultant/Expert for Civil Works:**
    Skilled in overseeing civil engineering projects for meteorological infrastructure, ensuring quality, compliance, and design standards.

Method of Selection

- World Banks Quality & Cost Based Selection (QCBS) method will be adopted for selection of the SI Consultants
- Steps involved

Procurement: Steps / Tentative Timeline

S. No.	Activity	Proposed Date Range
i	Market Outreach Conference for refinement of TORs	18-Sep-24
ii	Invitation for EOI	01-Oct-24
iii	Short Listing of EOIs	05-Nov-24
iv	Issuance of RFP	20-Nov-24
v	Submission of Proposals	06-Jan-25
vi	Notification of Technical Qualified Firms	01-Feb-25
vii	Negotiations & Award of Contract	25-Mar-25
viii	Implementation Period	till Dec 2028

Q&A Session

THANKS