MALDIVES METEOROLOGICAL SERVICE (MMS)

Male' Republic of Maldives

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TERMS OF REFERENCE

Strengthening weather observation network of the Maldives Meteorological Service (MMS)

[04th April 2017]

Maldives Meteorological Service

Hulhule'

1. Introduction

The Government of Maldives, has received a grant from the Italian Government for the Project "Enhancing weather and climate monitoring and data management capacity of Maldives Meteorological Service (MMS) for reducing vulnerabilities of climate change in the Maldives" to the benefit of the Maldives Meteorological Service and Intends to use this grant to pay the successful bidder under the contract for the provision, supply, install and maintenance of 25 Automatic Weather Stations by restricting the invitation of bids to Italian Companies (registered to Italian Chamber of Commerce) or their associations (joint ventures or stable groups of companies or firms constituted pursuant to the Italian laws). And MMS seeks for the interested local parties (Maldivian) to join the eligible Italian companies as a joint venture to undertake this assignment.

2. Background

The Maldives is a low lying island nation in the Indian Ocean with a population of 341,256 (2014). The country consists of about 1190 islands and the population is distributed over approximately 197 inhabited islands. The country's main economic sectors are tourism and fisheries, both of which are extremely climate sensitive.

The challenges Maldives faces in the context of climate change and development are similar to other small island nations. These challenges include, but are not limited to, the low lying nature of the islands, high population density, high levels of poverty, and a dispersed geography. Because Maldives is a small low lying island nation, its vulnerability to climate change impacts and associated extreme weather events and disasters are significantly greater due to limited ecological, socio-economic, and technological capacities. Maldives' geography also makes communication difficult and transport expensive. Maldives' small, physically isolated economy is highly susceptible to global influences and shocks.

Continuous efforts are being undertaken to increase adaptation actions and opportunities, and to undertake low emission development. However, limited financial resources, capacity and technology remain as major challenges in addressing the impacts of climate change.

3. Scope of Works

The probable scope of the associated local party would mainly be but not limited to; arranging the needful logistics, providing a storage facility for the equipment's throughout the shipping process to its locations, providing the essential technical knowledge, undertake the civil works and being the focal point from Maldives on the communication loop and other services agreed through the joint venture. The final scope of works for the local contractor will be determined based on the joint venture agreement between the Italian company and the local party.

The Scope of the Main Assignment (Installation of weather stations) are;

The supply will include installation and maintenance of the full system. The supply shall be a "turn-key system", perfectly operational and working in all its components.

The AWSs (Automatic Weather Stations) will measure the following parameters: air temperature, relative humidity, air pressure, wind direction and speed, cumulative rain and rain intensity etc.

The AWSs must be powered by a solar panel system with battery backup. The sizing of the solar panel system with backup battery will ensure proper operation of the stations in the total absence of sunshine for at least 07 days.

Considering the purposes of the present network (early warning), thus the need of a fully reliable system under the worse climatic conditions, each AWSs will transmit data through GPRS network.
Stations must in any case allow local access to the data and the main configuration parameters through the connection to a portable PC. It is also necessary that the stations are remotely accessible via WEB by the mean of the most common internet browser, in order to visualize data and to configure data logger and sensor parameters.
In consideration of the importance of the monitoring system also for early warning, it is necessary that the operation of the equipment is guaranteed 24 hours per day and in any environment conditions through the use of components subjected to rigorous testing in the factory and designed for harsh environmental conditions, advanced logic of the communication modules management and data recovery, appropriate sizing of secondary power systems and different methods of storing data locally for at least 12 months.
All electronic components of the stations should be protected and enclosed in containers made up of materials resistant to corrosion. For this reason, it's recommended to protect the station with a double enclosure, first one for with at least IP65 protection for the data logger and data transmission system, the outer one for data logger, battery, and cables.
The main tower must be 10 meters in height to allow the installation of the wind sensor at a height suggested by WMO and at the same time to allow the operator to easily access to the sensors, without ever interrupting the station's functionality. The rain gauge must be installed in a separate mast at 2m height, as recommended by WMO.
All electronic components must be designed to fully meet all standard requirements for the measurement of meteorological parameters as well as regulations of the World Meteorological Organization (WMO). Moreover, the stations installation and setup should follow the guidelines suggested by the World Meteorological Organization in order to ensure the significance of the measures. The technical features of sensors provided cannot be less than those required by the WMO8 manual.
Control Centers are the brain of the environmental monitoring system. Their role is to manage stations, to collect data and to distribute the data acquired to the operators.
The stations have to transmit the data to a control center. The infrastructure of the control center will be made up of hardware and software systems for data acquisition, storage, SQL database, real-time visualization, displaying time series of original and summary data (hourly, daily, weekly, monthly, annual, statistical indicators), reporting for the generation, management and generation of alarms to the exceeding of thresholds configurable from the center, access to the database from fixed locations and web in addition to the supervision and remote control of the entire network monitoring system. The Central should be the real brains of the monitoring system, as it not only receives the monitoring data and makes them available to users, but allows the use and configuration of all devices in the field through the use of simple and user-friendly interfaces.
A database will ensure the uniformity of data management and should automatically merge both real-time and historical data. SQL (Structured Query Language) shall be used for retrieval and management of data in relational database. It shall be possible to unify (merging) the new data base with the one existing, in order to obtain a unique complete database where all software and application can store and upload data.

The hydrological and meteorological monitoring networks must be considered as Information and Communication Technology Products, "integrated with ICT systems to be able to provide reliable information that is of vital importance to preserve human lives and livelihoods with high efficiency" (WMO Executive Council, 66th Session, article 4.6.34, June 2014). The hydrological information system consists of the acquisition (meteorological and hydrological real-time monitoring), transmission and processing (data management and analysis). The supply of hydrological and meteorological monitoring system, is intended as perfectly operational and working in all its components (hardware, software, services), and compatible with existing infrastructures and software platforms.

The contractor is expected to perform all civil works required for the installation of AWS in the chosen islands. Civil works on site includes; perimeter cleaning and preparation, perimeter fencing, concrete foundation works for 10-meter mast, mast installation, equipment installation etc.)
After the commissioning and acceptance of the installation of all 25 AWS, MMS requires the contractor to conduct training program for MMS staff. This training shall be aimed for two areas; 1) ICT and Engineering Staff training for system maintenance and troubleshooting. 2) Operational training for meteorological observers and forecasters on effectively using the software for the collection, analysis and management of data.

4. Project Team

The following staff shall be employed in team as detailed below;

#	**Post**	**No**
1	Project Manager (Team leader)	1
2	Site Supervisor	1
3	Logistics manager / Administrative Manager	1

4.1 Qualifications of the team

The key personals should submit full CV's for each of the proposed staff members highlighting the criteria given below.

a. Project Manager

Project Manager should have at least 05 years' experience in project management, along with specific experience in the field of logistical operations or environmental consultancy with a background of civil works. Tertiary certification will be an added advantage. Project manager shall be fluent in both written and spoken English with Divehi.

b. Site Supervisor

Minimum 05 years' specific experience in supervising and managing the civil works. Should have a clear understanding of the specific assignment and be able to evaluate / supervise the quality of the works with the reflection of proposed scope. Additional certification to the related field will be an added advantage.

c. Logistics manager / Administrative Manager

The logistics / Administrative manager should have a minimum of 05 years' experience in logistics / Administrative management. The logistics / Administrative manager shall be fluent in both written and spoken English with Divehi.

5. Selection criteria

The following criteria's will be applied during the evaluation of the proposals and attention should be paid while preparing the proposals.

	Points
(A) Company Profile:	**[100]**
No. of similar projects/assignments	[40]
Organizational Structure	[40]
Financial Capacity	[20]
Total A =	[ ]

Note:

- Scoring weightage under "No. of similar projects/assignments" will be awarded 10 for each similar project
- Maximum score for the financial capacity will be awarded to the parties who proves their experience above the ceiling of 2,000,000 MVR
- Financial Capacity will be evaluated with reference to the work completed letters of past 03 years, submitted with the profile.

(B) Project Team	**[100]**
Project Manager	[40]
Site Supervisor	[30]
Logistics Manager / Administrative Manager	[30]
Total B	[ ]

Score (St) = A/100*[W1] + B/100*[W2]

Weights Distribution

W1	Company Profile with relevance to similar or related assignments	**[60]**
W2	Project Team	**[40]**

- The Minimal qualification score for this assignment would be ≥ (greater than equal to) 50. But the evaluation committee has the authorization to qualify the proposals scored below the ceiling by reflecting to the submitted documents and it's weightage to the referred assignment with the proper justification.