



## Solomon Islands Wind Monitoring and Resource Assessment Project

### Request for Quotation (RFQ) for the Supply and Transport of four Complete Wind Monitoring Systems, Installation and Preliminary Commissioning and Required Training in Operation and Maintenance

#### 1. BACKGROUND

The Pacific Islands Greenhouse Gas Abatement through Renewable Energy Project (PIGGAREP) is a regional climate change mitigation project that is funded by the Global Environment Facility (GEF). The project includes eleven Pacific Island Countries (PIC) with the United Nations Development Programme (UNDP) as the GEF Implementing Agency and the Secretariat of the Pacific Regional Environment Programme (SPREP) as the Implementing Partner. The global environment and development goal of PIGGAREP is the reduction of the growth rate of greenhouse gas (GHG) emissions from fossil fuel use in the PICs through the removal of the barriers to the widespread and cost effective use of feasible renewable energy (RE) technologies. The specific objective of the project is the promotion of the productive use of RE to reduce GHG emission by removing the major barriers to the widespread and cost-effective use of commercially viable RE technologies (RETs). PIGGAREP consists of various activities whose outputs will contribute to the removal of the major barriers to the widespread utilization of RE technologies (RETs). The project is expected to bring about in the PICs: (1) Increased number of successful commercial RE applications; (2) Expanded market for RET applications; (3) Enhanced institutional capacity to design, implement and monitor RE projects; (4) Availability and accessibility of financing to existing and new RE projects; (5) Strengthened legal and regulatory structures in the energy and environmental sectors; and, (6) Increased awareness and knowledge on RE and RETs among key stakeholders.

The Solomon Islands Wind Resource Monitoring and Resource Assessment Project is one of the PIGGAREP supported initiatives in the Solomon Islands via the Energy Division of the Ministry of Mines, Energy and Rural Electrification. The possible provision of clean and sustainable energy from wind power has been the driving force for this project however until now in the Solomon Islands wind power data have not been collected and analysed according to international standards. Overall this project will procure, install, and operate four (4) wind-monitoring stations and after at least one year with successful minimum data recovery rates analyse the data and assess the wind resource potential. The expected main outcome is that site-specific wind energy potential on the identified four (4) locations and the general wind energy potential for Solomon Islands have been assessed. A first step as part of this project is the supply and transport of four (4) wind-monitoring systems as well as technical expertise with regard to installation and preliminary commissioning and provision of required training of relevant personnel in appropriate operation and maintenance.

#### 2. OBJECTIVES

The objectives of the required work are:

- a) To supply and transport to Kirakira, Buala, Rennel and Taro respectively one complete wind monitoring station;
- b) To be responsible for installation;
- c) To undertake preliminary commissioning; and,
- d) To provide needed training for operation and maintenance personnel.

### **3. REQUEST FOR QUOTATION (RFQ) <sup>1</sup>**

Quotations are kindly requested from parties that are willing and able to undertake the services outlined in the Terms of Reference (ToR) in Annex I and supply the goods outlined in the Specifications for Complete Wind Resource Monitoring Systems in Annex II.

### **4. INSTRUCTIONS TO THE BIDDERS**

- a) The quotation must cover all the objectives, outputs and activities as specified in the ToR;
- b) The quotation must include costs for professional fees, travel and per diem;
- c) Pricing is to be done on a duty & VAT exclusive basis;
- d) US\$ only must be used in the quotation;
- e) The quotation must include: i) an updated CV of the individual/s who will undertake the assignment; ii) a summary of recent work in the areas to be covered in this assignment (including client and work produced); iii) information on availability; iv) total person days proposed for the work and daily rate in US\$; and v) a methodology and work plan (maximum 10 pages);
- f) Bidders are encouraged to include local Solomon Islands labor/expertise;
- g) The offer must be in the English language only;
- h) The above-mentioned documents, information and requirements are mandatory and as such are required to form a complete tender. An offer will be rejected unless it is substantially responsive;
- i) If the quotation is received prior to the formal submission date corrections/modifications can be made up to that date;
- j) The quotation must be submitted in electronic format only (Word and PDF format, two (2) MB max) by email to the three e-mail address specified below;
- k) The exact number of working days will be determined subsequently between the successful Contractor, the Government of the Solomon Islands and SPREP;
- l) The final working plan will be determined subsequently between the successful Contractor, the Government of the Solomon Islands and SPREP; and,
- m) Acknowledgements of the receipt of proposals will be provided by e-mail. Successful as well as unsuccessful offerors will be informed by e-mail once the evaluation and selection process are completed.

### **5. EVALUATION CRITERIA**

The following evaluation criteria will be applied when selecting the successful Contractor:

- a) Price - (40%);
- b) Significant practical working experience with supply, transport, installation, supervision installation, operation, maintenance, training, monitoring, and verification (including inspection and testing) of wind monitoring systems- (35%);
- c) Significant working experience in Pacific Island Countries and/or other developing countries - (15%);
- d) Quality and soundness of the preliminary proposed overall technical approach and work plan - (10%)

### **6. SUBMISSION DATE**

Deadline for the submission of offers is 5 pm, Wednesday 9<sup>th</sup> March 2011, Samoa time.

### **7. CONTACT INFORMATION**

All quotations must be addressed to:

The Director  
SPREP  
Email: [sprep@sprep.org](mailto:sprep@sprep.org)

And copied to the following email addresses:

Mr. Gabriel Aimaea  
Deputy Director (Ag) Energy Division  
Ministry of Mines, Energy and Rural Electrification  
Government of the Solomon Islands  
E-mail: [bushboi19@gmail.com](mailto:bushboi19@gmail.com)

Mr. Nixon Kua  
PIGGAREP Project Manager (Ag)  
SPREP  
Email: [nixonk@sprep.org](mailto:nixonk@sprep.org)

# **ANNEX I**

## **TERMS OF REFERENCE**

### **1. INTRODUCTION**

The Solomon Islands Wind Resource Monitoring and Resource Assessment Project is one of the PIGGAREP supported initiatives in the Solomon Islands via the Energy Division of the Ministry of Mines, Energy and Rural Electrification. The possible provision of clean and sustainable energy from wind power has been the driving force for this project however until now in the Solomon Islands wind power data have not been collected and analysed according to international standards. Overall this project will procure, install, and operate four (4) wind-monitoring stations and after at least one year with successful minimum data recovery rates analyse the data and assess the wind resource potential. The expected main outcome is that site-specific wind energy potential on the identified four (4) locations and the general wind energy potential for Solomon Islands have been assessed. A first step as part of this project is the supply and transport of four (4) wind-monitoring systems as well as technical expertise with regard to installation and preliminary commissioning and provision of required training of relevant personnel in appropriate operation and maintenance.

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### **3. OUTPUTS**

- a) Inception Note;
- b) De-briefing Note;
- c) Installation report;
- d) Preliminary commissioning checklist;
- e) Operation and Maintenance plan;
- f) System documentation compilation; and,
- g) Training report.

### **4. ACTIVITIES**

The scope of work for the consultancy will include, but not necessarily be limited to, the following activities:

#### **REGARDING INCEPTION NOTE:**

- a) Study and review relevant background material; and,
- b) Write-up an inception note comprising:
  - a) The successful Contractors understanding of the consultancy and associated tasks;
  - b) The proposed detailed technical approach;
  - c) Identification of issues crucial to the viability of the consultancy; and
  - d) Detailed comments on this TOR. Subsequently, if required and approved by Government of the Solomon Islands and SPREP the activities can be elaborated, modified, etc.

#### **REGARDING DE-BRIEFING NOTE:**

- a) Prepare debriefing note, based on preliminary findings, conclusions and recommendations and,
- b) Discuss preliminary draft debriefing note with appropriate personnel Solomon Islands, respectively. Prepare minutes of the meetings.

#### **REGARDING INSTALLATION REPORT:**

- a) Supervise installation preparations including:

- 1) Inspect the proposed four sites in Solomon Islands;
  - 2) Recommend further preparations if necessary at the proposed sites;
  - 3) Inspect the contents of the boxes as arrived through sea and/or air freight, compare with the relevant packing list/bill of landing and record any discrepancies;
  - 4) Inspect items and record damage to these if any; and
  - 5) Prepare a list of any additional materials needed for installation;
- b) Undertake installation on-site and ensure such is undertaken as specified in the instructions and recommendations of the particular equipment manufacturers; and,
- c) Ensure that all four installations conform to relevant national codes such as building and civil aviation codes. In areas where no national standards exist, ensure that installations conform to reasonable international practices for such installations.

**REGARDING PRELIMINARY COMMISSIONING CHECKLIST:**

- a) Undertake needed tests and assess operational conditions of all equipment and accessories at the four sites. Test individual equipment in accordance with manufacturer's recommendations and log the test methods and the resulting data;
- b) Log each site with regard to exact location via GPS and pictures, special circumstances, etc;
- c) Undertake preliminary commissioning, i.e. thorough checking out, setting to work, debugging, adjustment, and functional and performance testing of all equipment to ensure it operates as planned and in accordance with the design specifications; and,
- d) Prepare and record a preliminary commissioning checklist to be co-signed on-site by consultant and designated national representative respectively.

**REGARDING OPERATION AND MAINTENANCE PLAN:**

Outline station operation and maintenance. This should include:

- 1) On-site inspection schedule for e.g. periodic calibration, preventive maintenance (e.g. functional checks) and on-site visual inspections;
- 2) Operation and maintenance procedures that incorporate various quality control and quality assurance measures and provides procedural guidelines for all program personnel to be specified in a simple Operation and Maintenance Plan;
- 3) Prepared a standardized and simple Site Visit Checklist to be used by the field technician(s); and
- 4) Outline data collection and handling. This will include:
  - i) Raw data storage;
  - ii) Data retrieval;
  - iii) Data retrieval frequency;
  - iv) Data protection and storage including computer hardware and data handling procedures such as backup frequency and scope; and
  - v) Documentation – e.g. detailed database related records to be included in a Site Data File Log or similar, which serves as the master raw data file for the sites. In general, these procedures should comply with those specified by the data logger manufacturer.

**REGARDING SYSTEM DOCUMENTATION COMPILATION:**

Compile and supply the users and owners with system documentation including:

- 1) List of equipment supplied and installed;
- 2) System performance guarantees;
- 3) Operating instructions for system and components;
- 4) Operation and Maintenance Plan;
- 5) Preliminary commissioning records including checklists;
- 6) Warranty information;
- 7) Equipment manufacturers documentation and handbooks; and
- 8) Maintenance logbooks.

#### REGARDING TRAINING REPORT:

- a) Assess the current staff capacity and capability in the Energy Division and Meteorology Division, Government of the Solomon Islands;
- b) Where required refresh, upgrade or provide needed training for relevant personnel in detailed operation, maintenance, and faultfinding of the wind monitoring systems;
- c) Train according to recommendations of the particular equipment manufacturer, international standard practices and/or appropriate resource books;
- d) Train as a minimum to be able to undertake the following overall maintenance tasks:
  - 1) Every part of the system is checked for correct operation, cleanliness, and good connections;
  - 2) Components that are not in good conditions are repaired or replaced;
  - 3) The system is checked to make sure that no unauthorised changes have been made;
  - 4) A record is made of any actions taken during the maintenance visit; and,
  - 5) Train in data analysis to observe/detect faulty components or problems with data gathering.
- e) Concerning recording and reporting train in the following among others:
  - 1) Maintaining log including at the very least, a notebook with: i) the date of each maintenance visit; ii) the name of the technician; iii) A brief description of the scope of the maintenance; and iv) anything unusual that was observed;
  - 2) 'Readings' log;
  - 3) Repair and change records. If components are replaced or changed (whether because of failure or in order to modify the system) the manufacturer, model and serial number of each component should be added to the component list. Any components that have been replaced should be crossed off the component list and any changes to the as-built plan should be kept in file and updated when changes are made to the installation;
  - 4) Follow checklists and troubleshooting guides; and
  - 5) Consistently report abnormalities to supervisor; and,
- f) If possible (e.g. practical) train personnel before installations begin to allow them to better understand the system during its installation.

#### 5. REPORTING REQUIREMENTS

No	Deliverables	Deadline
1.	Draft Inception Note	To be proposed as part of the work-plan that is to be submitted as part of the quotation
2.	Final Inception Note	The same as above
3.	Draft De-briefing Note	The same as above
4.	Final De-briefing Note	The same as above
5.	Draft Installation Report	The same as above
6.	Final Installation Report	The same as above
7.	Draft Preliminary Commissioning Checklist	The same as above
8.	Final Preliminary Commissioning Checklist	The same as above
9.	Draft Operation and Maintenance Plan	The same as above
10.	Final Operation and Maintenance Plan	The same as above
11.	System Documentation Compilation	The same as above
12.	Draft Training Report	The same as above
13.	Final Training Report	The same as above

Concerning reporting requirements it should be noted:

- a) All draft documents should be in Microsoft Word and all final documents in Adobe Acrobat format; and
- b) All documents must have no restriction in access.

## 6. INPUTS

Entity	Input
Energy Division, Ministry of Mines, Energy and Rural Electrification	<ul style="list-style-type: none"> <li>a) Ensure that all key national and local stakeholders are duly informed about the purpose of the wind measurement masts</li> <li>b) Ensure that the appropriate land-use agreement(s) have been signed with the relevant land-owners for a period of at least two (2) years</li> <li>c) Assist if required with acquiring Development Consent or similar;</li> <li>d) If required make available storage space for the wind assessment equipment between arrival in Honiara and installation</li> <li>e) Carry out or contract out land preparations as required;</li> <li>f) Install or contract out security fence for each of the four sites;</li> <li>g) Make available technical staff to attend training and assist with the installation of the wind measurement equipment;</li> <li>h) Provide consultant with copies of relevant documentary sources; and,</li> <li>i) Provide input on all the draft documents.</li> </ul>
PIGGAREP PMO, SPREP	<ul style="list-style-type: none"> <li>a) Organise the consultancy;</li> <li>b) Fund the consultancy via UNDP/GEF resources;</li> <li>c) If required provide assistance with ensuring duty free access of equipment;</li> <li>d) Provide consultant with copies of relevant documentary sources; and</li> <li>e) Provide input on all the draft documents.</li> </ul>

## ANNEX II

### SPECIFICATIONS FOR COMPLETE WIND RESOURCE MONITORING SYSTEMS

In general it has to be equipment that is internationally recognized in the wind energy industry, with a design lifetime of minimum 2 years and with (third party) calibration curves for the anemometers. In particular the following specific requirements must be adhered to:

<b>Tower</b>	Four (4) towers are to be supplied They should be between 30-35 metres in height. The type should be gin pole raised, guyed tower (however alternative type can be proposed).
<b>Tower installation kit</b>	Four (4), i.e. one (1) for each of the towers.
<b>Anemometer, calibrated</b>	Four (4) (with one as spare) for each of the four wind monitoring systems. I.e., a total of 16.
<b>Wind direction sensor</b>	Four (4), i.e. one for each of the four wind monitoring systems.
<b>Air temperature sensor</b>	Four (4), i.e. one for each of the four wind monitoring systems.
<b>Barometric air pressure sensor</b>	Four (4), i.e. one for each of the four wind monitoring systems.
<b>Solar irradiation sensor</b>	Four (4), i.e. one for each of the four wind monitoring systems.
<b>Data logger</b>	Four (4), i.e. one for each of the four wind monitoring systems. As a minimum giving 10-minute average wind speed data, between 1-5 second wind gust and wind direction to be specified in degrees with an accuracy of +/- 5 degrees. The logger equipment must be powered by battery. The battery must have a lifetime of at least two (2) months, preferably kept at nominal voltage with a small photovoltaic (PV) module.
<b>Memory card</b>	Three (3) separate memory cards must be provided for each of the four wind monitoring systems. I.e., a total of 12 are to be provided. Each memory card must be able to store data for three (3) months.
<b>Protection class</b>	The locations have a mix of: a) very high humidity and b) high ambient temperatures. Therefore appropriate protection for data logger, instruments, mast and guys are required. For guys and mast in particular this includes anti-corrosion materials and coatings. In addition lightning protection for the tower and data logger must be provided.

In addition to these requirements the quotation must included:

- a) All other components needed for the complete wind resource monitoring systems such as base plate and anchors for the mast, equipment and instructions on how to erect/take down mast, booms, data logger shelter box, data logger software, and cables for the required sensors (i.e. anemometer, wind direction, air temperature, air pressure and solar irradiation); and,
- b) The systems must have remote/phone data transfer capabilities.