

Tender Fee: Rs. 500/-

**GOVERNMENT OF PAKISTAN  
MINISTRY OF WATER RESOURCES  
PAKISTAN COUNCIL OF RESEARCH IN WATER RESOURCES**



**Tender Document for the supply of IT equipment and programming services for automation and improvement in the Irrigation Advisory Services (IAS) of PCRWR**

**Opening Date: March 27, 2023**

Khayaban-e-Johar, Near Edhi Homes, H-8/1, Islamabad  
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## **PART - I**

### **TERMS AND CONDITIONS**

#### **1. GENERAL**

The bids are required from the firms/companies, registered with FBR/Income Tax, for the supply of IT equipment and programming services for automation and improvement in the Irrigation Advisory Services of PCRWR Pakistan Council of Research in Water Resources (PCRWR) as per the following terms and conditions:

- i. The bids are required from the registered firms with earnest money equal to 2% of the total amount of bid(s) in the form of a demand draft/pay order to be issued by a Pakistani scheduled Bank or branch of a Foreign Bank operating in Pakistan in favor of the Chairman PCRWR. Tenders without earnest money would be rejected out-rightly. In case of alternate prices, the earnest money will be based on the maximum quoted price of the same item(s). The Earnest Money will be forfeited if a bidder(s) withdraws his bid(s) during the period of his bid(s) validity. The earnest money of unsuccessful bidder(s) will be returned to them after the evaluation of bids.
- ii. The bidder must be a registered firm with FBR (as per Sale & Income Tax laws) and must include in active tax payer list. Evidence of both should be attached with the tender documents.
- iii. Conditional/incomplete tenders or those having overwriting will not be accepted.
- iv. Quoted price must be valid for at least 90 days from the date of tender opening.
- v. Last date of submission of offers is March 27, 2023 by 11:00 AM. The tenders would be opened at 11:30 AM on the same day in the office PCRWR Head Office, Khyaban e Johar, H-8/1, Islamabad.
- vi. The quoted prices must be inclusive of all taxes, trainings, services during warranty period, duties and delivery costs etc. The bidder should make sure that the bid is complete in all respects including consumables/non-consumables for the complete execution of the task at the specified location.

#### **2. SCOPE OF SUPPLY**

- i. The bidder shall supply and commission all items as per the TORs for the consulting firm given in "Schedule B". Only companies bidding for all two tasks mentioned in the TORs will be evaluated.
- ii. The scope of work may vary subject to the availability of the funds. Any item of work or its quantity may be omitted, added, or varied. Therefore, the payment will be made as per approved rates, if any, according to the quantity of work or items actually accomplished and as per the supply order.

#### **3. BID PRICE AND QUOTING**

- i. The supplier is required to quote his bid/charges for the supply of each item/component of work.

- ii. The bidder shall indicate, in his offer the unit prices inclusive of all taxes, duties, transportation; and total bid prices of the goods/services. Payment of any Taxes, duties etc. levied before the opening of bids by the Government shall be the full responsibility of the bidder(s) subject to prevailing regulations. The prices shall be quoted in Pakistan Rupees only. The person signing the bid shall initial all the pages of the bid(s) where entries are made. No bid received after the prescribed deadline date would be entertained and will be rejected without caring the reasons for delayed receipt in PCRWR Head Office, Islamabad due to negligence of the bidder or the postal/courier services etc.
- iii. The tenderer shall certify that the prices being quoted are not higher than those quoted to any Govt. Department or Institution or any organization and that if during the years at any time the tenderer has quoted rates lower than those quoted against this tender, the PCRWR would be given the benefit of lower rates by the tenderer. The relevant documents should be enclosed with technical bid.

#### **4. PURCHASER'S RIGHTS**

PCRWR reserves the right to reduce/increase the scope of work, specification and the number of items to be supplied; there by evolving no financial liability whatsoever or any other obligation on the part of PCRWR from the side of bidders. No other sub-office (outfit) of PCRWR is authorized to collect bid(s), only **PCRWR Head Office located at Khayaban-e-Johar H-8/1, Islamabad** is authorized to do so.

#### **5. CONVERSING**

Unsolicited advice/clarification and any personal contact at any stage of the evaluation of bids are strictly prohibited and may lead to disqualification.

#### **6. PERFORMANCE GUARANTEE**

The supplier will be responsible for complete supply and commissioning of the items and for its free repair services, if required, during the **performance guarantee period of one year**, starting from the date of completion of full commissioning of the systems. The successful bidder(s) is/are required to furnish a performance guarantee, equivalent to 10% of the total contract amount within ten days of issuance of supply order/award of contract in the form of a demand draft. Performance guarantee/security will be forfeited in case of failure to successfully complete the performance period of the equipment. The withheld performance security will be returned after successful completion of the guarantee period.

#### **7. DELIVERY, INSTALLATION AND COMPLETION PERIOD**

The bidder shall supply the IT equipment and the programming part **within 30 days and 60 days** respectively from the date of issuance of work order by the Pakistan Council of Research in Water Resources, Islamabad. A penalty @ 0.01% of the quoted price per day may be charged after expiry of delivery period till the supply of the item. Supply order can be canceled after an extended period of 30 days and the earnest money will be forfeited.

## 8. MODE OF PAYMENT

No advance payment will be made to any firm against any supply order in any case. No such demand will be entertained and failure to execute work against the supply order will lead to forfeiture of the earnest money. Payment (100%) shall be made for each individual task (hardware and programming) in the form of a cross-cheque, which shall be issued, after receipt of the inspection report.

## 9. TRAINING

The consulting firm will be responsible to maintain the server for a period of two years and will support PCRWR in developing the skills of its officers in managing the production server and the dashboard including the physical services of the hardware. The training package should be included as a part of the bid.

## 10. EVALUATION CRITERIA

The bids would be evaluated based upon their technical soundness with the Terms and Conditions set forth in this document. The lowest quoted bid for each individual item will be selected. The detailed evaluation criterion is as follows;

### A. Technical soundness 50% weightage

- Detailed methodology for the execution of each task. **(40 marks)**
- Provision of detailed specifications of each task as per tender document. Additionally, for a hardware solution, the bidder should present Manufacturer Authorization Form (MAF) issued by the Original Equipment Manufacturer (OEM) **(25 marks)**
- Experience in executing similar types of work in the past complying with deadlines **(20 marks)**, preferably with PCRWR **(05 marks)**.
- Availability of relevant human resources to execute tasks mentioned in the TORs **(10 marks)**

### B. Financial aspects 50% weightage

- Lowest bidder **(100 marks)**
- Second lowest bidder **(90 marks)**
- Third lowest bidder **(80 marks)**
- Further lowest bidders will be ranked with 10 less marks in descending order

## **11. GUARANTEE/WARRANTY**

The warranty period of the hardware is one year which should be provided on proper legally recognized documents. In case of failure, the same will be arranged from the performance security amount. It will be the responsibility of the supplier to arrange any spare part, or repair in case of damage, for the period of one year.

The procuring agency may cancel the tender as per PPRA rules. PPRA rules and other prevailing government rules shall be applicable.

The representative of PCRWR may examine any item, equipment, material, supplies and/or services to be provided under this contract, at any time prior to expiry of this contract. He may reject or require alteration thereto or replacements thereof as a condition of acceptance and its findings shall be conclusive except in regard to defects or fraud which may appear later.

**PART –II**

**GENERAL INFORMATION ABOUT THE FIRM/COMPANY**

Name of the Firm: \_\_\_\_\_  
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Main Line or Business: \_\_\_\_\_  
—

Type of Organization: \_\_\_\_\_  
—

Phone No(s): \_\_\_\_\_  
—

Mailing Address: \_\_\_\_\_  
—

Fax No: \_\_\_\_\_  
—

E-mail: \_\_\_\_\_  
—

Contact Person: \_\_\_\_\_  
—

National Tax Number, Income  
tax and sales tax numbers: \_\_\_\_\_  
—

**SIGNATURE & SEAL OF  
FIRM**

**Schedule B****TORs of the consulting firms**

Pakistan Council of Research in Water Resources (PCRWR) is providing irrigation advisory SMS to 20,000 farmers on weekly basis in Urdu. PCRWR utilizes a campaign management tool of a mobile phone company for sending these messages. These messages are developed manually by providing crop-specific coefficient values with satellite-observed evapotranspiration. The values of forecasted evapotranspiration are acquired from (<http://58.65.129.81:8888/index>) which is a web server developed that calculates Pakistan-specific evapotranspiration on a daily basis and stores this information on the server. Moreover, PCRWR has installed a network of 4 automatic weather stations that makes a real-time measure of evapotranspiration. The data from these systems may be used to correct the forecasted data observed by satellites and is shown in the aforementioned portals. Currently, this system is only based on manual calculations. PCRWR seeks to automate these messages service for the potential scaling up to a large majority of farmers on weekly basis through mobile phones. In this regard the required TORs of the consulting firm will be;

**Task A: Improve forecast with observed weather**

The Consultant will acquire forecast weather data from the irrigation advisory service (<http://58.65.129.81:8888/index>) reference evapotranspiration, wind velocity, relative humidity, max/min temperature, barometric pressure and precipitation values. The forecast data will be extracted from raster images from irrigation advisory services for the location (latitude and longitude) of the 4 automatic weather stations and for the time period for which the weather stations have been in operation. The consultant will use appropriate statistical measures to compare the forecast weather parameters with observed weather parameters. The Consultant will use the appropriate temporal aggregation of forecast lead time e.g. 1-1-7 days for the purposes of the evaluation.

The Consultant will explore various algorithms/models on a larger scale to improve the forecast weather parameters based on observed weather parameters. The Consultant will explore various temporal aggregations.

**Task B: Automate Irrigation Advisory SMS Message Service**

The Consultant will supply and install the hardware to be configured as a production server or the SMS Message Server. Following hardware is required from authorized dealer only. The bidder should present Manufacturer Authorization Form (MAF) issued by the Original Equipment Manufacturer (OEM).

<b>Model</b>	<b>Description (SM X11DDW-L,2U, 8 3.5" Bays )</b>	<b>Qty</b>
SYS-6029P-WTR	8 Hot-swap 3.5" SAS/SATA drive bays	1
Processor	CLX 4214R 12C/24T 2.4G 16.5M 9.6GT	1
Memory Capacity	16GB DDR4-2933 Registered Memory	6
Network	2x 10GBase-T ports via Intel C622	1
	Dual port 16/32Gb FC HBA, along with SFPs	2
SATA SSD for OS	480GB, SATA, 2.5", 3D TLC, 5DWPD	2

SAS RAID	LSI RAID: Low profile x8 PCIe , Supports RAID 0, 1, 5, 6, 10, 50, 60, 2GB DDR4 onboard cache	1
SAS HDD	3.5" 4TB SAS 12Gb/s 7.2K RPM Cache 256MB, 512N	6
Power Supply	1000W Redundant Power Supplies Titanium Level (96%)	2
Embedded Systems Management	Integrated IPMI 2.0 with KVM and Dedicated LAN	1

The Consultant will install and configure the server with Linux (Ubuntu 20.0 or more recent) and set up all necessary user accounts, regional settings etc. The Consultant will also install and configure PostgreSQL with PostGIS (Version 15.0 or newer), pgAdmin.

The Consultant will develop a relational-spatial database in PostgreSQL to capture all the necessary farmer information, crop information, acquire data from the irrigation advisory service, automatic weather station, correction algorithms/models and construct suitable SMS messages in Urdu.

The Consultant will develop a suitable web browser-based dashboard application in Java script or similar appropriate open-source language to allow the user to create-read-update-delete all records in the database and review SMS messages created by the application for approval/authorization for distribution to farmers. The application will interact with the telecommunications application programming interface (API) to dispatch the messages and log all messages dispatched in the database. The application will produce information reports as required by the client.

### Additional Tasks

- The programming environment needs to be in Linux environment and language should be python for database. The web dashboards need to be accessible through windows
- The consultant will undertake the programming making sure that server will not collapse under load/traffic.
- The consulting firm will be responsible to perform training for the PCRWR staff for the use of the production server.
- The Consulting firm(s) having prior experience of working with PCRWR on similar kinds of activities with the platform shall have the preference. Proof of such activities is to be provided by firms.
- The consulting firm will be responsible to develop demo version within 8 weeks after the award of contract to be reviewed by PCRWR. The final version free of errors and bugs has to be delivered to PCRWR within one month of the receipt of comments from PCRWR.
- The consulting firm will require to maintain the server for a period of 2 years after the delivery of the system.



## **Key Deliverables of the consulting firm**

1. Inception report detailing the methodology and relevant professional strength of the consulting firm for the execution of tasks A & B within 10 days after issuance of the work order. Due to time constraints, the team will continue to work on Task A and B in parallel.
2. Provide the hardware within 4 weeks after the issuance of the work order while the programming team will continue to do their job. The consulting firm will also provide server documentation and SOPs.
3. Working papers/Discussion papers as/when required for discussions and decisions from clients.
4. Documentation to describe the application including user manual, pseudocode and software specifications.
5. Task reports
6. The consulting firm will provide the design acceptance test and provide its report with the demo version of the dashboard.
7. Provide detailed documentation of the software, database and dashboard with the delivery of a demo version of the dashboard by June 15, 2023.
8. Deliver final version of the dashboard within 30 days of the receipt of comments from PCRWR