Government Innovation Lab (GIL)
University of Balochistan
Sariab Road Quetta, Pakistan. P.O Box: 87300 Ph: 081-9211751
govtinnovationlab@gmail.com

Tender Document

Procurement of Sensors and Equipment for the Smart Water Quality Monitoring Kit Project, Government Innovation Lab, University of Balochistan, Quetta.

REQUEST FOR PROPOSALS

TERMS AND CONDITIONS

Contact Details:
Government Innovation Lab (GIL)
University of Balochistan, Quetta
GIL, UoB, Sariab Road Quetta, Pakistan. P.O Box: 87300 Ph: 081-9211751

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REQUEST FOR PROPOSAL

TENDER PRICE: **Rs. 5000/-**

Issue date: ____/____/ 20_____

Last date of submission: ____/____/ 20__ till ____AM

FOR OFFICE USE ONLY

Serial No._____

Sold to: - M/S_____

Date of Sale_____**Bank Challan No.**_____**Date**_____

OVERVIEW

The Govt innovation Lab, University of Balochistan, Quetta, intends to purchase equipment for its R&D project, Smart Water Quality Monitoring Kit.

Proposal Instructions (for BOQs on FOR Basis)

1.1 Single stage/two envelope bidding procedure shall be applied in response to the RFP (Request for proposal). Financial proposals of technically non-responsive bids shall remain unopened. Financial bids of technically responsive bidders will be opened.

1.2 The vendor/supplier shall upload the Financial and Technical Proposals on or before 16/03/2026, up to 11:00 AM. The Proposals will not be accepted after the due date &, time.

1.3 The TECHNICAL PROPOSALS shall be opened on the same day **16/03/2026 Up to 11.30 AM** and the financial proposal will be opened on the **17/03/2026 up to 11:30 AM.**

1.4 Bidders are advised not to quote different options for each item (only one option is to be quoted).

1.5 Price should be mentioned on FOR basis.

1.6 All BOQs submitted by the bidder must use the numbers and labels used in this Request for proposal.

1.7 The original Request for Proposal documents duly signed and officially sealed by the bidder must be submitted in whole with the proposals. Any conditional, ambiguous, incomplete, supplementary or revised offer after the opening of tender shall not be entertained.

1.8 Any overwriting/crossing, etc. appearing in the offer may be properly signed by the person signing the tender. All pages of the tender must be properly signed &stamped. Offer with any overwriting/use of Blanco shall not be accepted in any circumstances.

1.9 A call deposit receipt of a fixed amount of PKR 350,000 shall accompany the tender as earnest money, drawn in favour of the Government Innovation Lab, University of Balochistan, Quetta.The hard copy of the bid security must reach the Govt innovation Lab before the deadline for submission of bids. The Tender shall not be considered without earnest money and bank guarantee will not be accepted.

1.10 The quantity of an order may vary depending on the quoted price and the allocated funds.

1.11 The decision of the committee will be a binding on all concerned and will in no case be challenged on any forum.

1.12 The Director of the Govt innovation Lab/Principal investigator, reserves the rights to modify the conditions / Specifications of the Tender Document with written intimation to all the participants those who have purchased the Tender Documents.

1.13 Delivery period for items will be 1– 5 weeks from the date of issuance of purchase/supply order .

1.14 Delivery & Installation (wherever mentioned) be completed according to the agreed upon schedule of works and time.

1.15 In case the tenderer fails to execute the contract strictly in accordance with the terms and conditions laid down in the contract, the Security Deposit shall be forfeited.

1.16 The Director /Principal Investigator, will get the equipment inspected at Govt innovation lab UOB Quetta and will have the right to reject the equipment if not found according to the requirements/spec.

1.17 The Principal Investigator, reserves the right to claim compensation for the losses so caused by delay in the delivery of equipment by deducting 1% of the total amount payable to the supplier/contractor as penalty.

1.18 It is the sole responsibility of the vendor to comply with provincial, national and international laws.

1.19 In case any supply / material is found not in conformity with the specifications provided in the tender, either on account of inferior quality, defective workmanship, faulty design, faulty packing or is short supplied, or wrongly supplied, the supplier shall replace the same free of charges .

1.20 All the proposals submitted will become the property of the University of Balochistan, Quetta.

2. Evaluation Criteria

All bids shall be evaluated on technical and financial merit as per clause 1.1. Technical evaluation process may include, but not limited to the consideration of the following with respect to the functional requirements given ahead:

2.1 Technical specifications of proposed equipment's

2.2 Company profile

2.3 Company Location

i. Age of the company

ii. Financial strength of the vendor

iii. Firm should have completed assignments of similar nature.

vi. Contact information of the firm.

2.4 Financial Evaluation process may include, but not limited to the consideration of the following:

i. Quoted price

3. ELIGIBILITY CRITERIA FOR BIDDERS

S.No	Bidders Eligibility Factor	Mandatory Requirement	Documents Required
1	Registration with Income Tax & Sales Tax	Firm should be registered for Income & Sales Tax with FBR Department.	Copies of the ATL Certificate, Income Tax and Sales Tax Certificates (from the FBR website), and the Registration Certificate.
2	FBR Tax Profile Inquiry with Sales Tax Registration Date Mentioned	Firm should be registered for General Sales Tax with FBR Department.	Copy of Taxpayer Profile Inquiry Certificate from FBR website.
3	Registration with Balochistan Revenue Authority (BRA)	Firm should be registered with Balochistan Revenue Authority (BRA) .	Copy of ATL Certificate (from BRA Website) and Registration Certificate .
4	Relevant Experience	The firm must have successfully completed assignments of a similar nature, with a total value of at least PKR 8 million, in public sector educational institutes specially on University Level.	Copies of work/purchase orders worth at least PKR 8 million with completion certificates.
5	Technical Support	The vendor shall provide technical guidance on the equipment's to the project team.	A letter of commitment from the vendor should be provided, confirming their cooperation in providing technical guidance to the project team for the supplied items whenever required.
6	Technical Datasheets & One Sample of Each Sensor	Technical datasheets are required for the Dissolved Oxygen (DO), Electrical Conductivity (EC), pH, Chlorine, and Turbidity sensors. One sample of each of the above-mentioned sensors is also required.	Submit the technical datasheets for the Dissolved Oxygen (DO), Electrical Conductivity (EC), pH, Chlorine, and Turbidity sensors that meet the specified requirements. Additionally, one sample of each of the above-mentioned sensors must be provided prior to the technical evaluation.
7	Financial Capacity	Firm`s Turn-over should be at least 15 million in last Three (03) years.	Copy of verified Bank Statement of firm.
8	Joint Venture	JV is not permissible.	Undertaking on company letterhead for applying as sole-bidder.
9	Local presence	The bidder must have a representative office in Quetta.	Attach copy of fresh utility bills or rent agreement.
10	Agreement with all the terms & conditions	Must unconditionally agree with all the instructions, terms & conditions specified in the bidding documents & contract agreement.	Copy of this bidding document duly signed by bidder and stamp seal of firm on every page of bidding document.
11	Non-blacklisting of firm	The bidding firm must not be currently blacklisted by any procuring agency of Pakistan.	Duly signed & stamped declaration of non blacklisting on company's Letter head by the bidder verifiable from all PPRAs web portals
12	Submission of Tender (Pay order) Fee	Amount PKR. 5000/- (Nonrefundable).	The Tender Fee Receipt amounting to Rs. 5000/- deposited in the name of bearing head of Govt Innovation Lab, UOB, with technical proposal.

13	Bid Security	Submission of fixed amount of PKR 350000 required as Bid Security of the total .In Case Bid Security is not found as required during evaluation the bidding firm shall be declared as in-eligible and non-responsive	A Call Deposit Receipt (CDR) fixed amount of PKR 350000 must be submitted with the bid. The hard copy of the bid security must reach the Govt innovation Lab before the deadline for submission of bids.

4. REQUIRED INFORMATION

4.1 Bidders are required to include the following documents/information in their technical proposals:

1. The Name and Address
2. Profile of company
3. As stated in Section (3) – Eligibility Criteria for Bidders, documents are required to be submitted along with the Technical Proposal.

4.2 Bidders are required to include the following documents/information in their financial proposals:

1. A Call Deposit Receipt (CDR) fixed amount of PKR 350,000 must be submitted with the bid.
2. Quoted Prices

5. Terms and Conditions (FOR Basis)

1.1 All prices should be in PAK Rupees inclusive of all Govt. taxes.

1.2 All prices should be valid for at least 90 days. Withdrawal or any modification of the original offer within the validity period shall entitle the University to forfeit the Ernest money favor of Govt Innovation Lab , University of Balochistan, Quetta and/or putting a ban/black listing on the future inquires or taking any other suitable action against the bidder.

1.3 Delivery of the items shall be free of charge at GIL UoB Quetta Main during the office hours with a copy of delivery challan. Any query regarding this proposal should be directed to the contact no. Listed below.

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P.O Box: 87300 Ph: 081-921175.

6. TECHNICAL SPECIFICATIONS:

S.No	Description	Quantity
1	**Chlorine Sensor** Technical Specifications • Power Supply: DC 7–30V • Power Consumption: 0.19W • Communication Interface: RS485, MODBUS-RTU protocol (default baud rate: 4800) • Residual Chlorine Measuring Range: 1. 0–10 mg/L, resolution 0.01 mg/L 2. 0–2 mg/L, resolution 0.01 mg/L • Measurement Accuracy: ±5% FS • Repeatability Error: ±0.05 mg/L • Response Time: < 30 seconds • Working Conditions: 1. Ambient Temperature: 0–40°C 2. pH Range: 4–9 3. Flow Rate: 30–60 L/h • Transmitter Pressure Resistance: 0.6 MPa • Cable Length: 5 meters (10m, 15m, 20m available upon request) • Protection Rating: IP68	7
2	**Turbidity Sensor** Technical Specifications (Turbidity Sensor) • Measuring Range: 1. 0.0–50.0 NTU 2. 0.0–200.0 NTU 3. 0.0–1000.0 NTU 4. 0–4000 NTU • Measurement Error: ±5% FS (at 25°C); Temperature accuracy ±0.5°C • Resolution: 1. 0.0–50.0 NTU range: 0.01 NTU 2. 0.0–200.0 NTU range: 0.1 NTU 3. 0.0–1000.0 NTU range: 0.1 NTU 4. 0–4000 NTU range: 1 NTU 5. Temperature resolution: 0.1°C • Response Time: ≤ 30 seconds • Working Conditions: 0–40°C • Power Supply: DC 10–30V • Power Consumption: 0.2W • Communication Interface: RS485, MODBUS-RTU protocol 1. Default baud rate: 4800 2. Adjustable baud rates: 1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 • Measuring Principle: 90° Light Scattering Method • Service Life: Approximately 2 years under normal use • Waterproof Rating: IP68 • Cable Length: 5 meters (standard) • Housing Material: Corrosion-resistant plastic.	5

3	**Dissolved Oxygen (DO) Sensor – Technical Specifications** • Power Supply: DC 10–30V • Power Consumption: 0.2W • Communication Interface: RS485; Standard MODBUS-RTU protocol 1. Default baud rate: 4800 bps 2. Adjustable baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps • Measuring Principle: Fluorescence Method • Measuring Range: 1. 0–20 mg/L 2. 0–200% saturation • Measurement Accuracy: 1. ±3% FS 2. ±0.5°C (at 25°C) • Resolution: 1. 0.01 mg/L 2. 0.1% saturation 3. 0.1°C • Response Time: ≤ 60 seconds • Operating Temperature: 0–40°C • Fluorescent Film Life: Approximately 1 year under normal use • Storage Temperature: -10–60°C • Waterproof Rating: IP68 • Electrode Cable Length: Default 5 meters • Housing Material: Corrosion-resistant plastic and stainless steel	5
4	**Microcontroller** Specifications: • 8-bit high-performance RISC microcontroller • Up to 16 MIPS throughput at 16 MHz operation • Memory: 64K/128K/256K Flash, 4K EEPROM, 8K SRAM • Supports In-System Programming and Read-While-Write operations • QTouch® capacitive touch support (buttons, sliders, wheels; up to 64 channels) • Communication Interfaces: USART, SPI, I²C (Two-Wire), JTAG debug support • Timers: 8-bit and 16-bit timers with PWM and capture compare modes • ADC: 8/16-channel, 10-bit analog-to-digital converter (device-dependent) • Watchdog Timer with on-chip oscillator • Low Power Modes: Idle, Power-save, Power-down, Standby, Extended Standby • Operating Temperature: –40°C to +85°C (Industrial grade) • Ultra-low power consumption: 1. ~500 µA @ 1 MHz (active mode) 2. ~0.1 µA (power-down mode) • Package Options: TQFP / QFN / CBGA	11
5		5

	pH Sensor Technical Specifications • Operating Mode: Continuous 24/7 (7×24 hours) measurement • Supply Voltage: 3.3 – 5.5 V DC • Output Voltage: 0 – 3.0 V (Analog) • Power Input Type: Wide voltage input • Signal Stability: Hardware-filtered output with low jitter • Calibration Support: Two-point calibration with automatic buffer recognition • Detection Range: 0 – 14 pH • Measurement Accuracy: ±0.1 pH (at 25°C) • Temperature Range: 0 – 60°C • Response Time: Less than 1 minute • Probe Type: Industrial grade • Probe Connector: BNC • Signal Connector: PH2.0-3P • Dimensions (Board): 42 mm × 32 mm (1.66 × 1.26 inches) • Cable Length: 5 meters (500 cm) • Probe Lifespan: Greater than 0.5 years under continuous operation (depending on water quality) • Mechanical Compatibility: Uniform size and connectors for easy structural integration • Installation: Plug-and-play, no soldering required	
6	**Electrical conductivity (EC/TDS) sensor** Technical Specifications • Working Voltage: DC 12–24V • Power Consumption: < 1W • Measuring Range (Selectable): 1. 0–4400 µS/cm 2. 0–44000 µS/cm • Accuracy: ≤ ±2% F.S (Full Scale) • Response Time: ≤ 5 seconds • Signal Output (Selectable): 1. 4–20mA 2. RS485 (Modbus RTU) • Load Resistance (Current Output): Rload ≤ (Vcc − 3) / 0.02 Ω • Operating Environment: 1. Temperature: 0–100°C 2. Humidity: 0–100% RH • Storage Environment: 1. Temperature: 10–50°C (Peak tolerance –20 to 80°C) 2. Humidity: 20–60% RH • Dimensions: 65mm × 46mm × 28.5mm • Electrical Connections: 1. VCC: DC 12–24V 2. Iout / A: Current Output / RS485 A(+) 3. GND: Ground 4. NC / B: Not Connected / RS485 B(–)	5

7	**Wi-Fi Module** • Main Chip: ESP32-S3R8 • Processor: Xtensa® 32-bit LX7 dual-core, up to 240 MHz • Memory: • 512 KB SRAM • 384 KB ROM • 8 MB PSRAM (built-in) • 16 MB Flash • Wireless Connectivity: • 2.4 GHz Wi-Fi • Bluetooth Low Energy (BLE) • Excellent RF performance for stable wireless communication • Programming Support: • Compatible with Arduino, MicroPython, and ESP-IDF	14
8	**GSM Module** • TTL level, compatible with 3.3V and 5V. • The two antenna interface, the default SMA straight head, connector for IPXmini antenna. • One way of speech interface, the way Mike interface. • The control interface of each pin description: • GND – GND • SIMR RXD, TTL level, can not be directly connected to the 232 level • SIMT TXD, TTL level, can not be directly connected to the 232 level • RST – SIM900A reset, active low • VCC_MCU when the gsm module and 5V TTL level communication, this pin is connected to DC 5V; when the level of communication of SIM900A and 3.3V TTL, this pin is connected to DC 3.3V. • VCC5—-DC 5V input. • VCC4——DC3.5–4.5 input • Onboard Resources: • Serial port circuit(with protection) • Antenna interface circuit(SMA bend female port) • SIM card circuit(flip SIM slot) • 4*3.5 fixture hole 4pcs	11

9	**Printed Circuit Boards designing and manufacturing:** Specifications: • Design and development of PCB as per project circuit requirements • Support for single-layer, double-layer, and multi-layer PCB layouts • Substrate Material: Industrial-grade FR-4 (or equivalent based on application) • Copper Thickness: 1 oz standard (2 oz optional depending on design requirements) • Surface Finish: HASL / ENIG (Gold Finish) as required • Minimum Track Width & Spacing: As per electrical design rules and safety standards • Solder Mask & Silkscreen: Provided on both sides; available colors: Green / Black / Blue / White • File Outputs Included: Schematic diagram, PCB layout files, and Gerber files for fabrication • Prototyping and Batch Production: Supported as per required quantity • Printed Boards Manufacturing: High-quality fabrication of PCBs, including drilling, copper plating, solder mask coating, and final finishing, ensuring durability and reliability	35
10	**Batteries:** • Type: Lithium Polymer (Li-Po) Rechargeable Battery • Capacity: 10,000-15000 mAh • Nominal Voltage: 3.7V • Battery Management System (BMS): Integrated Protection Board • Overcharge protection • Over-discharge protection • Short-circuit protection • Over-current protection • Charge Controller: Built-in BMS Charge Control Module • Charging Voltage: 5V (Standard USB / DC Charging Compatible) • Discharge Current: Up to 2A – 3A (continuous)*)* • Output Leads: Positive (Red) / Negative (Black)	15
11	**Laptop:** Chip 10-Core GPU 10-Core CPU 16GB 512GB SSD 13.6-Inch Liquid Retina	1
12	**Temperature Sensor :** • Temperature Measuring Range: -55°C to +125°C • Resolution: Selectable 9-bit to 12-bit • Accuracy: ±0.5°C (typical from -10°C to +85°C) • Communication Interface: 1-Wire digital interface • Unique ID: Each sensor contains a unique 64-bit identification code • Power Supply Voltage: 3.0V to 5.5V • Wiring Requirement: 4.7kΩ pull-up resistor required on data line • Output Type: Digital temperature data (no ADC required) • Package Options: Standard TO-92 or waterproof stainless-steel probe	9
13	**Injection Molding Die and Enclosures:** The Smart Water Quality Monitoring Kit enclosure is designed to securely house all electronic, sensing, and power components while ensuring reliable operation in field and industrial environments. The front panel includes four	15

	waterproof push buttons for the complaint management system, indicating motor fault, pipe damage, filter expiration, and filtration plant functional status. The enclosure supports multiple water quality sensors through sealed cable gland outlets, allowing four external wire exits and accommodating six to seven sensor electrodes, including pH, TDS/EC, turbidity, dissolved oxygen, chlorine, and temperature sensors. All sensor connections are IP-rated to protect against moisture and dust ingress during continuous operation. A dedicated water sampling container is integrated with the system to hold and test water in real time. The container has a minimum storage capacity of 40 liters and is designed with controlled water inflow and outflow ports to allow continuous sampling. The sensors are placed inside this container to directly measure water parameters under stable conditions, ensuring accurate and consistent readings. Internally, the enclosure features modular mounting provisions for PCB boards, power management modules, battery management systems, rechargeable batteries, and communication modules. Organized wiring channels and protected ventilation support safe and efficient operation. The enclosure and complex parts are manufactured using injection molding with recommended materials such as ABS or PC-ABS polymer for strength, UV resistance, and durability. Injection molding dies are produced using high-grade mold steels including 45#, P20, H13, 718, 2738, NAK80, and S136, designed using UG/NX, SolidWorks, and CAD software. This ensures high production efficiency, reduced costs, and long-term product reliability.	

7. Eligibility Criteria Evaluation Form

Note: Failure to meet any of the following criteria will result in disqualification of the bidder, and their financial proposal will be unopened.

S.No#	Required Documents Submitted	Eligibility Vendor/Supplier Name: Is the Vendor/Supplier Fulfill Requirement YES / NO
1	Copies of the ATL Certificate, Income Tax and Sales Tax Certificates (from the FBR website), and the Registration Certificate.	
2	Copy of Taxpayer Profile Inquiry Certificate from FBR website.	
3	Copy of ATL Certificate (from BRA Website) and Registration Certificate .	
4	Copies of work/purchase orders worth at least PKR 8 million with completion certificates.	
5	A letter of commitment from the vendor must be provided, confirming their support in delivering technical guidance to the project team.	
6	Submit the technical datasheets for the Dissolved Oxygen (DO), Electrical Conductivity (EC), pH, Chlorine, and Turbidity sensors that meet the specified requirements. Additionally, one sample of each of the above-mentioned sensors must be provided prior to the technical evaluation.	
7	Copy of verified Bank Statement of firm. Firm Turn-over should be at least 15 million in last Three (03) years.	
8	Undertaking on company letterhead for applying as sole-bidder.	
9	Attach copy of fresh utility bills or rent agreement.	
10	Copy of this bidding document duly signed by bidder and stamp seal of firm on every page of bidding document.	
11	Duly signed & stamped declaration of non blacklisting on company's Letter head by the bidder verifiable from all PPRAs web portals.	
12	The Tender Fee Receipt amounting to Rs. 5000/- deposited in the name of bearing head of Govt Innovation Lab with technical proposal.	
13	A CDR in the fixed amount of PKR 350,000 is submitted along with the financial proposal.	
The committee has recommended the vendor/supplier for the financial opening.		

8. Name, Designation & Signatures of the Committee Members:

1.Committee Member **2.Committee Member** **3.Committee Member**

IMPORTANT DECLARATION

I/We hereby confirm that we have carefully read, understood, and agree to comply with all the terms, conditions, and requirements specified in the Tender Documents. We further declare that all information and documents provided with this tender submission are true, complete, and correct to the best of our knowledge and belief.

We acknowledge that failure to submit any required document, or submission of incorrect/invalid information, may result in the rejection of our tender at the initial evaluation stage.

Tenderer's Signature & Stamp

End