



REQUEST FOR QUOTATION

Supply and installation of Residential Wastewater Treatment Plant

CX-RFQ-24-002

RFQ Release Date	Jul 30, 2024
Quotation Submission Deadline	Aug 11, 2024



List of abbreviations and symbols:

PV: Photovoltaic

MOE: Ministry of Environment

MICRO WWTP: Micro Wastewater Treatment Plant

RFQ: Request for Quotation

TOR: Terms of Reference

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1. Company Background

CUBEX is a specialized waste management consultancy firm and social enterprise focusing on resource-oriented biowaste and wastewater management practices. CUBEX offers a comprehensive range of consultancy services addressing environmental challenges, promoting waste valorization practices, and managing a variety of waste types, including municipal solid waste, green waste, agricultural residues, agro-industrial residues, wastewater, and fecal sludge.

2. Project Background

Lebanon faces significant wastewater management challenges, with 92% of wastewater going untreated and over 40% of households relying on seepage pits. Aintoura, a town of around 4,000 residents in the Keserwan District, still faces major challenges in the management of wastewater where most of its population relies on seepage pits.

Given the lack of a central wastewater network and wastewater treatment plant in Aintoura, the trend of Micro -wastewater treatment plants are becoming a viable solution. Aintoura is a town that is setting a model for the rest of Lebanon where Micro WWTP are becoming the go-to solution in every household. Micro WWTP help provide the required treatment for household wastewater where it can be safely discharged into the rainwater drainage network or into the environment without adverse effects on the surrounding. This is essential in the absence of a connection to the sewage network.

The project also focuses on community awareness raising, educating residents on the importance of proper wastewater management and encouraging the adoption of similar systems throughout the town.



3. Purpose of the RFQ

One of the project's objectives is to implement two Micro Wastewater Treatment Plants (WWTPs) for two residential entities. This RFQ pertains to the residential entity located in Aintoura, Keserwan, at coordinates 33°57'41.1"N 35°37'52.5"E, specifically on plot number 31, which consist of one six story residential buildings.

4. General scope

This Scope of Works is for the provision of a Wastewater Treatment Plant in the series, designed for wastewater (coming from residential building(s)) purification, with minimum requirements for maintenance and power consumption. **While it is optional, bidders are encouraged** to provide a proposed quotation for a PV system to power the Micro WWTP. The supplier of the Micro WWTP is required to ensure the proper operation of the plant and provide all relevant documentation as requested later in the following. For this purpose, the services of a company are requested to carry out the following:

Provide the design, install, commission, and tune a cost-effective stand-alone wastewater treatment plant (based preferably on aerobic treatment) serving 70 to 120 residents that treats the liquid effluent (wastewater) produced by residential building(s) connected to a relevant solar power system (in case the supplier/solution developer decided to optionally bid for the solar power system).

It's highly recommended for the plant to have the minimum needs for civil works in the design and use mobile tanks (three layered plastic tanks or equivalent). As for the solar power system (if applicable) it is important to use the latest cost/effective technologies relevant to the designed treatment plant.

The selected Company will be also requested to provide a User's Manual and a troubleshooting guideline for the wastewater treatment plant as well as for the solar power system (if applicable) at the end of the project in addition to a technical training on the operation and maintenance of the two systems (WWTP and solar power system) for buildings' chosen residents.

To enable companies to develop and price their proposals, a field visit (detailed in the term and conditions section) is obligatory for interested companies prior to the submission of offers.

5. Design Requirements

The Micro WWTP should be designed to treat the residential domestic effluent, based on the wastewater characterization, of effectively treating wastewater. The type of treatment is based on the bidder's assessment but preferred to be a simple aerobic system. The bidder should incorporate treatment processes and technologies suitable for removing the pollutants (identified through the bidder's assessment) in the produced water.

Regarding the solar power system several things should be taken into consideration: Energy Needs Assessment (based on your design of your treatment plant), Location and Solar Resource (to be assessed during the field visit). System Sizing (to be assessed during the field visit), Battery Selection, Inverter Selection, Charge Controller, Efficient Appliances, Wiring and Electrical Safety, Maintenance Needs, Professional Installation.

N.B: systems that consumes less power, less operation, less maintenance, and less consumables will be highly prioritized, thus, when submitting your offer please highlight clear numbers of operational consumptions and costs in addition to the needed maintenance works in a dedicated section.

5.1. Site information

The treatment system specifications should be designed in accordance with the following criteria, ensuring that the aerobic system meets the necessary requirements. All information provided in this table is based on a survey CUBEX conducted with households and should be verified by the supplier during the site visit.

Table 1 (Plot No. 31 information)

Location	Aintoura - Keserwan
Number of residents	20 people
Number of residential apartments	7 (only 6 currently occupied)
Number of commercial units	None
Type of buildings	Residential
Wastewater Characteristics	Recommended to be tested by supplier to ensure that the Micro WWTP will meet mandatory surface water discharge guidelines

Table 2 (Plot no. 31 space availability)

Space and Location Assessment	
Micro WWTP format	Exposed - Above Ground
Dimensions of available space	4.5 x 3.5 (m)
Water discharge channel's distance from the plant	~ 8 m, to be measured on site
Micro WWTP Venting	Up to roof of building (6 floors)
(Optional) PV system	To be explored on site if bidder is adding the PV system to their proposal.

Overview Map

Showing:

- Sewage network routing
- Existing cesspit
- Cesspit inlet pipe
- Manhole
- Mechanical Room available space ground floor of building on lower road.



5.2. Effluent Quality (Discharge Parameters) and commissioning

It is mandatory for the system to meet the discharge requirements of surface water according to MOE Decision 8/1 of 2001 (Page 685-687 – See Annex Attached). Bidders are encouraged to collect and test a sample during the mandatory site visit, to ensure that the proposed system will meet the surface water discharge guidelines of Decision 8/1 set by the Ministry of Environment.

Table 3 (List of Micro WWTP to be tested by CUBEX)

Parameter	Surface Water	Parameter	Surface Water
pH Level	6-9	Total Nitrogen	30 mg/L
BOD₅	25 mg/L	Total Coliforms	2000 CFU/100ml Incubated at 37°C
COD	125 mg/L	Salmonella	No trace present
Total Suspended Solids	60 mg/L	Total Phosphorus	10 mg/L

The completion of installation works will be followed by a commissioning phase to verify that the effluent meets the above-mentioned parameters; the duration of this phase is specified by the Bidder but shall not exceed 30 days after the Micro WWTP is operational. At the end of the commissioning phase, the effluent quality should be verified at an accredited lab with representatives from the bidder and Cubex to oversee implementation/sampling and results. Noting that the installed plant will be under the custody of the installing company for 3 months after the commissioning and tuning phase and any deviation in the process should be fixed under its responsibility.

It should be noted that the final payment (retained as a performance bond) will be released to the Company only after the effluent is verified to satisfy these standards. If result were found non-satisfactory, the Company shall take any additional works and requirements at their own expenses to make sure that the effluent is verified to satisfy these standards

5.3. Specific Scope of work

5.3.1. Supply and Installation of the Wastewater Treatment System

This involves providing all necessary components and equipment required for the wastewater treatment system. The supplier shall ensure that the system is delivered to the site and properly installed. This may include:



- Delivery of the system components to the site
- Assembly and installation of the system components on-site
- Ensuring that the system is installed according to the design specifications and standards
- Testing the system to ensure it functions correctly
- Control panel board

5.3.2. Supply and installation of PV system to power Wastewater Treatment System (**Optional**)

This involves the procurement and installation of a PV system including solar panels, steel chassis of solar panels, inverter, and battery bank that will power the proposed Micro WWTP. The supplier shall ensure that the system is installed and connected to the Micro WWTP control panel board on site. This may include:

- Delivery of PV system components to the site
- Assembly and installation to all PV components mentioned above on-site.
- Ensuring that the system is installed according to the design specifications and standards
- Testing the system to ensure it functions correctly and sufficiently powers the recommended Micro WWTP.

5.3.3. Handover of the System

After the installation and testing, the system will be handed over to the site owners and municipal staff. This includes:

- Conducting a final inspection to ensure the system is operational
- Providing a comprehensive Operation and Maintenance (O&M) manual
- Handover session provided to the municipal staff and site owners on the operation and maintenance.

5.3.4. Responsibilities Not Within the Scope of the Supplier

The following activities will be provided by the site owners and the client's team:

- Site Preparations: This includes any excavation, leveling, or groundwork required to prepare the site for the installation of the wastewater treatment system.
- Connection of the effluent output to sewage network/ rainwater channel discharge.

6. Terms and Conditions

6.1. Supplier mandatory site visit to households needing Micro WWTP

- The supplier shall conduct a mandatory site visit to the location requiring a Sewage Treatment Plant (Micro WWTP) to assess site conditions before submitting bids to ensure that supplier provides accurate and competitive bids that reflect the true scope of work.
- The visit shall be scheduled in advance based on the date mentioned in the timeline table and conducted by qualified personnel from the supplier's team.
- This visit is essential for suppliers to thoroughly assess site conditions, evaluate potential installation sites for wastewater treatment systems, and identify any challenges or constraints that may affect the installation process.
- Following the site visit, the supplier shall specify the site preparation works needed, noting that the site preparations will be handled by the site owner

To confirm your attendance to the site visit, send an email to rt@cubexmena.com stating the names and contact information of the representatives that will be visiting the site.

6.2. Technical Proposal

Technical proposal deliverables are summarized below to be prepared and sent by the bidders to CUBEX as per the timeline in section 6, table 5 as an **integrated compiled document** containing the following elements (**in the same mentioned order**):

Table 4 (List of Deliverables)

#	Description	To be filled by bidders	
		Yes	No
1	Terms of Reference TOR signed & stamped by the bidder		
	Expression of Interest email		
	Copy of the letter confirming the conduction of the mandatory visit		
2	The bidder's official registration documents		
3	A copy of the bidder's legal representative ID or passport		
4	Proof of experience e.g.: company profile, supporting documents of previously installed similar sewage treatment plants (at least 10) and solar power system and evidence of successful operation including but not limited to treated water test results and project's closing documents from clients.		

6	Technical proposal: Technical design details (design methodology and philosophy) and dimensions and specifications for the WWTP and solar power system (if applicable - based on total power consumption and the minimal hours of power supply needed for WWTP's optimal operations), comprehensive commissioning plan that outlines the step-by-step process for bringing the treatment plant into operation, list of equipment provided (based on a developed BOQ) along with their manuals and technical sheets , P&I diagram and general layout CAD drawing (PDF format), user manual and equipment specifications for components to be installed		
7	Additional technical documents: outline of operational user's manual, list of tentative maintenance works needed, list of tentative consumables' quantity needed per month		
8	Management approach, and estimated timeline for activities needed for performance of the works, with a detailed work plan for the whole scope		
10	Financial Proposal: The Company's Financial proposal for performance of the Scope of works in response to the RFQ; the Financial Proposal should specify a breakdown of the offer's total price based on the following section 6.3		
11	Guarantee letter not less than 12 months for the overall process, equipment to be installed and not less than 60 months for the tanks in addition to a commitment letter to the required effluent quality		
11	Any other important documents relevant to the mentioned scope		
12	Present bidder's checklist (this checklist) dated, filled, signed & stamped by the Bidder		

Please note that CUBEX reserves the right to visit any of the WWTPs mentioned in your reference list. Please note also that additional mandatory documents will be requested during the handing over phase including but not limited to: detailed operation manual, training manual, actual maintenance works needed (describing the needed operations along with their needed frequency), troubleshooting manual for expected frequent deviations and problem, Shop drawings (initial design drawing and as built drawing shop drawings and as built drawings, user's manual and data sheet for the actual installed equipment, post-commissioning and monitoring reports. Noting that the winning bidder will be requested to provide the needed trainings for the responsible assigned operators to ensure the operating conditions of the installed micro WWTP and solar power system (if applicable).



6.3. Financial Proposal

Bidders are requested to submit a detailed breakdown of the implementation cost including:

- System Cost: Includes expenses for equipment, design, engineering, and monitoring systems.
- Transportation and Installation Cost: Covers logistics, labor for installation, and any site-specific needs.
- After-sales services: Quality Control Visits post-installation inspections to ensure the successful operation of the installed system(s) (Including the PV system if applicable to bidder) and system handover to landowner and municipal staff Involving final inspection, operational testing, and provision of documentation and training.

6.4. CUBEX site visit to Suppliers' previously installed Micro WWTPs

- Before the end of the selection process, Shortlisted suppliers are expected to facilitate a site visit for CUBEX and its partners' representatives to a minimum of one more previously executed system(s) with a similar scale
- This visit serves several purposes:
 - Allows CUBEX and its partners representatives to assess the quality of the supplier's workmanship and the functionality of the installed systems, ensuring reliability, durability, and effectiveness in treating wastewater.
 - Provides an opportunity to gather feedback from homeowners or users regarding system performance and challenges faced, aiding in decision-making.
 - Allows CUBEX and its partners representatives to verify the supplier's claims about their experience, track record, and successful installations.

6.5. Duration of the assignment

Site Visit During Tender Period: Suppliers must visit the site while the tender is being published to assess the feasibility of the locations and determine the necessary site preparations.

Site Readiness Notification: Once notified that the site is ready, suppliers have 2 weeks to complete the installation on site.

Commissioning and Monitoring: Following the 2-week installation period, suppliers will have an additional 6-8 weeks to ensure the system is fully operational, with particular attention to the biological components.

7. Management modalities

Execution of works will be monitored by CUBEX, who will monitor the implementation of works on the ground and make sure that the works are compliant with the standards and specifications as well as approved BOQs proposed by the awarded supplier/solution provider. The consultant will also monitor sampling and delivery of samples to accredited laboratories for the testing of effluents and validate the efficiency of the installed Micro WWTP, **noting that those tests should be performed once in the commissioning period and another round of tests once the system is handed over to the residents.** The cost of the tests shall be on the expense of the awarded company and shall include the following parameters.

Table 5 (Parameters that should be tested)

BOD ₅ (mg/L)
COD (mg/L)
TSS: Total Suspended Solids (mg/L)
TDS: Total Dissolved Solids (mg/L)
TN: Total Nitrogen (mg/L)
TP: Total Phosphorous (mg/L)
TKN: Total Kjeldahl Nitrogen
NO ₃ – NO ₂ (Nitrate – Nitrite)
Total Coliform Bacteria (CFU in 100 ml)
Salmonella (CFU in 100 ml)
pH
EC
Temperature

8. Reporting

During the installation works the supplier/solution developer should submit regular progress reports (according to the already provided work plan) to CUBEX detailing the status of installation, commissioning, and tuning activities.

At the end of the works the supplier is required to provide a final report summarizing the results of performance testing and adjustments made to the treatment plant and solar power system.



9. Health and safety

Ensuring the health and safety of workers during the plant's installation and operation of a treatment system is paramount. Implementing robust safety measures is not only a legal and ethical requirement but also contributes to the overall success of the project by preventing accidents, injuries, and disruptions. Here are provisions and considerations to ensure worker health and safety: **Health and Safety Plan, Personal Protective Equipment (PPE), Hazard control, Emergency Response, Site Safety Inspection, Communication and Reporting.**

10. Confidentiality

All project-related information, including but not limited to TOR document, plans, reports, data, and any proprietary information provided by CUBEX, shall be treated with the utmost confidentiality by all parties involved in the installation, commissioning, and tuning of the wastewater treatment plant.

- **Confidentiality Obligation:** All individuals, contractors, subcontractors, and personnel engaged in the project shall sign a confidentiality agreement and are obligated to maintain the strictest confidentiality regarding any project-related information.
- **Non-Disclosure:** Project-related information shall not be disclosed to any third party, except with the express written consent of CUBEX or as required by law.
- **Use of Information:** Project-related information may only be used for the purpose of fulfilling the obligations outlined in this RFQ.
- **Data Security:** Adequate measures shall be taken to secure all project-related data, both in electronic and physical formats, to prevent unauthorized access, disclosure, or theft.
- **Duration:** The obligation of confidentiality shall extend beyond the completion of the project and shall continue indefinitely, unless otherwise specified in writing by CUBEX.
- **Breach of Confidentiality:** Any breach of this confidentiality agreement may result in legal action and may have financial and reputational consequences for the responsible party/parties.

By accepting and expressing the interest in this ToR and engaging in the project, all involved parties acknowledge and agree to abide by the terms of this confidentiality statement.



11. Submission of the proposal

Please ensure that your proposal is complete and includes all required documentation as specified in the submission guidelines, to be submitted electronically at this email address: rt@cubexmena.com by **11th of August 2024**. Late submissions will not be considered. For any inquiries or clarification regarding this RFQ, please contact rt@cubexmena.com.

CUBEX reserves the right to reject any or all proposals and to waive any irregularities or informalities in the submitted proposals. Submission of a proposal indicates acceptance of the terms and conditions outlined in this RFQ and any accompanying documents.

12. Timeline

Table 6 (Tasks Timeline)

Task	Deadline
RFQ Release Date	Jul 30, 2024
Expression of Interest email and Confirmation on mandatory site visit	Aug 2, 2024
Mandatory site visit to the implementation site	Aug 6, 2024
Submitting questions	Aug 8, 2024
Submitting Quotation	Aug 11, 2024
CUBEX site visit for evaluation of previous Micro WWTP installed by shortlisted suppliers	Sept, 2024
Selection of supplier	Oct, 2024
Contract signature	Oct, 2024
Start of Installation	Nov, 2024

13. Terms of Payment

Payment Terms: Payment shall be made over 3 installments via bank transfer as follows. Bidders are requested to share their bank account information.

- 25% of the total contract upon completion of the designs, including all specifications of the WWTP and solar power system (if applicable), and upon validation and approval of CUBEX project's manager.
- 25% of the total contract upon delivery (on site) of all equipment (mentioned in the technical offer and BOQ)
- 50% of the total contract upon completion of all installation works, commissioning, tuning and validation from the CUBEX project's manager.

N.B: An amount of **20%** will be deducted of each payment as a performance bond, to be released upon verification that the effluent of the WWPTs satisfies the mentioned requirements mentioned in this RFQ (for the reusing water and the rejected effluent) and the good performance of the solar power system, over a period of 3 months after the commissioning and tuning phase (not exceeding 3 weeks)

Price Variation: CUBEX will not accept any price variation due to escalation, inflation, fluctuation in exchange rates, or any other market factors after receiving the quotation, during the validity period.

- It is important to note that any costs incurred by the bidders during the bid submission process are not reimbursed.

Validity of Quotation: The quotation should be valid for a period of 6 months from the date of issuance and including VAT.

14. Evaluation Criteria

Quotations will be evaluated based on a technical and financial assessment. Thus, suppliers are encouraged to submit their most competitive price quotation. Quotations will be evaluated by an assessment criterion where 70% of the application weight is on the technical assessment and 30% of the application weight is on the financial offer assessment.