# Call for Tenders
# Smart Greenhouses for the Universities of Dhi Qar and Basra (Iraq)

## AUF-MO/09/2025

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## I. PRESENTATION OF AUF

A development aid organization founded on knowledge and learning in 1961, AUF is a global operator of programs and projects and the world's largest university network, with more than 1,000 members across nearly 115 countries.

The AUF Middle East Regional Office, established in Beirut in 1993, brings together 109 member institutions across 18 countries. Its regional strategy covers the entire higher education sector, with a focus on digital transformation, employability, and student entrepreneurship.

## II. PRESENTATION OF THE « AGRIRAK » PROJECT

The project *"Partnership for Research and Training for Sustainable Agricultural Irrigation in Iraq"*, implemented in Iraq, aims to establish a lasting Franco-Iraqi axis of academic and scientific cooperation in the field of sustainable agricultural water use, while also initiating the creation of a regional network of specialized expertise.

AUF Middle East is the implementing agency of the project, funded by the French Ministry for Europe and Foreign Affairs through the former Solidarity Fund for Innovative Projects (FSPI), now known as the France Team Fund (FEF).

The Iraqi universities benefiting from the project are Dhi Qar University and Basra University.

The project has achieved the following:

- Strengthening scientific and academic expertise in Iraq to address climate and water management challenges in a context of scarcity.
- Establishing sustainable academic collaborations: joint publications, researcher mobility, doctoral and teaching exchange programs.
- Training a new generation of agronomists and researchers capable of proposing solutions adapted to local realities.

## III. PRESENTATION OF THE CALL FOR TENDERS

### 1. GENERAL OBJECTIVE

The purpose of this call for tenders is the supply, installation, and commissioning of smart greenhouses for Dhi Qar University and Basra University, with the aim of:

- Supporting agricultural research and practical training.
- Producing high-quality seedlings in a protected environment.
- Enabling year-round cultivation through smart technologies.
- Preserving and studying experimental and heritage varieties.

### 2. SPECIFIC OBJECTIVES

- **Design and Engineering:** Adapt structural designs for each site according to specific environmental, spatial, and agronomic needs.
- **Procurement and Manufacturing:** Supply all materials, greenhouse structures, coverings, fans, sensors, irrigation systems, control systems, solar panels in compliance with technical standards.

- **Construction and Installation:** Carry out site preparation, foundations, structural assembly, installation of systems, and auxiliary equipment.
- **System Integration:** Seamlessly integrate ventilation, irrigation, automation, solar power, and data collection into a fully operational smart system.
- **Testing and Commissioning:** Ensure that all systems operate as intended and meet environmental control objectives.
- **Training and Handover:** Provide on-site training in operation and maintenance, along with the necessary documentation for university staff.

## 3. TECHNICAL SPECIFICATIONS

| **3.1 Greenhouse Structure and Framework** | |
|---|---|
| Width | 9 m² |
| Length | 50 m² |
| Height | 4 - 6 m |
| Frame | Aluminum structure |
| Galvanized profile columns | 2*80*80 with double base |
| Column height | Gross height 4.70 m; gutter height 4 m |
| Foundation type | Direct foundation |
| Arches material and shape | Galvanized oval tube 65 × 55; arch tubes 60 |
| Total height | 6.20 m at the highest point |
| Cover design | No wires beneath the covering - structural advantage |
| Facade columns | 3 galvanized profile columns 80 × 80 |
| Base spacing | 2.5 m between bases, 5 m between interior columns |
| Gutter details | 11 folds, 2 mm galvanized sheet, width 51 cm |
| Inhibitor connections | M and W elements; 11 advanced-style arch arms |
| Clamps | Upper clamp and cap in 3 mm galvanized sheet, 275 coating |
| Arch arms | Included in all spans |
| Crop load support | 40 mm galvanized steel tube |
| Bracing | Initial and central bracing in 80 × 80 galvanized tubes |
| Central bracing | X-shaped |
| Roof connection | X-shaped (HOOK) in 40 mm galvanized tube |
| Lateral reinforcements | U-profile with galvanized locking along the greenhouse |

| | |
|---|---|
| Personnel access | Door with technical specifications and warranty |
| Nylon support | Required infrastructure included |
| Warranty | 5 years on design; 20 years on galvanized tubes |
| Mechanized roof vents | - Single-direction mechanized vents at all openings<br>- Openings positioned at the highest point of the structure<br>- First-quality rack-and-pinion system<br>- Length of each window arm: 150 cm<br>- Maximum opening of each vent: 100 cm |
| Electric gear motor | Installed on all roof vents |
| **3.2 Covering and Glazing** | |
| - Roof and walls covered with polyethylene<br>- Three-layer polyethylene, 220 microns, 10% UV protection<br>- 3-year warranty<br>- Light transmission factor: 90%<br>- Supplied with all installation accessories, including locking systems and springs | |
| **3.3 Ventilation and Climate Control** | |
| Fan and pad cooling system: | - 3 extractor fans 140 × 140<br>- Automatic shutter with centrifugal drive system<br>- Galvanized body |
| Circulation fan: | - Size 50<br>- Air distribution capacity: 7,400 $m^3/h$<br>- Motor power: 250 W<br>- Diameter: 500 mm |
| Shading screen: | - White color<br>- 80% shading<br>- 6 m width<br>- UV-protected |
| Automation | - Intelligent climate control system for all greenhouse equipment (fan & pad, shading, circulation, misting, roof and side vents)<br>- Remote control via mobile phone<br>- Hourly, daily, and monthly reports<br>- External weather station with wind, temperature, and humidity sensors<br>- Internal temperature and humidity sensors<br>- Soil and substrate moisture sensors<br>- EC (electrical conductivity) and pH monitoring<br>- $CO_2$ enrichment system<br>- Light sensors and horticultural LED lamps |
| **3.4 Irrigation and Fertigation Systems** | |
| - Drip irrigation (soil-based)<br>- Hydroponic preparation (NFT/DWC systems)<br>- Automated fertigation with nutrient sequencing (N-P-K)<br>- Main pumps, water tanks, filters; dosing controlled by EC/pH<br>- Zonal control with automatic programming | |
| **3.5 Power Supply and Solar Energy Integration** | |

| | |
|---|---|
| **Photovoltaic system:** | 5–10 kW PV capacity (roof or ground-mounted), optimized for greenhouse load |
| **Battery storage:** | 20–30 kWh capacity (Li-ion or AGM/GEL), powering critical systems at night |
| **Inverter** | 220V AC output, pure sine wave; hybrid/grid type with automatic switch |
| **Grid connection** | Integration with national grid; ready for optional generator connection |
| **Energy efficiency** | Energy-efficient fans, LEDs, and pumps; maximum estimated load 5–10 kW |
| **Safety measures** | UV-resistant cabling, grounding, surge protection, fuses, circuit breakers, lightning rod |
| **Monitoring system** | Real-time display of solar generation, battery levels, and consumption; remote control capability |

## 4. COMMITMENT PERIOD

Bidders shall remain bound by their offers for a period of thirty (30) days from the deadline, set for **(25 September 2025)** at 12:00.

## 5. SUBMISSIONS

Bidding companies shall submit their files in French or English by email to the following address: yasmina.el-assi-prestataire@auf.org

The email must clearly indicate the reference of the Call for Tenders as specified below:

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## 6. REQUIRED DOCUMENTS

The bidder must provide and complete the following documents:

a. A duly signed, dated, and stamped quotation;
b. A copy of the commercial registration;
c. technical data sheets of the proposed equipment;
d. A signed after-sales service and warranty letter covering at least 12 months;
e. Evidence of prior experience and technical references.

## 7. SUBMISSION DEADLINES

The deadline for the submission of bids is 25 September 2025 at 12:00 (Beirut time). No bid may be submitted or modified after this date.

## 8. SELECTION PROCESS

The contract will be awarded to the bidder whose offer is deemed compliant with the Tender Dossier, following an evaluation of technical compliance as well as all conditions relating to the comparative advantage of “value for money.” The official response will be communicated on 1 October 2025.

### 9. START DATE OF THE WORK

As soon as possible. The work may extend over a maximum period of one month following the official response.

## IV. SCOPE OF WORK TO BE CARRIED OUT BY THE BIDDER

The bidder shall be responsible for the design, procurement, installation, commissioning, and on-site staff training. Tasks include:

- Site-adapted design and engineering.
- Procurement and manufacturing (structures, control systems, irrigation, solar energy).
- Full construction and installation.
- Integration of smart systems (sensors, automation, ventilation, fertigation).
- Testing, commissioning, and validation.
- Training and knowledge transfer.

## V. LIST OF DOCUMENTS TO BE PROVIDED

At the end of the assignment, the bidder must provide:

- Final as-built drawings.
- Training materials.
- Commissioning and testing reports.
- User and maintenance manuals.
- Warranty certificates.
- Staff training certification.

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For further information, please contact:

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