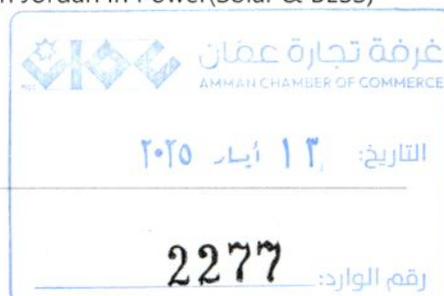


Amman Chamber of Commerce

Subject: FW: Request for Identification of Local Associate in Jordan in Power(Solar & BESS) Sector
Attachments: ToR Jordan WAJ.pdf



From: leena malkawi <leena.malkawi@acc.org.jo>
Sent: Tuesday, May 13, 2025 10:29 AM
To: Amman Chamber of Commerce <AmmanChamberofCommerce@acc.org.jo>
Subject: FW: Request for Identification of Local Associate in Jordan in Power(Solar & BESS) Sector

From: Ghaleb Hijazi
Sent: Tuesday, May 13, 2025 10:26 AM
To: leena malkawi <leena.malkawi@acc.org.jo>
Subject: FW: Request for Identification of Local Associate in Jordan in Power(Solar & BESS) Sector

الانسة لبنا ملكاوي المحترمة، للدخال بالبريد. لاحقا لاجتماعي مه الملحق التجاري الهندي يوم أمس، تم عرض فكرة التشبيك بين الشركة الهندية المذكورة في مجال الطاقة والشركات الأردنية من ذات الاختصاص، لعقد شراكة في عطاء مزود خدمة داخل المملكة الأردنية الهاشمية.

Ghaleb M. Hijazi
Director General
غالب محمد حجازي
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للمحافظة على البيئة يرجى عدم طباعة هذه الرسالة الإلكترونية إلا للضرورة



From: V. Sivaraman <com.amman@mea.gov.in>
Sent: 12 May 2025 17:25
To: Ghaleb Hijazi <Ghijazi@acc.org.jo>
Cc: India in Jordan <indiainjordan@gmail.com>
Subject: Request for Identification of Local Associate in Jordan in Power(Solar & BESS) Sector

Dear Mr. Ghaleb,

Greetings from the Embassy of India.

WAPCOS, a Government of India Undertaking has been shortlisted for submission of a proposal for the project called " SUPERVISION FOR SUPPLY AND INSTALL OF MEDIUM-SCALE PV SYSTEMS- JORDAN ". They have approached us to to identify local associates with

experience in the Power(Solar/BESS) Sector for potential collaboration in these opportunities in Jordan. We are reaching out to seek your assistance and guidance in this regard.

The contact details are as follows:

M. Manoj Kumar
Chief Engineer
WAPCOS Limited.
(A Govt. of India Undertaking)
Sector-18, Gurugram - 122015
Website: <https://www.wapcos.co.in>
email: manojkumar-electrical@wapcosindia.com

Your response on this matter is highly solicited, as WAPCOS has the last date 19.05.2025 for submission of their proposal.

Best regards,

Regards,

V. Sivaraman
Second Secretary (Com)

Embassy of India, Amman
Tel: +962 6 462 2098 / 463 7262
E-mail: com.amman@mea.gov.in

   You : [indiainjordan](https://www.indiainjordan.gov.in)

Section 7. Terms of Reference

**THE HASHEMITE KINGDOM OF JORDAN
MINISTRY OF WATER AND IRRIGATION
WATER AUTHORITY OF JORDAN
(WAJ)**

**JORDAN WATER SECTOR EFFICIENCY PROGRAM
LOAN NO. 9560-JO**

**TERMS OF REFERENCE
SUPERVISION CONSULTANCY SERVICES FOR SUPPLY AND INSTALL OF
MEDIUM-SCALE PV SYSTEMS**

JORDAN

SEP 2024

ABBREVIATIONS

ABBREVIATION	DESCRIPTION
AWC	Aqaba Water Company
AFD	Agence Francaise Deveelopment
CAD	Computer Aided Design
CV	Curriculum Vitae
DLP	Defects Liability Period
DNP	Defects Notification Period
EE	Energy Efficiency
EIA	Environmental Impact Assessment
EMRC	Energy and Minerals Regulatory Commission
ESHS	Environment, Social, Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMP	Environnement and Social Management Plan
ESS	Environnement and Social Standards
FIDIC	Fédération Internationale des Ingénieurs Conseils
GCCF	Global Concessional Financing Facility
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HSE	Health Safety Environment
IBRD	International Bank for Reconstruction and Development
JOD	Jordanian Dinar
JICA	Japanese International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau
MW	Megawatt
MWC	Miyahuna Water Company
MWI	Ministry of Water and Irrigation
NRW	Non-Revenue-Water
OHS	Occupational Health and Safety
PDF	File Format
PIA	Project Implementing Agency
PMD	Program Management Directorate
ToR	Terms of Reference
WAJ	Water Authority of Jordan
WB	World Bank
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant
YWC	Yarmouk Water Company

A. Background

The HASHEMITE KINGDOM OF JORDAN has obtained financing of USD 200 million from IBRD, USD 50 million from GCFF and the equivalent of US\$ 50 million from Agence Francaise Develoement (AFD) for the cost of assistance in financing the Project, which is part of a series of projects aimed at improving efficiency, service delivery and financial sustainability of the water sector.

The World Bank funded project will have the following components:

- **Component 1:** Sustainable Non-Revenue Water (NRW) Reduction
- **Component 2:** Increased energy efficiency and reduced energy supply costs
- **Component 3:** Water security measures to underpin efficiency improvements.
- **Component 4:** Institutional strengthening for water sector Efficiency
- **Component 5:** Contingency Emergency Response

Component 2 of the project “Increased energy efficiency (EE) and reduced energy supply costs” aims at Improving energy efficiency and use of renewable energy in the existing water systems by Supporting reduction in electricity use by improving energy efficiency and expanding renewable energy in the water sector through (a) feasibility, design and supervision consultancies; (b) works contracts to implement selected actions on energy efficiency and renewable energy; (c) an energy audit to identify additional energy efficiency actions needed in the water sector; and (d) design studies for infrastructure investments that enable reduction in peak energy demand.

A Project Management Unit (PMU) is established at the Water Authority of Jordan (WAJ) over the implementation period of five years. The PMU shall be responsible for the management of project activities including the fiduciary operations, contract management and the administration of the projects funds as well as implementation and monitoring of the environmental and social requirements and instruments.

The current Terms of Reference (ToR) are proposed under Component 2 of the project for – Renewable energy (RE) and will describe the assignment’s requirements and objectives.

B. PROJECT LOCATION AND DESCRIPTION

The project is located in different governorates (27 Locations) in Jordan. See table 1 below, for more details. The project includes the supply, installation, commissioning, and operation of 27 PV systems; each system capacity is less than 1 MWac for approximately 12 MWac in total.

B.1: - Project Location

Table1: Sub-projects locations.

#	Sub-Project Name	Location	
		Latitude	Longitude
1	North Shoneh WWTP	32.6000	35.5805
2	Aboor	30.7780	35.74560
3	Shobak WWTP	30.5353	35.6353
4	Jitheh PS	30.1826	35.5941
5	Karameh Dam	32.009534	35.569859
6	New Athroh well	30.3267	35.5530
7	Madaba WWTP	31.6919	35.8052
8	South Amman WWTP	31.68	35.9422
9	Wadi Seer WWTP	31.886	35.7458
10	Ground Yasmeen Reservoir	31.9116	35.8836
11	Abu Alanda 2 Reservoir	31.9021	35.9687
12	Amman Warehouse (Hizam)	31.9384	36.0006
13	Bani Hashem villages	32.124	36.0509
14	Hashmiya	32.1327	36.1327
15	Waleh	31.5849	35.7515
16	Old Muntazah	31.8645	35.8945
17	Sokhneh	32.1253	36.0736
18	Naqab Daboor	32.0309	35.7409
19	Libb PS	31°35'03.4"N	35°45'04.0"E
20	Al Aqeb K134 - Plot 738	32.1535	36.8244
21	Al Aqeb K134 - Plot 737 (Beshrya PS)	32.1535	36.8244
22	Al Aqeb Reservoir	32.2519	36.5076
23	Mafraq Warehouse (Jaber Hayyan)	32.3603	36.2102
24	Mafraq WWTP	32.3996	36.2231
25	New Um Lulu	32.3953	36.0941

26	Ramtha WWTP	32.5919	35.9888
27	Almeraad WWTP	32.2508	35.8764

C. OBJECTIVE OF CONSULTANCY SERVICES:

The consultant shall provide his supervision services for the following task in connection with the contractor's supply, build/install, commissioning, operation, and maintenance of 27 PV systems:

1. Task 1 - Supervision services

- Review and ensure that the revised detailed design by contractor complies with the approved functional design, internationally acceptable technical specifications, and sound engineering practice; and that all deficiencies, outstanding and substandard items are corrected according to the functional design as per the bidding document requirements.
- Supervise the construction activities and the supply and installation of physical infrastructure in the field including integration and commissioning.
- Monitor the operation and maintenance done by the contractor for 1 year including the training of Client staff in operating and maintaining the system.
- Ensure that the executed works comply with the approved functional design, internationally acceptable technical specifications, and sound engineering practice; and that all deficiencies, outstanding and substandard items are corrected.
- Develop/Review burn-in test(s) procedures.
- Participate in provisional taking-over including inspection, burn-in testing of the completed system, issuing a Provisional Take-over Certificate, compile as-built drawings, and prepare the Final Report.
- Provide inspection services during defects liability period for Remediating Defects, participate in the issuance of Defects Liability Certificate, certify Payment of retention, and prepare Final Completion Report.

The supervision services shall ensure that the works are executed with meticulous attention to detail, adhering strictly to predetermined schedules and budgetary constraints, while meeting the specifications and drawings outlined in the contract. Furthermore, the endeavor is committed to upholding environmental and social safeguard standards, as well as the requirements set forth by the Employer. Additionally, the project endeavors to advance gender equality within the workforce by actively promoting the recruitment of women and fostering a safe and inclusive workplace environment for all project personnel.

D. Scope of WORK:

The objective of the Consultant's assignment is to provide construction supervision to ensure an effective preparation and implementation of the project.

The Services under these terms of Reference are proposed to be carried out in one task as indicated below.

Task 1: Supervision.

The Consultant shall develop a Project Management Plan to adopt during the project, which will be composed of 2 main stages: Supply, Install and commission stage and defects liability stage during the one year of operation and maintenance.

The services to be provided by the Consultant shall include, but shall not be limited to:

- Set up and establish the system of managerial control for the contract to maintain control over estimated works quantities and contract outcome costs, and monitor the progress of the works, the disbursements and technical records.
- Review and approve the revised detailed design performed by the contractor and verify its compliance with the preliminary design set forth in the contractor's contract.
- Prepare initial site-handing over certificate in accordance with contract provisions.
- Develop/Review measures of effectiveness and Key Performance indices.
- Supervise the supply & installation activities as well as construction works and make sure that the supplied materials are in compliance with the technical specifications.
- Ensure that the contractor implements the project activities with utmost care in accordance with the bidding document safeguard requirements.
- Prepare, monitor, and maintain cost estimates and planning schedules.
- The consultant will (daily) supervise work activities to ensure compliance with ES measures outlined in the ESMP checklist, with reference to the ESMF. Also, conduct monthly on-site audits covering environmental, social, health and safety.
- Supervise the contractor's daily performance regarding labor and working conditions.
- Prepare a monthly environmental, social health and safety performance report.
- Progress monitoring (including compliance with Social and Environmental as per the requirements of the ESMP checklist) and reporting on all E&S aspects.
- Reporting and monitoring of incidents as per the requirements of the project's ESCP (Environmental and social Commitment Plan)
- Administer a grievance's log (register) for all received complaints and report them to the project owner. Details on how these grievance/ complaints were handled should be provided.
- Manage claims and variation in consultations with the Employer.
- Certify contractors' progress payment certificates.
- Ensure that as-built drawings are prepared, operation & maintenance manuals reviewed & updated.
- Administer the contract.
- Supervise rectification of defects during the defects liability period
- Supervise the operation and maintenance carried out by the contractor.
- Certify final completion certificate in accordance with contract provisions.

3.1 PLANNING AND CO-ORDINATION

a- Review of Contractor's submitted Detailed Program

The Consultant shall review the contractor's submitted detailed work plan, including his methodology for ensuring the quality of the works, and computerized program of all activities and resources for the execution of the work included in his contract. The Contractor's plan and program shall include all activities that interface or otherwise relate to the work being done by the different contractors or other involved parties, including

required dates of receipt of data and construction drawings, submittal dates for the various documents, appropriate periods for review etc.

The program shall be prepared using project management software such as “Primavera” or similar compatible software approved by the Consultant and shall be constantly updated throughout the period of the contract.

b- Progress Monitoring-During Construction

In order to fulfill the above objectives, the Consultant shall for all contracts, inter alia: At all times take necessary measures and provide appropriate advice to the Client to enable the contracts to be completed in a timely and cost-effective manner, in conformity with the contract’s conditions and specifications.

The Consultant shall monitor the Contractor’s works to determine progress on a monthly basis and ensure that the construction program is maintained, and costs minimized by means of, but not limited to, the following activities:

- Review and, if in agreement, consent to the Contractor’s proposed program of work to meet key dates established in the various tasks.
- Prepare and maintain progress programs for use in monitoring and reporting progress.
- Prepare consolidated monthly reports on physical and financial status, site meetings and contractual matters with particular reference to variation orders and contractors claims. The monthly reports shall deal specifically with monitoring and follow-up of agreed environmental and social mitigation measures and with the contractor’s adherence to safety, health standards and anti-corruption measures as applicable under contract. Each monthly report should include recommendations if any, for action by the Client and the Contractor.
- Prepare control charts of the main activities and a project master schedule, indicating both past performance and forecasts for completion including time involved in each case.
- Analyze the variations of construction progress from the Contractor’s program; and advise client in a timely manner.
- If progress falls behind program, develop in consultation with the Contractor, appropriate modifications to programs and/or work methods to recover the original program. The Employer shall be informed of such changes and recovery activities.
- Ensure that the Contractor’s reporting requirements identified in the management procedures developed by the Consultant are fulfilled.

c- Co-ordination

The Consultant shall organize co-ordination and site meetings with the Contractor on a regular basis and as necessary. The Consultant shall conduct these meetings on behalf of the Client, take minutes and report to all concerned parties.

d- The Environmental and Social Monitoring.

Prior to construction stage, the Consultant shall review, provide feedback on, and approve site-specific ES documents developed by the contractor, including the ESMP checklist.

The ESMP checklist should include all necessary plans such as method statements, HSE plan, WMP, TMP, LMP including the GRM and any other relevant plans as per the requirements of the ESF pertinent documents for the project.

During construction/Installation, the Consultant shall:

- Perform monitoring on ES specific indicators with reference to the project ESMF, and the metrics specified in the works bidding document.
- Conduct weekly site visits to monitor and evaluate the contractor's adherence to ES mitigation measures as outlined in the ESF documents, including but not limited to the ESMP checklist, OHS plan, TMP, WMP, LMP and ACF with reference to the ESMF. Upon identifying non-compliance, assess the associated risks and recommend corrective measures. Record these measures along with their implementation timeframe in the report. Follow up to ensure the implementation of corrective measures and report compliance.
- Ensure that the grievance mechanism of the project is implemented properly. This through ensuring if there is any complaint is submitted from any party and to whom is submitted and how it will be handled and closed. This is to be reflected in the monthly reports submitted to the employer (the WC/ESSD/PMU/WAJ) and submit upon request to the World Bank.
- Assess any new impacts that emerge during the construction stage and propose mitigation measures based on the mitigation hierarchy in accordance with the ESSs. Provide feasible measures for their elimination, and if elimination is not feasible, propose mitigation measures to minimize risks and impacts, which should be implemented by the contractor.

3.2 COST CONTROL

a- Monitoring Contract Costs

The Consultant shall be responsible for monitoring of contract costs relative to budget. The consultant shall utilize a computerized Budget and Cost Forecast (BCF) system or equivalent and shall prepare, with the Contractor, an estimate of the cost of the various contract items, and incorporate updated quantities, variation orders, day works, potential costs of claims, and projected expenditure from provisional sums. The estimated cash flow up to completion of the contracts shall be prepared, updated based on the revised contract costs, and submitted each month in line with the management procedures.

b- Claims Management and Variation Orders

The Consultant shall anticipate potential claims and shall take steps to mitigate their effect. The Consultant shall assess the need for variations to the Contract and any claims submitted by the Contractor, review their merit and, where appropriate, prepare variation approval requests and submit them to the Employer for approval prior to preparing variation orders and issuing them to the Contractor.

c- Certify Contractors' Monthly Statements

The Consultant shall process in a timely manner and, as appropriate, certify for payment the Contractor's monthly interim statements to ensure that such statements reflect work completed.

The statements shall be based on measurements on site. The measurements on site shall be made jointly by the Contractor and the Consultant. The consultant shall prepare and submit to the Client the final cost for the measured completed works.

3.3 RECORD KEEPING

a- Preparation of Reports

The Consultant shall prepare all necessary reports for progress and record purposes. The preparation of these reports shall include, but not be limited to, the following activities:

- Prepare and agree with the Employer appropriate formats and review and approval of these formats, if required, as work proceeds.
- Collect and check daily and shift reports from the Contractor for labor (disaggregated by type of job, gender, location, and nationality of worker) and equipment in anticipation of preparing weekly and monthly summary reports.
- Keep records of all measurements and agreements and incorporate measurement data in monthly progress reports and cost monitoring systems.
- Undertake the correct and timely distribution of all reports.
- Minutes of site and co-ordination meetings shall be distributed within the three days following the meeting.
- Monthly progress reports will be standardized as per the developed management procedure. The Consultant shall follow these standardized formats.
- The Consultant shall prepare and/or supervise the preparation of cost reports, progress reports, construction schedules, estimates of monthly cash requirements, Contractor's estimates for payments, and such other reports and data as may be desirable or as may be directed by the Employer. Monthly construction progress reporting will use the "Earned Value" technique requiring the provision of an activity completion report for each contract with an "S" curve, and a tabular cash flow report.

b- As-Built Drawings and Completion Report

The Consultant shall be responsible for ensuring that the Contractor maintains at the site a complete set of "as-built" drawings for the Contract as the work proceeds. To this end the Contractor shall:

- On a set of working drawings maintain a continuous reproducible "as-built" record of the actual alignments, levels, dimensions etc. to which the works have been constructed.
- On completion of the construction of each structure/section, transfer all recorded changes to a CAD file (original CAD files to be supplied by designer), or prepare new CAD drawings as required.
- Prepare completion reports for all major structures or elements of the contract works, incorporating as-built records and drawings, within 60 days of issue of any taking over certificate. Completion reports shall also include details of construction methodology, test results, O&M recommendations etc.
- The Consultant shall audit on a monthly basis, and maintain audit records for review by the Client, the Contractor's performance in producing as-built details and completion reports.

c- Operation and Maintenance Manuals

The Consultant shall review detailed Operation and Maintenance Manuals prepared by the Contractor, finalize as appropriate and submit to the Employer.

The O&M manual shall include at least:

- Reference to all relevant design and other reports, specifications etc. in order to provide a complete bibliography on the structures and plant such that the operation and maintenance staff can understand the basis of their functions.
- Details of any problems encountered during construction which may have a bearing on the future safe operation and decommissioning of the facilities.
- Full operating instructions for all systems; drawings, diagrams, charts, notices etc. to facilitate understanding of safe operation and maintenance.
- A maintenance schedule and consumables required to give reliable operation of the facilities.

3.4 SUPERVISION OF CONTRACT WORKS, GOODS SUPPLY, INSTALL, COMMISSIONING & OPERATION

a- Project Manager Function

The Conditions of Contract for the construction contracts are based on WB Conditions of Contract and special conditions. The Consultant will be required to obtain specific approval of the Employer before taking certain actions.

b- Construction Works and Materials Inspections and Approvals

The Consultant shall supervise and inspect the construction works including, but not limited to, the following activities:

- Supervising and inspecting the works of the contractors and suppliers for completion of the contracts in accordance with plans and specifications.
- Monitoring environmental, social, and health and safety requirements, whether specified or not, and ensuring that requirements are fulfilled.
- Taking photographs during construction and installation and keeping a daily diary of construction activities.
- Supervising and approve all tests to be carried out by the Contractor and suppliers.
- Supervising and approve final evaluation of all measurements made by the Contractor including the provision of all necessary measurement instruments.
- Supervising the assembly, installation, preliminary tests, initial operation, and preparation for commissioning of all machinery and equipment on site.
- Supervising through qualified inspectors jointly with the Employer the execution of the acceptance tests prior to convening the taking over committee and issuing the Taking Over Certificate.
- Preparing and submitting to the Employer inspection and test reports and certificates of acceptance.
- Supervising the commissioning of all structures and plant. The Consultant shall assist in the involvement of concerned operating staff, co-ordinate testing and commissioning programs and prepare taking over certificates.
- Administer day works as required.
- Follow up on the manufacturing of all equipment and participate on his own expenses and according to WAJ clearance in factory acceptance tests to ensure compliance with

the specifications, including monitoring of certificates of origin, and supervise their delivery to ensure compliance with contractual time schedules.

- Follow up on packing, transportation, and delivery, as well as temporary storage, and supervise the storage at sites of all equipment, materials, and supplies, together with ensuring that Letters of Credit are opened by the Contractor where appropriate.
- Promote a good working environment and monitor labor relations, living and community relations to be able to identify potential problems and solve them promptly as set forth in the various contracts.
- Enforce the maintenance and protection of traffic procedures and schemes as detailed in the drawings.
- Enforce the contract's Safety, Health, and Environmental Regulations.
- Ensure that the Contractor complies with the contract in respect of insurance.

DEFECTS LIABILITY, OPERATION AND MAINTENANCE PERIOD

The objective of the services during the operation and defects liability period is to oversee the maintenance and operation activities for one year, by drawing the attention of the contractor on any defect or parts replacements due to defect within their warranty periods and by inspection of the remedial works. For purposes of carrying out these services the Consultant shall assign his Resident Engineer to make two visits (one Man Month input for both visits) to carry out the following.

- Inspections of Outstanding works and Remediating Defects
- Prepare and issue Defects Liability Certificate
- Review and certify operation monthly certificates and Final Payment Certificate
- Prepare monthly progress reports to include the operator performance, system performance, Key Performance Indices and deviations from design objectives, etc.
- Prepare Final Completion Report

E. Reporting Requirements for Deliverables

The Consultant reporting requirements shall include but not limited to the following:

For Task 1: Supervision of works.

Reporting for Construction Period Services

INCEPTION REPORT

The Consultant shall submit the Inception Report within four weeks of commencement of the works contract. This report shall include results of the review of the contractor's work program, the contractors E&S submittals, any modifications thereto, status of the contractor's mobilization, advance payment, Bank guarantees and any matter requiring the Employer's attention and action. This report shall be also being submitted in 4 copies in addition to soft copy.

MONTHLY PROGRESS REPORTS

The Consultant shall prepare monthly progress reports for the duration of the contract. These are to be submitted in 4 hard copies and 1 electronic editable version by email and should reach the Client not later than 10 days after the end of the month being reported on.

The format of the monthly progress reports shall be agreed with the Client. The report will include but not be limited to the following:

- Useful information regarding the implementation of the contract allowing a technical and financial follow up of the project.
- Recording of any agreed changes on the original envisaged technical solutions.
- Major changes of quantities compared to contractual Bill of Quantities.
- Suggestions for resolution of any technical and other problems (a separate section will be given to cover issues, problems, and solutions) which occur and those affecting the progress of the work such as variation orders and claims of the contractors.
- Financial status of both the construction and the supervision of the works.
- Progress charts including percentages of completion of individual main work items and overall project/contract.
- weather information and charts; and,
- Construction and supervision data.

Monitoring of E&S requirements which include, but are not limited to, assessment of the degree of compliance of the contractor to all Environmental and Social instruments but not limited to the Contractors' Environmental and Social Monitoring Plan (CESMP), Occupational Health and Safety (OHS), Traffic Management Plans (TMP), The reporting shall cover implementation status of mitigation measures, results of environmental and social monitoring and evaluation, compliance with the environmental and social requirements including the Health and Safety measures, immediate reporting on any related incident/accidents. Corrective actions implemented, etc. This should include a section on the Consultant progressing of the activities, including schedule at the site to conduct monitoring and evaluating of the ES work, and the planned activities.

QUARTERLY PROGRESS REPORTS

The Consultant shall prepare quarterly progress reports for the duration of the contract following the same format of the monthly progress report and summarizing the past 3 monthly progress reports. These are to be submitted in 4 hard copies and 1 electronic editable version by email and should reach the Client not later than 10 days after the end of the month being reported on.

FINAL REPORT

The Final Report in five (5) hard copies and 1 electronic editable version by email and should reach the Client no later than one month after the substantial completion of construction works. The report should enable the Client to know the type, quality and quantity of materials used

and all information which together with the as-built drawings (original and 6 copies and 1 CD containing the As-built in electronic editable and non-editable format) and specifications will help in the maintenance of the works.

The report shall also include a summary of the principal difficulties encountered during construction and the means employed to overcome them, changes (if any) made in the original designs, modifications to specifications and conditions of contract, all variation orders, assessment of claims by the contractor, utilization of provisional and price variation and physical contingency sums, cumulative monthly payments to the Contractor, by date and number of payment certificate and break down into foreign and local currencies and including a similar payment schedule for supervision services in addition to overall assessment of the environmental and social requirements compliance. The details of the overall project costs (construction and supervision) with justification for any significant differences with the original shall be given in the final report.

Reporting for Defect Liability Period Services

Final Completion Report: At the end of the DLP and upon issuance of the defect's liability and the final payment certificates, the Consultant shall prepare within 30 days the Project Final Completion Report in five (5) hard copies and 1 electronic editable version by email and should reach the Client no later than one month after the end of Defect Liability Period. The report shall include a separate section on proposed future maintenance activities and related arrangements for the sections supervised. The Consultant shall also prepare a comprehensive

PV Performance Report: This report shall include, but not be limited to, the following:

- Yearly actual energy output;
- Year-to-date actual energy output;
- Yearly inverter availability;
- Year-to-date inverter availability;
- Yearly performance ratio;
- Yearly actual irradiation;
- Year-to-date actual irradiation;
- Forced outage log and descriptions;
- Description of major maintenance activities and events, including completed work orders;
- List of Employer's inventory used;
- Failure analysis reports, as necessary; and
- Relevant alarm logs.

Operation & Maintenance Reports

During the period of Supervising the Operation & Maintenance, the Consultant shall submit monthly reports showing events and activities for the previous month in 3 (Three) hard copies within 10 (ten) days after the end of the month being reported on.

Final O&M report, in 10 (ten) hard copies, will be submitted within one month after the expiration of the O&M period.

F. Team Composition & Qualification Requirements for the Key Experts**For Task 1:**

The Consultant shall employ as many staff as may be necessary to fulfill his obligations under the agreement. An assessment of the minimum staff required is set out here below. However, the Consultant shall make his own assessment of the staff necessary to fulfill his obligations. All such staff is to be fluent in the written and spoken use of the English Language and shall also be fully computer literate.

Office Backup Staff

The Consultant's key personnel proposed shall include but not necessarily limited to:

a) Electrical Engineer

- B.Sc. in electrical engineering
- 15 years of overall relevant engineering experience in alternative energy sector.
- Proficiency in the English language

b) Structural Engineer

- A minimum of B.Sc. degree in Civil Engineering or Structural Engineering, with at least 15 years' experience in building and steel structures design.
- Languages: Arabic, English is a plus.

c) Contract Management Expert

- A minimum of B.Sc. degree in civil engineering (contract management): General professional experience: At least 10 years of relevant experience in contracts management. Experience in using FIDICS or other IFI standard bidding documents is a must, knowledge with World Bank Standard Bidding Document is a plus.
- Languages: English and Arabic.

The CVs of all the positions mentioned above shall be submitted for conformity with qualifications. No Evaluations will be conducted.

Field Supervision Staff

The Consultant shall make his own assessment for the staff needed and their time participation for carrying out the work, but this must comprise at least the minimum specified here. The Consultant shall also make his own assessment of the staff necessary to perform the supervision of the contractor during construction and the defects liability period. However, upon construction start-up the consultant shall seek client's approval on the field staff in case of changes since proposal submission and their number.

No staff shall be mobilized until the Consultant has received formal written approval from the WAJ for each member of staff. Such approval shall be provisional. During the first three months of their duties, the performance of each member of the Consultant's staff will be monitored. If the performance of a member of the Consultants' staff is deemed inadequate by the client, the Consultants shall provide a replacement.

An indicative list of Key (K) staff is presented below:

- (i) **Position K-1: One Resident Engineer- Team Leader (Full Time)**
- A minimum of B.Sc. degree in engineering (preferably electrical engineering) with 15 years of overall engineering experience preferably relevant to renewable energy sector with at least 5 years in managerial position. Extensive experience in industrial relevant alternative energy projects supervision and contract administration. Duties include overall responsibility for management of staff. Maintaining contact with WAJ and Consultant's head office. Liaison with public authorities and general members of the public. Ensuring adequate supervision of works and maintaining control of programming, claims and variations. Issuing instructions to Contractor.
 - Languages : English and Arabic.
- (ii) **Position K-2: Three Site Engineers (Full Time)**
- A minimum of B.Sc. degree in Electrical Engineering with 5 years of experience in similar works including PV systems. Responsible for Supervision of all types of field works, materials and workmanship. Maintaining records of the Contractor's activities, plant and labour. Maintaining records of complete works.
 - Languages : English and Arabic.
- (iii) **Position K-3: Sr. Senior Electrical Engineer (Full Time)**
- A minimum of B.Sc. degree in Electrical Engineering with 10 years of experience in similar works including PV systems. Responsible for supervising the site engineers and supervision of all types of electrical field works, materials and workmanship; including proven experience dealing with electricity companies requirements for LV and MV.
 - Languages : English and Arabic.
- (iv) **Position K-4: One Sr. Structural Engineer (Part Time)**
B.Sc. degree in Civil Engineering or Structural Engineering, with at least 15 years of relevant experience in building and steel structures design.
- Languages: Arabic, English is a plus.
- (v) **Position K-5: One Sr. PV Expert (Full Time)**
- A minimum of B.Sc. degree in Engineering, with at least 10 years' experience in PV systems, including testing and commissioning of similar PV projects.
 - Languages: Arabic, English is a plus.
- (vi) **Position K-6: One Environmental Specialist (Part Time)**
- A minimum of B.Sc. degree in Engineering or Environmental and Social studies, with minimum experience of at least 7 years in ESMP's preparation of environmental and social safeguard instruments, and monitoring for relevant projects. Familiarity with environmental and social standards of international

financial institutions (IFI) is a must while previous experience with preparing safeguard instruments according to World Bank safeguard policies is a plus.
Languages: English and Arabic.

(vii) Position K-7: One Social Specialist (Part Time)

- Advanced degree in social sciences, anthropology, sociology, or a related field, with minimum experience of at least 7 years. Experience in conducting social assessments, preferably in the context of water projects. Knowledge of and experience with the social and cultural context under the project area. Ability to identify and address risks and impacts on disadvantaged or vulnerable individuals or groups. Familiarity with environmental and social standards, such as those of the World Bank or similar institutions. Strong analytical skills to understand complex social issues and to develop appropriate mitigation measures. Experience in preparing and reviewing social impact assessments and social management plans. Excellent communication skills to work effectively with a wide range of stakeholders, including local communities, government officials, and non-governmental organizations.
- Languages: English and Arabic.

(viii) Position K-8: Occupational Health & Safety Expert (Full Time)

- A minimum of a graduate degree in related field with minimum proven experience of at least 5 years in monitoring Occupational Health & Safety relevant projects (water/sewer/PV projects) including international experience. Experience should include workplace health and safety practices, strong knowledge of OSHA or similar regulations, analysis of potentially dangerous workplace practices/conditions and preparation/implementation of recommendations, incidents fact finding and root cause analysis. Certification from an international body in OSHA or similar is preferable.

Languages: English and Arabic.

The CVs of all the positions mentioned above shall be submitted for conformity with qualifications. Evaluations will be conducted for the CVs of positions K1, K2, K3, K4, K5, K6 K7 and K8.

G. Working Hours

During site construction and installation works the Consultant shall ensure that his staff are on site at all times when the Contractor is working.

H. Consultant's Facilities

The costs of consultant's facilities should be included in the Consultant's experts' fee rates. The Consultant must ensure that experts are adequately supported and equipped. In particular, the Consultant must ensure that there is sufficient administrative, secretarial and interpreting provision to enable experts to concentrate on their primary responsibilities. It must also transfer funds as necessary to support their work under the contract and to ensure that its employees are paid regularly and in a timely fashion.

During supervision stage all logistics including offices, site stationery and furniture will be provided by the contractor upon consultant requirement and conditions as per special contract specification.

I. Duration and Payment Schedule

Duration of the services is 26 (Twenty six) months composed of 13 (thirteen) Months for supervision of installation and 12 (Twelve) months for DLP and operation Period and 1(one) month for PV Performance report.

In view of the tasks to be achieved, it is anticipated that staff input will be 121 key-staff months, as follows:

For Task 1:

The Consultant shall quote the cost of his staff, technical, equipment and other costs as he deems to be required. He shall summarize his monthly costs and accompany the same with a schedule showing the involvement of project staff.

Staff Remuneration

Staff remuneration covering the monthly remuneration rates for each local and expatriate personnel:

Staffing (Task 1)	Input in staff-month (total)
Key Staff	
K-1 Resident Engineer	13 staff-month + 1 staff-month during DLP, Operation & maintenance + 1 staff-month for PV Performance report
K-2 Three Site Engineers	13 staff-month+ 2 staff-month during DLP, Operation & maintenance (for each engineer)
K-3 Sr. Electrical Engineer	13 staff-month + 1 staff-month during DLP, Operation & maintenance + 1 staff-month for PV Performance report
K-4 Sr. Structural Engineer	6 staff-month + 1 staff-month during DLP, Operation & maintenance
K-5 Sr. PV Expert	13 staff-month + 1 staff-month during DLP, Operation & maintenance + 1 staff-month for PV Performance report
K-6 Environmental Expert	4 staff-month (1 week/month) + 1 staff-month during DLP, Operation & maintenance
K-7 Social Specialist	4 staff-month (1 week/month) + 1 staff-month during DLP, Operation & maintenance
K-8 Occupational Health & Safety Expert	13 staff-month+ 1 staff-month during DLP, Operation & maintenance
Total	121 staff-month
Non-Key Staff	
One Surveyor Engineer	2 staff-month
Quantity Surveyor Engineer	2 staff-month
Total	4 staff-month

The Consultant is required to review and adapt and rationalize the outlined staff input in his proposal, such that there will be as much continuity of employment as is practicable in the teams it proposes to assign. The Consultant should consider the prospective peaks of construction activity and ensure the adequacy of staffing levels during such periods, and, at the same time, periods with low productivity levels should not be un-economically over-staffed. The objective is that the Consultant should propose to assign team that will be best suited to the methodology of its supervision and management systems. The Consultant should also consider the added value that will be provided by its organization.

Depending on the works currently in progress, details of staffing levels will be agreed through the course of the assignment with the Client.

It should be noted that the Consultant shall work according to the contractor's work schedule, which may include work during 7 (seven) days a week.