



BANGLADESH POWER DEVELOPMENT BOARD

Central Secretariat

WAPDA Building (1st Floor), Motijheel, Dhaka

www.bpdb.gov.bd

Memo No: 27.11.0000.101.14.079.25- 487

Date: 20/02/2025

REQUEST FOR EXPRESSION OF INTEREST
For Selection of Consulting services as Owner's Engineers (Consulting firm, International)
(Package Number: SD-1)

1. The Government of Bangladesh, with World Bank funding, is implementing the "HELP" project to support Host Communities and FDMNs (Forcibly Displaced Myanmar Nationals). Bangladesh Power Development Board (BPDB) plans to procure an 8 MW (AC) / 10 MWp (DC) Solar Power Plant with battery backup and associated distribution system for Bhasanchar, Noakhali. The EPC contractor will manage design, supply, installation, testing, and commissioning, while the consultant will support BPDB in ensuring all processes are executed correctly to guarantee the plant meets performance, reliability, and operational requirements. BPDB intends to apply a portion of the funds to eligible payments under the contract for which this Invitation for Expressions of Interest is issued.
2. The consulting firm will be selected using the Quality and Cost Based Selection (QCBS) method.
3. Interested consulting firm(s) must provide information indicating the qualifications to perform the services. The short-listing criteria are:
 - (a) General experience of the firm;
 - (b) Experience in similar projects of design, drawing, supervision of construction, installation, testing and commissioning of 3 MWp or higher capacity Solar Photovoltaic power plant along with minimum 4 MWhr Battery storage system;
 - (c) Financial soundness of the firm;
 - (d) Resources, key experts & support services of the firm.
4. A consulting firm can submit the Expression of Interest (EOI) alone if fully qualified. Alternatively, it can form an association as a Joint Venture (with joint responsibility) or use Sub-consultants (where the main consultant is responsible, but sub-consultants' qualifications are not evaluated). In case of an association, consultants must justify the rationale for the collaboration and outline the roles and qualifications of each JV member or sub-consultant for the assignment. Failure to provide the above explanation in the EOI may risk the association not being shortlisted for the assignment.
5. The attention of interested Consultants is drawn to paragraphs 3.14, 3.16, and 3.17 of the World Bank Procurement Regulations for IPF Borrowers, Fifth Edition, September 2023 ("Procurement Regulations"), setting forth the World Bank's policy on conflict of interest.
6. Consultants are requested to submit the following supporting documents against the above mentioned criteria: (a) Application Letter to Secretary of BPDB for Expression of Interest; (b) The firm's constitutional documents or the firm's Registration Certificate; (c) Company Profile and Organization chart with in position experienced staff for each area; (d) Brief of all similar works executed in the past 5 (Five) years; (e) Brief of all ongoing similar works and time period for completion of each work; (f) Brief of any new similar works being finalized/under process; (g) Audited Financial statement for last 3 (Three) years, inclusive of Balance sheet, P&L account etc.; (h) Consortium/ Association agreement on a non-judicial stamp of value BDT 300 (Taka Three Hundred only) or letter of intent to enter into such agreement along with the proposed consortium/ association agreement duly signed by all partners of the intended consortium/ association; (i) Working Methodology; (j) Applicant shall have to propose required expert/manpower with

mentioning the position to complete the whole task as per point 3 (Scope of services) of ToR of Owner's Engineers; (k) Experience of the engineering consulting services rendered in the Photovoltaic Power plant projects in last 10(ten) years, including: PDF copy of the engineering services contract cover page, Contract value page, signature page and end user certificate from beneficiary in letterhead. (l) History of litigation in courts or any arbitration proceedings (if any); (m) Any other information/additional information relevant to the work/assignment.

7. Detailed Scope of Work will be available in the Terms of Reference (ToR) which can be downloaded from the website of Bangladesh Power Development Board (bpd.gov.bd), and BPPA Website from the date of publication of EOI.
8. Interested Firms are requested to submit their EOI in 4 (four) sets, (one original and three duplicate) in the address of the undersigned and clearly marked "Request for Expression of Interest" for "Consultancy services as Owner's engineers for "Electrification at Bhasanchar of Noakhali District" on or before the submission deadline of **19/03/2025, 14:00 Hours** (Bangladesh Standard Time). Any submission received after the submission date & time will not be accepted.
9. Special instructions: Authority reserves the right to accept any or all of the EOI at any stage without assigning any reason whatsoever and without incurring any liability to the affected applicant(s).
10. For any clarification and background information, intending entities may contact at the given address:

Project Director
Electrification at Bhasanchar of Noakhali District
Biddut Bhaban (level-04), Abdul Gani Road, Motijhil, Dhaka
Email: pd.eob.bpdb@gmail.com


Muhammad Ali Baker
Id No-1-01916
Project Director
Electrification at Bhasanchar of
Noakhali District, BPDB, Dhaka


20.2.2025
(Md. Rashedul Hoque Prodhan)
Secretary
Bangladesh Power Development Board
☎ 02-223387350
Secretary@bpd.gov.bd

Memo No: 27.11.0000.101.14.079.25-487

Date: 20/02/2025

Copy for information & necessary action to (not according to seniority):

1. Secretary, Power Division, Ministry of Power, Energy and Mineral Resources, Dhaka.
2. Chief Executive Officer, BPPA, Dhaka (With a request to take necessary action for posting the said Notice in the BPPA Website).
3. Member, Admin/ Finance /Generation/ Distribution/P&D, BPDB, Dhaka.
4. Chief Engineer, PSC/Generation/ P&D, BPDB, Dhaka.
5. Chief Engineer, Distribution South Zone, BPDB, Chattogram.
6. Controller (Finance & Accounts), BPDB, Dhaka.
7. C.S.O. to Chairman, BPDB, Dhaka.
8. Director, Renewable Energy and R & D/ Design & Inspection - 2/ Purchase/ System Planning/ Project Planning/ Program/ Finance/ Contract & C.A, BPDB, Dhaka;
9. Superintendent Engineer, Noakhali, BPDB;
10. Project Director, Electrification at Bhasanchar of Noakhali District, BPDB, Dhaka
11. Director Public Relation, BPDB, Dhaka. (With a request to take necessary action to publish the notice);
12. Senior System Analyst, BPDB Dhaka, (With a request to publish the EOI notice & TOR at BPDB Website);
13. Office copy.


20/2/25
(Ahammad Bhuiyan Lipu)
Sr. Section Officer (Dev.) (Add. Chg.)
Central Secretariat, BPDB, Dhaka

**Terms of Reference (ToR)
of Owner's Engineer
For**

**"Electrification at Bhasanchar of Noakhali District under Host and Rohingya
Enhancement of Lives Project (HELP)"**

1. BACKGROUND

Bangladesh has been coping with the presence of around one million Forcibly Displaced Myanmar Nationals (FDMNs) since 2017, which has resulted in a protracted crisis requiring longer term support to host and Rohingya communities. The Government of the People's Republic of Bangladesh (GoB) has received credit and grant from the International Development Association (IDA) for the Host and Rohingya Enhancement of Lives Project (HELP). The objective of the project is to improve access to basic services and enhance disaster and climate resilience of the host communities and FDMNs. HELP is comprised of four components:

1. Resilient water, sanitation, and hygiene (WASH)
2. Climate and disaster resilient infrastructure, energy, and emergency response
 - 2.1. Rural Infrastructure Development
 - 2.2. Rural Roads Improvement
 - 2.3. Renewable Energy
3. Strengthening institutional systems to enhance service provision and support resilient development
 - 3.1. Capacity Building and Technical Assistance
 - 3.2. Host Communities and FDMN Awareness Raising and Skills Building Programs
 - 3.3. Reinforcement of Emergency Management Capacity
 - 3.4. Technology-driven Monitoring and Evaluation and Project Management

4. Contingent Emergency Response

Component 2.3 and parts of Components 3.1, 3.2, and 3.4 of the projects will be implemented by Bangladesh Power Development Board (BPDB) under the Ministry of Power, Energy and Mineral Resources. The project will be conducted through the implementation of works, supply of goods, and hiring of services.

The Project Implementation Unit (PIU) is mandated to manage the project in keeping with the Borrower's obligation to use the project fund with due regard to economy and efficiency and only for the purpose for which project financing was provided. BPDB intends to apply a part of the project financing to hire an Owner's Engineer following the World Bank Procurement Regulations.

2. ELECTRIFICATION AT BHASANCHAR OF NOAKHALI DISTRICT UNDER HELP PROJECT

The project consists of constructing, on a functional turnkey basis, a complete 10MWp (DC)/8 MW (AC) Hybrid power plant from solar source using 16 MWh Battery Energy Storage System (BESS) backed up by fossil fuel (diesel) generation at Bhasanchar. The plant will utilize solar energy as the main source of power generation, with fossil fuel generation playing only a secondary role. Key components include:

- a) Solar Power Generation: Supply, installation, and commissioning of photovoltaic modules (Mono Crystalline) with a minimum individual capacity of 550Wp, achieving a cumulative output capacity of 10 MWp (DC).



- b) Inverters: Supply, installation, and commissioning of micro grid-tied inverters achieving a cumulative minimum output capacity of 8 MW (AC).
- c) Battery Energy Storage System (BESS): Installation of a BESS with a total capacity of 16 MWh, including battery inverters.
- d) Fossil Fuel Backup: Installation of a diesel generator for backup power when renewable energy generation and storage cannot fully meet demand.
- e) Balance of System (BOS): Installation of BOS components for BESS, including Battery Management System, container, climate control, fire suppression system, and related components.
- f) Civil Works: Comprehensive civil works including all types of surveys, soil tests, excavation and development, internal road construction, fencing, and drainage system. The structural elements of solar power generation infrastructure are reinforced (with elevated platform and adequate foundation) to ensure resilience to expected climate change impacts: storm surge, extreme precipitation, and high wind.
- g) Distribution System: Development of an associated distribution system at Bhasanchar with end-mile connections.
- h) Testing and Commissioning: Installation, testing, and commissioning of the entire 8 MW (AC) Hybrid Power Plant.

Cost Breakdown:

- Solar panels and associated facilities: approximately 27% of total cost
- BESS: approximately 36% of total cost
- Distribution System: approximately 13% of total cost
- Fossil fuel (diesel) generator: approximately 1.5% of total cost
- Associated activities (Land acquisition, staffing, civil works, Installation, Testing & Commissioning): approximately 13 % of total cost

3. SCOPE OF SERVICES FOR OWNER’S ENGINEER

3.1. General Scope of Services

The Owner's Engineer (OE) for the Bhasanchar Solar Power Plant Project, implemented by the Bangladesh Power Development Board (BPDB), will provide both project management and construction management services. The OE's scope will cover the pre-construction and construction periods.

Key responsibilities include evaluating tender documents, and overseeing the construction and commissioning of the solar power plant, battery energy storage systems (BESS), and diesel generator backup. The OE will also manage the turnkey project, ensuring the installation of mandatory spare parts, minor distribution lines, and end-mile connections to consumers.

3.2. Detailed Scope of Services

The following description attempts to outline the OE’s Consultant’s tasks during execution of services in suitable detail. However, the OE shall bear in mind that the list of tasks and activities can by no means be considered as a complete and comprehensive description of the OE’s Consultant’s duties. It is understood that the OE will carry out any other work as deemed necessary to achieve the programmed objectives.

3.2.1 Phase 1 – Task 1 -Bid Evaluation

The OE will review all the bids submitted against the ITB with respect to technical compliance to the required specifications. The OE will prepare a detailed comparative statement covering all the

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pros and cons, compliance and non-compliances, drawbacks of each of the submitted technical proposals along with adequacy of drawing, technical parameters etc. OE will prepare a presentation for the technical evaluation committee with a synopsis of all the bid submissions in terms of technical compliances and in a broader view of turnkey project.

Upon successful selection of responsive bidder, the OE will prepare merit order of the responsive bidders under rated criterion and prepare a list with rated criterion marking matrix.

Phase 1 – Task 2 Post award Design/Drawing Finalization

Once the EPC contractor is finalized and awarded the bid and it starts the submission of the Design documentation, the OE will carry out the project vetting of all the Contractor's submitted documentation and samples (if any). This will include, but not be limited to, the following functions:

- Review and recommend for approval of all necessary drawings, analyses and calculations for all permanent structures prepared by the Contractor (buildings, foundations, structures, dikes, buildings, drains etc.).
- Review and recommend for approval of all electric drawings and calculations including the high voltage interconnection.
- Review and recommend for approval of all the water management infrastructure design including drains, dikes, culverts, sluice gates, pumps and any other related equipment that may be included in the Contractor's design.
- Review and recommend for approval of the engineering design, fabrication, erection and assembly drawings for solar field, electrical equipment and interconnection prepared by the Contractor,
- Check and recommend for approval of fabrication and assembling drawings of the remaining part of the plant prepared by the Contractor,
- Review and recommend for approval of construction design prepared by the Contractor, prior to the Employer's endorsement.
- Review the Project's work schedule to identify the critical path, main risks and their suggested mitigation.
- Review of the EHS -management plan to be implemented by the Contractor, under the responsibility of the Employer (environmental, health and safety aspects);
- Review of the EHS monitoring plan for the Employer for the further operation of the PV plant.
- Support to the Employer in the financial management (disbursements plan) of the project.
- Issue Project Vetting report to include above items and any other aspect that may be found critical during the review.

Approvals / Rejections will fall into three categories:

- Approved without comments
- Approved with comments that must be complied with during project execution
- Rejected – to be re-submitted

Phase 1 – Task 3 Factory acceptance test of Major components/ sub systems

The OE shall carry out Witnessing of Factory Acceptance Tests and be responsible for quality assurance of all major equipment such as PV modules, BESS, EMS (Energy Management System), Diesel Generators, DC Cables, inverters (both PV Inverter and Battery Inverters/PCS), transformers, metal frames, support structures and trackers (if and as applicable) as well as poles for the distribution system and material to be supplied under the EPC Contract. The specific items to be tested and the methods to be used will be agreed between the Employer and the Contractor beforehand. The OE will advise the Employer on the list of equipment that should be inspected.

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The OE, along with Employer's personnel, shall witness the determined factory tests in order to ensure a strict follow-up of the testing procedure; including certifications-related tests performed by third parties. It is not required to permanently assign an inspector in the manufacturer country. Inspection and witnessing of factory tests shall be done periodically as agreed with the Employer.

The OE price proposal for factory test witnessing shall include all OE personnel expenses, travel, and hotel and allowance expense (for 5 trips and accommodation 7 days per travel) as a single and separate item in budget. Written report shall be provided by the OE on each test witnessed by the OE or together with the Employer. Factory tests are optional, and they will take place if the Employer considers them relevant for the project or for capacity building.

The inspection and factory test witnessing include all major plants and equipment and critical material for the project, at least but not limited to the transformer, inverters, solar PV modules, BESS, EMS, Switchgear items.

The equipment to be supplied under this project will be subject to random sampling and the selected items should be tested in a certified testing station. Tests will be financed by the Contractor by witness of the OE and the Employer.

The procedure for testing should be prepared by the manufacturer/contractor in coordination with the OE and should be reviewed and submitted to the Employers before 4 weeks of the test.

The OE is expected to:

- Review and recommend for approval of proposals on quality assurance program and delivery program prepared by the Contractor.
- Monitor to ensure timely manufacturing and testing in accordance with the approved construction schedules.
- Provide periodical review of production schedules and delivery schedules by the Contractor.
- Review and recommend for approval of factory testing procedures submitted by the Contractor.
- Monitor to ensure the Contractor's workmanship in accordance with the specification.
- Witness tests and issue the corresponding report; and
- Produce a Factory Acceptance Test Report for each test. This will include the supplier's test as an exhibit.

3.2.2 Phase 2 – Construction and Commissioning

Phase 2 – Task 1 Supervision of construction works

During Phase 2, the OE will carry out the supervision of construction works. This will consist in supporting the Employer in monitoring the implementation of the Project in terms of time schedule, budget compliance, quality of work, performance of Project participants and compliance with the EPC contract and WB's EHSS Requirements.

The OE will continuously monitor the works and review the Contractor's periodic (monthly/quarterly) construction reports. The OE's Consultant's monitoring will include a review of:

- Progress against the base case schedule; compliance with contractual milestones; implications for meeting the overall target completion dates and confirmation whether or not dates and deadlines are likely to be achieved; where possible, provide quantitative measurements (i.e. "percent complete") and use GANTT charts presentation format.

- Original budget versus revised outcome, estimate and variance for each budget item, highlight any actual or expected variance in the overall Project cost and confirm whether the Project is likely to become operational within the given budget.
- Adequacy of the work performance with approved design, construction supervision and control program.
- Status of procurement and spare parts inventory, and shipping and transportation.
- adequacy of the change orders (if any) and impact of change orders on the overall construction time and budget.
- Quality of work, monitor contractor's overall management of the construction, and issue of non-conformity notices for non-compliance with approved design, certification and testing arrangements.
- Construction arrangements and compliance with good construction practice, waste management, health and safety and labor rights compliance.
- Compliance with the ESAP, Environmental and Social Management Plans (ESMPs) and other environmental and social documents.
- Progress in completing the electrical interconnection works; and
- Support the Employer in the reporting for the Financiers.

The OE will review the Contractor's disbursement requests and confirm achievement or otherwise of the relevant milestones in accordance with the relevant Project Agreements as well as such other technical certifications as may be required under the financing documentation.

The OE will report monthly and quarterly to the Employer on a routine basis and provide the corresponding progress reports. These will include ad hoc comments and review of unexpected events if they occur, such as proposed variations, material non-compliances or force majeure events.

The Employer's Project Manager and the OE shall hold site meetings regularly as required with the contractors' site representatives. These meetings will review the progress of the works and will be based on the monthly progress reports issued by the OE. Minutes of the meeting shall be prepared and signed by the participating parties. Copies of the minutes shall be given to the participants and to the Employer's management.

The OE's Consultant's Project Manager will keep a daily site log with

- Weather conditions.
- Major works completed, accepted or rejected.
- Written notices given to the Contractor.
- Problems encountered; and
- Reference of meetings and other events, which have bearing on the project development.

Phase 2 – Task 2 Commissioning

The OE will review the commissioning plan received from bidder with respect to relevant and applicable IEC and other standards as mentioned in the bid and finalize the plan in consultation with employer after bidder has accommodated all the changes/improvements instructed by OE/Employer to fulfill the relevant codes and standards mentioned in the bid.

During the commissioning phase, the OE will supervise the commissioning and acceptance tests along with the Employer and that the Plant achieves the expected performance and is ready to be handed over to the Employer.

- The OE will review and recommend to the employer, in the form of reports, the key acceptance, completion and commercial operation tests, including acceptance of civil works and electrical works, performance testing (including PR calculation during the PR test), energization, punch

list items and final handover (confirmation of the beginning of the guarantee period as defined in the EPC contract).The OE will also review and advise on as-built documentation completeness, snagging and punch list items and confirm ESAP compliance up to that point.

- The OE will assist the Employer in the preparation of the relevant completion certificates.
- Following the start of commercial operations the OE will provide a final report (the “Completion Report”) confirming that the Project has been passed operational acceptance phase and commissioned, all the works specified in the Project Agreements have been completed in accordance with their provisions including the performance test and WB’s EHSS Requirements, all relevant completion certificates have been issued and that the OE is not aware of any breach by the Contractor of its obligations under applicable law or the Project Agreements.

3.2.3 Phase 3 - Plant Operation Assistance

Phase 3 – Task 1

The OE will support the Employer to prepare a long-term (20 years) O&M management plan for each of component of the entire plant. This will include the following activities:

- The OE will review and support the Employer to confirm the acceptability of the final O&M procedures, including detailed environmental and social monitoring and management plans for the operational phase. The OE will also monitor and support the Employer to confirm the completion of punch list items.
- The OE will calculate the achieved PR during the reviewed period using the data provided by the Employer.
- The OE will support the Employer in the preparation of provisional FAC test plan.
- The OE shall recommend and advise the Employer on requirements for the necessary reports and data associated with Final Acceptance of the Project, as defined in the Final Acceptance protocols. This will include, inter alia:
 - o Required content and format of the test report by the contractors.
 - o Methodology/approach for evaluating compliance with performance guarantees, interconnection adequacy.
 - o Evaluation of expected deviations to technical performance assumptions contained in the pro forma assumptions incorporated into the financial model.
 - o Evaluation of technical deviations that may impact operations of the Project;
 - o Procurement and spare inventory procedures.

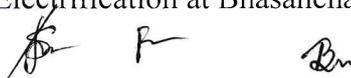
Quality Control:

OE before submitting any report to the Employer, the OE is obliged to carefully screen the respective document to ensure the required quality. The correspondent cost shall be included as a separate item in the financial proposal.

3.3 Engineering Review and Office Based Project Management

A1. Engineering & Design Review and Approval (Office Based)

- a. Ensure EPC Contractor's services and related documentation stay in conformance with the EPC contract.
- b. Evaluate the EPC Contractor's major engineering and design criteria, selection of equipment, and checking of related documents and data.
- c. Validate delivery of equipment, parts, and materials, with regard to completeness, delivery time, and proper identification system, in accordance with the EPC Contract.
- d. Review and recommend for approval of the EPC Contractor's proposals, including design, documents, ITP, method statements and other submissions.



- e. Review and recommend for approval of plans and manuals, including but not limited to the O&M Manual, to be submitted by the EPC Contractor.

A2. Project Management (Office Based)

- a. Monitor the EPC Contractor's project implementation plan and performance, including but not limited to time schedules, functional tests, quality assurance, site equipment and assembly procedure.
- b. Monitor and coordinate scheduling between the EPC Contractor and his sub-contractors and suppliers.
- c. Report on the EPC Contractor's progress of work with regard to planned schedule, pricing and performance.

3.4 Construction Management Services (Site Based)

- a. Monitor the EPC Contractor's procedures for site safety, security, emergency first aid, environmental protection, cleanliness and waste disposal.
- b. Review, comment upon and agree the Installation Method Statement, inspection and test procedures, and quality control procedures.
- c. Inspect equipment and supervise the quality of work during assembly and construction.
- d. Follow-up and supervise shop tests, check test results and related documentation, and check test certificates.
- e. Monitor and check supplies and services of major suppliers and other contractors to ensure their compliance with the contract drawings and specifications.
- f. Monitor and inspect the quality of supplies and services at site and the workmanship of the EPC Contractor.
- g. Supervise the implementation by the EPC Contractor of corrective measures for defective parts.
- h. Provide risk management and investigate and advise on contract claims.
- i. Monitor the timely completion by the EPC Contractor of all technical documentation including operating instructions, specifications, charts, and as-built drawings and descriptions
- j. Monitor the EPC Contractor's compliance with time schedules and propose countermeasures in the case of critical delays on major parts of the work.
- k. Review, comment and recommend for approval of the Performance Guarantee (PG) test procedure submitted by the EPC Contractor, ensuring that it conforms to specified codes and standards required by the contract.
- l. Witness the PG test to ensure that it is conducted in accordance with the approved procedure.
- m. Review the PG test report, verify the test results and recommend to BPDB whether or not all required performance guarantees are met.

3.5

3.3. Safeguards Compliance (Site Based)

- a. Ensure compliance with environmental, social, and gender safeguards throughout the construction and commissioning phases as per the HELP ESCP.
- b. Adopt and implement an Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), Labor Management Procedures (LMP) and SEA/SH Prevention Plan, consistent with the relevant ESSs.
- c. Adopt and implement a Stakeholder Engagement Plan (SEP) for the Project, consistent with the relevant ESSs.
- d. Carry out site specific E&S screening and assessment in accordance with the ESMF to identify E&S risks and impacts of each sub-project as per the procedure mentioned in the ESMF including vulnerability to access development benefits, risks of GBV/SEA/SH and share the screening report with World Bank for review and clearance. Depending on the outcome of the

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screening result, site specific environmental and social assessment/site specific ESMP for each sub-project would be prepared and shared with the Association for review.

- e. Incorporate the relevant aspects of the ESCP, including, inter alia, the relevant E&S instruments, the Labor Management Procedures, SEA/SH Prevention Plan and code of conduct, into the ESHS specifications of the procurement documents and contracts with contractors and supervising firms. Thereafter ensure that the contractors and supervising firms comply and cause subcontractors to comply with the ESHS specifications of their respective contracts.
- f. Adopt and implement the Labor Management Procedures (LMP) for the Project, including, inter alia, provisions on working conditions, management of workers relationships, occupational health and safety (including personal protective equipment, and emergency preparedness and response), code of conduct (including relating to SEA and SH), forced labor, child labor, grievance arrangements for Project workers, and applicable requirements for contractors, subcontractors, design and supervising firms and monitoring and evaluation firm.
- g. Support BPDB in establishing and operating a grievance mechanism for Project workers, as described in the LMP and consistent with ESS2.
- h. Adopt and implement a Waste Management Plan (WMP), to manage hazardous and non-hazardous wastes, consistent with ESS3. Moreover, adopt an e-waste management plan for the solar energy supply component.
- i. Carry out E&S monitoring as per ESMP and other relevant plans and prepare E&S monitoring reports following frequency as set forth in the project ESCP.

4. RESPONSIBILITIES

- a. The Employer shall arrange for issuance of all necessary permits and authorizations required by the OE for carrying out the Services.
- b. The OE's inability to perform any of the tasks or sub-tasks due to non-availability of relevant data or documents shall not result in a reduction of the contract price and no payment shall be held up on this account.
- c. Assess the suitability of the Bhasanchar site for solar power generation and battery storage, including factors like solar irradiance, environmental conditions, and micro-grid connection feasibility
- d. Oversee the integration of the 16 MWh BESS into the solar plant, ensuring it supports micro- grid stability, improves power quality, and optimizes the plant's energy dispatch.
- e. Ensure all designs adhere to local and international standards, including those for safety, electrical systems, environmental protection, and system performance.
- f. Oversee the performance of subcontractors to ensure that they meet their contractual obligations and work is carried out according to project requirements.
- g. Ensure proper management of warranties provided by equipment suppliers, ensuring prompt rectification of any defects or performance issues.
- h. Assist the owner in developing long-term O&M strategies for the solar plant and BESS, considering expected performance, degradation, and necessary upgrades.

5. REPORTING

- a. The OE shall prepare and submit to the Employer the following reports in a format acceptable to the Employer.
- b. Inception report not more than four weeks after commencement of Services.
- c. Technical reports on review of the EPC Contractor's engineering design, drawings, specification and related documents, as required by the project schedule.
- d. A Monthly Work and Activity Plan not less than one week before start of each calendar month.
- e. A Monthly Progress Report not more than one week after the end of each calendar month.

- f. A Quarterly Progress Report not more than one week after the end of every quarter.
- g. An Interim Progress Report annually, or any other time interval as agreed by the Employer.
- h. Project Completion Report on completion.
- i. Review and confirm the operational manual submitted by the EPC.
- j. Prepare a FAC test and acceptance plan, along with a matrix.
- k. Prepare all environment, social safeguard & gender related reports as per WB guidelines.
- l. Any other report related to project activities as may be required by the Employer.

6. EXPERTISE REQUIRED

The Employer envisages that the OE will employ the following **Key Experts** in its team and that each Key Expert should have the qualifications and experience as shown in the following paragraphs. The use of “he” does not preclude the nomination of female Key Experts.

Sl. No.	Expert Position	Person-months	Education and Qualification	Expected Roles and Responsibilities
International OE Positions:				
1.	Team Leader (Solar Expert)	10	<p>The expert shall have a bachelor or higher degree in engineering or higher degree in relevant subject (Electrical/Mechanical etc.). The incumbent should have at least 15 years of professional experience of which at least 5 years in the development of solar power plants. The expert should have global experience.</p> <p>The expert, as team leader of OE, completed at least 2 Solar PV power plants with an aggregated total capacity of 15 MWp. The expert must have at least 2 experiences of successfully developing PV ESS system of a minimum capacity of 5 MW. The expert will get added advantage (i.e. more points) if the person implemented at least one project financed by the World Bank, the Asian Development Bank or Japan International Cooperation Agency and has work experience in south Asia or Asia pacific region. The project manager shall be fluent in English.</p> <p>This position shall not be subcontracted to a third party or cannot be assigned to any professional currently holding an executive management position within the firm/company.</p>	<p>The team leader will undertake the following:</p> <ul style="list-style-type: none"> (i) Coordinate with other team members to develop a detailed work plan and implementation schedule; (ii) Review and prepare the scope, implementation schedule, contracting, and implementation arrangements; (iii) Ensure reports are delivered on time to required quality and schedule; (iv) Lead the updating and enforcement of the operation and maintenance (O&M) manuals and system design books developed by the Contractor; (v) Supervise and monitor the project implementation, particularly during construction; (vi) Develop and maintain a project safety plan and project quality assurance plan and ensure compliance with plan. (vii) Certify As-Built drawings and checking the progress payments; and (viii) Prepare quarterly reports and analyse causes of delay, if any, and propose remedial measures as necessary.

 F Bm

Sl. No.	Expert Position	Person-months	Education and Qualification	Expected Roles and Responsibilities
2.	Solar/ Electrical Engineer	5	<p>The expert shall have a bachelor or higher degree in relevant engineering subject (Electrical etc.). The incumbent should have at least 10 years of professional experience of which at least 5 years on solar PV technology and electrical engineering. The expert has experience in construction supervision of at least two solar PV power plants totalling at least 20 MWp and including at least one PV power plant interconnected with high voltage grid network through a substation (11 KV or higher voltage). Experience in the region is desirable. The expert should have global experience.</p> <p>This position shall not be subcontracted to a third party.</p>	<p>The Expert will undertake the following:</p> <ul style="list-style-type: none"> (i) Work closely with the project manager in ensuring efficient project implementation; (ii) Review the technical specification of the solar PV power plant prepared by the Contractor; (iii) Assist Project Manager on technical matters; (iv) Review and support the employer to confirm the contractor's design submissions; (v) Supervise and monitor the project implementation related to solar and electrical system and support facilities; (vi) Monitor progress against plan; (vii) Certify As-Built drawings and progress payments; (viii) Ensure adherence to project safety plan and quality assurance plan; and (ix) Support on the updating and enforcement of the operation and maintenance (O&M) manuals and system design books developed by the Contractor.
3.	Energy Storage Expert/Engineer	2	<p>The expert shall have a bachelor or higher degree in Electrical engineering. The incumbent should have at least 10 years of professional experience of which at least 5 years in the design and implementation of Utility scale/micro grid BESS with at least in 2 projects each not less than 5 MWh.</p> <p>On site experience of MW scale PV-DG-BESS system in any off-grid island will be an added advantage. Previous experience in the region is desirable. The expert should have global experience.</p>	<p>The Expert will undertake the following:</p> <ul style="list-style-type: none"> (i) Work closely with the project manager in ensuring efficient project implementation; (ii) Review the technical specification of the BESS system prepared by the Contractor, ensuring technical and anticipated operational compliance to the bid requirement. Functionality of the EMS system with all the component of PV, BESS & DG subsystem. (iii) Prepare test plan (FAT & OAC) for the BESS system (iv) Review the total Capacity Test of BESS after installation. (v) Review and support the employer to confirm the contractor's design submissions; (vi) Supervise and monitor the project implementation related to integration of BESS to PV system and support facilities; (vii) Monitor progress against plan; (viii) Ensure adherence to project safety plan and quality assurance plan; and

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				Support on the updating and enforcement of the operation and maintenance (O&M) manuals and system design books developed by the Contractor.
4.	Commissioning Engineer/I&C Engineer	1	The expert shall have a bachelor or higher degree in electrical engineering. The incumbent should have at least 15 years of professional experience of which at least 8 years of relevant experience on commissioning of solar power plants. The expert should have commissioned at least 2 projects during the last 5 years, with an aggregated total capacity of 100 MWp or higher. The expert should have global experience.	The Expert will undertake the following: (i) Coordinate and finalize all commissioning schedules with the EPC contractor; (ii) Develop an inspection and testing plan covering factory and site tests; (iii) Review and approve all final commissioning procedure/methodology in line with relevant International standards; (iv) Supervise testing and commissioning as required; (v) Inspect and verify calibrations/certifications of the testing equipment as per relevant standards; (vi) Monitor and verify all guaranteed values as per contract terms; (vii) Ensure adherence to project safety plan and quality assurance plan; (viii) Prepare the impact reports and remedies in case of any test failures; and (ix) Prepare report for the Employer to issue final acceptance certificate.
Sub-total International:		18		
National OE Positions:				
5.	Deputy Team Leader (Solar PV Expert)	20	The expert shall have a bachelor or higher degree in engineering or higher degree in relevant subject (Electrical/Mechanical etc.). The incumbent should have at least 10 years of professional experience of which at least 3 years in the development of solar power/renewable energy. The expert, completed at least 2 Solar PV power plants with an aggregated total capacity of 5 MWp.	The deputy team leader will undertake the following: (i) Coordinate with other team members to develop a detailed work plan and implementation schedule; (ii) Review and prepare the scope, implementation schedule, contracting, and implementation arrangements; (iii) Ensure reports are delivered on time to required quality and schedule; (iv) Supervise and monitor the project implementation, particularly during construction; (v) Develop and maintain a project safety plan and project quality assurance plan and ensure compliance with plan. (vi) Certify As-Built drawings and progress payments;

Sl. No.	Expert Position	Person-months	Education and Qualification	Expected Roles and Responsibilities
				<p>(vii) Prepare quarterly reports and analyse causes of delay, if any, and propose remedial measures as necessary; and</p> <p>(viii) Coordinate with other team members and help the Project Manager review the Contractor's work plan and construction schedule.</p>
6.	Electrical Engineer	4	<p>The specialist should have a bachelor or higher degree in relevant engineering subject (Electrical etc.). The incumbent should have at least 5 years of professional experience of which at least 2 years on solar PV technology and electrical engineering. The expert has experience in construction supervision of at least two solar PV power plants totalling at least 5 MWp and including at least one PV power plant interconnected with high voltage grid network through a substation (11 KV or higher voltage).</p> <p>Experience in PV_BESS system will be an added advantage.</p>	<p>The Expert will undertake the following:</p> <p>(i) Work closely with the deputy project team leader in ensuring efficient project implementation;</p> <p>(ii) Review the technical specification of the solar PV power plant prepared by the Contractor;</p> <p>(iii) Assist Project Manager on technical matters;</p> <p>(iv) Review and support the employer to confirm the contractor's design submissions;</p> <p>(v) Monitor the project implementation related to solar and electrical system and support facilities;</p>
7.	Civil Engineer	5	<p>The specialist should have a bachelor or higher degree in Civil engineering, with a minimum of 7 years of professional experience. The expert will get added advantage if s/he has experience in PV power plants.</p>	<p>The Expert will undertake the following:</p> <p>(i) Coordinate with other team members and help the deputy project team leader review the Contractor's work plan and construction schedule;</p> <p>(ii) Monitor the civil works and ancillary services (security, water supply, etc.) of the Project;</p> <p>(iii) Ensure adherence to project safety plan and quality assurance plan; and</p> <p>(iv) Checking As-Built drawings and progress payments.</p>
8.	I&C Engineer	1	<p>The expert shall have a bachelor or higher degree in electrical engineering or relevant fields. The incumbent should have at least 5 years of professional experience of which at least 2 years of relevant experience in commissioning of solar power plants. The expert should have commissioned at least 1 project during the last 5 years.</p>	<p>The Expert will undertake the following:</p> <p>(i) Checking all commissioning schedules with the EPC contractor;</p> <p>(ii) Coordinate with other team members and Review all final commissioning procedure/methodology in line with relevant International standards;</p> <p>(iv) Supervise testing and commissioning as required; and</p> <p>(v) Inspect and verify calibrations/certifications of the</p>

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Sl. No.	Expert Position	Person-months	Education and Qualification	Expected Roles and Responsibilities
				testing equipment as per relevant standards.
9.	Environmental Specialist	6	The specialist should have a master's degree in environmental science or any branch of social sciences or a related field. The incumbent should have at least 15 years of professional experience of which at least 5 years of relevant experience in electricity sector or other infrastructure project. The expert should have experience in implementing projects financed by the World Bank Group/ the Asian Development Bank/ JICA.	The Expert will undertake the following: (i) Monitor compliance with and implementation of safeguards and of the Environmental and Social Management Plan (ESMP) and Resettlement Action Plan (RAP) provided by the Employer to ensure environmental and social impacts of the Project are adequately managed. (ii) Ensure the environmental safeguard compliance during construction of the solar PV power plant, high voltage systems and support facilities. (iii) Recommend additional monitoring plans and/or additional measures required to address identified significant environmental/social impacts. (iv) Ensure that the Contractor's ESHS performance is in accordance with good international industry practice and delivers the Contractor's ESHS obligations; and (v) Ensure that the cost of implementing of mitigation measures for identified environmental/social management and monitoring plans, and any strengthening measures, are included in the proposed Project's cost.
10.	Social Safeguard/ Gender Specialist	5	The specialist should have a master's degree in gender studies, social science, or a related field, with a minimum of 10 years of professional experience. They should have experience in implementing social, and gender safeguards in renewable energy projects, particularly in developing countries.	The Expert will undertake the following: (i) Monitor the preparation and execution of Social Safeguard practices by all Contractors on site during construction. (ii) Conduct Gender analysis to monitor the impact of project in different genders
Sub-total National:		41		
Total Person-Months:		59		

7. DURATION OF SERVICES

The estimated duration of the OE's contract is expected to be as follows:

- Core Period: design, construction, installation, testing, commissioning, preparation of defects punch list, and reporting –36 months.

