

REPUBLIC OF TURKEY
MINISTRY OF ENVIRONMENT AND URBANIZATION
General Directorate of Construction Affairs

TURKEY ENERGY EFFICIENCY IN PUBLIC BUILDINGS PROJECT
(P162762)

**TERMS OF REFERENCE (TOR) FOR
CONSULTING SERVICES ON THE SUPERVISION AND COMMISSIONING FOR ENERGY EFFICIENCY
BUILDING RENOVATIONS
(REF: EEPB/WB/MoEU/QCBS-DES&SUP-03)**

I. Introduction

The Ministry of Environment and Urbanization (MoEU) has applied for financing from the World Bank toward the cost of the Energy Efficiency in Public Buildings Project (EEPBP) and intends to apply part of the proceeds for consulting services.

The project investments will focus primarily on the renovation of central public buildings with high energy consumption and shorter pay-back periods. The proposed project would be implemented through two components: (i) energy efficiency (EE) investments in central government buildings; and (ii) technical assistance (TA) and project implementation support. The General Directorate of Construction Affairs (GDCA) under the MoEU has been delegated to assume overall responsibility for the project. This will include completion of the necessary activities to support project preparation as well as implementation for the six-year project period. In parallel, grant funding has been mobilized from the Clean Technology Fund (CTF) to help analyze the investment needs and potential of the central government buildings.

The GDCA has established a project implementation unit (PIU) to administer all aspects of the project, including selection of the buildings, procurement of the various contractors (e.g. energy audits, technical designs, renovation works, construction supervision, savings verifications, technical assistance or consultancies, etc.), and monitoring.

Through the EEPBP, approximately 500-700 public buildings will be renovated for EE. Investments would include building envelope measures (roofs/wall insulation, windows, doors), heating/cooling systems, water heating, pumps/fans and lighting and some renewable energy (RE) applications (e.g., rooftop solar PV, biomass heating, solar water heating, geothermal heat pumps) to offset the building's electricity/fuel use. A limited amount of funds may be allocated for non-EE/RE measures (e.g., rewiring, minor structural repairs, painting, seismic safety, etc.).

Within the framework of the EEPBP, a consulting firm will be employed to carry out construction supervision and building commissioning.

II. Scope of Services

The Consultant will be required carry out construction supervision and building commissioning services, supervise remedial works to rectify defects that arise during the Defects Notification Period (DNP), and prepare Measurement and Verification (M&V) reports for the renovated buildings.

The estimated number of buildings for renovation in 5 building complex is 16 buildings and 258.732 m2. The buildings and the locations are listed below:

Lot 3:

| List of the buildings | Total number of buildings | Construction Area (m ²) | Location |
|--|---------------------------|-------------------------------------|----------|
| Bağcılar Eğitim ve Araştırma Hastanesi | 10 | 61.864 | İSTANBUL |
| Marmara Üniversitesi Pendik Eğitim Araştırma Hastanesi | 1 | 143.928 | İSTANBUL |
| Başakşehir Devlet Hastanesi | 1 | 16.410 | İSTANBUL |
| Dr. Necmi Ayanoğlu Silivri Devlet Hastanesi | 3 | 21.470 | İSTANBUL |
| Esenyurt Devlet Hastanesi | 1 | 15.060 | İSTANBUL |
| Total | 16 | 258.732 | |

III. Description of the Consultants's Tasks

Principles of consultant assignment

- The Consultant as "the Engineer" shall also be responsible to carry out all the duties envisaged in the Contractor's contract document. The Consultants shall perform all duties which may be required to do pursuant to any Contract entered into between the Client (designated as "the Employer") and the Contractor where Consultants are designated as "the Engineer" in such Contract.
- The Consultant shall provide consulting services for execution of works with qualified personnel approved by Client.
- The Consultant shall execute the services in accordance with recent laws and regulations,
- The Consultant shall supervise and oversee all aspects of the construction and installation of the various components of the works and engineering services to ensure strict compliance with the drawings and contract documents, subject to any expressed or implied terms contained in the Contract entered into between the Client and the Contractor,
- The Consultant shall stipulate the criteria, the planning and the procedure for all tests and inspections necessary for the materials, equipment, plant and workmanship and the commissioning of the Works and shall provide supervision and inspection for these tests. The Consultant shall compile a record of all such tests and compare the results with the specifications, standards or with the performance criteria that has been guaranteed by the suppliers or contractors,
- Consultant shall follow up evacuation of buildings (if needed) with respect to the planned schedule of the works, communicate with the related authorities and inform the Client timely on the issues identified,
- The Consultant shall prepare the necessary documents required for obtaining the renovation construction permit (if needed) from the Municipality and assist the Contractors for obtaining the renovation construction permit (if needed),
- The Consultant shall arrange weekly and monthly meetings with contractors, inform the Client about progress of the work and activities, attend any meetings reasonably convened by the

Client and provide any information or evidence reasonably required by the Client at any public meetings or inquiries which might be held in connection with the Project,

- The Consultant shall check the Contractor's valuations for payment on account and issue certificates according to the Conditions of Contract used and shall also be responsible for agreeing with the Client on each payment certificates in payable amount. The actual procedure and presentation of the certificates, supporting documents, etc. shall be discussed and agreed with the Client,
- The Consultant shall review and report on any financial claims submitted by the Contractors within 2 weeks of receipt of such claim submission. If payment certificate is not prepared by contractor, consultant will prepare payment certificate for contractor,
- The Consultant shall have a quality review of the designs, plans, technical specifications, BOQs, etc. that were originally prepared during the first phase design services contract and prepare any additional documents and detailed designs (if needed) that would minimize variation orders during the construction/installation stage. However, in case it is considered necessary by the Consultant or the Client that any alterations in any of the Contract Documents, Plans or Specifications are advisable (due to reasons not attributable to the works contractor), the Consultant shall prepare and submit such alterations to the Client for approval, in a timely manner, supported by the necessary calculations, details and, time and cost implications. The Consultant shall state whether the alterations will cause any delay in the work program, and therefore the contractor(s) to be entitled any time extension or not, supported by necessary documentation. On receiving written approval from the Client, the Consultant shall promptly amend the existing designs or supply any additional designs, plans, drawings and specifications where required or found necessary for the satisfactory completion of the works. Furthermore, the Consultant shall review and approve Contractor's and manufacturer's drawings and where appropriate incorporate these drawings into the overall design and review alterations which might be requested by the Contractors during the course of Works. The Consultant shall fully inform the Client about the cost and time impact and any other consequences of his any sort of proposals (such as revisions, recommendations, etc). The Client shall not be responsible from the consequences of the fact of which the Client is not informed in advance,
- The Consultant shall not delay any action required to be taken by the Consultant during the construction. In any case, all the correspondences received from the contractor shall be reviewed, evaluated and responded the latest within one week. Any claim from the contractor(s) under the construction contracts shall be evaluated by the Consultant and necessary recommendation shall be made the latest within two weeks, as well,
- The Consultant shall assist in the setting of all disputes or differences, which may arise between the Client and the Contractors, in a timely manner. In the case of litigation and arbitration the Consultant shall assist the Client in the preparation of the documents needed by the Client,
- Since the similar construction works will also be supervised by other Consultant in other sites, the Consultant shall co-operate with the other Consultant and join the meetings whenever required by the Client,
- Awarded consultants and their nominated sub-consultants (if applicable) shall have a local branch office in Ankara for the administrative communication aspects (corresponding letters, printing or plotting of project document, etc.).

Not limited to the above, the specific tasks are described as follows:

Task 1: Carry out construction supervision and building commissioning services

This task is estimated to last about 8 months, from the time of signing the contract with the construction contractor until completion of the renovations works.

1a) Supervise construction projects (including ESCO pilot):

- Oversee all phases of the project and contract and sign payment parts as specified on contract.
- Conduct regular (semi-monthly or more often if required) site visits of each construction site.
- Prepare semi-monthly progress reports and send a copy of material acceptance to the construction company and PIU.
- Administer contracts; evaluate schedules; monitor progress of the contractors on projects; ensure that project deadlines are met; proactively identify renovation challenges and propose solutions; ensure installation and renovation works follow design specifications and good practices for EE renovations.
- The Consultant, shall ensure the construction progress is in compliance with the workplan, building access plan, and restrictions (for access to users during the construction phase).
- Oversee implementation of the Environmental and Social Management Plans (ESMPs), including supervision regarding proper removal, packaging, and transport and disposal/interim storage of the hazardous materials, use of personal safety equipment, and monitoring in line with requirements of design and Environmental Mitigation and Monitoring Measures based on the Environmental and Social Management Framework.
- Ensure that all health & safety measures are respected by the construction company in compliance with the monitoring and reporting requirements of the World Bank.

1b) Evaluate the completion and implement commissioning of the construction projects until Taking-over Stage

- Confirm the projects' compliance with the investment plan. In case of deviation from those plans, justification of the differences and evaluation of consequences in terms of compliance of the project with the eligibility criteria of the facility.
- Before issuing the Taking-Over Certificate, the Consultant will enforce any obligation placed on the construction contractor to remove all obstructions, surplus materials, plant, wreckage, rubbish and temporary works.
- Upon completion of the works, the Consultant will require the construction contractor to remove all plant, equipment and materials except those required to complete any outstanding or remedial works and facilities required by the Consultant during the Defects Notification Period.
- The Taking-over certificate shall be prepared and issued by the Consultant in consultation with the Client, following the successful completion of the works provided that the Consultant is satisfied that any defects or deficiencies have been successfully rectified.
- The Consultant shall oversee training of O&M staff on new equipment. The issuance of the Taking-over Certificate shall be subjected to:
 - ✓ The Contractor having provided the operating and maintenance manuals, training of O&M staff on new equipment, as well as all the drawings and documents handed over to the Client requested in the contract.
 - ✓ No major deficiencies are found and minor deficiencies are listed in the defects list by the Consultant.
- The Consultant shall witness the works performance tests carried out after completion and will analyze, evaluate and approve the final performance tests with the concurrence of the Client. The analyses, results and conclusions with recommendations shall be compiled in

the project completion report to be submitted to the PIU.

- Prepare Energy Performance Certificate (EKB): The consultant shall prepare the energy performance certificate of the building before and after the completion of the works with the BEP-TR program.

Deliverables

- **1a) Interim semi-monthly progress reports for works contract.** These will describe the physical and financial progress of the works and will address contractual and technical matters. They shall provide information on (tentative list below that can be amended):
 - (i) a description of physical progress, with reference to the program;
 - (ii) explanations for differences between actual and forecast progress;
 - (iii) a summary financial report containing cash-flow forecasts and budget expenditure;
 - (iv) status of payments and requests for payment;
 - (v) explanations for differences between actual and forecast cash-flow o summary of claims and disputes;
 - (vi) major milestones, obstacles, achievements, constraints on progress and problems encountered and appropriate identified solutions;
 - (vii) remarks on procedural issues;
 - (viii) variations and proposals for future variations to the timing and budgets of individual activities;
 - (ix) a projection of activities for the forthcoming month;
 - (x) recommendation for further actions and improvements, both short- and long-term;
 - (xi) records of human resources, mechanical equipment and materials, testing and quality control;
 - (xii) local issues/stakeholder issues;
 - (xiii) a summary of environmental issues, including compliance with the ESMP.
- **1b) Draft project completion report,** to be delivered 4 weeks prior to completion of the contract period. These will provide an overview and measure of success of the project. They shall contain: (i) a summary of information contained in the previous monthly reports; (ii) an overall review of the project; (iii) a description of physical progress, with reference to the program; (vi) explanations for differences between actual and forecast progress; (v) a summary financial report containing cash-flow forecasts and budget expenditure; (vi) the status of payments and requests for payment; (vii) explanations for differences between actual and forecast cash-flow on summary of claims and disputes; (viii) an assessment of impact of project on the number of people employed; (ix) a report on problems encountered and how they were overcome; (x) recommendations for maintenance works; (xi) report on the compliance with ESMPs. The Consultant shall review and approve in consultation with the Client the relevant completion reports with enclosed test results for the particular work sections submitted by the Contractor. These reports shall address all Tests on Completion and Tests after Completion including their results. The approval of the completion reports shall be a pre-condition for issue of any Taking-over Certificate and Tests after Completion.
- **1b) Final inspection report.** The final inspection report of the Consultant shall address the status of the work items at the time of Taking-over by the Client. The minor outstanding works, defects, failures, shortcomings are to be listed and compiled. Possible remedial actions by the Contractor as needed, are to be listed and noted, including the given period of time the Contractor is to rectify. The material handed over by the Contractor to the Client will be checked and listed for status and completeness

- **1b) Final completion report**, to be delivered 2 weeks after completion of the contract period or after comments on the draft project completion report provided by the Client. The contents will be as for the draft completion report, with the incorporation of comments/suggestions from the reviewing parties. The report shall contain at least: (i) Copies of requests for issuance of a takeover certificate; (ii) A list of approved As-Built Design submitted by the Contractor showing all the modifications in relation to the Main design elements or surveyor of performed works; (iii) Quality assessment of materials and workmanship; (iv) Data on the technical difficulties encountered and how they were solved; (v) Comment on the As-Built Design, (vi) List of Instructions for Use and Maintenance, (vi) Final Report on Contractor's ESHS performance (Code of conduct, compliance with ESMP, consent/permits and other relevant project requirements. Deliver to the Client upon completion of the works all job records, reproducible "as-built" drawings including (but not limited to) calculations, drawings, specifications, test reports and final cost analysis and the instruction necessary for the satisfactory operation and maintenance of the works.
- **1b) Energy Performance Certificate (EKB)** for each building after completion of the renovation works
- **1a/b) Other reports upon request.** The PIU may request the Consultant to submit specific reports on the issues related to the execution of the works. The Consultant will make the requested report in such manner within a reasonable time. The Consultant is obliged to provide all assistance to the PIU, upon request, in drawing up reports to the bodies that comprise the institutional framework for project implementation described in the introduction to this project task, relating to project implementation reports, financial reports and etc.

Task 2: Supervise remedial works to rectify defects that arise during the Defects Notification Period (DNP)

The Defects Notification Period (DNP) is 12 months, starting on the date of building commissioning.

- The Consultant shall continue to be responsible for the supervision and inspection of the construction and completion of the Works during the DNP as defined in the works contracts. The level of supervision shall be appropriate to the scale of the works being carried out. The Consultant will provide adequate number of technical staff acceptable to the Client on each construction site during the DNP. These inspections and supervision are to ensure that works, agreed to be carried out during the DNP, are properly carried out and have been completed and that any failure of any part of the Works has been rectified. If any defect is discovered, during this period, the Consultant shall promptly investigate the reason for it, report to the Client and take required actions to rectify the defect.

Deliverables

- **DNP quarterly reports.** A report of the DNP inspections shall be submitted to the Client, which shall include all details of any defects, faults, accidents or breakdowns, which have occurred together with the estimated costs of repair and the time scales within which they will be completed. The reports shall be prepared on a quarterly basis.
- **DNP final report** shall be submitted by the time of the expiration of the DNP giving full details of all works carried out during the period. This report shall be submitted by the Consultant to the Client at least 30 days prior to issuing the Defects Notification Certificate for the completed Works.

Task 3: Preparation of Measurement and Verification (M&V) report

The M&V period covers 12 months, starting on the date of building commissioning.

- Conduct required measurements to prepare the M&V Report. Measurement and verification of savings will be made in accordance with TS ISO 50.006 and IPMVP.

- Prepare M&V reports for all buildings renovated in Year 1 of the Project one year after the renovation works are completed. The M&V reports need to be consistent with the format to be published by MENR. The PIU will review and approve the M&V report or request from the contractor to revise the report. The M&V report shall demonstrate the amount of savings realized by comparing the actual energy consumption with the reference energy consumption in which the necessary adjustments are made according to the TS ISO 50.006 standard will be calculated.

Deliverables

- **M&V reports for all buildings renovated in Year 1 of the Project**

IV. Deliverables

All Documents need to be in Turkish language. The first 5 M&V reports also need to be delivered in English language. All deliverables must be submitted as Hard Copy (in one copy signed and stamped) and soft copy.

The deliverables for each task will be submitted to and approved by the PIU. The consulting firm must obtain approval for each deliverable before moving to subsequent tasks. The table below summarizes the deliverables and includes an indicative timeline and payment schedule.

| Task | Deliverable | | Submission (months after contract signing) |
|-------------|--------------------|---|--|
| 1 | 1a | Interim semi-monthly progress reports for works contract | Together with the submission of the interim payment certificate for each month |
| | 1b | Final inspection report; final completion report; Energy Performance Certificates (EKB); As-Built drawings (including calculations, drawings, specifications, test reports and final cost analysis); Other reports as requested related to the completion of the works (Taking-Over stage) | At the time of drafting the taking-over report, 2 weeks after taking over, as agreed with the client |
| 2 | | DNP Quarterly Reports and DNP Final Report | Quarterly, at the time of drafting DNP Certificate |
| 3 | | M&V Report | At the time of submitting the DNP Report |

V. Facilities provided by the consultant

The Consultant shall provide sufficient, qualified and experienced staff to ensure proper site supervision of the works and engineering services during the construction period and ensure that the works are executed in accordance with recent regulations and rules. All costs for equipment and administrative and logistic support must be covered by the Consultant and included in the bid price, including:

- All costs arising from the activities of its staff during the contract period, including accommodation, allowances, transportation, insurance, etc.
- Automotive, equipment, office supplies and hardware and software to ensure that the monitoring is fully functional;
- All communication costs, including fax, email, telephone, etc.

- All the equipment, instruments, services and logistical support required for the implementation of the contract, and any costs incurred during its preparation of documents and drafts, copying, printing, etc.
- Technical equipment at the monitoring site;
- Other equipment, instruments, services and logistical support necessary for the implementation of the contract.
- Excellent written and spoken English and Turkish is required. If the Consultant will require a translation services, it will be at his own expenses and the Consultant will be responsible for the accuracy of the translation.
- The Consultant is required to obtain all the necessary permits, approvals, payment of all fees and contributions, as well as all the other elements necessary for the work of his professional staff who is engaged at his own expense for the performance of this Contract.

VI. Timeline

The estimated time period for this assignment will be held within the fourth quarter of 2020 and finalised in 20 months period (8 months for construction and 12 months for Defects Notification Period), subject to completion of the construction contract.

Key staff

- 1 Team leader / Engineer with at least Master degree in Civil Engineering or or Mechanical Engineer with 10 year experience relevant to the project.
- 2 Mechanical Engineer with at least 5 years professional experience relevant to the project, preferable in energy efficiency and renewable energy; with at least Master degree, having expertise on M&V,
- 3 Electrical Engineer with at least 5 years professional experience relevant to the project, preferable in energy efficiency and renewable energy; with at least Bachelor degree, having expertise on M&V will be an asset,
- 4 Architect with at least 3 years professional experience in energy efficiency and renewable energy and relevant to the project; with at least Bachelor degree.
- 5 Environmental Engineer or equivalent with at least 3 years of experience in hazardous material inventories in buildings, in particular asbestos and experience with requirements and practice for proper asbestos and mercury containing CFLs removal, handling, transport and disposal/storage including monitoring and personal safety equipment requirements, with at least Bachelor's degree.

Non-key Staff

- Additional engineers, construction specialists, and other staff should be included to adequately carry out all aspects of the assignment

General qualifications of all consultants:

- Strong knowledge of local laws, standards and norms about building construction.
- Prior experience on energy auditing of buildings and preparation of detailed project designs
- Engineer's authorizations for design preparation in public buildings in compliance with local legal requirements
- Knowledge of environmental management, health and safety
- Good communication, management, organization and reporting skills
- Excellent knowledge of Turkish and English language.
- Excellent communication, presentation and use of basic computer (Microsoft office, AutoCAD etc.) skills.

VII. Support to be provided by the client to the consultants

- The client will sign letters with the beneficiary buildings that describe the responsibilities of the beneficiary, including appointing a contact/facility coordinator for all project phases, facilitating access to buildings or facilities, providing existing documentation, etc.