**REPUBLIC OF TURKEY**

**MINISTRY OF ENVIRONMENT AND URBANIZATION**

**General Directorate of Construction Affairs (GDCA)**

**TURKEY ENERGY EFFICIENCY IN PUBLIC BUILDINGS PROJECT**

**(**P162762**)**

**TERMS OF REFERENCE (TOR) FOR**

**CONSULTANCY SERVICES** **TO PROVIDE TECHNICAL ASSISTANCE TO GDCA FOR**

**PUBLIC BUILDING RENOVATIONS**

(REF: EEPB/WB/MoEU/QCBS-SUBPR-01)

1. **Introduction**

The Government of Turkey has applied for financing from the World Bank to implement the Energy Efficiency in Public Buildings Project (EEPBP). The Project’s objective is to reduce energy use in central government buildings and develop a transition plan to develop and scale-up suitable sustainable financing and institutional mechanisms to support a national program.

About US$200 million will be provided by the World Bank—US$150 million IBRD loan, US$46.2 million CTF concessional loan, US$3.8 million CTF grant. Through the Project, MoEU will support the renovation of central government and central-government affiliated buildings (i.e., public buildings under central line ministries, such a schools and hospitals). It is expected that such subprojects will generate demonstrable energy cost savings and social co-benefits, which would form the basis for developing a national-level program for EE in public buildings. As the proposed projects aims to renovate public buildings with the highest energy consumption, the immediate direct beneficiaries would be the public sector as the budgetary savings from the investments, resolution of budgetary constraints for central government buildings associated CO2 emissions reductions as a result of the energy savings (tons of CO2 equivalent) and also users of the public buildings (administrative staff and society) and public communities in the catchment areas of the identified facilities.

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.).

The General Directorate of Construction Affairs (GDCA) under the Ministry for Environment and Urbanization (MoEU) has been delegated to assume overall responsibility for the Project. MoEU established a project implementation unit (PIU) to administer all aspects of the Project. The PIU is responsible for selection of the buildings, procurement of the various contractors (e.g. energy audits, technical designs, renovation works, construction supervision, savings verifications, technical assistance or TA consultancies, etc.).

Within the framework of the Energy Efficiency in Public Buildings (EEPB) Project, a Consulting Firm will be employed to provide technical assistance for public building renovations at the General Directorate of Construction Affairs of Ministry of Environment and Urbanization (MoEU), hereafter referred to as the Client, for about a 2-year period.

1. **Scope of Services**

A consulting firm, hereafter referred to as the Consultant, is required to support the PIU to implement the Project for the initial 18-24 months. This would include: (i) review of energy audits, technical designs, energy savings monitoring reports from the subprojects’ of the first year, (ii) developing case studies to document investment costs, measures implemented, actual energy savings and lessons learned and (iii) support communication and outreach of the project activities.

In carrying out this assignment, the Consultant should consider the cost benefit analyses of identified energy efficiency improvement, identify common deficiencies in the contractor outputs, make recommendations on EE guidelines in relevant national policies and legislations and make suitable recommendation in the form of step by step approach and best practices to improve the current practices. The Consultant will also advise in the determination of appropriate package and lot sizes, license requirements, etc. (for subprojects in Year 2 and 3). The estimated number of buildings for renovation in Year 2 is approximately 100 buildings or about 1,000,000 m2.

1. **Key tasks**

## Review the pipeline of subprojects, review energy audits and technical designs; energy savings monitoring (subproject’s first year); Supervise completion and acceptance/commissioning of the construction works, inspect renovated buildings for evaluation and verification of savings, developing case studies to document investment costs, measures implemented, actual energy savings and lessons, providing support for ESCO contracts and nZEB pilot projects:

1. Prepare inception report, to be delivered two weeks after contract signing, which shall: (i) further define the aims and objectives of the services to be provided; (ii) set out a detailed work program for the rest of the project services to be provided; (iii) identify potential problems to be overcomed and possible solutions; (iv) identify the experts and counterpart staff that are going to work in the Client’s office and other organizations; (v) include a stakeholder analysis identifying other third party organizations involved in the project implementation process. and (vi) support other tasks as requested by the PIU.
2. Review on the applications for the Project: Assist and prepare a technical report for appropriate selection of the buildings for the component 1a according to the eligibility criteria, energy consumptions, building types, etc. determined by the PIU (2 packages-100 building each).
3. Review and advice on energy audits. (for Year 2) Under a separate consultancy, the PIU will hire a consulting firm to prepare detailed energy audits. For this assignment, the consultant will review the audits to ensure their accuracy and high-quality including review if all appropriate EE and RE measures have been considered, if analyzed and recommended scenarios are appropriate, assessment of cost-benefit analysis, etc. (up to 100 buildings)
4. Review and verify draft technical designs: The detailed designs and technical specifications/bills of quantity, cost estimation for all buildings to be renovated from the pipeline will be prepared by a licenced company. The consultant will be asked to review and and prepare verification report of these designs for the compliance with the energy audit, the technical completeness, adherence to national standards and technical norms, good practices for EE renovation. According to the evaluation and determination of the consultant, if required by PIU, negotiate with the design company on specifics to increase quality and cost effectiveness of measures and to improve the energy performances. (up to 100 buildings)
5. Perform in-situ Inspection of buildings for renovation works evaluation in Year 1, at least twice, and during building commissioning and acceptance stage and prepare a technical report on the findings, including adherence to technical designs, quality of renovation, review of M&V reports and comparison of energy savings to the audit estimates and reasons for the deviations, and recommendations to improve future renovations. (up to 50 buildings)
6. Review M&V reports: Review proposed methodology for project measurement and verification (M&V) and recommend enhancements based on global best practices and experiences in Year 1.
7. Prepare quantitative assessment criteria for monitoring and evaluation of the renovated buildings. Conduct an evaluation of the buildings renovated during the first year. Develop at least 10 case studies based on the findings and the lessons learned from the energy efficiency implementations in public buildings under this project (5-10 pages each, with 1-page summaries) covering investment amounts, EE measures, the level and amount of energy and budgetary savings, key defeciencies, variations between savings estimated in energy audits and actual building performance, etc.
8. Provide support to implementation of component 1b of the Project (ESCO support): (i) Assist with ESCO pilot including review of the ESCO tender documents, energy audit and detailed design, M&V report, (ii) support the PIU on the bid evaluation of ESCO contracts including assessing the technical feasibility of options and calculations of net present values (NPVs); (ii) review the M&V reports from ESCO contracts to verify reasonablness of savings estimates and advise the PIU to assist in their decision making on ESCO adherence to contracts and issuence of payments (up to 10 - 15 ESCO contracts and 10 - 15 M&V reports and upon PIU request)
9. Provide support to implementation of component 1c of the Project (NZEB support): Review (or help draft) TOR for (i) detailed energy audits; (ii) technical designs, to ensure state of the art technologies and best practices are considered and used to the extent technical feasible and financially viable, assess the possibility of additional measures (up to 5 audits and 5 technical designs); (iii) assist with bid evaluations as requested by the PIU; and (iv) assist PIU with supervision and final assessment of the renovatoin and final building performance.
10. Assist with selection of next batch of ESCO buildings basing on the reviews made on previous MENR energy audits (up to 25 buildings)
11. Support other tasks as requested by the PIU.

## Communication and outreach; development of training materials;

* 1. Training Materials:
1. Development of training materials*:* Development of draft training materials for annual training of energy auditors, designers, construction supervision firms, construction companies, building administrators and building users based on the case studies and the evaluation of the experiences from Year 1.

The technical training material aims at increasing trainees' knowledge, skills and capacities regarding technical aspects related to EE in public buildings, with the specific focus on integration of different solutions, choosing most optimal scenarios, ensuring efficient monitoring and involving building users in the processes and building on implementation experiences under the Project. The material has been divided into 5 training modules presented in the table below:

**Training modules:**

|  |  |
| --- | --- |
| Module no  | Module topic and main activities |
| Module 1 | The training material will focus on technical aspects related to the overall topic of energy efficiency in public buildings together with audit and design specifications and technical standarts, addressing practical aspects related with the implementation of energy efficiency improvements in public buildings, such as energy auditing, choosing optimum improvement scenarios, economic and financial analyses of measures, overcoming most typical barriers or integrating different types of measures to create synergies |
| Module 2 | The training material will focus on technical aspects related to the overall topic of energy efficiency in public buildings together with building construction specifications, technical designs, good renovation practices. |
| Module 3 | Training material will address building managers responsible from operation and maintainance systems, enabling them to successfully implement sustainable energy measures in their buildings and to engage users in this process |
| Module 4 | Training material will address raising awareness among building users, focusing on changing their behaviours and involving them on technical EE interventions |
| Module 5 | Training of trainers’ material will be prepared towards MoEU staff since actual trainings will be delivered by them. Apart from trainer’s guide covering above mentioned 4 modules, the training material will cover 4 in situ visits to selected EE and NZEB best practices in 2 different countires for about 20 PIU staff. The best practice buildings and the countries will be selected together with PIU. |

b) Gender-sensitive training: Support MoEU to identify professional women to participate in the trainings in order to increase involvement of women in energy workforce and taking necessary measures. It’s targetted to have 20% women participation among all trainees.

1. *Support with citizen engagement activities*. The consultant will support PIU citizen engagement activities including helping to set-up user committees with representatives from different user groups like employees, patients, students, communicating and soloiciting feedback (on designs, implementation and post-renovation satisfaction), developing scorecards, preparing, leaflets, brochures, social media, videography or other means of information (notice boards, official website of MoEU, etc.) and any other relevant engagement tools to inform the communities about the renovation.
	1. Communication and outreach:
2. Evaluation and dissemination of case studies*:* Based on case studies prepared under Task 1, prepare and print relevant communication materials (flyers, posters, etc.) and organize a case studies/lessons learned workshop at the end of each year.
3. Preparation and holding of workshops: Assist the PIU in preparation and organization of knowledge and experience-sharing workshops based on the case studies developed to involve and motivate stakeholders representing all levels and other organisations involved in the implementation of support to energy efficiency investments, at the end of each year with max. 100 participants. The priority in participation will be given to the women participants to reach the targeted share of women participation to the activities which is 20%.

The tasks related to the workshop organization is as follows:

* Identification and invitation of the participants
* Determination of the workshop structure and development of facilitation methodology
* Preparation of the detailed agenda
* Identification of the keynote speakers and moderators
* Any other task stated by the PIU related to the workshop organization
1. Plan and develop communication and outreach activities and impact analysis:

Develop and implement a communication strategy with outreach campaigns to increase the awareness and solicit applications related to the current call for proposals under the project for Year 3 and beyond.

The planned communication activities are as follows:

* Preparing project web-page and social media accounts,
* Preparing project banners and video to be published at project website and social media accounts,
* Preparing articles, success stories and interviews for national and/or regional/local press,
* Develop a methodology for impact assessment of the project activities
* Monitor the impact and analyse the participant profile in the realised activites.
* If required by PIU, take necessary measures to increase the participation of women in the communication activities to keep up with the targets.

***Deliverables***

All Documents need to be in English and Turkish language, unless otherwise specified. Payment will be output based. 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.

1. Inception Report
2. Application Review Reports (based on # reviewed)
3. Energy Audit Evaluation Reports (based on # reviewed)
4. Technical Design Review Reports (based on # reviewed)
5. Renovation works Inspection and Acceptance Reports (based on # reviewed)
6. M&V methodology and recommended enhacements
7. Building Evaluation Criteria & Evaluation Report
8. ESCO contracts Implementation support, including supporting the PIU procurement, reviews of M&V Reports (per procurement package)
9. NZEB Assessment and Recommendation Report, including review of audits, technical designs, bid evaluation and final assessment
10. ESCO buildings selection support
11. Training materials for different target groups; as for energy auditors, designers, construction supervision firms, construction companies and MoEU report
12. Communication and outreach: including dissemination of case studies and preparation of workshops.
13. Citizen engagement activities

**Deliverables and payment schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| **Task** | **Deliverable** | **Deadline** (months after contract signing) | **Payment** (% of total payment) |
| Year 1 |  | **75%** |
| 1a | Inception Report | 1 | 4% |
| 1b | Application Review Reports (based on # reviewed) | 2 | 4% |
| 1c | Energy Audit Review Reports (based on # reviewed) | 2-3 | 4% |
| 1d | Technical Design Review Reports (based on # reviewed) | 2-3 | 10% |
| 1e | Renovation works Inspection and Acceptance Reports (based on # reviewed) | 6 | 10% |
| 1f | M&V methodology and recommended enhacements | 12 | 10% |
| 1g | Building Evaluation Criteria &Evaluation Report | 12 | 10% |
| 1h | ESCO contracts Implementation support | 15 | 10% |
| 1i | NZEB pilot projects Implementation support | 14 | 10% |
| 1J | ESCO buildings selection support  | 2 | 3% |
| Year 2 |  | **25%** |
|  | 2a | Development of training materials for different target groups; as for energy auditors, designers, construction supervision firms, construction companies and MoEU report | 15 | 11% |
| 2b | Communication and outreach: including dissemination of case studies and preparation of workshops. | 14 | 10% |
| 2c | Citizen engagement activities | 3-12 | 4% |

1. **Facilities provided by the consultant**

The Consultant must ensure that its professional staff has adequate support and equipment. 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 and other equipment, instruments, services and logistical support necessary for the implementation of the contract.
* Advanced level of 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.
1. **Timeline**

The estimated time period for this assignment will be 2 years, within the whole project duration.

1. **Experience and Qualifications of the Consultant**

The Consultant should be a consulting firm with relevant project experience. The work should be undertaken by a consulting team consisting of key experts who have following skills and credentials and sufficient number of experts and backstopping:

**Key staff**

1. **Team Leader**

The team leader shall have substantial experience in the area of Energy Sector/Energy Efficiency/Energy Audit in building sector. S/he shall at least have Master’s degree in Civil / Electrical / Mechanical / / Energy Management with Bachelor's degree in Civil Engineering or Mechanical Engineer. S/he shall have at least 15 years of professional experience in related field with specific experience in Energy Efficiency / Energy Audit / Energy sector / preparation of Policy/ Guidelines/ Manuals/Directives, s/he has experience as manager at least 5 years/ similar management experience for at least 5 years, and will be responsible to:

* Take full responsibility for the consulting team and as per the scope of work, provide overall direction to the consulting team, and coordinate between individual experts;
* Carry out extensive consultations with the key stakeholders obtaining suggestions and concurrence with the contents of the plan;
* In cooperation with PIU unit of the General Directorate of Construction Affairs, carry out extensive consultations with the key stakeholders and obtain suggestions and concurrence as part the contents of the study;
* Prepare detailed schedules for the fieldwork and office works;
* Organize meetings and workshops;
* Ensure timely delivery and quality control of the outputs required as per the scope of work.
1. **Mechanical Engineer**
* The Mechanical Engineer shall at least have Bachelor's degree in Mechanical Engineering with at least 10 years of professional experience in related field with specific experience in Energy Efficiency/Energy Audit / Energy sector / preparation of technical designs/preparation of Policy/ Guidelines/ Manuals/Directives, and have an energy auditor certificate.

S/he will be responsible to:

* Work closely with other members of the core technical team and assist the team leader.
* Carry out all the field work, diagnostic work, data analysis and guideline preparation work related to Energy Audit
* Monitor, review and analyze the inputs provided by different experts in the team;
* Assist the Team Leader and Energy Expert in field work, data analysis, report preparation etc. in timely delivery of all outputs and preparation of reports.
1. **Electrical Engineer**

The Electrical Engineer shall at least have Bachelor's degree in Electrical Engineering with at least 10 years of professional experience in related field with specific experience in Energy Efficiency/Energy Audit / Energy sector / preparation of Policy/ Guidelines/ Manuals/Directives, and have an energy auditor certificate. S/he will be responsible to:

* Work closely with other members of the core technical team and assist the team leader.
* Carry out all the field work and data analysis related to Energy Audit
* Assist the Team Leader and Energy Expert in field work, data analysis, report preparation etc. in timely delivery of all outputs and preparation of reports.
1. **Architect**

The Architect shall at least have Bachelor's degree in architecture with at least 5 years of professional experience in related field with specific experience in Energy Efficiency / Energy Audit / Energy sector / preparation of Policy/ Guidelines/ Manuals/Directives. S/he will be responsible to:

* Work closely with other members of the core technical team and assist the team leader.
* Carry out all the field work and data analysis related to Energy Efficiency
* Assist the Team Leader and Energy Expert in field work, data analysis, report preparation etc.
1. **Environmental Engineer**

The Environmental Engineer shall at least have Bachelor's degree in environmental engineering, environmental sciences or any other discipline relevant for the project and scope of the services required with at least 3 years of professional experience in related field with specific experience in environmental and social management, 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, preparation of environmental and social reports/ Guidelines/ Manuals/Directives. S/he will be responsible to:

* Work closely with other members of the core technical team and assist the team leader in environmental and social issues,
* Carry out all the field work and data analysis related to environmental and social aspects, health and safeguard,
* Assist the Team Leader and in environmental and social issues, field work, data analysis, report preparation etc.
1. **Social Specialist**

Graduate/Advanced degree in relevant discipline (e.g., social sciences esp. gender studies, stakeholder consultants, community outreach or other related discipline). Minimum of five years sectoral work experience in social impact analysis and/or stakeholder engagement. Ability to analyze diverse data form a range of sources.

S/he will be responsible to:

* Support the PIU team in identifying the social risks and engagement opportunities in the implementation process.
* Provide efficient impact assessment tools related to the project activites.
* Develop policy related to gender issues and citizen engagement.
* Analyse the case study experiences that reflect opportunities for future EE improvements
1. **Communications Analyst/ Officer**

Master’s degree in Communications, Journalism, Public Affairs, with five or more years’ experience in corporate communications, international relations, or other related field, or equivalent combination of education and experience. State-of-the art knowledge in the field of strategic communications, social media, and ability to address a range of issues related to the project.

S/he will be responsible to:

* Support the PIU team in communication issues, contribute to campaigns and develop productive relations with key media, and manage digital communications.

**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,
* Familiaritiy with Government of Turkey administrative and bureaucratic procedures,
* Knowledge of health and safety,
* Excellent interpersonal skills, demonstrated ability to communicate, management and organization effectively and strong reporting skills,
* The team members must have experience working as part of a team, preferably in a leadership position, and have demonstrated ability to deliver complex tasks and resolve challenges that may arise,
* Excellent knowledge of Turkish and English language,
* Excellent communication, presentation and use of basic computer (Microsoft office, AutoCAD etc.) skills.

**The consultant shall provide sufficient number experts upon request of PIU. 80% of LOE should be local staff, especially for comms and case studies. ESCO/NZEB support requires international experience.**