

REQUEST FOR EXPRESSIONS OF INTEREST (REOI) (CONSULTING SERVICES – QCBS) TÜRKİYE

TÜRKİYE

Name of the Project: Name of the Project: EU Instrument for Pre-Accession (IPA) 2018 Energy Sector Program Phase III Project

Grant No.: TF0C3092

Assignment Title: Consultancy Services to Improve Capacity of TEİAŞ for Enhanced Electricity Grid Operations

Reference No: CS03

The Ministry of Energy and Natural Resources (MENR) has received a grant from the European Union toward the cost of the EU Instrument for Pre-Accession (IPA) 2018 Energy Sector Program Phase III Project which will be jointly implemented with the World Bank, and intends to apply part of the proceeds for Consulting Services.

1. The Consulting Services (“the Services”) aim to support The Turkish Electricity Transmission Corporation (TEİAŞ) in electricity grid operations through enhancing the capacity of the TEİAŞ staff.

The studies include:

1. Improvement of Research and Development (R&D) capacity of TEİAŞ

- Evaluation of organizational structure and operations of TEİAŞ R&D unit
- Analysis of the types and methodologies of R&D applications and multi-party R&D implementations performed by the selected TSOs and Power Laboratories
- Gap analysis and Benchmarking of TEİAŞ R&D applications with selected institutions’ organizational structure and operations
- Workshop on R&D project management
- Study visit for TEİAŞ staff for observing and enhancement of their information by visiting an ENTSO-E member TSO R&D center onsite
- Need assessment and recommendations for TEİAŞ to improve its R&D
- Training on Project Management Professional (PMP)

2. Improvement of Planning Capacity of TEİAŞ

- Improvement of Transmission Planning Capacity of TEİAŞ
 - o *Assessment of transmission planning within TEİAŞ*
 - o *Analysis of the transmission planning organizational and operational structure of ENTSO-E member TSOs*
 - o *Gap analysis and Benchmarking of TEİAŞ transmission planning with selected two ENTSO-E TSOs’ transmission planning*
 - o *Trainings for TEİAŞ personnel regarding new types of Transmission Planning methodologies and implementations*
 - o *Study Visits for TEİAŞ staff for monitoring transmission-planning implementations of ENTSO-E member TSOs on site*
 - o *Need assessment and recommendations for TEİAŞ to improve its transmission planning capacity*
- Improvement of Generation Planning Capacity within Turkish Power System
 - o *Assessment of generation planning within Turkish Power System*

- *Analysis of the generation planning of ENTSO-E TSOs (market-based dispatch studies/scenarios)*
- *Gap analysis and Benchmarking of generation planning applications within Turkish power system with selected two ENTSO-E TSOs' generation planning applications*
- *Training on types of Generation Planning methodologies and implementations*
- *Study visit for monitoring generation-planning implementations of two ENTSO-E member TSOs on site*
- *Need assessment and recommendation report for generation planning capacity within Turkish Power System*

3. Improvement International Business Development Capacity of TEİAŞ

- Assessment of TEİAŞ's international business development capacity
- Analysis of international business operations and organizations of an ENTSO-E member TSO
- Gap Analysis and Benchmarking of TEİAŞ's international business transaction capacity with an ENTSO-E TSO
- Study visit to an ENTSO-E member TSO
- Need assessment and Recommendation report for TEİAŞ for improving its business development capacity

2. The detailed Terms of Reference (TOR) for the assignment is provided in the Annex of this document.

3. The MENR now invites eligible consulting firms ("Consultants") to indicate their interest in providing the Services. Interested Consultants should provide information demonstrating that they have the required qualifications and relevant experience to perform the Services.

4. A consulting firm is allowed to submit the expression of interest alone if it considers itself to be fully qualified on its own for the assignment, as it is not mandatory for consultants to associate with any other firm(s), whether foreign or local. Alternatively, if consultants themselves choose to associate to enhance their qualifications and capability for the assignment, then such associations may either be as a Joint Venture (i.e. all members of the joint venture shall be jointly and severally responsible) and/or Sub-consultants (i.e. the Consultant will be responsible, including for the services of the sub-consultant). In case of an association, the Consultants must explain in the EOI submission (a) the rationale for forming the association and (b) the anticipated role and relevant qualifications of each member of the Joint Venture and/or of each sub-consultant for carrying out the assignment, to justify the proposed inclusion of the JV members and/or sub-consultants in the association. Failure to provide the above explanation in the Expression of Interest may risk the association not being shortlisted for the assignment. Please note that in the evaluation of EOIs of associations for shortlisting purposes, only the qualifications of the JV members will be taken into account whereas the qualifications of proposed sub-consultants will not be considered.

5. The shortlisting criteria are as follows, in which specific experience of the Consultant relevant to the assignment will be considered of paramount importance:

- i. General Experience of the Consultant (as a firm) in providing consultant services should not be less than the last 5 years prior to deadline for submission of interests;
- ii. Specific Experience of the Consultant (as a firm) relevant to the assignment in providing similar services within the last 3 years prior to deadline for submission of interest under contracts of comparable size of:
 - Experience in electricity grid operations
 - Experience in R&D implementations in TSOs

- Experience in planning implementations in TSOs
- Experience in international business development implementations (specific experience in this area in TSOs is an asset)
- Staff capacity in the above-mentioned areas

Key Experts will not be evaluated at the shortlisting stage.

6. To demonstrate their qualifications and experience in meeting the above shortlisting/selection criteria, Consultants are requested to submit, at a minimum, the supporting documentation listed below. A consultant firm can only use its own qualifications and experience and not of its parent, sister or subsidiary companies or its employees.

- (i) The firm's incorporation/trade/registration documents issued by the concerned government authority of the country of the firm.
- (ii) The firm's company brochures including the core areas of business; and
- (iii) Completed Form-1 (attached to this Request for Expression of Interest) to provide information of similar contracts. This should include the name and reference number of the contract, brief description of the scope of work, contract amount, period of the contract, name of the client and country of assignment, and role of the Consultant in the contract. Copies of completion certificates/references of Clients of completed contracts are not required to be submitted with the EoI. In the subsequent stage at the time of submission of proposals, the Client may request the shortlisted consultants to submit such supporting completion certificates.

7. The attention of interested Consultants is drawn to Section III, paragraphs, 3.14, 3.15, 3.16, and 3.17 of the World Bank's "Procurement Regulations for IPF Borrowers" November 2020 ("Procurement Regulations"), setting forth the World Bank's policy on conflict of interest.

<https://pubdocs.worldbank.org/en/178331533065871195/Procurement-Regulations.pdf>

8. A Consultant will be selected in accordance with the Quality and Cost Based Selection (QCBS) method set out in the Procurement Regulations.

9. Further information can be obtained at the address below during office hours from 10:00 a.m. to 4:00 p.m. Türkiye time.

10. Expressions of interest must be delivered in a written form to the address below in person, or by mail, or by e-mail until **27th of the September 2024, at by 2:00 p.m.** Türkiye time.

Address:

Ministry of Energy and Natural Resources

General Directorate of Foreign Relations

Foreign Investment Coordination Department (Project Implementation Unit)

Attn: Engin Bostancı

Nasuh Akar M. Türkocağı C. No:2 A Blok Kat:4 no:62

Tel: +90 312 546 56 65

E-mail: dia2@enerji.gov.tr

Website: www.enerji.gov.tr

Attachment: Form-1 (Similar Contracts)

Name of Consultant firm: _____ (attach separate form for each firm in case of JV)

Sr. No .	Contract name & Reference No. of contract	Brief Description of scope of work and main deliverables/outputs	Contract value (in US\$ equivalent)/ Amount paid to your firm	Contract Period (start date and completion date)	Name of Client & Country of Assignme nt	Role in the Assignment
	{e.g., “Improvement quality of.....”: designed master plan for rationalization of; }		{e.g., US\$1 mill/US\$0.5 mill }	{e.g., Jan.2009– Apr.2010 }	{e.g., Ministry of, country }	{e.g., Lead partner in a JV A&B&C }
	{e.g., “Support to sub-national government..... ” : drafted secondary level regulations on..... }		{e.g., US\$0.2 mil/US\$0.2 mil }	{e.g., Jan-May 2008 }	{e.g., municipality of....., country }	{e.g., sole Consultant }

ANNEX:

Terms of Reference

Türkiye: EU/IPA (CS-03) Energy Sector Technical Assistance Project Terms of Reference

Consultancy Services to Improve Capacity of TEİAŞ for Enhanced Electricity Grid Operations Selection Type: QCBS

1. INTRODUCTION

Türkiye's energy sector is in a state of transition to ensure self-reliance, robustness and resilience, diversification, supply security, competitiveness and low-carbon energy in compliance with its national circumstances. So far, the sector has been driven by two major characteristics: growing energy demand and import dependency, both of which are impacted by steady economic development with averagely 5% annual growth coupled with sectoral leaps in energy. To tackle these challenges, Türkiye has had its own circumstantial energy transition phases, first of which lasted over a decade during 2001-2016. During this first stage, Türkiye introduced radical reforms and restructuring in the energy sector including independent regulation of the sector by the Energy Market Regulatory Authority, enabling a level playing field for new market entrants, liberalization in power generation, distribution and trade as well as gas distribution and retail, and stepping up efforts to support the growth of renewable energy sources like solar and wind. Ensuring non-discriminatory access, energy markets mobilized sizeable private sector investments and involvement in energy activities. Since then the installed capacity in energy generation, for instance, has almost tripled and the energy landscape in Türkiye's consumption and power generation patterns have altered.

Having reached a certain maturity threshold with the introduction of the Energy Exchange Istanbul (EPIAS) for electricity and natural gas transactions, Türkiye has stepped into the second phase of the energy transition inspired by the National Energy and Mining Policy Strategy announced in 2017 with targets for 2023. Three main pillars of the Strategy were (i) reinforcement of security of supply, (ii) localization through renewable and domestic sources and (iii) enhancement of predictability in the market. Cross-cutting these pillars; market reforms, utilization of renewable resources, improvement of energy efficiency, deployment of new technologies and new infrastructure investments are the main objectives of Türkiye's policy.

The 2019-2023 Strategic Plan of the Türkiye Electricity Transmission Corporation (TEİAŞ) provides the mission to operation systems and networks in energy markets in order to ensure sustainable, high quality, environmentally friendly transmission of electrical energy in accordance with national energy policies. It envisions TEİAŞ to be a leading system and grid operator integrated into the international energy market and in line with national energy policies. Four objectives comprise: (1) Evaluating business and investment activities in terms of relevance and priority; (2) Increasing R&D and innovation activities; (3) Strengthening IT infrastructure, increasing its security and efficiency; and (4) Improving governance and stakeholder engagement. To realize these, the plan sets 18 targets with performance indicators. Annual update of the Master Plan is one indicator. R&D and innovation activities include: design of 400 kV underground lines; redesign of transmission poles; application of series reactors to limit short circuit current values; development of high-voltage DC; and climate map updating with an early warning system.

In 2021, Türkiye entered a new phase of ambition announcing a target to achieve net zero emissions by 2053 and ratifying the Paris Agreement, to which it is a party. In December 2022, Türkiye announced the National Energy Plan (NEP) which will guide the energy sector by 2035. The NEP prospects to reach the total installed electricity of 189.7 GW including 86.1 GW of new capacity of which 60 GW from solar and wind, and the share of the total installed capacity from renewable resources to reach 64.7% including hydropower or 43.5% from variable renewables. The NEP also aims to meet the flexibility need caused by the integration of variable renewables with battery storage, electrolyzers and demand side measurements. The energy intensity is also expected to decrease by 35.3% in this period.

Estimated costs of investments for transmission and distribution are estimated in the tens of billions of US dollars for each coming decade. In addition to the public sources, new, diverse and innovative sources of financing will be needed to mobilize capital while maintaining financial viability for the power system and affordability for power system users.

Under the 12th National Development Plan (2024-2028) sets 13 energy sector targets with the primary objective to maximize self-sufficiency by utilizing domestic and renewable energy resources, based on the 2053 net zero emission goal, along with ensuring uninterrupted, high quality, sustainable, reliable and affordable energy supply, the diversification of energy supply sources, and achieving a competitive structure that uses nuclear technologies in electricity generation, boosts energy efficiency, prioritizes the use of domestic energy technologies, integrates new technologies and strengthens our strategic position in international energy trade. For reliable integration of renewable energy into the grid, reinforcement of electricity grids and systems includes to increase flexibility, expand international connection capacity, and strengthen smart grid infrastructure. In parallel, it is aimed to ensure sustainable supply security in energy, strengthen institutional and sectoral capacity, technology development in energy, reinforce electricity infrastructure, ensure technological transformation in electricity sector, and develop management system infrastructures under the Strategic Plan of Ministry of Energy and Natural Resources (MENR) for 2019-2023. New Strategic Plans of TEİAŞ for 2024-2028 will be published in 2024. Action to improve efficiency in electricity transmission and distribution has also been identified under the second National Energy Efficiency Action Plans (NEEAP) 2024-2030 and Energy Efficiency Strategy for 2030.

To enhance electricity grid operations in line with the abovementioned targets and action, the current assignment covers activities for improvement of R&D, transmission planning capacity with particular regard to integration capacity of variable renewable energy to the grid, generation planning capacity, and benchmarking for TEİAŞ. The action will provide valuable input for improving TEİAŞ's planning-related activities such as R&D implementations, transmission and generation planning. It is also among the priorities identified for the energy sector under the revised Indicative Strategy Paper for Türkiye for the period 2014-2020 and in compliance with one of the actions to achieve the results in the Energy sector:

Market integration and development of infrastructures: IPA II assistance will support the modernization and upgrading of the Turkish electricity network in line with the European Network of Transmission System Operators for Electricity (ENTSO-E), and of the Turkish Gas Transmission System in line with the European Network of Transmission System Operators for Gas (ENTSO-G), including soft supply equipment for Supervisory Control and Data Acquisition (SCADA). Technical assistance will be needed for harmonizing Turkish gas and electricity codes with relevant EU network codes and for acquis alignment in the areas of electricity and gas.

The European Commission (EC, for the European Union) and the Ministry of Foreign Affairs (for the Government of Türkiye) have signed a Financing Agreement under EU's 2018 Instrument of Pre-Accession Assistance (IPA) program to Türkiye. The World Bank administers a Trust Fund for the EU-IPA including for the Türkiye EU IPA Energy Sector Program Phase III Project (World Bank Project Code P173247, hereafter the 'Project'). The execution of the Project is led by the MENR, the 'Contracting Authority'. An Administration Agreement between the EC and WB and a Grant Agreement between the MENR and WB have been executed to finance the implementation of the Project, with beneficiaries including TEİAŞ, the 'End Beneficiary' of his activity.

The Project Development Objective (PDO) includes to "improve TEİAŞ's capacity for enhanced electricity grid operations". The Project includes a PDO Indicator: "Level of transmission system readiness for future generation investments" defined as the level of preparation of a revised Transmission Master Plan by TEİAŞ, with a baseline of "Master plan drafted, internally circulated" as of September 2023 and target value of "Master Plan revised" by Project completion. The Project also include an intermediate result indicator of: "Needs assessment and recommendations reports drafted to identify improvements in TEİAŞ's operations (number)" with a baseline of zero as of September 2023 and target value of four (4) by Project completion.

Per the Grant Agreement, the activity comprises: "assessment of key units of TEİAŞ in respect to the organizational structure, operations, types and methodologies for research and development (R&D), transmission and generation planning, and international business development applications; said activities includes: (i) conducting gap analysis and benchmarking of TEİAŞ with two selected European Network of Transmission System Operators for Electricity (ENTSO-E) member Transmission System Operators (TSOs); and (ii) carrying out study visits and conducting relevant trainings for TEİAŞ staff".

2. BACKGROUND

Turkish Electricity Transmission Corporation (TEİAŞ) is the sole owner and operator of the electricity transmission network of Türkiye serving to system with a total installed capacity around 106,15 GW. TEİAŞ is operating a transmission system with 74.441 km of power transmission line together with 797 substations, 225.055 MVA transformer power and 15 interconnection lines with neighboring countries. By the end of 2023, TEİAŞ is operating the interconnected power system in an uninterrupted, high quality and reliable manner with 54,34 MW peak load and 330,3 TWh annual power production.

Moreover, Turkish Power System is permanently interconnected with ENTSO-E Continental Europe Synchronous Area (CESA) and TEİAŞ is obliged to fulfil technical and legal requirements and rules of the ENTSO-E.¹ Together with this, intense renewable energy penetration to the Turkish grid and diversification of the energy resources together with the rapid increase of the demand in Türkiye makes it necessary for TEİAŞ to review its planning related activities and R&D implementations.

TEİAŞ wills to review and improve its organizational and operational structure of its R&D and Planning implementation and methodologies not only to ensure the satisfactory and efficient operation of these, but also in the concept of improving its institutional capacity. With this project, TEİAŞ will undertake comparative studies about the R&D and Planning of the selected EU Countries' electricity transmission operators with that of TEİAŞ.

This project will pave the way for possible restructuring of the planning and R&D organizations of TEİAŞ and will support the development and improvement of its planning related activities and R&D implementations and the connection of renewable energy resources to the power system.

¹40 Member TSOs from 36 countries are part of ENTSO-E. Türkiye. Türkiye's observer membership agreement, which took effect on 14 January 2016 and extended two times. Last extension's date was on 1 January 2023 and it runs for a period of three years.

3. OBJECTIVES OF THE STUDY

This activity aims to improve TEİAŞ's capacity for enhanced electricity grid operations, in line with the Project Development Objective. The activity will do this by assessing and recommending actions to improve the institutional capacity of TEİAŞ with regard to transmission and generation planning and the R&D capacity and international business development. As a result of implementing actions to improve these capacities, including through revision and continuation of the Master Plan, it is expected that TEİAŞ will, among other impacts, increase the use of new technologies and enhance grid reliability and quality.

4. SCOPE OF WORK

The work under this assignment covers three main Tasks, plus overall management tasks to meet the above objectives, with 25 deliverables over 23 months and interim progress reports every 3 months (see Section 12 for report deliverables and timing). The three main Tasks involve work with relevant departments of TEİAŞ as described further below:

1. Improvement of Research and Development (R&D) capacity of TEİAŞ
2. Improvement of the Transmission & Generation Planning Capacity of TEİAŞ
3. Improvement of the International Business Development Capacity of TEİAŞ

Below is a general introduction to the main tasks, followed by a detailed description of each task.

Within the First Task of this project, types and methodologies of R&D applications and multi-party R&D implementations performed by the ENTSO-E member TSOs shall be analyzed in order to improve applications, operations and organizational structure of R&D within TEİAŞ and also provide a framework for a potential restructuring of R&D unit of TEİAŞ. For this purpose, organizational structure and daily operations of TEİAŞ R&D unit should be analyzed and evaluated by comparing with international comparators according to selection criteria defined in Box 1. In addition, personnel responsible for R&D operations in TEİAŞ should observe and enhance their information by visiting an ENTSO-E TSO R&D center onsite. Together with these activities, a detailed need assessment and recommendations report should be prepared for TEİAŞ in order to contribute the improvement of its R&D capacity. In order to improve the capacity of the TEİAŞ's R&D staff, a training will be organized and relevant R&D staff of TEİAŞ will be trained.

Within the Second Task of this project, planning capacity of TEİAŞ will be developed/strengthened/improved with regard to transmission and generation planning. In this regard, TEİAŞ would also like to have ability to analyze and investigate operational and organizational structures and capacities of two ENTSO-E TSOs' Transmission & Generation Planning institutional and operational structures. Discussing and comparing the definition and understanding of Transmission & Generation Planning both in Türkiye and ENTSO-E countries is another important issue. Together with these activities, trainings should be organized for TEİAŞ's relevant personnel regarding Transmission Planning methodologies. In addition, personnel responsible for transmission & generation planning operations in TEİAŞ should observe and enhance their information by visiting ENTSO-E TSOs and co-work with the TSO's personnel on a transmission-planning case study.

Within the Third Task of this project, TEİAŞ's international business development capacity will be evaluated. After this, organizational and operational structure of the international business development of two-selected ENTSO-E member TSOs (selected per Box 1) will be analyzed and a benchmarking

with that of TEİAŞ will be performed. Upon this study, a need assessment and recommendation report will be prepared. Finally, a study visit will be performed to an ENTSO-E member TSO in order that TEİAŞ relevant staff shall meet with the counterpart's staff and observe the operations of the ENTSO-E member TSO.

Box 1: Selection Criteria for Comparator Countries

Several subtasks involve comparison with power systems entities in countries other than Türkiye through international assessments, gap analysis and benchmarking, and study visits (i.e. Tasks 1.2, 1.3, 1.5, 2.1.3, 2.1.3, 2.1.5, 2.2.2, 2.2.3, 2.2.5, 3.2, 3.3, 3.4). The Consultant shall propose a minimum of two comparator countries to be assessed, benchmarked and/or visited for these tasks. France and Spain systems are default preferred comparator options for all tasks, i.e. Spain's Red Eléctrica and Elewit (Redeia's Innovation lab) in Madrid, and Electricité du France (EDF) with labs near Paris, including any other entities in Spain and France appropriate to include to achieve the tasks. Consultants are free to propose one or more alternative comparator countries for any or all of the tasks or sub-tasks, in which case the proposal will be evaluated based on following criteria: (i) the comparator has advanced experience integrating variable renewable energy including integrated resource planning, flexibility resources development, and other relevant innovations; (ii) the comparator's corresponding power system is broadly similar in size and diversity of resources to Türkiye's power system; (iii) the comparator and its relevant personnel are willing and available to provide all the appropriate information and support necessary for the tasks to be carried out including, for study visits, to be the host for such visits. In all cases, consultants shall explain how the countries proposed by the consulting (including France and Spain as applicable) align with the above three criteria.

The Consultant will prepare a work schedule for the performance of the tasks. Exact timeline of the study visits and trainings under the tasks will be proposed by the Consultant during the inception and implemented after the approval of the Contracting Authority.

Inception and opening event

The Consultant shall prepare an Inception Report covering all the below activities as described (Deliverable 1 'D-1').

Opening Event Organization: A one-day opening event will be held at a 4-star hotel with the participation of 100 people in Ankara. The event is anticipated to cover a total of five contracts, including this assignment, constituting all activities that will be implemented under EU IPA 2018 Energy Sector Program Phase 3 Project. The venue, catering, Turkish-English interpretation and other organizational related costs will be borne by the Consultant of one of the other contracts. The Consultant of this contract will be responsible for providing: (a) suggested participant list; and (b) suggested promotional materials related to the current activity. The Consultant will also prepare a presentation about its contract and should expect to be asked to participate in a round table type-like session.

Activity 1: Improvement of R&D Implementations within TEİAŞ

Task 1.1 Evaluation of organizational structure and operations of TEİAŞ R&D unit

The Consultant shall meet with the employees of the TEİAŞ R&D Division to investigate the policies, charter, road map, types, concept and content of the R&D activities carried out within TEİAŞ. This will include reviewing how in-house versus outsourced activities, differ, the selection criteria for activities and the choice of implementing entity, how R&D ideas originate and attract seed funding, the budgeting

process and structure, Plan Do Check Act (PDCA) cycle, and the methodologies used by TEİAŞ. Consultant will examine the R&D organizational and operational implementations of TEİAŞ with regard to internal cooperation within TEİAŞ and external cooperation with the Universities, Institutes, academic societies such as TÜBİTAK (Scientific and Technological Research Council of Türkiye) and Sector Stakeholders etc. Consultant will also examine the roles, responsibilities and capabilities of TEİAŞ R&D unit and also other departments of TEİAŞ contributing to the R&D implementations.

For Task 1.1, Consultant will hold 2-days of interview meetings with TEİAŞ R&D Division staff and also with internal and external stakeholders that contributes to the TEİAŞ R&D operations and organization. TEİAŞ will provide the interviewee list and make the necessary timing arrangements. Meetings will be held at TEİAŞ premises. Simultaneous translation will be provided by the Consultant. Consultant shall prepare and submit an R&D TEİAŞ Assessment Report (D-2) at the end of this Task 1.1. This report shall include the snapshot of the R&D department of TEİAŞ, the organization effectiveness for pursuing R&D activities, contribution of external stakeholders, as well as the results of the interviews.

Task 1.2 Analysis of the types and methodologies of R&D applications and multi-party R&D implementations performed by the selected TSOs and Power Laboratories

The Consultant shall investigate 2 TSOs and 1 globally well-known power laboratory in terms of their R&D policy/strategy, R&D structure, R&D Process, interaction with the R&D Environment, project management, quality process, resources used in R&D process, budget structure, staff structure, roadmap in R&D. Selection criteria for comparators are defined in Box 1.

The power laboratory that will be analyzed shall be selected based on the expertise on variable renewable integration. The working system of the laboratory, focal R&D topics, cooperation methods with TSOs shall be analyzed. In order to increase the collaboration, conduct a network between TEİAŞ and the laboratory and discuss the investigation results, through organizing a half day remote (virtual) meeting with the laboratory and TEİAŞ.

Consultant shall prepare and submit an R&D International Assessment Report (D-3) at the end of this Task 1.2. This report shall include detailed analysis of how the R&D activities are held in the selected TSOs and power laboratories defined in the objective requirement of this task. Consultant will present the Task 1.2 Report in a 3-day meeting in TEİAŞ. Meetings will be held at TEİAŞ premises. Simultaneous translation will be provided by the Consultant.

Task 1.3 Gap analysis and Benchmarking of TEİAŞ R&D applications with selected institutions' organizational structure and operations

Following the completion of Task 1.1 and Task 1.2, Consultant shall prepare Gap Analysis and Benchmarking Report based on comparison of TEİAŞ and the selected two TSOs and one power laboratory under Task 1.2. This report should include a detailed comparison of the topics mentioned in Tasks 1.1 and 1.2. The report shall include a detailed SWOT analysis of TEİAŞ R&D. Moreover, gap analysis shall put the spotlight on important R&D areas that other TSOs are working on – i.e. integration of variable renewables, flexibility resources and associated market design, design of towers and substations, system operational efficiency through smart grid, a better SCADA/EMS system, better management of transmission and distribution interface (including distributed energy resources), development in digital protection relays, climate resilience of lines and substations, pilots of new technologies, laboratories for materials testing, data analysis and management, etc.

Consultant will prepare an R&D Gap Analysis and Benchmarking Report (D-4) at the end of Task 1.3. Consultant will present the Task 1.3 Gap Analysis and Benchmarking Report in a 2-day meeting in TEİAŞ. Meeting will be held at TEİAŞ premises. Simultaneous translation will be provided by the Consultant.

Task 1.4 Workshop on R&D project management

Consultant shall organize a one-day workshop in order to develop the capacity of TEİAŞ with regard to preparation, execution, management and finalization of R&D projects. Workshop shall include but not limited the following topics:

- R&D Project Management
- R&D Project Progress: how to track, manage and report project performance
- Stakeholder management: how to manage relationships and information flows
- Identifying Key Result Areas & Performance Indicators
- Documentation of Research Process/Activities
- Budget & Financial Management
- Resource Generation & Management
- Risk Management
- Quality Management
- Root Cause Analysis (RCA)
- Patent Management

The One-day Workshop will be performed for 20 people (including TEİAŞ personnel and TEİAŞ's stakeholders (i.e. TÜBİTAK, ELTEM-TEK and the Universities/Research Institutes working with TEİAŞ)) working for R&D studies with TEİAŞ. Workshop venue, catering and simultaneous translation will be arranged and incurred by the Consultant as project costs.² All the documentations and presentations of the workshop shall be shared with TEİAŞ by the Consultant and summarized in an R&D Training Report (D-5) covering Tasks 1.4 and 1.7.

Task 1.5 Study visit for TEİAŞ staff for observing and enhancement of their information by visiting an ENTSO-E member TSO R&D center onsite

Two study visits will be organized to demonstrate the R&D organizational and administrative structure and future planning activities and the utilization of the tools in R&D and labs of a TSO. Selection criteria for the comparator is defined in Box 1. The number of in-person participants will be five (5) TEİAŞ personnel and one (1) MENR personnel for each Study Visit. The duration of each study visit will be 2 days. MENR and TEİAŞ will share the participant list with the Consultant at least one month before the study visit dates.

The consultant will consider options to combine in-person with online (remote) participation, where practical, to allow for a greater number of participants. The study visit destinations will be selected according to the same criteria as task 1.3, while additionally taking into account logistical considerations as well as TEİAŞ staff's expressed needs to learn from facilities with outstanding R&D capabilities.

All relevant costs of the Study Visits will be treated as project costs by the Consultant (travel, accommodation, per diem etc.). After the completion of Task 1.5, Consultant shall deliver an R&D Study Visit Report (D-6). This report shall include a summary of the sessions during the visit,

² See page 24 and Section 12 for a note about payment schedules.

information about the visited institutions, takeaways, the participant list, and documents/presentations given by the visited institutions (if shared).

Task 1.6 Need assessment and recommendations for TEİAŞ to improve its R&D

The consultant shall prepare a Need Assessment and Recommendations Report on the deficiencies of TEİAŞ's R&D structure and the aspects that need to be improved, taking into account Tasks 1.1 through 1.5. Consultant shall give recommendations to improve TEİAŞ's R&D structure, increase R&D execution capability at both laboratory level and field level, develop competitive structure, increase profitability, manage resources effectively, improve personnel quality in order to become an important R & D center among TSOs in the future, including on the technical topics assessed in Tasks 1.1, 1.2 and 1.3. The consultant shall consider the feasibility of recommendations being made.

Consultant will present the Task 1.6 R&D Need Assessment and Recommendations Report (D-7) in a 2-day meeting in TEİAŞ. Meeting will be held at TEİAŞ premises. Consultant will provide simultaneous translation.

Task 1.7 Training on Project Management Professional (PMP)

Consultant shall organize a PMP training in order to develop the capacity of related TEİAŞ and MENR. PMP Training will be performed for ten (10) TEİAŞ personnel and ten (10) MENR personnel. PMP training will last for 5 days. Trainings will be held in Ankara. Training venue, catering, simultaneous translation and exam fee (if any, for accreditation body) will be arranged and covered by the Consultant as a project cost. All the documentations and presentations of the training shall be shared with training participants by the Consultant and the outcomes summarized in the R&D Training Report (D-4) covering Tasks 1.4 and 1.7. The Consultant should inform MENR and TEİAŞ about the timeline of the training, and then participant list of the training will be decided by MENR and TEİAŞ and share with the consultant, accordingly.

Activity 2: Improvement of Planning Capacity of TEİAŞ

Across Task 2.1 and 2.2 below, the Consultant should consider integrated power system planning and the interface between energy resources at generation-, transmission- and distribution-levels in accordance with international best practice. Corresponding sub-tasks of Task 2.1 and Task 2.2 may be designed to reflect an integrated planning approach.

Task 2.1 Improvement of Transmission Planning Capacity of TEİAŞ

The Consultant shall carry out the following activities within the scope of development of the transmission system planning capacity of TEİAŞ, prepare reports for conducted activities, create workflows and guidelines for planning activities, make proposals for new types of reports and prepare sample report templates for planning activities and provide training on new methods and analyzes that are considered useful within the scope of planning activities.

Task 2.1.1 Assessment of transmission planning within TEİAŞ

Main focus of this Task is to investigate and analyze the operational and organizational structure of transmission planning within TEİAŞ how generation planning meets the domestic load and power trade needs securely, reliably and economically, and how transmission and generation planning integrate and

interact. In this regard, Consultant shall hold meetings with the employees of the Transmission Planning Division to learn the methods and content of the planning activities carried out by the Transmission Planning Division of TEİAŞ the staffing method, the staff's planning capacity development plan, processes, and career paths.

Transmission Planning Division will share information about procedures and studies regarding to preparation of transmission system planning data (static and dynamic) for 5, 10 and 20 years horizon, and preparation of various load and generation scenarios for 5, 10 and 20 years horizon to use in transmission planning studies; connection assessment of power plants and consumer facilities; the studies conducted to identify new transmission facilities; planning criteria within the Turkish Grid Code, ENTSO-E directive, and relevant legislations and other works carried out by the division and, if necessary, sample documents related those activities might be shared with the Consultant.

Consultant shall also investigate the organizational structure of Transmission Planning within TEİAŞ. In addition, the Consultant shall review data and work flow between Transmission Planning Division and other divisions within TEİAŞ and other external institutions and stakeholders within the scope of all type of planning activities. The Consultant shall prepare a report (D-8) stating the current status of the works and structure carried out by the Transmission Planning Division, interview analyses, as well as the evaluating the human and technical resources within the division.

For Task 2.1.1, Consultant will hold 2-day interview meeting within TEİAŞ Transmission Planning Department, other relevant departments, the corporate management. Meeting will be held at TEİAŞ premises. Consultant will provide simultaneous translation. TEİAŞ will provide the interviewee list and make the necessary timing arrangements.

Task 2.1.2 Analysis of the transmission planning organizational and operational structure of ENTSO-E member TSOs.

The Consultant shall examine the organizations and operations of the transmission system planning units/structures of two selected ENTSO-E Transmission System Operators. Selection criteria for comparators are defined in Box 1. In this regard, procedures and studies regarding to preparation of transmission system planning data (static and dynamic) for 5, 10 and 20 years horizon, and preparation of various load and generation scenarios for 5, 10 and 20 years horizon to use in transmission planning studies; connection assessment of power plants; procedures and studies regarding to connection assessment of consumer facilities; studies conducted to identify new transmission facilities and reports prepared periodical or non-periodical of the two selected ENTSO-E Transmission System Operators shall be analyzed and reported by the Consultant.

Consultant shall also examine the activities and studies of the transmission-planning unit of the TSOs within indicated timeline in this TOR and prepare a report showing the breakdown of the activities and studies, methodologies, contents, time required for the studies and the sample time plan of the activities performed by the unit during the year and planning criteria within national Grid Codes of those countries and other documents regarding transmission planning. Samples of the reports of the transmission system operators that are examined should be included as an annex to the report.

The Consultant shall review data and work flow between the transmission system planning units of selected two ENTSO-E Transmission System Operators' with other divisions within the TSO and other institutions within the scope of the planning activities. Consultant shall also analyze and report the

organizational structure of Transmission Planning of the ENTSO-E Member TSOs, as well as how least cost generation planning is dealt with and how it is integrated as the generation- transmission expansion plan properly.

Consultant will prepare a Task 2.1.2 Transmission Planning International Assessment Report (D-9) that includes details of the above task definitions and present it in a 3-day meeting in TEİAŞ. Meeting will be held at TEİAŞ premises. The Consultant will provide simultaneous translation.

Task 2.1.3 Gap analysis and Benchmarking of TEİAŞ transmission planning with selected two ENTSO-E TSOs' transmission planning

The Consultant shall compare the activities of TEİAŞ Transmission Planning Division with the activities of the transmission planning units of two-selected ENTSO-E Transmission System Operators and prepare a Gap Analysis and Benchmarking Report. Selection criteria for comparators are defined in Box 1. According to the results of the Gap Analysis study, Consultant shall prepare a Gap Analysis and Benchmarking Report including but not limited to the following issues;

- the development of the processes for the existing activities carried out by TEİAŞ Transmission Planning Division,
- Development of the processes for the integration with the generation plan.
- the development of the processes for the new activities required to be carried out by TEİAŞ Transmission Planning Division,
- Specifying the methodologies and types of analysis to be used in the existing and new activities,
- Preparation of guidelines and sample report templates for the existing and new activities,
- Specifying the time requirement for the existing and new activities and preparation of sample time plan for a year regarding all activities of TEİAŞ Transmission Planning Division,
- Comparison of the transmission planning criteria, documents and legislation together with amendment proposals
- Specifying qualification of engineers who will be work in transmission planning unit and necessary trainings for engineers in transmission planning unit.

In addition, a part that includes explanations and charts related to data and workflow between the transmission system planning units of TSO and other divisions within the TSO and other institutions shall be included to the report within the scope of the operational and organizational planning activities.

Consultant shall present Task 2.1.3 Transmission Planning Gap Analysis and Benchmarking Report (D-10) to TEİAŞ in a 3-day meeting. Meeting will be held at TEİAŞ premises. The Consultant will ensure simultaneous translation.

Task 2.1.4 Trainings for TEİAŞ personnel regarding new types of Transmission Planning methodologies and implementations.

Consultant shall give training to the TEİAŞ Transmission Planning Division personnel on the following topics;

- 1st Training (Static Analyses Training); Static analyses regarding to connection assessment of power plants and consumer facilities and to identify new transmission facilities,
- 2nd Training (Dynamic Analyses Training); Dynamic analyses regarding to connection assessment of power plants and consumer facilities and dynamic analyses that will be performed in the long-term planning studies,

- 3rd Training (Load Flow Analyses Training); Load flow analyses covering 8760 hours in the specified target years (5-10 years) with different system scenarios in the long-term planning studies.

Before the trainings, the training contents will be shared with TEİAŞ Transmission Planning Division and after the content is approved by TEİAŞ, training will be planned. Digital and/or printed training documents will be shared before training. Detailed guidelines which include methodologies and work flows of analyses explained in trainings shall be prepared and submitted for all analyses.

Trainings shall be conducted by utilizing the transmission planning software programmes (PSS/E, Digsilent) used within TEİAŞ.

There will be three training courses in five different sessions held for TEİAŞ Transmission Planning staff. First training (Static Analyses Training) will last for 3 days and 10 TEİAŞ engineers responsible for Transmission Planning will attend to this training. Second (Dynamic Analyses Training) and third training (Load Flow Analyses Training) will each be repeated over two separate sessions, making a total of four sessions. Each session of second and third training will last for 3 days and two groups of 10 TEİAŞ engineers responsible for Transmission Planning will attend one session each. A total of 20 TEİAŞ engineers responsible for Transmission Planning will be trained via second and third trainings. Venue of the Training, catering and simultaneous translation will be arranged and incurred by the Consultant as project costs. All the document and presentations of the training shall be shared with TEİAŞ by the Consultant, with a Training Report (D-11). This report shall at least include the structure of the training, participant list, and takeaways.

Task 2.1.5 Study Visit for TEİAŞ staff for monitoring transmission-planning implementations of ENTSO-E member TSOs on site

Four (4) study visits will be organized in order to observe and monitor the transmission planning activities and operations of the two-selected ENTSO-E member TSOs. Selection criteria for comparators are defined in Box 1. Procedures, analyses and examples of transmission planning activities examined in Task 2.1.1 and Task 2.1.2 will be presented by transmission planning engineers of selected ENTSO-E member TSOs. Transmission-planning engineers of selected ENTSO-E member TSOs shall demonstrate sample studies (case studies) regarding static and dynamic analyses utilized in connection assessment studies and long-term planning studies through simulation program.

Each Study Visit will last for 3 days. Consideration will be given to including online access for remote participation of activities as appropriate to maximize participation. Five (5) TEİAŞ Transmission Planning personnel and one (1) MENR personnel will participate in person to each Study Visit, with different personnel attending each study visit in person and a total of 20 TEİAŞ Transmission Planning personnel and four (4) MENR personnel will attend to the Study Visits. MENR and TEİAŞ will share the participant list with the consultant at least one month before the study visit dates. Consultant will prepare and submit a Study Visit Report (D-12) after all Study Visits performed. This report shall include a summary of the sessions during the visits, information about the visited institutions, takeaways, the participant list, and documents/presentations given by the visited institutions (if shared). All relevant costs of the Study Visits will be treated as project costs of the Consultant (travel, accommodation, per diem etc.).

Task 2.1.6 Need assessment and recommendations for TEİAŞ to improve its transmission planning capacity

A Needs Assessment and Recommendations Report (D-13) will be prepared including the findings of the activities carried out throughout Tasks 2.1 and recommend actions necessary for increasing the transmission planning capacity of TEİAŞ. The recommendations should cover: the development of processes for existing activities carried out by TEİAŞ Transmission Planning Division and the new activities required to be carried out, specifying the methodologies and types of analysis to be used in the existing and new activities, preparation of guidelines and sample report templates for the existing and new activities, specifying the time requirement for the existing and new activities and preparation of sample time plan for a year regarding all activities of TEİAŞ Transmission Planning Division and specifying qualification of engineers who will work in transmission planning unit; necessary trainings for engineers in transmission planning unit and related proposals regarding transmission planning criteria.

The Consultant shall present it to TEİAŞ in a 3-day meeting. Meeting will be held at TEİAŞ premises. Simultaneous translation shall be provided by the Consultant.

Task 2.2. Improvement of Generation Planning Capacity within Turkish Power System

The Consultant shall carry out the following activities within the scope of development of the generation planning capacity within Turkish power system.

Task 2.2.1 Assessment of generation planning within Turkish Power System

The Consultant shall analyze the methods and procedures applied for Generation Planning studies within Turkish power system. Consultant shall examine the studies performed, the tools, methodologies and software used in performing the work, the methodology of preparing the data used in the generation planning work and the stakeholders of the generation planning works.

For Task 2.2.1, Consultant shall hold a two (2) day interview meeting with responsible parties of Generation Planning within Turkish Power System. Meeting will be held at TEİAŞ premises. TEİAŞ will provide the interviewee list and make the necessary timing arrangements. Simultaneous translation will be provided by the Consultant.

Consultant shall prepare and submit a Generation Planning TEİAŞ Assessment Report (D-14) at the end of this Task 2.2.1. This report shall be stating the current status of the works and structure carried out by the related divisions, interview analyses, as well as the evaluating the human and technical resources.

Task 2.2.2 Analysis of the generation planning of ENTSO-E TSOs.

The Consultant shall examine the activities of the generation planning applications and methodologies of two ENTSO-E Transmission System Operators' generation planning studies, reports, activities and works performed. Selection criteria for comparators are defined in Box 1. In addition, Consultant shall also analyze the data and workflow used in generation planning and interaction with the other departments of the two selected ENTSO-E Transmission System Operators within the scope of generation planning activities.

Consultant shall prepare and submit a Generation Planning International Assessment Report (D-15) which shall include the above analyses and studies at the end of the Task 2.2.2. Consultant will present the Task 2.2.2 Report in a 2-day meeting in TEİAŞ. Meeting will be held at TEİAŞ premises. Consultant shall provide simultaneous translation.

Task 2.2.3 Gap analysis and Benchmarking of generation planning applications within Turkish power system with selected two ENTSO-E TSOs' generation planning applications

The Consultant shall compare the concept of the generation planning within Turkish power systems and the two selected ENTSO-E Transmission System Operators and prepare a Gap Analysis and Benchmarking Report. Selection criteria for comparators are defined in Box 1. According to the results of the study, Consultant shall prepare a Benchmarking Report including the following issues:

- the development of the processes for the existing generation planning activities carried out and new activities required to be carried out within Turkish power system in the context of Generation Planning,
- Specifying the methodologies and types of analysis to be used in the existing and new activities,
- Preparation of guidelines and sample report templates for the existing and new activities,
- Specifying the time requirement for the existing and new activities and preparation of sample time plan for a year regarding all activities of Generation Planning.

Consultant shall prepare and submit a Generation Planning Gap Analysis and Benchmarking Report (D-16) at the end of this Task 2.2.3. Consultant will present the Task 2.2.3 Report in a 2-day meeting in TEİAŞ. Meeting will be held at TEİAŞ premises. Consultant will provide simultaneous translation.

Task 2.2.4 Training on types of Generation Planning methodologies and implementations

The Consultant shall prepare and provide a training on types of Generation Planning methodologies and implementations. Consultant shall give training to the related Generation Planning staff of MENR and TEİAŞ about the generation planning analysis within the scope of 5-years, 10-years and 20-years of generation planning studies in various scenarios covering the long-term period by using ANTADES software. Training shall include also the transfer of the results of the generation planning studies to the network analysis programs (PSS/E, Digsilent).

Training contents will be shared before the training and training will be planned after the content approved by TEİAŞ and MENR. Final form of the printed and digital training documents will be shared with participants before the trainings. Detailed guides including methods and workflows for the analyzes described within the trainings will be prepared and presented as reports. Training documents shall be translated to Turkish and delivered before the trainings.

Contractor will organize the training for responsible Generation Planning staff of MENR and TEİAŞ. Training will last for 3 days. 15 personnel (10 from TEİAŞ and 5 from MENR) will attend to the training. Venue of the Training, catering and simultaneous translation will be arranged and incurred by the Consultant from the contract. All the documents and presentations of the training shall be shared with TEİAŞ by the Consultant, with a Generation Planning Training Report (D-17). This report shall at least include the structure of the training, participant list, and takeaways.

Task 2.2.5 Study visit for monitoring generation-planning implementations of two ENTSO-E member TSOs on site.

Two Study Visits will be organized under Task 2.2.5. Selection criteria for comparators are defined in Box 1. It is aimed to perform meetings and exchange information about the generation planning application and methodologies with the personnel of the visited ENTSO-E Transmission System Operators by the participation of the TEİAŞ and MENR responsible personnel attended to the Task 2.2 studies.

In the study visit, the generation planning logic of the visited TSOs will be explained and the studies performed by the TSOs in different scenarios will be explained. Each presentation to be made during the study visit will be made by experts who have worked on that subject and the presentations will be shared with participants.

Each Study Visit will last for 2 days. 6 (six) staff will attend each Study Visit, total of 12 (8 from TEİAŞ and 4 from MENR) responsible staff for generation planning activities within TEİAŞ and MENR will participate in Study Visits. MENR and TEİAŞ will share the participant list with the consultant at least one month before the study visit dates. All relevant costs of the Study Visits will be met from the contract by the Consultant (travel, accommodation, per diem etc.).

Consultant will prepare and submit a Study Visit Report after the Study Visits performed (D-18). This report shall include a summary of the sessions during the visits, information about the visited institutions, takeaways, the participant list, and documents/presentations given by the visited institutions (if shared).

Task 2.2.6 Need assessment and recommendation report for generation planning capacity within Turkish Power System.

The consultant will prepare a Need Assessment and Recommendation Report including findings of the activities carried out during Task 2.2 and the suggestions required to increase the capacity of generation planning within Turkish Power System. The Need Assessment and Recommendation Report shall include but not limited to the following topics;

- Analysis of existing activities and if applicable recommendations for new activities to be carried out for generation planning,
- determination of the methods to be followed in the generation planning studies and the types of analysis to be used,
- creation of guidelines and sample report templates for generation planning studies,

Consultant shall present Task 2.2.5 Report (D-19) in a 2-day meeting. Meeting will be held at TEİAŞ premises. Simultaneous translation will be provided by the Consultant.

Activity 3: Improvement International Business Development Capacity of TEİAŞ

Task 3.1 Assessment of TEİAŞ's international business development capacity

Within Task 3.1, Consultant will examine the organizational structure and operational implementations of business development and international relations of TEİAŞ. Consultant will analyze the international business transaction capacity of TEİAŞ. With this purpose, Consultant may interview with the TEİAŞ Foreign Affairs Division and relevant different departments if deemed necessary. TEİAŞ will provide the interviewee list and make the necessary timing arrangements. Moreover, Consultant shall analyze Turkish international energy companies (such as BOTAŞ, TPAO, Turkish Petroleum International Company (TPIC), BOTAŞ International Limited (BIL), etc.) with regard to their operational and organizational structure in the context of recruitment, internal and external cooperation, budgeting, legislative structure etc.

Consultant will hold a 2-day meeting within TEİAŞ to present the results of the assessment of TEİAŞ's international business development capacity. Meeting will be held at TEİAŞ premises. Consultant shall prepare and submit an International Business Development TEİAŞ Assessment Report (D-20) at the end of Task 3.1. This report shall prepare be stating the current status of the works and structure carried out

by the related division of TEİAŞ, interview analyses, takeaways from Turkish international energy company analyses, as well as the evaluating the need for human and technical resources.

Task 3.2 Analysis of international business operations and organizations of ENTSO-E member TSOs

Consultant shall analyze organizational structure and operational implementations of the two-selected ENTSO-E Member TSOs with regard to the topics mentioned in Task 3.1. Consultant shall analyze the ENTSO-E member TSOs operational and organizational structure in the context of recruitment, internal and external relations and cooperation, budgeting, legislative structure, etc. of the selected TSOs. Selection criteria for the comparator is defined in Box 1.

Consultant shall prepare and submit an International Business Development International Assessment Report (D-21) that includes the above mentioned analyses at the end of Task 3.2. Consultant will present the Task 3.2 Report in a 2-day meeting in TEİAŞ. Meeting will be held at TEİAŞ premises.

Task 3.3 Gap Analysis and Benchmarking of TEİAŞ's international business transaction capacity with an ENTSO-E TSO

After the finalization of the Task 3.1 and Task 3.2 and approval of the reports of these Tasks, Consultant shall prepare and submit a Gap Analysis and Benchmarking Report (D-22) that will build on the findings and results of the Task 3.1 and Task 3.2. Consultants shall present this report to TEİAŞ in a 2-day meeting. Meeting will be held at TEİAŞ premises.

Task 3.4 Study visit to an ENTSO-E member TSO

One study visit organized to an ENTSO-E Member TSO. International business transaction types and methodologies of the visited ENTSO-E member TSO will be observed and monitored and information will be gathered from the TSO's staff of relevant unit of the TSO. Selection criteria for the comparator is defined in Box 1. Six (6) TEİAŞ personnel and one (1) MENR will attend to the study visit and study visit will last for 2 days. MENR and TEİAŞ will share the participant list with the consultant at least one month before the study visit dates. Consultant will prepare and submit a Study Visit Report (D-23) after the Study Visit. This report shall include a summary of the sessions during the visit, information about the visited institutions, takeaways, the participant list, and documents/presentations given by the visited institutions (if shared). All relevant costs of the Study Visits will be met from the contract by the Consultant (travel, accommodation, per diem etc.).

Task 3.5 Need assessment and Recommendation report for TEİAŞ for improving its business development capacity

After the completion of Tasks 3.1, 3.2, 3.3 and 3.4 and approval of the reports of these Tasks, Consultant shall prepare and submit a Need Assessment Report and Recommendation Report (D-24) that will include all the aspects that will pave the way for TEİAŞ within the possible revision and/or restructuring of TEİAŞ international relations unit/structure. Consultant shall present this report to TEİAŞ in a 2-day meeting. Meeting will be held at TEİAŞ premises.

Closing Event and Completion Report

After the approval of all technical reports and deliverables including a draft of the Activity Completion Report (D-25), a one-day closing meeting will be held at a 4-star hotel in Ankara with the participation of at least 50 people (excl. the Consultant) where the Consultant will present on project results and main take-aways. The venue, catering, interpretation and other organisation related costs will be borne by the

Consultant of one of the other contracts. The Activity Completion Report will be finalized after the closing workshop to also summarize the closing workshop’s outcomes. Further details of the Activity Completion Report are described in Section 6 below.

5. MANAGEMENT AND COORDINATION

The progress of the contract will be monitored by a Project Steering Committee consisting of representatives from MENR, Directorate of EU Affairs, Delegation of the European Union to Türkiye, the World Bank and TEİAŞ. MENR representative appointed by the MENR will head the Committee. **Steering Committee** will be responsible for verifying the achievement of the outputs, and discussing actions to be undertaken for the successful implementation of the project. During implementation it is anticipated that meetings will be convened on a quarterly basis and also on ad hoc basis when deemed necessary by its members. The consultant is obliged to attend the relevant experts to such meetings and to provide information about the activity in the meeting. The responsibility of the preparation of minutes for such meetings lies with the Consultant. Meeting minutes are subject to the approval of the head of the Committee. The Steering Committee meetings shall be organized in Ankara at the premises of MENR or TEİAŞ.

The Consultant(s) shall appoint a Team Leader and work closely with the Project Coordinator assigned by MENR. TEİAŞ will also assign a Project Coordinator for the technical and organizational implementation of the Project between the Consultant and TEİAŞ. On the other hand, MENR or TEİAŞ may request the organization of physical or online ad hoc Technical Committee meetings with the representatives of the consultant in order to discuss the progress of the project in a monthly basis. When needed, line Ministries and institutions that have intersects with transmission and generation planning, other IFIs, bilateral agencies, energy companies, energy related NGOs and/or other corporations may participate in the Technical Committee and its meetings by invitation.

The **MENR General Directorate of Foreign Affairs (DGFR) PIU** is the Contracting Authority of the TEİAŞ project. The Contracting Authority will be responsible for tendering, contracting, administration, overall project supervision, review and final approval of the reports, financial management including payments of project activities.

TEİAŞ is the end beneficiary for all activities and responsible for improving its institutional capacity with regard to transmission and generation planning, international business development and R&D utilization. The End Beneficiary is responsible for the overall technical implementation of the TEİAŞ project.

The MENR and TEİAŞ will introduce the Project Coordinators at the inception meeting and ensure the availability of the participating staff at the task designated dates.

6. DELIVERABLES AND REPORTING REQUIREMENTS

Summary of Deliverables (see section 12 for complete list)
Inception Report
Quarterly Interim Progress Reports (including presentation to the SC)

International Assessment, Gap Analysis & Benchmarking, Need Assessment and Recommendations Reports for All Tasks (all the reports shall be prepared separately for each task)
Training Reports (shall be prepared separately for each relevant task)
Study Visit Reports (shall be prepared separately for each study visit)
Final Report

- Inception Report: Proposed methodologies, data required, hardware requirements (including Functional requirements to), final work program and issues for consideration in completing the tasks defined under this TOR will be reported.
- The detailed work program will be finalized in the first steering committee meeting.
- Quarterly Interim Progress Reports will be submitted every three months from the start of the project activities till the end of the project.
- Task Reports: As assignments progress, the Consultant shall submit draft outline or table of contents for each main output report for PIU to review. The Consultant will then incorporate PIU's input on the scope and the contents toward finalizing each report.
- Study Visit Reports: The report will consist of brief information about the study visit and its results.
- Training Reports: The reports will consist of brief information about the trainings including documents, presentations, recordings and summary of the training evaluation forms of the participants.
- Activity Completion Report: will be submitted at the end of the project within four weeks following the completion of the activities and will include final set of data and indicators as well as user manuals. The consultant should propose a methodology to monitor the outputs, efficiency and effectiveness of implementation and take necessary actions to enhance these during implementation and report on these in the Final Report.

The Inception Report will be disseminated via e-mail in English and Turkish to Steering Committee Members within four weeks of contract signing. One week will be provided for the Steering Committee Members for their comments on the Inception Report. The final version of the report will be disseminated to the Steering Committee Members as soft versions via e-mail. The consultant should expect at least two rounds of Steering Committee comments on the reports and plan to carry out parallel activities accordingly.

The Interim Progress Reports will be disseminated via e-mail in English and Turkish to Steering Committee Members within 10 days following every three months from the start of the project. Together with the dissemination of the Interim Evaluation Report, the date of the Steering Committee Meeting will be announced (the meeting will be held within max. 10 days from the dissemination of the report) and members will be invited to the meeting. After the Steering Committee Meeting, two weeks will be provided to the Steering Committee Members for their comments on the Interim Evaluation Report. The final version of the report will be disseminated to the Steering Committee Members as soft versions via e-mail.

The Training Reports will be disseminated via e-mail in English and Turkish to Steering Committee Members within 10 days following the completion of activities.

The Activity Completion Report will be disseminated via e-mail in English and Turkish to Steering Committee Members within one month from the completion of all activities. Two weeks will be provided to Steering Committee Members for their comments. The final version of the report will be disseminated to the Steering Committee Members as 1 hard copy in English and 1 hard copy in Turkish and as soft versions via e-mail etc.

All the reports and other deliverables under the project will be submitted in both Turkish and English languages, soft copies of the reports will be submitted in editable and ready to publish version (i.e. MS Word) and finalized reports will be published five hard copies in both Turkish and English.

The translations will be proofread by a native speaker to both languages before submitting.

7. CONSULTANT'S QUALIFICATIONS

The Consultant will be selected by MENR in accordance with World Bank Procurement Regulations (November 2020). The firm must propose a team capable of carrying out all aspects of the TOR.

The selected Consultant will be a qualified firm or Joint Venture of firms that have demonstrated significant experience and knowledge in the conduction and operation of the transmission and generation planning, research and development and business development for transmission system operator/s.

8. TEAM COMPOSITION

All experts who have a crucial role in implementing the contract are referred to as key experts. Consultant will assign a Team Leader among the Key Experts that will be responsible for managing the Consultant's team of experts and for ensuring the quality and the timely execution of the work tasks, ensuring a smooth execution of the project through careful preparation and monitoring of tasks.

The profiles of the key experts for this contract are as follows:

Key Expert 1: Team Leader

- Appropriate qualification and experience in transmission system operations and planning
- Minimum 10 years of relevant professional experience in the field of transmission and/or generation planning
- Minimum 10 years of power sector experience in project coordination and management

Key Expert 2: R&D Expert

- Appropriate qualification and experience in R&D operations in a Transmission System Operator, including following;
 - Minimum 8 years of relevant experience including Minimum 5 Years of experience in TSO innovation centers and/or research centers. If not possible experience in management of innovation centers and/or research centers is acceptable.
 - Experience in R&D project preparation, management, and execution of R&D Projects for Transmission System Operator
 - Experience in International Funded R&D projects will be an asset.
 - Experience in research areas will be an asset:
 - Power System Modernization
 - Power System Efficiency
 - R&D Asset Management
 - New Materials and Technologies
 - Grid Observability and Controllability
 - Enhanced Ancillary Services and associated market design
 - Renewable Energy (Solar, Wind etc.)
 - Power Quality
 - Power System SCADA
 - Flexibility Resources and Storage Integration

Virtual Power Plant
FACTS device systems

- Experience in implementation of new technologies and as a result of these implementations, experience in grid code regulations will be an asset.

Key Expert 3.1: Transmission Planning Expert

- Appropriate qualification and experience in Transmission Planning operations in a Transmission System Operator, including following;
 - At least 10 years of general experience
 - At least 5 years of transmission sector experience
 - Connection assessment of RES (wind, solar and etc.) power plants with combined installed capacity of least ~1000 MW
 - Dynamic analysis in large transmission network with at least 25 GW installed capacity.
 - Connection assessment of conventional power plants with combined installed capacity of at least ~1000MW will be an asset.
 - Connection assessment of industrial consumer facilities (arc furnaces etc.) which affect power quality of transmission network will be an asset.
 - Connection assessment of distributed solar PV generation will be an asset.
 - Long term transmission system planning studies will be an asset.
 - Interconnection studies will be an asset.
 - Transmission investment financing will be an asset.
 - Integration of transmission and generation planning will be an asset.

Key Expert 3.2: Generation Planning Expert

- Appropriate qualification and at least 5 years of general experience.
- Experience in Generation Planning operations in a Transmission System Operator, including following;
 - Conducting long term generation planning studies,
 - Conducting short term generation planning studies,
 - Conducting long term demand forecasting studies

In Countries that have similar installed power capacity (above 80,000 MW) and have been transitioning from coal and gas-based power generation to more variable renewables and nuclear resource type as of Türkiye

- Performing long-term generation planning studies for a generation system having several/diverse generation regions.

Key Expert 4: Business Development Expert

- Appropriate qualification and at least 8 years of general experience.
- Experience in International Business Development operations of a Transmission System Operator, including following;
 - Implementation of the projects funded by IFIs
 - Implementation of EPC projects in Middle East and North Africa Region will be an asset.

Training Experts:

- Training experts may be the same as or separate to the above experts.
 - 1 Transmission Planning Training Expert shall have experience in following;
 - PSS/E and DigSilent software with regard to static and dynamic analyses and training of these software including following topics;
 - Connection assessment of conventional power plant
 - Connection assessment of RES power plants
 - Connection assessment of industrial consumer facilities

- Connection assessment of dispersed generation
 - Dynamic analysis in large transmission network
- 1 Generation Planning Training Expert shall have experience in following;
 - Long term generation planning studies with ANTARES software,
 - ANTARES analysis with regard to Nodal and Zonal studies,
 - Long-term generation planning studies of a generation system, that has several/diverse generation regions, via ANTARES software.

Additional **team members / non-key experts will be** required to perform stated activities. Consultant shall secure the proper implementation by recruiting a satisfactory number of key/non-key experts in the field. Including at least one local Turkish staff to manage liaison with TEİAŞ on technical matters and logistics respectively, preferably based in Ankara, where TEİAŞ premises is located. The consultant teams should be divided into groups to progress the TOR elements in parallel (particularly data preparation) and provide feedback to each other.

9. DURATION OF THE SERVICES

The total duration of consulting services will be 24 months. The following table summarizes the timing of outputs. See section 12 for the complete list and notes about payment schedule.

Output	Timing
Activity Inception Report	1 st month
Interim Progress Reports (including presentation to the SC)	Every 3 months
Assessment of TEİAŞ Reports for all Tasks	4 th month
International Assessment Reports for All Tasks	7 th Month
Gap Analysis and Benchmarking Reports for All Tasks	10 th month
Need Assessment and Recommendation Reports for All Tasks	15 th Month
Study Visit Reports for All Tasks	1 month after the organizations of the Study Visits
Training Reports for Tasks 1, 2	1 month after the organizations of the Trainings
Activity Completion Report	23 rd month

10.FACILITIES TO BE PROVIDED BY THE CONSULTANT IN THE PROJECT

The Consultant shall ensure that experts are adequately supported and equipped. In particular, it must ensure that there is sufficient administrative, secretarial and interpreting provision to enable experts to concentrate on their primary responsibilities. It must also transfer funds as necessary to support their work under the contract and to ensure that its employees are paid regularly and in a timely fashion.

The Consultant will be responsible for provision of the services detailed in this TOR including the following:

- The Consultant shall cover the administrative costs of employing the relevant experts, such as relocation and repatriation expenses (incl. Flights to and from Türkiye upon mobilization

and demobilization), accommodation, expatriation allowances, leave, medical insurance and other employment benefits accorded to the experts by the Consultant,

- The Consultant will also be responsible for arranging the transport of the experts when travelling in Türkiye.
- The Consultant shall provide office equipment and cover office running costs that necessary for the implementation of the project,
- Regarding the trainings which will be held in Ankara, Consultant will deliver the venue and catering and simultaneous interpretation covered under the Consultant's budget. The training places will be determined together with the End Beneficiary (TEİAŞ) and the Consultant. Design, printing and translation costs of the training materials will be incurred by the Consultant from the contract. The rooms will be capable of hosting all the attendants to the trainings. Consultant shall also record all the trainings via screen recording and audio recording and will share with MENR and TEİAŞ.

For workshop and training activities to held in a hotel as per this TOR, the Consultant shall arrange and cover the cost of venue as well as food and beverages to be served during lunch and coffee breaks.

Regarding the bilateral meetings between the Consultant and MENR that will be held under all Tasks, MENR will arrange the venue.

For the organization of workshops, seminars, meetings, site visits, roundtable meetings, etc. out of Ankara, the Consultant will be responsible for the arrangement and costs of the travel and accommodation of the delegates from MENR and TEİAŞ as the case may be.

- For the study visits abroad: the Consultant will be responsible for the arrangement and costs of the travel (flights for all staff participants from/to Ankara, including inter and intra-city travel), accommodation in at least 4-star hotel or equivalent including meals and beverages of participants, preparation and printing of training materials, as well as fees of the institutions to be visited and visa costs, and other expenditures.

The Consultant shall assume that interpreting will be required for both Turkish participants and for experts from comparator countries where English is not the official language (e.g. Spanish in Spain, French in France).

Actual costs paid for travel and accommodation will be covered under the Consultant's budget. All payments will be made per schedule noted in Section 12. No pocket money shall be paid to civil servants in any case. For all participants of this project's activities, daily costs shall not exceed the per diem rates published by the EU:

https://international-partnerships.ec.europa.eu/funding-and-technical-assistance/guidelines/managing-project/diem-rates_en

The Consultant will ensure proper communication (English/Turkish) with interlocutors and language barriers should be addressed by the Consultant during implementation. The Consultant

will meet the cost of translation and interpretation (including the costs of simultaneous translation for trainings, meetings, study visits, workshops and translation of all reports),

Study visits will be carried out to ENTSO-E Member Countries and will be determined with the decision of TEİAŞ and the Consultant.

The Consultant will cover cost of visibility materials, including printing, duplication and dissemination.

The Consultant will provide fully responsible authorized contact person/s for the organizational issues to the MENR. The invitations to the Steering Committee meetings and necessary arrangements and registrations will be conducted by the Consultant and according to the registration number; the meeting room will be organized.

11. GENERAL RULES ON PUBLICITY AND VISIBILITY FOR EU FUNDED PROJECTS

The Consultant shall take all necessary measures to publicize the fact that the European Union has financed the Program.

In addition, the Consultant shall take the necessary measures to ensure the visibility of the European Union financing or co-financing. These measures must comply with the rules laid down and published by the Commission on the visibility of external operations: http://ec.europa.eu/europeaid/work/visibility/index_en.htm.

All projects /contract implemented under this programme shall comply with the Visibility Guidelines for European Commission Projects in Türkiye published by the EU Delegation (EUD) to Türkiye, at https://www.eeas.europa.eu/delegations/t%C3%BCrkiye/visibility-guidelines-clarification-2022-guidelines-communicating-and-raising-eu-visibility_en

All communication and visibility activities should be carried out in close co-operation with the World Bank (WB). The WB is the main authority in charge of reviewing and approving visibility-related materials and activities. Before initiating any information, communication or visibility material and activity, Consultant and implementing partners should seek the approval of the WB in writing.

Whether used in the form of the EU-Türkiye cooperation logo for information materials or separately at events, the EU and Turkish flag have to enjoy at least double prominence each, both in terms of size and placement in relation to other displayed logos and should appear on all materials and at all events as per the Communication and Visibility Manual for European Union External Actions. At visibility events, the Turkish and the EU flag have to be displayed prominently and separately from any logos. Logos of the MENR, TEİAŞ and WB should be clearly separated from the EU-Türkiye partnership logo and be maximum half the size of each flag. The logos will not be accompanied by any text. The WB and Türkiye logos will be on the lower left-hand corner and lower right-hand corner respectively. The Consultant logo with the same size will be in the middle of the WB and Türkiye logos. If the Consultant is a consortium, only the logo of the consortium leader will be displayed.

Any publication by the Consultant, in whatever form and by whatever medium, including the Internet, shall carry the following or a similar statement: “This document has been produced with the financial assistance of the European Union”. In addition, the back cover of any such publications by the Consultant should also contain the following disclaimer: “The contents of this publication is the sole

responsibility of name of the author/Consultant/implementing partner- and can in no way be taken to reflect the views of the European Union, the World Bank Group, or the Government of Türkiye”.

12.REPORT DELIVERABLES AND TIMING

All deliverables within a set will be required for any given deliverable set to be considered complete and trigger a lump sum payment. The payment schedule is expected as follows:

Deliverable	Task No.	Name
D-1	n/a	Activity Inception Report
-	n/a	Interim Progress Reports (7 in total)
D-2	Task 1.1	R&D TEİAŞ Assessment Report
D-3	Task 1.2	R&D International Assessment Report
D-4	Task 1.3	R&D Gap Analysis and Benchmarking Report
D-5	Task 1.4, 1.7	R&D Training Report
D-6	Task 1.5	R&D Study Visit Report
D-7	Task 1.6	R&D Need Assessment and Recommendations Report
D-8	Task 2.1.1	Transmission Planning TEİAŞ Assessment Report
D-9	Task 2.1.2	Transmission Planning International Assessment Report
D-10	Task 2.1.3	Transmission Planning Gap Analysis and Benchmarking Report
D-11	Task 2.1.4	Transmission Planning Training Report
D-12	Task 2.1.5	Transmission Planning Study Visit Report
D-13	Task 2.1.6	Transmission Planning Need Assessment and Recommendations Report
D-14	Task 2.2.1	Generation Planning TEİAŞ Assessment Report
D-15	Task 2.2.2	Generation Planning International Assessment Report
D-16	Task 2.2.3	Generation Planning Gap Analysis and Benchmarking Report
D-17	Task 2.2.4	Generation Planning Training Report
D-18	Task 2.2.5	Generation Planning Study Visit Report
D-19	Task 2.2.6	Generation Planning Need Assessment and Recommendations Report
D-20	Task 3.1	International Business Development TEİAŞ Assessment Report
D-21	Task 3.2	International Business Development International Assessment Report
D-22	Task 3.3	International Business Development Gap Analysis and Benchmarking Report
D-23	Task 3.4	International Business Development Study Visit Report
D-24	Task 3.5	International Business Development Need Assessment and Recommendations Report
D-25	n/a	Activity Completion Report

Payment Schedule

Deliverables	Output	Payment Ratio
D-1	Approval of Activity Inception Report by TEİAS	10 %
D-2, D-8, D-14, D-20	Approval of Assessment of TEİAŞ Reports & International Assessment Reports for all Tasks by TEİAS	15 %
D-4, D-10, D-16, D-22	Approval of Gap Analysis and Benchmarking Reports for All Tasks by TEİAS	15 %

D-5, D-6, D-11, D-12, D-17, D-18, D-23	Approval of Study Visits Reports and Trainings Reports for All Tasks by TEIAS	20 %
D-7, D-13, D-19, D-24	Approval of Need Assessment and Recommendation Reports for All Tasks by TEIAS	20 %
D-25	Approval of Activity Completion Report by TEIAS	20 %