***Terms of Reference (ToR):***

***Economic Modelling of Emissions Trading System in Türkİye AND DECISION SUPPORT MECHANISM***

1. **Objective**

The main purpose of the assignment is to conduct an economic modelling study on the impact of different Emission Trading System (ETS) design settings, conduct socio-economic analysis for Just Transition policies for Carbon Pricing Instruments (CPIs – carbon taxes and emissions trading systems), economic modelling for impacts of expanding scope of carbon pricing, and providing decision making support mechanism for policy formulation and development. This will inform decision makers and stakeholders on the design of the Turkish Emissions Trading System.

1. **BACKGROUND**

***Climate action in Türkiye***

Türkiye ratified the Paris Agreement in October 2021, and in the same year announced a target to reach the net zero by 2053. After the ratification of the Paris Agreement, Türkiye’s efforts have been focused on preparing plans and adopting policies to achieve these goals. Some of these efforts include establishing the DoCC which includes a carbon pricing department, approval of the Climate Law No: 7552 by the Parliament, organization of the Climate Council in 2022 and updating the first Nationally Determined Contribution (NDC) in line with the 2053 net zero target.

Figure-1: Greenhouse Gas Emission Shares by Sector, 2023

The following information is taken from Turkish Statistical Institution (TURKSTAT), reflected in Figure 1[[1]](#footnote-1) defines the greenhouse gas inventory of Türkiye.

The greenhouse gas inventory results revealed that overall greenhouse gas (GHG) emissions as CO2 equivalent (eq.) for the year 2023 compared to the previous year decreased by 1,4 % to 552,2 million tonnes (Mt).

In 2023, the energy sector had the largest share of total GHG emissions with 71,6%. The energy sector was followed by the agriculture sector with 13,0%, the industrial processes and product use sector with 12,8%, and waste sector with 2,5% (Figure-1). The energy sector emissions were calculated at 395,4 Mt CO2 eq. in 2023, which increased by 176,2% compared to 1990 and also decreased by 1,3% compared to previous year. Similarly, emissions from the industrial processes and product use sector were calculated at 70,9 Mt CO2 eq. in 2023, which increased by 207,2% compared to 1990 and also decreased by 1,4% compared to previous year.

Agriculture sector emissions were calculated at 71,8 Mt CO2 eq. in 2023, which increased by 38,4% compared to 1990 but increased by 0,3% compared to previous year. Waste sector emissions were calculated at 14.1 Mt CO2 eq. in 2023, which increased by 36,4% compared to 1990 but decreased by 12,2% compared to previous year

86,2% of total CO2 emissions originated from the energy sector including 34,5% of total CO2 emissions originating from electricity and heat production which is a sub-category of the energy sector. The remaining 13,5% of CO2 emissions originated from the industrial processes and product use sector and 0.4% from the agriculture and waste sectors in 2023.

DoCC has also determined 59 products/activities with their respective PRODCOMs that their respective output has to be verified by accredited GHG emission verifiers.

***Climate policy***

Türkiye aspires to integrate its climate change policies into development policies, disseminate energy efficiency, enhance the use of clean and renewable energy source, participate actively in the international negotiations on climate change within and in doing so, and become a country that provides its people with high living standards and welfare in low carbon world. Climate change-related issues are regulated through the articles of various laws, but the main climate policy documents are:

* National Climate Change Mitigation Strategy and Action Plan (2024–30),[[2]](#footnote-2) covering key areas, including energy, buildings, industry, transport, waste, agriculture, land use and forestry, just transition and carbon pricing mechanisms
* National Climate Change Adaptation Strategy and Action Plan (2024–30)[[3]](#footnote-3)
* 2053 Long Term Climate Strategy[[4]](#footnote-4)
* Green Deal Action Plan (in Turkish)[[5]](#footnote-5)

The 12th Development Plan of Türkiye (2024-2028) outlines the establishment of a national Emission Trading System (ETS), including the completion of necessary legislation and infrastructure. As part of this initiative, a comprehensive assessment of the economic and social impacts will be conducted. Key objectives related to carbon markets and climate policy include:

* Implementation of a National ETS: A regulatory framework will be introduced to cap emissions and enable trading of allowances, encouraging emission reductions.
* Economic and Social Impact Assessment: The effects of the ETS and carbon pricing mechanisms on businesses, employment, and the economy will be evaluated.
* Development of a National Offsetting Mechanism: Studies will be conducted to establish a system for carbon offsetting, allowing industries to compensate for their emissions through certified projects.
* Analysis of Participation in International Carbon Markets: Türkiye will explore opportunities for integration into global carbon trading platforms, such as the EU Emissions Trading System (EU ETS) or voluntary carbon markets.

In the Medium-Term Program (2025-2027), one of the key climate policies is the establishment of an emission trading system in Türkiye, with the goal of completing the necessary legislative framework within this period.

***Progress towards emissions trading***

The development of an ETS as a Carbon Pricing Instrument (CPI), fits into Türkiye’s climate and development strategies by reducing GHG emissions, according to the results of the Partnership for Market Readiness (PMR) Project, in a cost-effective manner, incentivizing modernization, and introducing innovative technologies. The first updated NDC of Türkiye also addresses ETS as a GHG mitigation measure. Likewise, in the National Climate Change Mitigation Strategy and Action Plan (2024-30) document, this issue is also included as an action under carbon pricing mechanism strategies as establishment of ETS in Türkiye.

In addition to these domestic drivers, Türkiye, as a candidate country to the EU, is targeting to develop ETS in the scope of harmonization of legislation and to mitigate the possible impacts of the EU’s Carbon Border Adjustment Mechanism (CBAM). The Climate Law No: 7552 laid the legal foundation of establishment of a national ETS, domestic off-set, and revenue recycling for green transition and climate change. 12th Development Plan (2024-2028) and Medium-Term Program (2024-2026) also puts some targets and measures regarding ETS. Subsequent by-laws are being developed to implement the ETS and the domestic offset system and first drafts of the by-laws are opened for public consultation.

Türkiye has been conducting carbon pricing studies under the Partnership for Market Implementation (PMI)[[6]](#footnote-6) and its predecessor, the Partnership for Market Readiness (PMR), since 2013. The PMI program in Türkiye is expected to be a five year program from 2023 to 2028. The Consultancy under this ToR is part of the PMI program.

"By-law on Monitoring of Greenhouse Gas Emissions", which is the first published legal by-law on the MRV system in Türkiye and followed by "Communiqué on Monitoring and Reporting of GHG Emissions" and "Communiqué on Verification of Greenhouse Gas Emissions Reports and Accreditation of Verification Bodies". The By-law is considered in line with the EU ETS; excluding emissions trading, free allowance allocation, carbon capture and storage.

The By-law covers greenhouse gas emissions from key sectors in Türkiye, such as the combustion of fossil fuels, oil refining, iron and steel, ferrous and non-ferrous metal production, primary aluminum production, mining industry, pulp and paper production, chemical industry, and acid production. More than 800 facilities, accounting for approximately 50% of Türkiye's total GHG emissions, has submitted their monitoring plans and have been monitored since 2015[[7]](#footnote-7).

**3. SCOPE of Work**

The Consultant will work closely with the DoCC to develop and run economic modelling of ETS based on different ETS design settings which aims to deliver and present the model results that test a range of ETS design scenarios. The Consultant will also develop and run an economic model in order to present economic analysis for Just Transition policies for Carbon Pricing Instruments (CPIs including carbon taxes and ETS) and provide economic analysis of different carbon pricing schemes for expanding the scope of carbon pricing.

The Consultant will customize the models over time to suit the needs of modelling an ETS and other policies as agreed with DoCC. In addition, the Consultant will provide trainings for DoCC staff and stakeholders on modelling.

It is expected that the DoCC will have ad-hoc modelling needs over the duration of the contract and the Consultant will therefore supply ongoing modelling support to address these ad-hoc requests throughout the execution of the contract.

Scope of Work consists of 3 main components, and their breakdowns of sub-components are listed below:

***Component 1: Conducting Economic Modelling***

**Task 1.1:** **Identification of a Model**

The Consultant shall review and identify appropriate model(s)/quantitative tool(s), e.g. an energy system model plus a macroeconomic model, to run the analysis under Task 1.2. The Consultant shall submit the model and scenario suggestions as a Modelling Framework Report.

**Deliverable (1): Modelling Framework Report**

The Consultant shall submit the model and scenario suggestions as a Modelling Framework Report. This report should provide justifications for the model selected. The model(s) used shall have high level of detail applicable to Türkiye for production sectors in order to be able to reflect different ETS scopes, also representation of the consumption side to reflect the impact of prices and revenue use, and trade linkages. The models will also need to include industrial process and product use (IPPU) emissions.

**Deliverable (2): Modelling Scenarios and Inputs/Assumption Report**

The Consultant will produce a list of agreed modelling scenarios for Component 1. The Consultant shall flag where further data is required to run the modelling scenarios so the DoCC, World Bank can provide the necessary information. In cases where the data is not available or cannot be obtained, the consultant will propose a sensible dataset, conducting the necessary work including a literature review. This proposal will be submitted to the DoCC and the World Bank. If agreed upon, that dataset will be used.

The Consultant will produce a list of key inputs and assumptions that have been agreed with the DoCC. All input and output data will be shared with the DoCC in EXCEL workbook.

The Consultant together with DoCC will determine the list of ETS design settings such as levels of emission intensity benchmark for free allocation, level of cap setting, level of domestic off-setting for running economic modeling of ETS based on different design settings.

**Task 1.2:** **Modelling of Potential Impacts**

The Consultant will provide a quantitative assessment of expected outcomes for Türkiye in the absence of emissions trading system (baseline scenario), and also evaluate the potential impacts of the ETS under 5 to 10 different scenarios. These scenarios will be agreed upon under Task 1.1. The questions to be addressed with the modelling study include (but are not limited to) the following:

* 1. What are the economic and emissions impacts, including sectoral impacts, of implementing ETS?
	2. What is the impact of increasing ambition (so tighter caps) of the ETS?
	3. What is the impact of introducing offsets (whether domestic or international) into the scheme at set quantity levels?
	4. What is the impact of Paris Agreement Article 6 mechanisms to ETS considering cap setting and price levels?
	5. What is the impact of using different forms and levels of free allocation: different ambitions of emissions intensity benchmark based on current output including assessing how the cost burden shifts between sectors?
	6. What is the impact on revenue generated of different levels of auctioning over time?
	7. What is the impact on the economy of different approaches to spending revenue and revenue recycling channels? (For example, returning revenue to household versus using the money for investment.)
	8. What is the impact on households of implementing an ETS?
	9. What is the impact of applying a price corridor (either a floor, a ceiling or both)?

In order determine social impacts of CPIs and establish just transition policies for CPIs, and maintain a consistency between the development of the ETS and established policies; the Consultant will assess the socio-economic impacts of CPIs including (but are not limited to) the following;

* Stakeholder Analysis and determination of affected sectors (considering sectoral, regional and distributional impacts)
* Modelling socio-economic impacts for determined sectors and determining socio-economic indicators for measuring the impacts. For example, assessing the impact of the ETS on households through its impact on household consumption by income decile.
* Impact assessment

The impacts of modelling will also include scenarios for expansion of carbon pricing including using other policy measures alongside the ETS and considering international best-practice experience/lessons learnt. The Consultant will assess different expansion options including (but are not limited to) the following:

* Translating existing fuel and excise taxes to carbon taxes through adjusting the taxation formula to be based on carbon content with no net change
* Expand the ETS to more sectors and gases.
* Expand carbon pricing through a carbon tax to non-ETS sectors
* Adjusting indirect carbon pricing (subsidies, VAT, etc...) to increase the price signal.

The final set of questions concerning the scenarios to be addressed for the ETS design settings, CPIs scope and options for impact assessment regarding just transition policies for CPIs, carbon pricing expansion options and instruments/methods will be determined with close coordination with DoCC. The modeling time period is from 2026 to 2035 with a focus on 2026 to 2030. Ideally, the model would include CO2, CH4 and N2O and emissions from industrial processes and product use (at least NACE 4 level). The outputs from the modelling shall include (but not limited to):

* Changes in GDP and wealth accounts (e.g. World Bank ‘Changing Wealth of Nations’)[[8]](#footnote-8)
* Changes in output and energy consumption of industrial sectors,
* Changes in employment in economy wide and changes by sector,
* Carbon price level, GHG emissions by sector,
* Electricity generation mix,
* Changes in electricity supply and demand
* Changes in investment costs and decisions,
* Changes in power price,
* Changes in inflation/price,
* Changes in trade balance,
* Economy wide costs incurred and sectoral costs incurred
* Changes in domestic market shares of different sectors
* Changes in income and energy consumption patterns of households,
* Revenue generated from ETS and other CPIs,
* Effects of different revenue recycling channels on industry and households.

Inputs, assumptions (including technology costs) and outputs are to be agreed with the DoCC.

Each of the main scenarios will be compared to a baseline scenario of no national emissions trading system. The baseline and core input assumptions for all scenarios will be calibrated by the DoCC in coordination with stakeholders chosen by DoCC World Bank, and, where relevant, incorporate outputs from previous economic modelling, such as that done for the Partnership for Market Readiness or the 2035 NDC currently under development. All scenarios (except baseline) will assume Türkiye fully implements current climate and energy policies and at least meets emission mitigation targets (including their 2030 NDC target). Up to two sensitivities will be tested for each scenario, which could explore for example, different rates of technology cost reductions, different fuel prices.

Modelling outputs will be provided in spreadsheet files. PowerPoint presentations will also be developed to highlight key results.

**Deliverable (3): Draft Modelling Results**

Draft modelling results for each scenario will be presented to the DoCC in the form of an EXCEL workbook and a slide deck, including comparative charts and initial insights from the results. The EXCEL workbook shall allow the user to interrogate precise results and relationships between them, and include charts for key output metrics.

**Deliverables (4 and 7): Economic Modelling Workshops**

The Consultant will organize two workshops.

The first workshop will be organized after approval of Modelling Framework Report, Modelling Scenarios and Inputs/Assumption Report and compilation of draft modelling results. In this workshop the Consultant will provide a brief explanation of their modelling approach and present the draft modelling results from Component 1. Stakeholders will have an opportunity to ask questions and provide feedback on the assumptions and results. The first workshop will be to present draft modelling results and is intended to elicit feedback and assist stakeholders to understand the results and implications of the modelling

The second workshop will be organized after approval of modelling results. In this workshop the Consultant will present the final modelling results from Component 1 to relevant stakeholders in order to get feedbacks from them to be considered for incorporating to the technical report on economic modelling.

The targeted stakeholders for the economic modelling workshops are government institutions, business associations and research institutions.

Each workshop event will be held in person with 30 participants and at least in a 4 star hotel in Ankara for 1 day.

**Deliverable (8): Final Modelling Results**

After the first economic modelling workshop, final modelling results, incorporating feedback from the DoCC, World Bank team on the draft results, will also be presented in an EXCEL workbook with graphs and a slide deck. Results from the modelling will also be incorporated into the technical report.

**Task 1.3:** **Policy Implications**

Based on the sub-task 1.2., the Consultant will elaborate potential policy implications of the results. The Consultant will present the final modelling results, insights and guidance on how to use and interpret the modelling results in the Technical Report plus a summary PPT presentation.

The Consultant will prepare a just transition impact and policy recommendations for carbon pricing instruments report based on economic modelling outputs (changes in employment and output in different sectors, household incomes and savings etc…) under different considered scenarios.

The Consultant will prepare an assessment report on assessment of pros and cons of each expansion options considered for carbon pricing based on economic modelling outputs. The Consultant will also develop policy recommendations for expansion of carbon pricing options

**Deliverable (9): Technical Report on Economic Modelling**

The Consultant will develop a technical report of the modelling studies undertaken under Component 1. The technical report will be delivered incorporating final modelling results and feedback from the DoCC and stakeholder.

The Consultant will develop a technical report of the modelling undertaken under Component 1. The report shall include the following elements:

* An executive summary
* An introduction to the model used and methodology
* Key assumptions of the specific models used, including an explanation of the consequences of these assumptions on the final results
* Main data sources for scenarios
* Baseline scenario and any key assumptions made in this scenario
* Modelling scenarios and sensitivities
* Presentation of results based on metrics agreed with the DoCC/WB, including charts for individual scenarios and comparison charts. This shall include an explanation of channels of impacts to inform the DoCC and stakeholder on how these results were derived.
* Stakeholder and affected sector analysis studies under Just Transition policies for CPIs
* Modelling studies carried out for socio-economic impact assessment under Just Transition policies for CPIs
* Impact assessment and development of policy recommendations (including use of revenues) under Just Transition policies for CPIs
* Review of existing indirect carbon pricing instruments and fuel/excise taxes including international best practices.
* Impact assessment on expanding carbon pricing to non-ETS sectors through carbon taxation, translation of existing fuel and excise taxes for carbon taxation, different carbon tax levels, adjustment of indirect carbon pricing to strengthen the price signal.
* Development of policy recommendations for carbon pricing expansion options.

The Consultant will also prepare a summary PPT presentation and spreadsheet of the final results

***Component 2: Economic Modelling Trainings***

Training sessions will be held after the first workshop, and scheduled to ensure relevant DoCC staff are able to engage effectively in providing feedback at various stages of the project.

**Task 2.1. General Training**

In order to ensure the DoCC is able to continue to adequately engage with the modelling – both in agreeing the approach and scenarios but also in using the results, the Consultant will provide general training for DoCC staff and stakeholders.

The training mainly shall cover:

* A general introduction to modelling: how it works, limitations, different types of models etc.
* A specific introduction to the model(s) used under this ToR.
* How to interpret, interrogate and use modelling results.

**Deliverable (5): General Economic Modelling Training**

The Consultant will deliver a training for DoCC and stakeholders to improve their understanding of the model(s) and analytical frameworks utilized under this ToR, modelling more generally, and the interpretation of modelling results. The training session will be held just after the first Economic Modelling Workshop.

The targeted stakeholders for the economic modelling workshops are government institutions, business associations and research institutions.

The training event will be held in person with 30 participants and at least in a 4 star hotel in Ankara for 1 day.

**Task 2.2. Individual Modelling Training**

In order to enhance institutional capacity of DoCC, the Consultant will design, organize or select a training program tailored for an individual expert working in DoCC.

**Deliverable (6-14-19):** **Individual Economic Modelling Trainings**

The Consultant will design/organize/select a 5-day modelling training program – one per year for the three years of the contract - for an individual expert selected by the DoCC during the execution of the contract.

The Consultant is responsible for identifying and recommending appropriate courses and relevant content to the DoCC and the WB.

Preferably, the individual training will include certification and will take place abroad.

***Component 3: Ongoing Modeling Support for Decision Making***

DoCC will acts as secretariat for the Carbon Markets Board, established under the Climate Law, which will be the decision making body regarding planning, policy and strategy development, and actions to be taken for ETS and other carbon pricing instruments. DoCC will also provide secretariat functions to the Advisory Board, which will provide advisory decisions, established under the Climate Law.

Beyond the modeling needs for Component 1, it is expected that the DoCC will have ongoing modeling needs to support decision making by the Carbon Markets Board and the Advisory Board. The Consultant will therefore provide modelling support on an ad-hoc basis throughout the contract. Based on the issues and topics in the agenda of Carbon Markets Board the Advisory Board, the Consultant will assess the economic and emissions impacts of different design and implementation settings for the ETS and other carbon pricing mechanisms. Indicative list of studies include (but are not limited to) the following:

1. Economic impacts on sectors
2. GHG emission reduction by sectors
3. Impacts on electricity prices
4. Impacts on CBAM and international trade exposed sectors.
5. Economic impact of implementation of other carbon pricing mechanisms.
6. Impacts on revenue generation from ETS and other carbon pricing mechanisms
7. Macro-economic impacts (GDP, employment, inflation) of different carbon pricing mechanisms.

Due to ad-hoc and urgent nature of this component, the Consultant expected to prepare a briefing report within 2 days (could be longer depending on the delegated task) once a task is assigned by DoCC according to agenda of the Carbon Markets Board and the Advisory Board. After this briefing report the Consultant will prepare a detailed technical report about the task under consideration within 3 months. In case the Task 1.2 (Modelling of Potential Impacts) and modelling set-up have not been completed by the time of the assignment of the ad-hoc tasks; the Consultant expected to provide foresights and insights while preparing the briefing report. In case the Task 1.2 and the modeling set-up are completed; the Consultant expected to provide modelling results and brief interpretation of the results. This may involve running additional scenarios to answer specific questions raised by the Board.

The Consultant is also expected to participate in Carbon Markets Board, Advisory Board, and National Carbon Pricing Workshop meetings to provide briefings and presentation regarding to topics in respective meeting agendas, in case it is deemed necessary by the DoCC.

With respect to technical support provided and current status, the Consultant will prepare semi-annual progress reports.

In addition, the Consultant is expected to provide and deliver a user-friendly interface at the end of the contract allowing DoCC staff to access and interrogate results from the different scenarios run under the contract. The interface should be in a software accessible by DoCC, such as EXCEL. This interface shall be fully integrated with the modelling scenarios developed in coordination with the Consultant and DoCC, and results from the model and structured to ensure operability and sustainable internal use by DoCC for decision support purposes. The interface will allow the user to change the scenarios modelled and see the results from the selected scenario. If possible, rather than selecting a ‘scenario’, the user could select different ETS design parameters (such as levels of emission intensity benchmark for free allocation, amount of free allocations, level of the cap, level of domestic off-sets) and see the results corresponding to the relevant scenario. The interface will provide following outputs including (but not limited to);

* Changes in GDP,
* Changes in output and energy consumption of industrial sectors,
* Changes in employment in economy wide and changes by sector,
* Carbon price level,
* GHG emissions by sector,
* Power generation mix,
* Changes in electricity supply and demand
* Changes in investment costs and decisions,
* Changes in power price,
* Changes in inflation/price,
* Changes in trade balance,
* Economy-wide costs incurred and sectoral costs incurred
* Changes in domestic market shares of different sectors
* Changes in income and energy consumption patterns of households,
* Revenue generated from ETS and other CPIs

The system must be configured to enable sustainable use of the developed modelling framework by DoCC for future policy formulation, evaluation, and reporting in alignment with the mandate of the Carbon Markets Board and the Advisory Board.

## **Deliverable (10): Capacity Building Activities Planning Report**

The Consultant shall prepare and submit a dedicated Planning Report outlining the structure, content, and timeline of activities under Component 3, with a specific focus on economic modelling of ETS and carbon pricing instruments. The report shall include:

* A detailed description of each proposed training and workshop, including learning objectives, session content, and methodology
* Proposed schedule and sequencing of activities (including duration and target month)
* Intended number and profile of participants (DoCC staff)
* Required training resources (e.g. software, datasets, trainers, tools)
* Delivery modalities (e.g. in-person, lab-based, interactive exercises)
* Monitoring and evaluation approach for assessing training outcomes
* Roles and responsibilities of the Consultant and DoCC in delivery

The Planning Report will be submitted by the Consultant to the DoCC for review no later than two months prior to the start of capacity building activities. Feedback from the DoCC shall be addressed, and a revised final version will be submitted for approval before implementation begins.

**Deliverable (11): Modelling Interface**

The Consultant will develop a user interface for the modelling system developed under Component 1 in order to address future modelling needs of DoCC:

The features of the interface, input parameters to the interface, and outputs from the interface will be determined based on the agreement between the Consultant and DoCC’s and the interface will be compatible with IT systems of DoCC. The Consultant will provide technical support for questions of DoCC experts regarding usage of the interface and also prepare a user guidance document for DoCC experts

## **Deliverables (12-15-17-21): Semi-Annual Progress Report**

The Consultant will prepare semi-annual progress reports for the activities provided under Technical Support For Decision Making Mechanism.

The report will summarize tasks delegated from DoCC, indicative timeline for tasks performance, progress achieved (if task is not competed), tasks completed and summary of the respective results. As annex to the report, the Consultant will include reporting and documentation of tasks performed.

## **Deliverable (13): Training on Interpreting Economic Model Results for Policy Design**

A 2–3 day applied training session aimed at strengthening DoCC staff's ability to read, interpret, and utilize economic modelling outputs generated during the assignment. This training will:

* Walk through outputs from Türkiye’s ETS modelling scenarios (GDP impacts, sectoral output, carbon price trends, household distributional impacts)
* Discuss key indicators (e.g. technology mix, inflation, employment shifts) and policy relevance
* Offer guided exercises for converting technical results into policy options and just transition responses

**Target skills:** Interpretation of quantitative modelling results; formulation of evidence-based policy recommendations; understanding of macroeconomic and distributional impacts of carbon pricing.
**Expected Duration:** 2–3 days
**Expected Location and Format:** Ankara and In-person, hands-on with presentation tools.

**Expected number of participants:** 5 people

## **Deliverable (16): Scenario Development and Sensitivity Analysis**

This 2-day technical workshop will train DoCC participants in the development of alternative policy scenarios and conducting sensitivity analysis. The content will include:

* How to formulate ETS design options and CPI expansion pathways as modelling scenarios
* Parameterization techniques and handling assumptions (e.g. fuel prices, technology costs)
* Hands-on sensitivity testing of key variables and interpreting divergent results

**Target skills:** Scenario formulation, data assumptions, sensitivity and uncertainty analysis, critical thinking in model testing
**Expected Duration:** 2 days
**Expected Format:** Interactive, with real scenario files and consultant support.

**Expected number of participants:** 5 people

## **Deliverable (18): Sectoral Economic Impact Modelling Training**

A 2-day modelling clinic focused on assessing sector-specific economic effects of ETS implementation in Türkiye. The session will:

* Examine case studies of emissions-intensive sectors (e.g. power, cement, steel)
* Analyze sectoral changes in production, employment, and competitiveness under different ETS settings
* Introduce simplified sectoral economic modelling tools aligned with the national model used

**Target skills:** Sectoral impact assessment, micro-macro linkage understanding, data handling for sectoral breakdown
**Expected Duration:** 2 days
**Expected Location and Format:** Ankara and In-person, practical session with worked examples

**Expected number of participants:** 5 people

**Deliverable (20): Economic Modelling Refresher and Continuity Planning Session**

This 1-day wrap-up session will be designed as both a refresher on core modelling components and a planning discussion for internal continuity at DoCC. It will:

* Revisit the overall modelling framework and calibration logic
* Identify areas where internal staff can gradually take over maintenance or scenario input tasks
* Establish a roadmap for institutionalizing modelling activities within DoCC

**Target skills:** Institutional anchoring of modelling tools; long-term model use planning; refresher on ETS economic modelling basics
**Expected Duration:** 1 day
**Expected Location and Format:** Ankara and In-person, strategic and technical session, with internal staff mapping.

**Expected number of participants:** 5 people

**Deliverable (22): Final Report**

The Consultant will deliver a narrative final report that provides information on the deliverables and stakeholder engagement process throughout Component 1, Component 2 and Component 3 of the contract; showing that all requested items under this contract are completed.

**4. Approach**

The Consultant will need to understand the specific local context of the relevant economic activities, energy system and industrial sector dynamics. This consulting activity may lead to further consulting activities after the completion of the project as the DoCC may have continued need of modelling services. Combined with the need for a strong understanding of the Turkish context, it is preferable for a local expert, such as an academic, to be on the team (see section 5)

The contract activity will directly influence the high-level decision making for climate change policies in Türkiye. Disclosure and information sharing of all relevant Turkish data are required for commencement of contract activities. The Consultant needs to acknowledge strict rules and regulations for sharing of critical national data with 3rd parties and must be willing and able to sign stringent confidentiality. The Consultant will also need to implement risk monitoring tasks regarding preserving confidentiality of provided information.

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 including (but not limited to):

* All costs arising from the activities of its staff for the kick-off meeting and during the contract period, including accommodation, allowances, transportation, insurance, etc.
* All costs arising from organization of workshop and training activities including the materials to

be used. The Consultant will cover venue costs, and accommodation for participants (DoCC

experts, participants from stakeholders, Consultant’s own personnel).

* All costs arising from organization of workshop and training activities.
* All communication costs, including fax, email, telephone
* All the services and logistical support required for the implementation of the contract

***4.1 The Kick-off Meeting***

The project will commence (effectiveness of the contract) with a kick-off meeting in Ankara at the premises of the DoCC. Before the kick-off meeting, the Consultant shall provide an updated description of its team composition, methodology and a detailed work plan, which will be discussed and agreed in this meeting. The timing of the kick-off meeting will be determined by DoCC.

***4.2 Project Focal Point***

The Consultant will appoint one (1) Key Expert as coordinator for this contract and s/he will be responsible for daily coordination of the activities in the contract and act as a first contact point for the questions and any work related request of the DoCC throughout the project.

The coordinator will set up regular project management meetings with DoCC, WB to discuss progress, draft modelling results and other technical matters when deemed necessary. The Consultant will set the agenda, incorporating any issues suggested by the DoCC, WB, where relevant prepare papers (or presentations) for discussion (e.g. setting out proposed scenarios). These meetings will be online or in-person depending on the circumstances.

***4.3. Stakeholder Workshops***

The Consultant will organize two workshops with stakeholders to provide insight and further information on the modelling work undertaken.

The dates and times for the workshops will be determined in discussion with the Consultant but shall be held between 10 a.m. and 5 p.m. in Ankara (GMT+03:00). The Consultant is responsible for the preparation of the Turkish and English versions of the meeting agenda, workshop presentations, invitation letter, and list of invitees, brief documents, but workshop report only in English.

***4.4 Trainings***

The Consultant will organize following training activities; one (1) for general training and three (3) for individual training.

The general training should take place the day after the first stakeholder workshop if possible, or during the same week for DoCC and stakeholders. Dates and times for the training will be determined in discussion with the Consultant but shall be held between 10 a.m. and 5 p.m. in Ankara (GMT+03:00). The training event will be held in person with 30 participants and at least in a 4 star hotel in Ankara for 1 day.

The selection of a suitable course for individual model training is based on recommendations by the Consultant, DoCC and WB. The DoCC will approve the finalized individual model training course and content. The tentative schedule for individual trainings is provided in the Deliverables table but the final schedule shall be agreed between DoCC and the Consultants.

***4.5 Capacity Building Activities on Economic Modelling for DoCC Staff***

The Consultant will organize four (4) training programs under the capacity building activities. The DoCC has determined main themes and target skills for capacity building activities. The content, format, and duration of activities will be agreed between DoCC and the Consultant.

The dates and times for the capacity building activities will be determined in discussion with the Consultant but shall be held between 10 a.m. and 5 p.m. in Ankara (GMT+03:00).

***4.6. Ongoing Modeling Support for Decision Making***

Due to ad-hoc and urgent nature of on-going support for decision making to DoCC, the Consultant is expected to dedicate on average one week per month (subject to change depending of the agenda of DoCC) from the completion of Component 1 until the end of the contract. Some months may require more effort and some less.

***4.7 Reporting Requirements***

The Consultant will prepare all final reports in Turkish and English.

The Final Report will be prepared as one (1) hardcopy and one (1) OCR compatible soft copy.

1. **TEAM COMPOSITION AND QUALIFICATION REQUIREMENTS FOR THE KEY AND NON-KEY EXPERTS AND CONSULTANT**

The attention of interested Consultants is drawn to Section III, paragraphs 3.13, 3.15, and 3.16 of the World Bank’s ‘Procurement Regulations for IPF Borrowers’ Sixth Edition, February 2025 as amended, setting forth the World Bank’s policy on conflict of interest.

Consultants may associate with other firms to enhance their qualifications, but should indicate clearly whether the association is in the form of a joint venture and/or a sub-consultancy. In the case of a joint venture, all the partners in the joint venture shall be jointly and severally liable for the entire contract, if selected

1. **TEAM COMPOSITION**

The Consultant shall name key experts and the core team members for the specified roles within the Project Team and provide full curricula vitae and any other information considered relevant by the Consultant.

To assure the required services, in addition to input from the Key Experts, Non-Key experts will be provided. All key staff and support staff shall be mobilized immediately after effectiveness of the contract.

The CVs of the Non-Key experts will not be evaluated or scored in the EOI stage. They will be taken into consideration as a part of team composition and evaluated at the proposal stage for shortlisted firms.

**B. KEY EXPERTS**

The Consultant shall employ the following key expert with minimum requirements below. The consultant may propose additional key experts as desired.

 **Key Expert 1: The Senior Modelling Expert**

* Minimum fifteen (15) years of general working experience;
* Minimum eight (8) years of professional experience in energy and economic modelling and technical data collection and analysis across various sectors and in relations to climate policies and actions;
* Minimum one (1) completed study/project on carbon pricing assessment and modelling carbon pricing instruments;
* Minimum one (1) completed study/project on preparation of technical and modelling reports related to the assignment, including carbon pricing, power and industry sector transition, and decarbonization (please cite relevant experience);
* Holding an academic position in a Turkish university is highly desirable;
* Working experience in academia is desirable;
* Experience in training/capacity-building in economic modelling is desirable;
* Excellent written and presentation skills in English are essential
* Ability to speak Turkish would be an advantage.

**C. NON-KEY EXPERTS**

The following general qualifications and skills are required for non-key experts:

* University degree in the relevant field.
* Good command of written, spoken and presentation skills in English, ability to communicate in Turkish would be an advantage.
* Minimum five (5) years of general experience,

The Consultant will employ at least two (2) Modelling Experts as non-key experts in the course of implementation. The implementation of the activities under this contract may require the mobilization of higher number of non-key experts. The CV of these experts will submit to the DoCC for approval within 7 days after commencement of the implementation of services.

The Modelling Experts should have below requirements.

* At least two (2) years of professional experience in energy and economic modelling and technical data collection and analysis across various sectors and in relations to climate policies and actions;
* Demonstrated experience with carbon pricing assessment and modelling carbon pricing instruments;
* Demonstrated experience preparing technical and modelling reports related to the assignment, including carbon pricing, power and industry sector transition, and decarbonization (please cite relevant publications);

The Consultant must select the Modelling Experts according to proven sectoral expertise for industrial sectors for carrying out the activities required according to this Terms of Reference document. The experts should be considered in order to integrate the mentioned subjects through the studies under the activities. In terms of professional and technical competence, the areas of expertise, which will be needed from the pool of experts, should at least include the following:

* Experience in preparation and delivery of training programme, facilitation of workshop, seminar or similar activities
* Demonstrated working experience in Turkish climate policies
* Demonstrated experience in preparing technical and modelling reports related to the assignment, including carbon pricing, power and industry sector transition, and decarbonization

**6. MILESTONES**

The ongoing modelling support for decision making is expected to start after 6 months and run for 24 months. Table 1 provides the time schedule for deliverables.

The Consultant shall respect the deadlines, although the timing of the deliverables identified may be subject to change during the course of the contract with the approval of the DoCC and with the justification of the Consultant (as shown in Table 1). The Consultant will receive feedback from DoCC and relevant stakeholders within two weeks of submitting reports and model results. Afterwards, the Consultant shall revise the reports according to the feedback and submit again within 2 weeks.

The time schedule will be discussed and finalized with the consultant following the kick-off meeting.

 Table 1 Time Schedule for Deliverables

|  |  |  |
| --- | --- | --- |
| No. | Deliverables | Time Schedule\* |
| 0 | Kick-off Meeting | First week |
| 1 | Modelling Framework Report  | 1st Month |
| 2 | Modelling Scenarios and Inputs/Assumption Report  | 2nd Month  |
| 3 | Draft Modelling Results  | 4th Month |
| 4 | First Economic Modelling Workshop  | 5th Month |
| 5 | General Economic Modelling Training  | 5th Month |
| 6 | Individual Economic Modelling Training-1  | 5th Month |
| 7 | Second Economic Modelling Workshop  | 8th Month |
| 8 | Final Modelling Results | 8th Month |
| 9 | Technical Report on Economic Modelling  | 9th Month  |
| 10 | Capacity Building Activities Planning Report | 12th Month |
| 11 | Modelling Interface | 12th Month |
| 12 | Semi Annual Progress Report 1 | 15th Month |
| 13 | Training on Interpreting Economic Model Results for Policy Design | 17th Month |
| 14 | Individual Economic Modelling Training-2 | 17th Month |
| 15 | Semi Annual Progress Report 2 | 21th Month |
| 16 | Scenario Development and Sensitivity Analysis Workshop | 23th Month |
| 17 | Semi Annual Progress Report 3 | 27th Month |
| 18 | Sectoral Economic Impact Modelling | 29th Month |
| 19 | Individual Economic Modelling Training-3 | 29th Month |
| 20 | Economic Modelling Refresher and Continuity Planning Session | 31th Month |
| 21 | Semi Annual Progress Report 4 | 33th Month  |
| 22 | Final Report | 33th Month |

\*after commencement of the service

1. Source: https://data.tuik.gov.tr/Bulten/Index?p=Sera-Gazi-Emisyon-Istatistikleri-1990-2023-53974 [↑](#footnote-ref-1)
2. https://iklim.gov.tr/db/turkce/icerikler/files/undp\_azaltim\_spread.pdf [↑](#footnote-ref-2)
3. https://iklim.gov.tr/db/turkce/icerikler/files/%C4%B0klim%20De%C4%9Fi%C5%9Fikli%C4%9Fine%20Uyum%20Stratejisi%20ve%20Eylem%20Plan\_%202024-2030.pdf [↑](#footnote-ref-3)
4. https://iklim.gov.tr/db/turkce/icerikler/files/Türkiye-Long%20Term%20Climate%20Strategy.pdf [↑](#footnote-ref-4)
5. https://ticaret.gov.tr/data/60f1200013b876eb28421b23/MUTABAKAT%20YEŞİL.pdf [↑](#footnote-ref-5)
6. https://pmiclimate.org [↑](#footnote-ref-6)
7. <https://unfccc.int/sites/default/files/NDC/2023-04/T%C3%9CRK%C4%B0YE_UPDATED%201st%20NDC_EN.pdf> [↑](#footnote-ref-7)
8. https://datacatalog.worldbank.org/int/search/dataset/0042066 [↑](#footnote-ref-8)