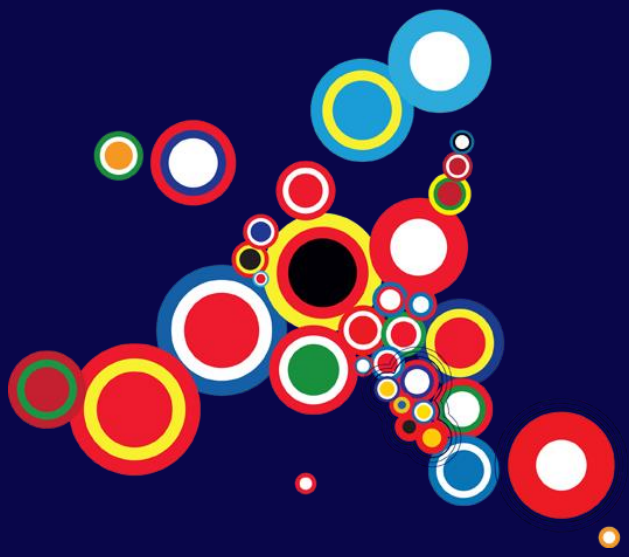
European Commission

INSTRUMENT FOR PRE-ACCESSION ASSISTANCE (IPA II) 2014-2020

TURKEY

EU support to the Energy sector



Action summary

The Action will contribute to improving the investment potential for offshore wind energy generation in Turkey, hence supporting Turkey's and the EU's policy objectives on sustainable development and climate change.

This Action promotes reinforcement of the Ministry of Energy and Natural Resources (MENR)'s level of preparedness to select and develop sites for auction/tender/competition for offshore wind energy generation up to the most advanced international standards.

The Action is in line with Sustainable Development Goal (SDG) 7 to ensure access to affordable, reliable, sustainable and modern energy for all, SDG 13, to take urgent action to combat climate change and its impacts, the EU Indicative Strategy Paper for Turkey (2014-2020) and Turkey's National Renewable Energy Strategy and Action Plan (2013-2023).

Action Identification	
Action Programme Title	Annual Action programme for Turkey 2019
Action Title	EU support to the Energy sector
Action ID	IPA 2019/042-259/5/Turkey/Energy
Sector Information	
IPA II Sector	Environment, climate action and energy
DAC Sector	23210 - Energy generation, renewable sources - multiple technologies
Budget	
Total cost	EUR 9 300 000
EU contribution	EUR 9 300 000
Budget line(s)	22.020302
Management and Implementation	
Management mode	Indirect management Direct management for external evaluations
Indirect management: **National authority or other entrusted entity**	Indirect management by the entrusted entity: The World Bank
Implementation responsibilities	EU Delegation to Turkey
Location	
Zone benefiting from the action	Turkey
Specific implementation area(s)	Turkey
Timeline	
Final date for concluding Financing Agreement(s) with IPA II beneficiary	At the latest by 31 December 2020
Final date for concluding procurement and grant contracts and contribution agreements	3 years following the date of conclusion of the Financing Agreement, with the exception of cases listed under Article 114(2) of the Financial Regulation
Final date for operational implementation	6 years following the conclusion of the Financing Agreement
Final date for implementing the Financing Agreement (date by which this programme should be de-committed and closed)	12 years following the conclusion of the Financing Agreement

Policy objectives / Markers (DAC form)			
General policy objective	**Not targeted**	**Significant objective**	**Main objective**
Participation development/good governance	☐	☐	✓
Aid to environment	☐	✓	☐
Gender equality (including Women In Development)	✓	☐	☐
Trade Development	✓	☐	☐
Reproductive, Maternal, New born and child health	✓	☐	☐
RIO Convention markers	**Not targeted**	**Significant objective**	**Main objective**
Biological diversity	✓	☐	☐
Combat desertification	✓	☐	☐
Climate change mitigation	☐	☐	✓
Climate change adaptation	☐	✓	☐

1. RATIONALE

PROBLEM AND STAKEHOLDER ANALYSIS

Regarding renewable energy, Turkey's priority in the forthcoming period will be reducing its dependence on the imports by exploiting its **domestic and renewable energy potential** along with securing the energy supply, as it has been so far. Within the framework of ensuring source diversification, Turkey aims at bringing domestic and renewable sources in its economy to the maximum extent in an environment-friendly manner. In 2017, Turkey already reached 31% renewable energy share in electricity generation. The Ministry of Energy and Natural Resources (MENR) organised two auctions separately for the wind and solar energy each with 1 GW capacity by realising the model of "RE-ZONE" in 2017. With broad participation from bidders in these auctions, Turkey achieved record-low prices; namely 0.0699 USD/kWh in Konya-Karapınar for solar energy auction while the price was 0.0348 USD/kWh in the wind auction. Auctions included introduction of new technologies and domestic manufacturing along with R&D studies in Turkey. In the light of this, Turkey's goal is to develop 10 GW of additional capacity in solar and wind energy each by 2026 compared to 2016 and increase the share of the domestic and renewable energy up to two thirds of the electricity production by 2023. Studies for the new support scheme are currently ongoing building upon the outputs of the post-2020 renewable energy support options project implemented under IPA 2013 European Bank for Reconstruction and Development (EBRD) component.

Following the recent developments in the Turkish Renewable Energy sector and as a follow up to the targets set forth in the National Renewable Energy Action Plan (NREAP), it is necessary to use the untapped potential of other renewable resources such as off-shore wind energy.

Within this framework, Turkey plans to tap the offshore wind energy potential by virtue of determination of eligible sites and launch of auctions/tenders/competitions for offshore wind energy generation. Accordingly, Turkey already launched a tender for a 1.2 GW offshore wind project on June 21, 2018 and bids were to be submitted by October 23, 2018. However, no application was received because of the lack of on-site measurement data. To attract investors' interest in off-shore wind in 2018, the Ministry of Energy and Natural Resources's Directorate General of Energy Affairs (DGEA) decided to focus on de-risking and increasing transparency for potential investors while initiating a new competitive tender in the future. To this end, the institutional capacity of DGEA requires assistance for conducting preparatory technical studies including geological and geotechnical surveys, meteorological and oceanographic analysis and measurements, techno-economic pre-feasibility studies, environmental/social constraints analysis and other technical reports. These will set the scene for site selection and announcement of competitions. Based on the outputs of this Action, should any site proves to be feasible, a new competition is planned to be prepared and announced consecutively. In the future, following the competitions for offshore wind energy generation, IPA contribution may be also utilised for leveraging investments in collaboration with financiers.

Among the main stakeholders, whose detailed roles are given below under Section 3, are Energy Market Regulatory Authority (EMRA), General Directorate of Mineral Research and Exploration (MTA), Turkish Electricity Transmission Company (TEIAS), Turkish State of Meteorology (TSMS), Ministry of Transport and Infrastructure (MTI), Ministry of Environment and Urbanization (MEU), Turkish Naval Forces, and the Office of Navigation, Hydrography and Oceanography. Also, some activities may require permissions from or formal notifications to relevant authorities the list of which is provided under Section 2. Coordination of and facilitation for such permission/clearance procedures by virtue of formal exchanges with the relevant stakeholders will be ensured by the DGEA.

Apart from IPA intervention, with reference to the Danish-Turkish Memorandum of Understanding (MoU) from 2013 on energy efficiency and renewable energy, the Danish government has initiated a **Strategic Sector Cooperation (SSC) with Turkey** for developing an offshore wind roadmap for the further deployment of offshore wind in Turkey. At the Inception Phase four areas for cooperation were determined: 1) Workshop on maritime spatial planning, 2) Workshop on framework conditions for offshore wind tendering processes, 3) Workshop on integration of renewable energy in the power system, 4) Workshop on analysis and ranking of cost-effective renewable energy sources deployment and power sector modelling. The first workshop was held in March 21, 2019 while the remaining ones will be organised in later 2019 and 2020. The main activities in the inception phase included a study tour to Denmark and fact finding missions

to Turkey. This cooperation mainly focuses on exchange of experience and knowhow transfer on offshore wind. This cooperation will not overlap with but complement this Action with preliminary studies.

Also, within the framework of the **Turkish-German Energy Forum**, a Letter of Intent was signed at the November 25th 2018 Forum which envisaged exploration of cooperation opportunities in offshore wind. This cooperation will focus on presentation about Alpha Ventus Offshore Wind Project by the German side as the project is the first offshore wind energy project in the country. On July 2nd and 3rd, 2019, a workshop on offshore wind energy was organized in Ankara with the German counterparts.

OUTLINE OF IPA II ASSISTANCE

IPA II intervention will provide valuable input for reinforcement of MENR's level of preparedness to select and develop sites for auction/tender/competition for offshore wind energy generation up to the most advanced international standards.

Geological, geophysical and geotechnical surveys, meteorological and oceanographic analysis and measurements, techno-economic pre-feasibility studies, environmental/social constraints analysis and other technical studies and trainings will be conducted under this action. Activities under this project will improve the investment potential for offshore wind energy generation in the Marmara and Black Sea regions.

RELEVANCE WITH THE IPA II STRATEGY PAPER AND OTHER KEY REFERENCES

The EU has been committed to the issues of increasing the use of renewable sources, reduction of CO_2 and other Greenhouse Gas (GHG) emissions and cuts in total energy consumption as regards its 2020 and 2030 targets and 2050 long term strategy with a view to constitute a global engagement and to achieve safe, secure, sustainable and affordable energy use. In this context, the Commission Communication "A Clean Planet for all" (COM2018/773), sets a European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, in line with the Paris Agreement objective to keep the global temperature increase to well below 2°C and pursue efforts to keep it to 1.5°C.

Accordingly, the *2030 framework for climate and energy policies* sets the targets as to reduce EU domestic GHG emissions by 40% below the 1990 level, to increase the share of Renewable Energy (RE) to at least 32% of the EU's energy consumption and to ensure 30% energy savings by 2030, with a possible upward revision in 2023.

This programme is in line with the priorities identified for the energy sector under the revised **Indicative Strategy Paper for Turkey** for the period 2014-2020. As such, relevant IPA II financial assistance will be channeled for the:

Promotion of the renewable energy and energy efficiency: Harmonising renewable energy and energy efficiency legislation with the EU *acquis*; building capacity to implement energy efficiency programs and renewable energy programs; increasing the technical capacity of energy service companies (ESCOs); supporting SMEs and micro enterprises to improve competitiveness; developing infrastructures to measure, monitor and report on energy savings and greenhouse gas emissions; and raising awareness and disseminating information on energy efficiency targeted to industry, commerce and households, promoting of renewable energy and energy efficiency applications in public buildings, facilities and municipal services including green transportation, and supporting energy efficiency in electricity and gas transmission/distribution grids and generation plants.

Within the framework of the 2030 Agenda for Sustainable Development it is considered that this Action will contribute to SDG 7, to ensure access to affordable, reliable, sustainable and modern energy for all, and SDG 13, to take urgent action to combat climate change and its impacts.

LESSONS LEARNED AND LINK TO PREVIOUS FINANCIAL ASSISTANCE

Under **TF-016532 IPA 2012 Enhancement of Turkish Energy Sector in line with the EU Energy Priorities and Strategies** and **TF-019255 IPA 2013 Enhancement of Turkish Energy Sector in line with EU Energy Strategies** projects, the activities implemented through a PIU (project implementation unit) at

the MENR achieved results, appreciated by all stakeholders concerned in Turkey's energy sector. The IPA 2013 activities are ongoing to a good standard and on schedule, albeit some minor justifiable delays.

The MENR received all planned outputs of high quality and on time through an operation executed in house. This solid success has been achieved despite MENR having no prior experience in implementing large-scale consultancy service operations involving several energy sector stakeholders. Thus, the capacities of MENR and key institutions have been improved and their coordination and relationships have been strengthened.

Amongst the main achievements to date regarding particularly renewable energy under the 2012 program were the drafting of the **Renewable Energy Integration road map** (instrumental to the preparation of the TEIAS TSO Grid Master Plan), and leveraging of approximately EUR65 million in **69 small scale renewable energy investments** from a project budget of EUR 2.2 million and the triggering of 79 energy efficiency projects, yielding annual savings of USD 0.54 million. In addition, an EU Energy Acquis Regulatory Impact Assessment Report coupled with training was developed and the Government has issued legislation regarding energy performance contracts (EPCs), allowing public buildings management to enter into 15-year contracts to invest in energy efficiency measures.

Based on the accomplishments, the MENR intends to continue the cooperation with the World Bank for the Technical Assistance (Services) envisaged under IPA 2019 Action.

On the other hand, within the components entrusted to the EBRD under the 2013 IPA programme, the project **"Identifying and Mapping Off-shore Wind and Wave Energy Potential of Turkey"** is under tendering with the aims to explore the off-shore wind energy potential of Turkey, update and upgrade the existing wind energy atlas of Turkey by extending it to off-shore in the seas surrounding Turkey (Black Sea, Aegean Sea, and Mediterranean Sea Shores), and to create a wave energy atlas. In addition to off-shore wind, the assignment will also review different setbacks requirements for wind turbines in the countries that have significant experience with wind energy.

The current action will build on the above actions, ensure precise measurements and surveys, as well as validation and verification of data. It will draw lessons from the previous projects into account and coordination and synergies with current and future actions will be ensured.

2. INTERVENTION LOGIC

LOGICAL FRAMEWORK MATRIX

OVERALL OBJECTIVE	**OBJECTIVELY VERIFIABLE INDICATORS (*)**	**SOURCES OF VERIFICATION**	
To promote energy efficiency and renewable energy in line with the EU's resource efficiency and climate action targets.	Quality of electricity supply [The System Average Interruption Duration Index (SAIDI), the System Average Interruption Frequency Index (SAIFI) and the Momentary Average Interruption Frequency Index (MAIFI)] Progress made towards meeting the EU energy and climate change *acquis*.	EMRA Annual Progress Reports (Turkey Report) of the EC.	
SPECIFIC OBJECTIVE	**OBJECTIVELY VERIFIABLE INDICATORS (*)**	**SOURCES OF VERIFICATION**	**ASSUMPTIONS**
To improve the investment potential for offshore wind energy generation in Turkey.	Number of pre-licenses granted for offshore wind energy generation in Turkey	Energy Market Regulatory Authority (EMRA)	Market participants bid for the auction/tender/competition to be launched for offshore wind energy generation.
RESULTS	**OBJECTIVELY VERIFIABLE INDICATORS (*)**	**SOURCES OF VERIFICATION**	**ASSUMPTIONS**
Level of preparedness of MENR to select and develop sites for auction/tender/competition for offshore wind energy generation is reinforced up to the most advanced international standards.	Number of meteorological and oceanographic measurement reports to be prepared for selected sites Number of reports on geological, geophysical and geotechnical data from sea-bed surveys to be conducted at selected sites Number of trainings	Project reports	The policy decision for MENR to launch an off-shore-wind auction/tender/competition is retained.

DESCRIPTION OF ACTIVITIES

Result 1 - Level of preparedness of MENR to select and develop sites for auction/tender/competition for offshore wind energy generation is reinforced up to the most advanced international standards.

The activities to reach the above result are:

Activity 1.1 Conduction of geological, geophysical and geotechnical survey at specific offshore sites to be selected by MENR including conduction of studies such as (i) echo-sounding measurements, (ii) side scan sonar (SSS) investigations, (iii) seismic investigations, (iv) magnetometer and active metal detection surveys, (v) drilling and sampling for micro siting of offshore wind turbines, (vi) preparation of geological, geophysical and geotechnical sea bed survey reports and assessment of all survey outputs, and other relevant activities.

Activity 1.2 Conduction of meteorological and oceanographic analysis and measurements at specific offshore sites to be selected by MENR including activities such as (i) installation of meteorological and oceanographic measurement systems, (ii) acquirement of high quality and reliable meteorological and oceanographic data, (iii) preparation of meteorological and oceanographic measurement system installation and data analysis reports, and other relevant studies.

Activity 1.3 Preparation of technical, legislative, economic and environmental analyses and reports including deliverables such as (i) oceanographic report including wave model analysis, (ii) wind resource assessment, (iii) recommendations on offshore wind turbine location/size/type and type of foundations according to wind resource assessment and sea-bed survey studies, (iv) constraints analysis, economic and financial pre-feasibility[1] report (bankability assessment, cash flow/investment return/LCOE/CAPEX/OPEX calculations) and recommendations on financial mechanisms to ensure private sector participation, (v) environmental[2] and social constraints analysis (vi) grid connectivity assessment, (vii) recommendations on legislation, (viii) auction/tender/competition design and bidding document preparation, and other relevant studies.

Activity 1.4 Trainings and knowhow transfer on topics such as (i) oceanographic report including wave model analysis, (ii) wind resource assessment, (iii) recommendations on offshore wind turbine location/size/type and type of foundations according to wind resource assessment and sea-bed survey studies, (iv) constraints analysis, economic and financial pre-feasibility report (bankability assessment, cash flow/investment return/LCOE/CAPEX/OPEX calculations), (v) environmental and social constraints analysis, (vi) grid connectivity assessment, (vii) auction/tender/competition design and bidding document preparation.

RISKS

The following risks and assumptions have been taken into consideration when programming activities in this Action Document:

- A low impact risk is the public resistance and spread of misinformation on the assumed hazardous effects of measurement systems to be installed. In order to eliminate the risk, informative meetings with the local residents will be organized for demystification and public awareness.

1 Full-fledged feasibility study for investment will be prepared by the investor at the investment stage. This preliminary study will address site suitability for tendering.
2 Full-fledged EIA for investment will be prepared by the investor at the investment stage. This preliminary study will address site suitability for tendering.

- An assumption is that possible legislative changes and/or political developments will not be to the detriment of the progress in the renewable energy sector and in particular off-shore wind generation in Turkey.
- An assumption is that the policy decision for MENR to launch an off-shore-wind auction/tender/competition in future is retained.
- An assumption is that the signing and coming into force of the respective Financing Agreement will be timely.

CONDITIONS FOR IMPLEMENTATION

Activities 1.1 and 1.2 may require permissions from or formal notifications to relevant authorities. DGEA will ensure coordination of and facilitation for such permission/clearance procedures by virtue of formal exchanges with the relevant stakeholders.

Required permissions will be obtained from the following authorities for Activity 1.1:

- Turkish Naval Forces, Office of Navigation, Hydrography and Oceanography.
- Directorate General of Coastal Safety.
- Chamber of Maritime Trade.
- Provincial Police Department /Marine & Harbour Division.
- Port Authority (in related region).

Required permissions will be obtained from the following authorities for Activity 1.2:

- Turkish State of Meteorology (TSMS).
- Directorate General of Coastal Safety.
- Turkish Naval Forces, Office of Navigation, Hydrography and Oceanography.
- Command of Coast Guard.
- Ministry of Foreign Affairs/ Directorate General Aviation & Maritime.
- Ministry of Transportation and Infrastructure (MTI).
- Ministry of Environment and Urbanization (MEU), Directorate General of National Property.

3. IMPLEMENTATION ARRANGEMENTS

ROLES AND RESPONSIBILITIES

The Energy Sector is governed by a very large number of institutions. The lead institution in the context of IPA sector approach is the Ministry of Energy and Natural Resources **(MENR),** which is responsible for development of policy, legislating and enforcement of legislation in all areas of the sector. The role of the MENR is to help define targets and policies related to energy and natural resources in a way that serves and guarantees the defence of the country, security, welfare, and strengthening of the national economy; and to ensure that energy and natural resources are researched, developed, generated and consumed in a way that is compatible with said targets and policies.

Directorate General for Foreign Relations (DGFR) is responsible for the management, supervision and coordination of the EU relations of the Ministry, including all the attached, related and affiliated institutions. Programming, monitoring and coordination, evaluation and communication of the IPA projects for the MENR are under the responsibility of the Directorate General. DGFR will have a crucial role for providing coordination mechanisms between IFIs, investors and public institutions

especially in the areas of energy efficiency and renewable energy. The implementation of activities of all the beneficiaries is under the coordination and monitoring of the DGFR.

Directorate General for Energy Affairs (DGEA) is responsible for utilisation of new and renewable energy resources and preparation/conduction of pilot projects for implementation in cooperation with research institutions, local administrations and NGOs, providing necessary consultancy for and utilisation of renewable energy, preparation and launching of renewable energy auctions/tenders, and determination of renewable energy targets and projections for Turkey. DGEA will be the direct beneficiary for Activities 1.1, 1.2, 1.3 and 1.4.

Energy Market Regulatory Authority (EMRA) was established in 2001 in order to perform the regulatory and supervisory functions in the energy markets. The fundamental objective of EMRA is set forth in its founding document as to ensure the development of financially sound and transparent energy markets operating in a competitive environment and the delivery of sufficient, good quality, low cost and environment-friendly energy to consumers and to ensure the autonomous regulation and supervision of electricity, natural gas, and downstream petroleum and LPG markets.

General Directorate of Mineral Research and Exploration (MTA) is responsible for geological research at sea and on land with the aim of finding out natural resources; providing effective use of new ore deposits and energy raw materials by performing scientific researches related to exploration and development of them; bringing in new data to geology; and training well-qualified researchers simultaneously.

Turkish Electricity Transmission Company (TEIAS) is a related institution of MENR. Within the context of the "Transmission Licence" obtained from Energy Market Regulatory Authority (EMRA) in 2003 and according to the new market structure, TEIAS has been carrying out transmission activities by central and nationwide units responsible for project, installation, operation, maintenance and load dispatch.

Turkish State of Meteorology (TSMS) is responsible for observations, providing forecasts, providing climatological data, archive data, and other information, communicating these to the public, providing meteorological needs of army and civil aviation.

Ministry of Transport and Infrastructure (MTI), General Directorate of Marine and Internal Waters is responsible for regulating and managing marine and internal waters activities.

Ministry of Environment and Urbanisation (MEU), General Directorate of Spatial Planning is responsible for conducting, planning practices with a balanced, guiding, scientific and participatory understanding in a way that will ensure public and private investments to be realized in a fast way. General Directorate of Environmental Impact Assessment is responsible for regulating, following and managing activities related to environmental impact assessment.

Turkish Naval Forces, Office of Navigation, Hydrography and Oceanography is responsible for providing navigational, hydrographical and oceanographic services and products, carrying out national coordination and international activities in this field by using survey assets and existing abilities in hand, with the intention of supporting safety of navigation, scientific marine researches and operations of naval forces assets in the surrounding seas.

IMPLEMENTATION METHOD(S) AND TYPE(S) OF FINANCING

Activities 1.1, 1.2, 1.3, and 1.4 will be **implemented in indirect management with an entrusted entity,** namely The World Bank. The expertise and the good track record (including under EU programmes) of the World Bank in this sector justifies the choice as an implementing partner. Under the administration agreement, the World Bank will provide technical assistance to the Turkish counterparts for the achievement of the results via, among others, support to the preparation of

preliminary studies and tender dossier for the offshore wind measurement, geological/geotechnical survey, techno-economic pre-feasibility study and environmental/social constraints analysis activities.

Justification:

Leading donors active in the area of energy are the World Bank, the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB), the German Development Bank (KfW), the French Development Agency (AFD), the German International Cooperation Institution (GIZ), the Japan International Cooperation Agency (JICA), and the United Nations Development Programme (UNDP). These financial institutions contribute to developing a competitive and reliable energy market.

The WB is expected to provide further financing for priority investment projects in the Turkish energy sector as well as to provide technical assistance to help address the sector's key policy, regulatory and institutional challenges, including continued cooperation to liberalise and strengthen the gas and electricity markets, to enhance energy efficiency, and to promote renewable energy generation and integration in the grid.

Under **IPA 2012 and 2013**, the World Bank was entrusted with activities entitled "*Enhancement of the Turkish Energy Sector in line with the EU Energy Strategies*" – phase 1 was funded under IPA 2012 and completed successfully at the end of March 2018. Phase II was funded under IPA 2013 and is ongoing with expected completion in July 2020. The overall objective of these activities was the achievement of a secure, liberal and transparent Turkish energy market, in line with the EU *acquis* and the Europe 2020 sustainable energy targets.

Under IPA 2018, the World Bank was also selected as an entrusted entity to run a programme focused on residential energy efficiency awareness, electricity generation/transmission planning and natural gas market transparency monitoring.

The main achievements to date regarding particularly renewable energy under the IPA 2012 programme are addressed under the Lessons Learned section.

On the other hand, the WB has been providing **long-term support to the Turkish Electricity Transmission Company (TEIAS)** to modernise its transmission network and to facilitate renewable integration. The advisory services **through IPA 2012, 2013** and **Energy Sector Management Assistance Program (ESMAP)** financing aimed to help TEIAS take operational measures, including better monitoring the system and improved coordinated operations. Under the WB financed Renewable Energy Integration Project (**REIP, USD350 million**), TEIAS has upgraded and commissioned extra high voltage substations to facilitate power evacuation from wind power plants. Particularly following the March 2015 black out, the advisory services through IPA 2012, 2013 and ESMAP financing were targeted to help TEIAS take operational measures, including better monitoring the system and improved coordinated operations. The WB is currently preparing a lending operation with TEIAS regarding a second phase of the RE Grid Integration Project. The IPA 2018 Action will further contribute to the planning and R&D capacity of TEIAS to allow for larger amounts of renewables penetration.

Under the **IPA 2019 Action**, the above mentioned renewable energy activities in general and the specific studies conducted under REIP and ESMAP to help improve the renewable energy and wind energy integration will be further extended to cover also the offshore wind power generation. The activities planned are **meteorological/oceanographic measurements** and **geological/geotechnical surveys** along with **capacity building trainings** and **technical/economic/environmental pre-feasibility and constraints analysis studies** for MENR for offshore wind energy site selection and auction/tender/competition preparation which will eventually contribute to the improvement of the investment potential for offshore wind in Turkey.

ESMAP funds of WB are planned to be used for **tender dossier preparation** to save time and directly start implementation once the EU funds are available. The funds will be provided under the **Offshore Wind Development Program**, which aims to fast track the adoption of offshore wind energy. This programme builds on the previous work of WB-ESMAP on preparing the Global Wind Atlas.

Therefore, involvement of the World Bank in this Action will facilitate effective implementation of the policy advice provided in the energy sector to date.

Another reason to prefer the WB as entrusted entity for indirect management of Technical Assistance under the IPA 2019 Action is the excellent technical expertise in the energy sector that the WB has proven able to provide in a timely fashion and their responsiveness to concrete, ad-hoc needs and demands of the various beneficiaries in the sector.

Experience from **IPA 2012 and 2013** projects has revealed that the WB's clear engagement in the energy sector of Turkey enables the successful implementation of entrusted activities but also provides **advice, transfer of knowledge and capacity building** on further advancing the sustainable energy agenda in Turkey.

4. PERFORMANCE MEASUREMENT

METHODOLOGY FOR MONITORING (AND EVALUATION)

The Action will be monitored by the MENR. Steering Committee meetings for this Action whose beneficiary is DGEA will be held at the premises of the MENR every quarter of the implementation years. DGEA will host and chair the steering committee meetings whereas MENR's DGFRIP, EUD, NIPAC and the World Bank will be the members. Additionally, result-oriented monitoring will be provided by the Directorate for EU Affairs, Ministry of Foreign Affairs.

In line with the IPA II Implementing Regulation 447/2014 and Article 57 of the Framework Agreement, an IPA II beneficiary who has been entrusted of budget implementation tasks of IPA II assistance shall be responsible for conducting evaluations of the programmes it manages. The evaluations will be carried out following DG NEAR guidelines on linking planning/programming, monitoring and evaluation[3]. A Reference Group comprising the key stakeholders of this action will be set up for every evaluation to steer the evaluation process and ensure the required quality level of the evaluation outputs as well the proper follow up of the recommendations of the evaluation.

An amount of EUR100.000 is set aside for evaluation.

The Commission may carry out a mid-term, a final or an ex-post evaluation for this Action or its components via independent consultants, through a joint mission or via an implementing partner. In case a mid-term or final evaluation is not foreseen, the Commission may, during implementation, decide to undertake such an evaluation for duly justified reasons either on its own decision or on the initiative of the partner. In addition, the Action might be subject to external result oriented monitoring in line with the EC rules and procedures set in the Financing Agreement.

[3] https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/near_guidelines.zip

INDICATOR MEASUREMENT

Indicator	Baseline (value + year)	Target 2022	Final Target (year)	Source of information
CSP indicator: Quality of electricity supply (SAIDI, SAIFI, MAIFI)	(2015) SAIDI: 1610,15 Minutes per customer SAIFI: 11,15 Number of interruption per customer MAIFI: 0,96 Number of interruption per customer	N/A[4]		EMRA
Number of pre-licenses granted for offshore wind energy generation in Turkey	0 (2019)	0	At least 1(2027)	EMRA
Number of meteorological and oceanographic measurement reports to be conducted at selected sites	0 (2019)	0	1 per site (2025)	Project Reports
Number of reports on geological and geotechnical data from sea-bed surveys to be conducted at selected sites	0 (2019)	0	1 per site (2024)	Project Reports
Number of trainings	0 (2019)	0	7 (2025)	Project Reports

[4] The target will be provided after the 'validation of data' process for the years 2014 and 2015 is completed and the data of the year 2016 is gathered from distribution companies by the 2nd quarter of 2017.

5. SECTOR APPROACH ASSESSMENT

Turkey has been experiencing rapid demand growth in all segments of energy sector over the last decade. After a temporary slowdown during the global crisis, **energy demand is again rapidly growing**, particularly electricity demand, energising the rebound in economic growth. The gross electricity consumption in Turkey in **2018** was 303.3 TWh more than **doubling** the 128.3 TWh of **consumption in 2000**. According to the reference scenario, electricity consumption in 2023 is expected to rise by 4.4% to 375.8 TWh. By the end of 2018, 4,025 MW capacity was added to the system, and as of the end of December 2018, Turkey's installed capacity has risen to around 88,551 MW almost tripling the 31.8 GW installed capacity in 2002.

This rapid growth in energy demand has required Turkey to take concrete actions in order to **increase energy efficiency (EE), reduce greenhouse gas (GHG) emissions**, foster security of supply and create a sustainable energy sector within an efficiently functioning liberal energy market. For this purpose, several legal and institutional reforms were initiated and are still ongoing. In this context, last year, MENR announced **National Energy and Mining Strategy** in order to clinch the confidence in Turkish energy markets and update the goals. Ensuring energy supply security, maintaining predictable market conditions and localisation of technologies and energy production by virtue of domestic and renewable energy sources are the three pillars of Turkey's policy in this matter.

Since the beginning of the 2000s, with legal reforms, Turkey introduced an independent regulatory authority (EMRA) to license and supervise activities in the market and regulate the investments in accordance with the targets set by the government. In the same period, Turkey's electricity generation and distribution sectors have gone through **liberalisation and privatisation** including wholesale and retail power trade. Turkey opened up the generation market to private sector and have increased private sector's share in power production from 40% to 85% since 2002. As of the end of December 2018, state-owned Electricity Generation Company (EUAS) had a share of 20.9% in installed capacity of Turkey, as well as 60.8% share of the private sector, 6.9% of build-operate plants, 1.5% of build-operate-transfer plants, 3.8% of operationally transferred plants and 6% of unlicensed power plants. Initially, Turkey had set up a day-ahead market under the TSO operation, but then introduced also an intraday market within the newly established Turkish Energy Exchange (EXIST).

Regarding renewable energy, Turkey's priority in the forthcoming period will be reducing its dependence on the imports by exploiting its **domestic and renewable energy potential** along with securing the energy supply, as it has been so far. Within the framework of ensuring source diversification, Turkey aims at bringing domestic and renewable sources in its economy to the maximum extent in an environment-friendly manner. As of the end of 2018, 29.8% of electricity generation was obtained from natural gas, 37.3% from coal, 19.8% from hydropower, 6.6% from wind, 2.6% from solar, 2.5% from geothermal and 1.4% from other sources. As of the end of 2018, the distribution of Turkey's installed power by resources included 31.9% hydro, 29.5% natural gas, 22.2% coal, 7.9% wind, 1.45% geothermal power plants, 5.7% solar and 1.3% other sources. In this regard, Turkey set a 30% target for share of RE in power production by 2023. In 2018, Turkey already reached 33 % renewable energy share in electricity generation. MENR organized two auctions separately for the wind and solar energy each with 1 GW capacity by realising the model of "RE-ZONE" last year. With broad participation from bidders in these auctions Turkey achieved record-low prices; namely 0.0699 USD/kWh in Konya-Karapınar for solar energy auction while the price was 0.0348 USD/kWh in the wind auction. Auctions included introduction of new technologies and domestic manufacturing along with R&D studies in Turkey. The second tender for totally 1 GW onshore wind on four locations has been announced with the submission deadline of April 18th, 2019. In the light of this, Turkey's goal is to develop 10 GW of additional capacity in solar and wind energy each by 2026 compared to 2016 and increase the share of the domestic and renewable energy up to two thirds of the electricity production by 2023.

Energy efficiency is also vital for Turkey's security of supply, sustainable economic growth and energy savings. Turkey's gross domestic product (GDP) steadily increased in the period of 2005-2015 except for 2009 and 2010. The cumulative growth in the period is by 65%, corresponding to an annual GDP growth 5.2%. The primary energy consumption in the same period grew by 46%, i.e. lower than GDP growth. This

means that less energy is consumed to produce a unit of added value. In order to support and improve this trend in energy efficiency, Turkey had drafted with **IPA assistance** and has adopted the **National Energy Efficiency Action Plan** (NEEAP) this year. Accordingly, Turkey is expecting to achieve savings of $30.2 billion until 2033. The country will be investing approximately $11 billion until 2023. This means that energy savings equal to 23 million tons and 66.6 million tons of emissions reduction equal to 14% of the primary energy consumption will be potentially achieved. As a result of these efforts, Turkey will be creating additional employment of 20,000 until 2023 and remove the obligation to invest in new power generation plants that are worth USD 4.2 billion.

Turkey also **privatised gas distribution** and trading activities as well as investing in infrastructure. 16 years ago only 5 provinces were supplied with gas, as opposed to today's gas supplies to households/ industrial customers in all 81 provincial cities in Turkey. Accordingly, in order to ensure security of supply and diversification in natural gas consumption, Turkey increased its gas storage capacity. With the Tuz Lake storage facility, Turkey reached almost 3.44 bcm capacity which is planned to be increased to 11 bcm by 2023. Turkey's capacity for LNG imports is also increasing. Two FSRUs have become operational increasing the gas entry capacity to 300.3 mcm/d as of December 2018. Bearing in mind the daily peak gas consumption which was 245 mcm/d in 2018-2019 winter season (Date: 8 January 2019), security of gas supply is technically improved.

Turkey's electricity infrastructure has been strengthened and the production has increased in parallel with the rise in consumption. The parallel trial interconnection of the Turkish power grid with the European Network of Transmission System Operators for Electricity (ENTSO-E)'s Continental European Synchronous Area has been successfully completed in the last quarter of 2014 and a long term agreement between TEIAS and ENTSO-E was signed on 15 April 2015. The Turkish power system has been permanently operated in connection with the system of Continental Europe since January 2016. This is a major step for the integration of the Turkish system into the European electric system, opening the way to new opportunities to reinforce this integration both for market activities and flexibility of network operation. TEIAS also became an observer member of ENTSO-E with the observer membership agreement signed on January 14, 2016.

Legal framework of the above mentioned reforms, targets, policies and strategies are composed of the Law No: 6446 Electricity Market Law, 5346 Law on Utilisation of Renewable Energy Resources for the Purpose of Generating Electrical Energy, 5627 Energy Efficiency Law and 4646 Natural Gas Market Law. Political framework of the above mentioned reforms, targets, policies and strategies are composed of the MENR's National Mining and Energy Policy, MENR's 2015-2019 Strategic Plan, Electricity Market and Security of Supply Strategy Paper, NEEAP, National Renewable Energy Action Plan, National Climate Change Strategy 2010–2023, and National Climate Change Action Plan.

Energy sector in Turkey is governed by a very large number of institutions attached, related and affiliated with the main actor and the lead institution, MENR, which is responsible for development of policy, drafting and enforcement of legislation in all areas of the sector as well as coordinating the donor activities by financial institutions. Leading donors and financial institutions contribute to developing a competitive and reliable energy market. Bilateral coordination mechanisms are in place between the Government (under the leadership of the Treasury), and various other International Financial Institutions (IFIs) and donors. **IPA projects provide leverage** to the aforementioned institutions to set up new programmes in the energy sector of Turkey.

6. CROSS-CUTTING ISSUES

GENDER MAINSTREAMING

Gender balance will be sought on all the managing bodies and activities of the Action and importance will be given during all stages. Equal participation of women and men will be secured in the design of activities and access to the opportunities they offer. Promotion of gender equality and equal opportunities will be considered. The gender dimension of the activities will also be closely monitored by the European Union in terms of compliance with the Gender Action Plan.

Principles of equal opportunity for female and male and non-discrimination on grounds of gender are considered throughout the programme implementation. Therefore, measures to ensure equal opportunities and non-discrimination regardless of gender are integrated in the design and the implementation of this programme. As such, the Action will ensure that equally qualified men and women will be given equal opportunity to participate and benefit from it.

EQUAL OPPORTUNITIES

Equal opportunity principles and practices in ensuring equitable gender participation in the project will be guaranteed. The main criteria for staff recruitment will be appropriate qualifications and experience in similar projects.

Turkey government remains fully committed towards providing equal opportunities for men and women. The legislation ensures equal opportunities and no gender discrimination. All steps necessary to ensure equal representation and opportunities for women and men will be taken into consideration, including equal participation in implementation, monitoring and evaluation.

MINORITIES AND VULNERABLE GROUPS

According to the Turkish Constitutional System, the word "minorities" encompasses only groups of persons defined and recognised as such on the basis of multilateral or bilateral instruments to which Turkey is a party. This action has no negative impact on minorities and vulnerable groups.

ENGAGEMENT WITH CIVIL SOCIETY (AND IF RELEVANT OTHER NON-STATE STAKEHOLDERS)

Engagement with civil society will create the backbone of the awareness raising activities of the action. Informative meetings with the local residents for this Action will be organised for demystification and public awareness. In order to inform the public about offshore wind energy, close cooperation and coordination will be provided with line ministries, public institutions, NGOs and public in general. Stakeholder meetings and workshops will be employed for interacting with various stakeholders.

ENVIRONMENT AND CLIMATE CHANGE (AND IF RELEVANT DISASTER RESILIENCE)

Turkey is one of the fastest growing energy economies of the world; both primary energy and electricity demand are increasing rapidly in parallel with growing economy and rising social wealth. In recent years, Turkey has concentrated on increasing the use of national energy resources in a cost-effective manner. This requires sustainable private sector investments and a well-functioning and regulated energy market, while limiting environmental damage, reducing GHG emissions, and increasing energy efficiency and renewable energy utilisation. In this respect, increased utilisation of renewable energy and energy efficient technologies at the local level is considered to be an effective solution for both security of energy supply and reduction of GHG emissions. Activities of this action are going to contribute extensively to the sustainable environment targets of the EU and Turkey.

7. SUSTAINABILITY

This Action will contribute substantially to Turkey's plans to tap the offshore wind energy potential by virtue of determination of eligible sites and launch of auctions/tenders/competitions for offshore wind energy generation. This Action will contribute to de-risking and increasing transparency for potential bidders for competitions. Geological and geotechnical surveys, meteorological and oceanographic analysis and measurements, techno-economic pre-feasibility studies, environmental/social constraints analysis and other technical studies will be conducted under this action which will set the scene for site selection and announcement of competitions. On the other hand, the institutional capacity of DGEA will be enhanced by conduction of trainings on preparatory technical studies including techno-economic pre-feasibility studies, environmental/social constraints analysis and other technical reports.

As regards overall sustainability, IPA II intervention will provide valuable input for enhancement of institutional capacity of DGEA for offshore wind energy generation site selection and

auction/tender/competition preparation and thereby improvement of investment potential for offshore wind energy generation in Turkey.

8. COMMUNICATION AND VISIBILITY

Communication and visibility will be given high importance during the implementation of the Action. The implementation of the communication activities shall be the responsibility of the beneficiary, and shall be funded from the amounts of each individual budget (activity) lines allocated to the Action, as per the annexed Action Budget Breakdown.

All necessary measures will be taken to publicize the fact that the Action has received funding from the EU in line with the Communication and Visibility Requirements for EU External Actions.

Visibility and communication actions shall demonstrate how the intervention contributes to the agreed programme objectives and the accession process. Actions shall be aimed at strengthening general public awareness and support of interventions financed and the objectives pursued. The actions shall aim at highlighting to the relevant target audiences the added value and impact of the EU's interventions and will promote transparency and accountability on the use of funds.

It is the responsibility of the beneficiary to keep the Commission fully informed of the planning and implementation of the specific visibility and communication activities.

The beneficiary shall report on its visibility and communication actions in the report submitted to the IPA monitoring committee and the sectorial monitoring committee.

All projects /contract implemented under this programme shall comply with the **Visibility Guidelines for European Commission Projects in Turkey** published by the EUD to Turkey, at https://www.avrupa.info.tr/tr/avrupa-birligi-gorunurluk-ilkelerini-ogrenin-16

All communication and visibility activities should be carried out in close co-operation with the World Bank and the EUD to Ankara. The World Bank and the EUD are the main authorities in charge of reviewing and approving visibility-related materials and activities.

The EU-Turkey cooperation logo should be accompanied by the following text:

"*This project is co-funded by the European Union."*

Whether used in the form of the EU-Turkey 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 beneficiary institution and the World Bank should be clearly separated from the EU-Turkey partnership logo and be maximum half the size of each flag. The logos will not be accompanied by any text. The World Bank and beneficiary logo 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 World Bank and beneficiary logo. If the consultant is a consortium, only the logo of the consortium leader will be displayed.

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