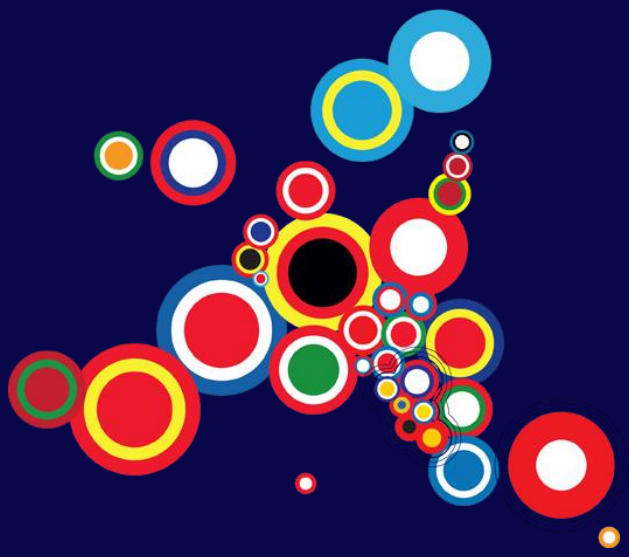
# INSTRUMENT FOR PRE-ACCESSION ASSISTANCE (IPA II) 2014-2020

# TURKEY

## Support to the Energy Sector



### Action summary

This Action promotes pilot renewable energy and energy efficiency applications in public buildings and facilities including municipalities (their subsidiaries and municipal service providers), and state-owned energy enterprises such as the natural gas transmission system operator Petroleum Pipeline Corporation (BOTAS) and Turkish Electromechanics Industry Company (TEMSAN); enhancement of institutional capacity of Ministry of Energy and Natural Resources (MENR)'s Directorate General for Energy Affairs (DGEA) for the implementation of energy efficiency awareness raising activities for households; establishment of natural gas market transparency and transactions monitoring platform within the Energy Market Regulatory Authority (EMRA) as well as the improvement of the research and planning capacity of the Turkish Electricity Transmission Company (TEIAS)'s for operation of the grid in line with EU network codes.

The Action will contribute to increase: (i) utilization of low-carbon energy technologies by public utilities, (ii) the awareness of households on energy efficiency, (iii) the level of trust and market depth in natural gas market and, (iv) effectiveness of electricity grid operations.

**THIS SECTION SHOULD BE FILLED IN BY THE EU DELEGATION/EU OFFICE**

| | |
|---|---|
| **Action Identification** | |
| **Action Programme Title** | Annual Action programme for Turkey 2018 |
| **Action Title** | EU support to the Energy sector |
| **Action ID** | IPA 2018/…/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 15 077 529 |
| **EU contribution** | EUR 13 400 000 |
| **Budget line(s)** | 22.020302 |
| **Management and Implementation** | |
| **Management mode** | Indirect management |
| *Indirect management:*<br>**National authority or other entrusted entity** | Central Finance and Contracts Unit<br><br>The World Bank<br><br>Lead Institution:<br>Ministry of Energy and Natural Resources (MENR) |
| **Implementation responsibilities** | Ministry of Energy and Natural Resources (MENR) |
| **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 2019 |
| **Final date for contracting, including the conclusion of contribution/delegation agreements** | 3 years following the date of conclusion of the Financing Agreement |
| **Final date for concluding procurement and grant contracts** | 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** | 12 years following the conclusion of the Financing Agreement |

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|---|---|
| **(date by which this programme should be de-committed and closed)** | |

| **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

In order to support and improve the positive trend in increasing its energy efficiency, Turkey drafted with IPA assistance and adopted in January 2018 its **National Energy Efficiency Action Plan (NEEAP)**. Actions adopted under NEEAP include: Y.8 conduct awareness-raising activities and training on energy efficiency, Y.10 adopt sustainability in public operations and procurement, B.4 improve energy efficiency in municipal services, E.2 implement efficiency standards for natural gas infrastructure, E.8 improve efficiency increase in electricity transmission and distribution and E.9 in existing power generation plants, and E.10 build a market infrastructure for demand-side response.

With regard to actions Y.10, B.4, E.2, E.8 and E.9, the Ministry of Energy and Natural Resources (MENR), as the Lead Institution in the energy sector, has conducted a mapping study for needs and problems to be addressed under IPA II assistance with its central administrative units, attached, related and affiliated institutions. Following several meetings and liaison activities, natural gas TSO Petroleum Pipeline Corporation (BOTAS), electricity TSO Turkish Electricity Transmission Company (TEIAS), Turkish Electro-mechanics Industry Company (TEMSAN), power generation plants, municipalities, universities, and public buildings were identified as stakeholders/beneficiaries for implementation of the aforementioned activities. Given the budgetary limitations and multi-annual programming constraints, MENR prioritized mature efficiency and renewable energy projects proposed by municipalities, their subsidiaries and municipal service providers, BOTAS and TEMSAN to be assisted under this Action. The remaining projects for other public utilities will be considered under the upcoming programming years.

Operations of the public utilities/factories such as municipalities, their subsidiaries and municipal service providers, BOTAS and TEMSAN represent an important potential area for improvement of energy efficiency and utilization of renewable energy for emissions reductions and energy savings; mainly because these entities run large operations that consume sizeable amount of energy. However, such entities are not investing, at the moment, in renewable energy and energy efficiency solutions to meet their energy needs, as they usually prioritize their main functional responsibilities when it comes to budgeting and investment planning. As a result, support is needed to complement their core investments with complementary efficiency and renewable energy applications. Pilot projects will contribute to raise awareness on the benefits of investing in such applications. Transforming their energy consumption into a clean energy saving and energy generating mode would increase their efficiency, self-reliance and downsize their carbon footprint, while stimulating further investments. This would result in an increasing demand for renewable and energy efficiency solutions and in the development of the relevant market.

In line with the actions Y.8 and E.10, the TURKSTAT data indicate that as of 2017, there are 9.1 million buildings in Turkey, approximately 87% of which are residential. The number of housing units is above 22 million[1]. According to the occupancy permit statistics, more than 100,000 new buildings are added every year to the building stock. Those statistics suggest that Turkey has a rapidly growing and transforming building stock. In this context, it is possible to save energy significantly through making the new buildings more energy-efficient as well as improving the existing buildings, raising awareness in purchase and use of household appliances and heating/cooling habits of households. Accordingly, the institutional capacity in MENR's Directorate General of Energy Affairs (DGEA) needs to be improved to implement an effective strategy to raise awareness and measure the awareness levels of households for efficiency.

On the other hand, with regard to continuing Turkey's capacity enhancement to integrate with EU electricity market, within the scope of the Long Term Agreement and the synchronous parallel operation between TEIAS and ENTSO-E, TEIAS needs to improve its research and planning capacity to deliver harmonious operations with the EU's network codes. In other words, intense renewable energy penetration to the Turkish grid and diversification of the energy sources together with the rapid increase of the demand in the country makes it necessary for TEIAS to develop and improve its planning-related activities such R&D implementations, transmission and generation planning activities.

[1] Based on TURKSAT 2000 building census and statistics for building occupancy permits

Lastly, in order to continue increasing Turkey's readiness to integrate with EU gas market, the Energy Market Regulatory Authority (EMRA)'s capacity to implement the Legislation on Transparency and Competition in Turkish Natural Gas Market in line with the EU Regulation on Wholesale Market Integrity and Transparency (REMIT) and legislation on natural gas market transactions needs to be supported and a platform for monitoring natural gas market transparency and transactions needs to be established along with the requirement to increase the level of trust and market depth.

### OUTLINE OF IPA II ASSISTANCE

IPA II intervention will provide valuable input for: (i) supporting and raising awareness of public utilities/buildings (operated by municipalities, their subsidiaries and municipal service providers, BOTAS and TEMSAN) in using efficient and low-carbon energy consumption/production technologies in their operations, (ii) enhancing MENR's capacity in implementing and measuring the impact of energy efficiency awareness raising activities and strategies towards households, (iii) improving TEIAS's planning-related activities such as R&D implementations, transmission and generation planning, (iv) developing EMRA's capacity to implement the Legislation on Transparency and Competition in Turkish Natural Gas Market in line with REMIT and the legislation on natural gas market transactions, and to monitor natural gas market transparency and transactions.

For component (i), pilot energy efficiency and renewable energy applications including supply and installation of ground and rooftop solar PV/wind/biogas/biomass/geothermal/hydraulic/landfill gas/waste water sludge electricity generation plants, solar-thermal drying systems, solar-thermal water systems for the production of hot water, co/trigeneration plants, heat pumps, geothermal heat pumps, power generating break pressure tanks, solar thermal collectors, passive building energy systems, energy storage systems, heat insulated sandwich panels, gas turbine starters, vortex, green transportation technologies, waste water sludge for fuel replacement, and rehabilitation/replacement/improvement of water pumps, electric motors, process machines, variable speed drive applications, steam distribution systems, heat recovery systems, compressed air systems, boilers, heating/cooling equipment, indoor/outdoor lighting systems, and relevant electro-mechanical equipment for municipalities, their subsidiaries and municipal service providers, TEMSAN and BOTAS.

For (ii), capacity enhancement studies, investigation of demand side management potential, awareness-raising and measurement of behavioral change activities will be implemented for DGEA as the direct beneficiary. Households will be the indirect beneficiaries as they participate in the questionnaires, trainings and awareness-raising activities whereas TURKSTAT, Ministry of Labor, Social Services and Family, Ministry of Industry and Technology, Ministry of National Education, Energy Efficiency Association, and Ministry of Environment and Urbanization will be the key stakeholders.

For (iii), activities for improvement of R&D implementations, transmission planning capacity with particular regard to integration capacity of solar power plants to the grid, generation planning capacity, and benchmarking will be implemented for TEIAS.

For (iv), the assistance will include trainings and study visits for examination and preparation of draft legislation on transparency, competition and market transactions in the natural gas market; preparation of a road map for the improvements to be made in the market to provide better transparency and liquidity; and preparation of technical specifications/design of the platform for monitoring natural gas market transparency and transactions. Direct beneficiary of the activity will be EMRA whereas BOTAS, EXIST (Energy Exchange Istanbul) and natural gas market players will be the key stakeholders.

### 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 Greenhouse Gas (GHG) emissions and cuts in total energy consumption as regards its 2020 targets and 2050 objectives with a view to constitute a global engagement and to achieve safe, secure, sustainable and affordable energy use by protecting its internal dynamics. In its strategy document, Low-carbon Economy 2050 Roadmap, the EU has committed to reducing GHG emissions to 80-95% below 1990 levels by 2050 in the context of necessary reductions by developed countries as a group. The Commission finds that domestic emission reductions of the order of 40% and 60% below 1990 levels would be the cost-effective pathway by 2030 and 2040, respectively.

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 by 2030, to increase the share of RE to at least 27% of the EU's energy consumption by 2030 and to ensure 30% energy savings by 2030.

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.

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

In the framework of the 2030 Agenda for Sustainable Development it is considered that this Action will contribute to the Sustainable Development Goal 7 to ensure access to affordable, reliable, sustainable and modern energy for all.

#### LESSONS LEARNED AND LINK TO PREVIOUS FINANCIAL ASSISTANCE

Through the 2003 & 2005 energy efficiency projects (TR 0303.06 "Improvement of Energy Efficiency in Turkey" – TR 0503.08 "Increasing Public Awareness on Energy Efficiency in Buildings for the General Directorate of Electrical Power Resources survey and Development Administration"), the following lessons have been learned:

- Reform of energy tariffs and energy efficiency policy package should be linked. Relatively low prices of energy are supportive of low efficiency behaviours; the fiscal and energy pricing policies must be seen as a key component and tool of the energy efficiency policy, not only a political decision.
- Energy efficiency should be promoted under the headline of sustainable development and better environment, for which there is greater awareness in the general public. Energy efficiency policy and the communication for promoting it should be focused on environmental justification and better use of resources/sustainable development.
- Involvement in R&D and European programmes should be encouraged. In the past, the efforts made, including the project "Increasing public awareness on Energy Efficiency in Buildings for the General Directorate of electrical power resources survey and development administration", had limited impact and demonstrates the need to improve the knowledge base (including statistical database on energy consumption by sector and building stock) as well as increase in public awareness on the topic. The skill sets required for such information gathering and dissemination activities are currently lacking in MENR and require external assistance, especially as the target audience and implementation of energy efficiency investments are shifting from public sector to private sector and the general public. The staff capacity for awareness raising is estimated to be insufficient to meet the needs which are continuously growing and providing potentials for reasonable improvements in energy efficiency.

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 are the establishment of the Gas Trading Platform (which is at testing phase to develop a well-operating gas market), the drafting of the Renewable Energy Integration road map (instrumental to the preparation of the TEIAS TSO Grid Master Plan), the leveraging of approx. EUR 65 million in 69 small scale renewable energy investments from a project budget of EUR 2.2 M and the triggering of 79 energy efficiency projects, yielding annual savings of US$0.54 million. In addition, 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 2018 Action.

The project funded under IPA 2012 in the energy sector had energy efficiency, renewable energy and natural gas components. The **lessons learned** from these projects are as follows:

- Within the renewable energy and energy efficiency components of 2012 project, multi-stakeholder seminars and workshops for determining the strategies to promote renewable energy and energy efficiency investments were held and procurement documents for pilot equipment supply projects for municipalities were prepared to be tendered under IPA 2015 Action. Particularly for solar PV projects and generally for renewable energy investments, beneficiaries had to hire external consultants to prepare the technical projects to be submitted to Turkish Electricity Distribution Company (TEDAS) for unlicensed generation and connection permits. This requirement delayed the process of preparation of final technical specifications and led to re-drafting of the tender dossier. Despite these considerable difficulties, the tender dossiers for all projects concerned were safely completed thanks to MENR's intense efforts. Therefore, under the 2018 Action, MENR will ensure in cooperation with the Union of Municipalities of Turkey (UMT) that solar PV/renewable energy pilot equipment supply projects' beneficiaries will complete the due permit procedures before preparing the procurement documents to avoid delays and risks stemming from license and permit-related uncertainties.
- A need assessment report and a feasibility study for the necessary infrastructure of the transparent transmission system operator's (TSO) operations for meeting the needs of natural gas trading platform both for domestic and international exchanges, including development of the detailed requirements and specifications for the gas trading platform software to enhance the system by servicing real time monitoring and assessment of future developments of financial market mechanisms such as OTC, contributing to a competitive gas market were among other objectives for that project. The outputs of the 2012 project have been essential to facilitate a competitive gas market and gas trade platform.

The IPA 2015 Action includes a TA project for supporting municipalities in their renewable energy and energy efficiency investments, and a supply project for supporting them in their pilot applications. Supply projects were supported by the IPA 2012 projects that delivered feasibility/audit studies and procurement documents for pilot projects under the IPA 2015 Action. The TA project under the IPA 2015 Action, on the other hand, will deliver valuable inputs for Phase-II pilot supply projects for municipalities envisaged under the IPA 2018 Action as well as independently proposed projects. In other words, preliminary technical studies and tender documents for municipalities under this IPA 2018 Action will be prepared under the IPA 2015 Action and through independently proposed projects while BOTAS and TEMSAN shall prepare their own technical feasibility studies and procurement documents with their specialied engineer teams. Lessons learned from the IPA 2015 Action are as follows:

- In order to take account of the mixed technological nature of those projects for municipalities, the inclusion of mixed Supply and Works as an alternative contract type for pilot renewable energy and energy efficiency procurement activities should be considered. Particularly the type and nature of the municipality projects will be identified under the IPA 2015 Technical Assistance and by independently proposed projects and hence, the type of the technology (such as biogas, hydro, or solar PV and etc.) which will possibly contain both Supply and Works components will be ascertained only then. Therefore, the contract type for procurement activities under this IPA 2018 Action should be finalised following the identification of the projects under IPA 2015 Technical Assistance and through independent proposals.

Past interventions, globally, also highlighted the need to ensure that all project partners abide to the Communication and Visibility Requirements for EU External Actions, as detailed in section 8.

The current action will take the above lessons 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;<br>To improve Turkey's integration with European electricity and gas markets. | 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)]<br>Progress made towards meeting the accession criteria. Progress made towards reaching targets of the National Energy Efficiency Action Plan (NEEAP). | EMRA<br>BOTAS<br>Annual Progress Reports for Turkey of the EC.<br>Measures envisaged under the National Energy Efficiency Action Plan (NEEAP). | |
| **SPECIFIC OBJECTIVE** | **OBJECTIVELY VERIFIABLE INDICATORS (*)** | **SOURCES OF VERIFICATION** | **ASSUMPTIONS** |
| To increase utilisation of low-carbon energy technologies by public utilities, awareness of households on energy efficiency and the level of trust and market depth in natural gas market; and enhance effectiveness of electricity grid operations. | Installed capacity (MW) of renewable energy generation plants in municipalities, their subsidiaries and municipal service providers, BOTAS and TEMSAN;<br>Level of households' awareness on energy efficiency;<br>Level of Preparation of a Master Plan for TEIAS;<br>Ratio of the published information market players need to access with respect to the data published on the REMIT portal. | TEDAS report<br>Consciousness Index[1] for Households by DGEA<br>TEIAS Website<br>EMRA Website | Consciousness Index is updated annually by DGEA;<br>Municipalities, their subsidiaries and municipal service providers, BOTAS and TEMSAN continue to invest further in energy efficiency and renewable energy applications;<br>Adoption of Legislation on Transparency and Competition in Turkish Natural Gas Market in line with REMIT; |
| **RESULTS** | **OBJECTIVELY VERIFIABLE INDICATORS (*)** | **SOURCES OF VERIFICATION** | **ASSUMPTIONS** |

[1] The Consciousness Index is a deliverable under Activity 2. As we do not have the index in place yet, no measurements (baseline & target data) are available.

| | | | |
|---|---|---|---|
| **Result 1**:<br>Utilisation of efficient and low-carbon energy consumption/production technologies by municipalities, their subsidiaries and municipal service providers, BOTAS and TEMSAN is increased and pilot implementation in their operations/buildings is supported | **Indicator for Result 1:**<br>Installed capacity (MW) of renewable energy generation plants in municipalities, their subsidiaries and municipal service providers;<br>Operational solar PV installed capacity (MW) at BOTAS facilities;<br>Operational solar PV installed capacity (MW) at TEMSAN facilities; | TEDAS's report (Indicator 1) | PV/renewable energy pilot equipment supply projects' beneficiaries will complete the due permit procedures before preparing the procurement documents to avoid delays and risks stemming from permit-related uncertainties. |
| **Result 2:**<br>MENR's capacity in implementing and measuring the impact of energy efficiency awareness raising activities and strategies towards households is enhanced | **Indicators for Result 2:**<br>Percentage of increase in sales of efficient household appliances | TURKBESD (White Goods Manufacturers' Association of Turkey) report (Indicator 2) | Monitoring platform for natural gas market transparency and transactions is established and has become operational in EMRA. |
| **Result 3:**<br>TEIAS's planning-related activities such as R&D implementations, transmission and generation planning are improved | **Indicator for Result 3:**<br>Level of Preparation of a Master Plan for TEIAS | TEIAS's report (Indicator 3) | |
| **Result 4:**<br>EMRA's capacity to implement the Legislation on Transparency and Competition in Turkish Natural Gas Market in line with REMIT and the legislation on natural gas market transactions and to monitor natural gas market transparency and transactions are developed. | **Indicator for Result 4:**<br>Ratio of the published information market players need to access with respect to the data published on the REMIT portal. | EMRA (Indicator 4) | |
| | | | |

## DESCRIPTION OF ACTIVITIES

**Result 1 - Utilisation of efficient and low-carbon energy consumption/production technologies by municipalities, their subsidiaries and municipal service providers, BOTAS and TEMSAN is increased and pilot implementation in their operations/buildings is supported**

The activities to reach the above result are:

**Activity 1.1** Modification of conventional starter systems of gas turbines with turbine starters by supply and installation of turbine starters at BOTAS's compressor stations; and supply and installation of vortex for decreasing pressure at BOTAS's regulating and metering stations (RMSs);

**Activity 1.2** Pilot renewable energy and energy efficiency applications on different sites at facilities/buildings of municipalities, their subsidiaries and municipal service providers for self-consumption purposes such as supply and installation of power plants for electricity generation from ground and rooftop solar PV/wind/biogas/biomass/geothermal/hydraulic/landfill gas/waste water sludge/co-generation/tri-generation/break pressure tanks, with heat insulated sandwich panels for rooftop PV systems and relevant electro-mechanical, battery storage and mounting structure equipment;

**Activity 1.3** Pilot renewable energy applications on different sites at factories/facilities/buildings of BOTAS and TEMSAN for self-consumption purposes including supply and installation of power plants for electricity generation from ground and rooftop solar PV systems with heat insulated sandwich panels for rooftops and relevant electro-mechanical, battery storage and mounting structure equipment;

**Activity 1.4** Pilot energy efficiency applications on different sites at facilities/buildings/vehicles of municipalities, their subsidiaries and municipal service providers such as supply and installation of solar-thermal drying systems, solar-thermal water systems for the production of hot water, waste water sludge fuel replacement systems, water pumps, heat pumps, geothermal heat pumps, solar thermal collectors, passive building energy systems, energy storage and battery systems, heat insulated sandwich panels, steam distribution systems, heat recovery systems, compressed air systems, boilers, heating/cooling equipment, green transportation technologies, electric buses, electric motors, process machines, variable speed drive applications, indoor/outdoor lighting systems, and relevant electro-mechanical and mounting structure equipment;

**Activity 1.5** Feasibility, detailed engineering, cost-estimation (including required valve, pipe, fittings materials) studies for establishment of Flare Gas Recovery (FGR)[3] system at BOTAS and organisation of multiple technical site visits and workshops in EU member states to examine FGR at LNG terminals;

**Result 2 - MENR's capacity in implementing and measuring the impact of energy efficiency awareness raising activities and strategies towards households is enhanced**

The activities to reach the above result are:

**Activity 2.1** Identification of market readiness in and preparation of a roadmap for harmonisation with EU's eco-design and labelling regulations in Turkey; design of a monitoring and calculation tool for energy savings potential of replacement of inefficient household appliances;

**Activity 2.2** Development of a purchasing guide and a calculation tool for public procurement of energy efficient products including office equipment, lighting, household appliances and consumers electronics; organisation of trainings on preparing communication strategy and plans, awareness raising and PR campaigns;

[3] BOTAS is currently not investing in FGR technology. The studies will help assess the feasibility of FGR in Turkey and measure corresponding savings of implementing such technology. If feasibility is confirmed potential investments could be unlocked

**Activity 2.3** Auditing of household loads, investigation of demand side participation and load shifting potential of household appliances as well as analysis of their possible impact on the national electricity load curve; determination of monetary savings potential of load shifting by consumers; calculation of national level load shifting potential; site visits to EU member states for best practices;

**Activity 2.4** Awareness raising activities towards households including preparation of a communication plan; design of a public awareness campaign; preparation of brochures for efficient households appliances; design, recording, editing and delivery of public service advertisement videos; design of a brand face (logo/item/mascot etc.) representing energy efficiency campaign and supply and distribution of shopping bags made of recycled fabric/material with the brand face visuals on them to 500,000 households; site visits to EU member states for best practices;

**Activity 2.5** Development of pre/post surveys for households considering the socio-economic and geographical factors to assess level of household awareness on energy efficiency and key drivers of consumption habits of households; application of the survey on a selected group of households; conduction of awareness raising activities; re-application of the survey on the selected households; development of a consciousness index to measure level of awareness;

**Activity 2.6** Development of a sustainable energy efficiency financing mechanism for replacement of inefficient household appliances, office equipment, lighting, and consumers electronics; review of current situation and incentive schemes; identification of barriers; review of international best practices including grants, subsidies, fiscal measures, loans (such as German EnEv and British Green Deal), market-based instruments, ESCOs and public-private partnership and etc.; recommendations on legislative and financial reforms.

**Result 3 - TEIAS's planning-related activities such as R&D implementations, transmission and generation planning are improved**

The activities to reach the above result are:

**Activity 3.1** Assessment of TEIAS's R&D Unit's organisational structure and operations; analysis of types and methodologies of R&D applications and multi-party implementations performed by the 2 selected ENTSO-E member TSOs; gap analysis and benchmarking of TEIAS's R&D applications with selected two ENTSO-E TSOs' R&D organisational structure and operations; study visit for TEIAS staff to an ENTSO-E member TSO's R&D centre; needs assessment and a feasibility study report for improvement of TEIAS's R&D restructuring;

**Activity 3.2** Assessment of TEIAS's generation planning; analysis of generation planning types and methodologies implemented by ENTSO-E member TSOs; gap analysis and benchmarking of TEIAS's generation planning with two selected ENTSO-E TSOs' generation planning activities; training for TEIAS staff regarding new types of generation planning methodologies and practices; study visit for TEIAS staff to an ENTSO-E member TSO's generation planning unit; needs assessment and a feasibility study report for improvement of TEIAS's generation planning;

**Activity 3.3** Assessment of TEIAS's transmission planning; analysis of transmission planning types and methodologies implemented by ENTSO-E member TSOs; gap analysis and benchmarking of TEIAS's transmission planning with two selected ENTSO-E TSOs' transmission planning activities; training for TEIAS staff regarding new types of transmission planning methodologies and practices; study visit for TEIAS staff to an ENTSO-E member TSO's transmission planning unit; needs assessment and a feasibility study report for improvement of TEIAS's transmission planning;

**Activity 3.4** Improvement of TEIAS's international business development capacity by delivery of assessments, ENTSO-E TSO benchmarking, site visits and recommendations;

**Result 4 - EMRA's capacity to implement the Legislation on Transparency and Competition in Turkish Natural Gas Market in line with REMIT and the legislation on natural gas market transactions and to monitor natural gas market transparency and transactions are developed**

The activities to reach the above result are:

**Activity 4.1** Training of EMRA staff on drafting legislation on transparency and competition in the natural gas markets and the legislation on natural gas market transactions; study visits to relevant institutions such as ACER and ENTSO-G to examine best practices in terms of transparency platforms and relevant legislation and to active futures and derivatives exchanges such as ICE ENDEX and European Energy Exchange (EEX);

**Activity 4.2** Following impact assessments and internal and external consultations, preparation of draft legislation on transparency and competition in the natural gas market and on natural gas market transactions; preparation of a road map for the improvements to be made in the market to provide better transparency and a more active and liquid market; organisation of multi-stakeholder workshops;

**Activity 4.3** Design and development of a software/platform to monitor natural gas market transparency and transactions.

### RISKS

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

- A high impact risk is the lack of management capacity that may also lead to potential de-commitment of the two supply procurements under IPA 2014 and 2015 due to complex technical nature of the projects,
- A high impact risk with medium likelihood will be the absence of TEDAS license approvals and other necessary permits for the installation of solar PV and other types of grid-connected renewable energy applications by the beneficiaries envisaged under the Action. To mitigate that risk, PV/renewable energy pilot equipment supply projects' beneficiaries will complete the due permit procedures before preparing the procurement documents to avoid delays and risks stemming from license and permit-related uncertainties,
- A high impact risk with medium to high likelihood is the accumulated and/or future backlog in the CFCU tendering and contracting schedule. This risk is aggravated by the lack of technical capacity at the CFCU to process timely the typically complex technical files for procuring Supply and Services in the energy sector. A mitigation measure has been the envisaged entrusting of the Technical Assistance (Services) for indirect management with the WB,
- An assumption is that possible legislative changes and/or political developments will not be to the detriment of the progress in the sustainable energy (renewables and energy efficiency) sector in Turkey,
- An assumption is that the signing and coming into force of the respective Financing Agreement will be timely,
- An assumption is that the signing and coming into force of the respective Agreement for indirect management with an entrusted entity will be compliant with the procurement plan.

### CONDITIONS FOR IMPLEMENTATION

Particularly for solar PV projects and generally for renewable energy investments, beneficiaries have to hire external consultants to prepare the technical projects to be submitted to TEDAS for unlicensed generation and connection permits. Therefore, under 2018 Action, MENR will ensure in cooperation with the Union of Municipalities of Turkey (UMT) that solar PV/renewable energy pilot equipment supply projects' beneficiaries will complete permit procedures before preparing the procurement documents to avoid delays and risks stemming from bureaucratic permit procedures.

Failure to comply with the requirements set out above may lead to a recovery of funds under this programme and/or the re-allocation of future funding.

## 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 purpose and the future 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 and International Projects (DGFRIP)** 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 of the IPA projects for the MENR are under the responsibility of the Directorate General. DGFRIP 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 DGFRIP.

**Directorate General for Energy Affairs (DGEA)** is responsible for utilization 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 improvement of energy efficiency and utilisation of renewable energy, awareness raising regarding energy efficiency in industry and buildings, implementing energy efficiency projects approved by the Council under the Presidency, and determining renewable energy and energy efficiency targets and projections for Turkey. DGEA will be the direct beneficiary for Activities 1.2, 1.3 and 1.4 and coordinate the indirect beneficiary institutions including municipalities, their subsidiaries, municipal service providers, TEMSAN and BOTAS. DGEA will also be the direct beneficiary for Activities 2.1, 2.2, 2.3, 2.4, 2.5 and 2.6.

**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. EMRA will be the direct beneficiary of Activities 4.1, 4.2 and 4.3.

**Petroleum Pipeline Corporation (BOTAS)** is a related institution of MENR. Because of Turkey's increasing need for diversified energy sources, since 1987 BOTAS has expanded its original purpose of transporting crude oil through pipelines to cover natural gas transportation and trade activities, therefore becoming a trading company. BOTAS will be the indirect beneficiary for Activity 1.3 while being a direct beneficiary for Activities 1.1 and 1.5.

**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. TEIAS will be the direct beneficiary of Activities 3.1, 3.2, 3.3 and 3.4.

**Turkish Electro-mechanics Industry Company (TEMSAN)** is a related institution of MENR which is responsible for production of electromechanical equipment including generators and turbines. The purpose of the establishment of TEMSAN is to reduce the external dependency of energy production equipment in the country and produce equipment with domestic industry to efficiently exploit

renewable energy sources in the international market; manufacturing, technology infrastructure and to increase know-how accumulation. TEMSAN will be the indirect beneficiary for Activity 1.3.

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

**Indicative IPA budget:** 13.4 M€

**Implementation period:** 48 months

**Activities** 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2 and 4.3 will be implemented through **indirect management with an entrusted entity**, namely the World Bank (WB). 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 (more detail can be found below). Under the administration agreement, the World Bank will provide technical assistance to the Turkish counterparts for the achievement of all 4 results via, among others, support to the preparation of studies for the renewable and energy efficiency markets, preparation of market assessments, guidelines and surveys to improve and monitor energy efficiency awareness at household's level as well as organisational assessments and training activities.

**Activities** 1.1, 1.2, 1.3, and 1.4 will be **implemented in indirect management with the CFCU**. It is intended that CFCU will launch an indicative number of 4 supply and/or works contracts. The contract type will be determined at the stage of project identification. Works required under these activities would likely be of minor volume and cost. The value and cost of works required will be established during project identification. An assessment will then be made on whether supervision might be envisaged, upon approval by the EU Delegation.

**Justification:**

**Leading donors** active in the area of energy are the World Bank, European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), German Development Bank (KfW), French Development Agency (AFD), German International Cooperation Institution (GIZ), 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.

The WB is the preferred entrusted entity for indirect management of Technical Assistance (services) under the IPA 2018 because the activities are a natural continuation and building on the activities funded and implemented under IPA 2012 and 2013 as described below:

The WB provided advice to the Government on gas sector development for years now through investment and advisory projects, including through projects funded IPA 2012 and 2013. To ensure the move towards a transparent and well-functioning energy market in Turkey, the IPA 2012 project triggered the establishment of the Gas Trading Platform (GTP), which is at testing phase to develop a well-operating gas market. EMRA issued a regulation for the constitution of the GTP. In line with this regulation, EXIST initiated market operations on April 1, 2018. The activities under this IPA 2018 Action with EMRA will further help the regulator carry out its transparency and transactions monitoring functions effectively.

The WB has been providing **long-term support to 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. IPA 2018 Action will further contribute to the planning and R&D capacity of TEIAS to allow for larger amounts of renewables penetration.

The projects were supported with extensive energy efficiency policy advice to MENR as well as other stakeholders provided under the project funded by IPA 2012 and implemented by the WB. Another outcome of the IPA 2013 project was that the **Government adopted legislation regarding energy performance** contracts (EPCs), allowing public buildings management to enter into 15-year contracts to invest in energy efficiency measures.

Through **IPA 2013**, energy efficiency in **hydro power generation** (with EUAS), energy efficiency in electricity transmission (with TEIAS) and energy efficiency in gas transmission (with BOTAS) activities are currently under implementation. A market potential for **residential energy efficiency** was estimated through a Global Environment Facility (GEF) project, in addition to ongoing preparations for the energy efficiency project in government buildings.

Under **IPA 2018** Action, the above mentioned energy efficiency activities in general and the specific studies conducted under GEF for residential energy efficiency will be further extended to cover also the households sector. The activities planned are awareness raising and capacity building in MENR for measuring the consciousness of **residential energy consumers regarding energy efficiency**. These activities are expected to contribute to the increasing trend in sales of **energy efficient household appliances** and **behavioural change** in households. Also, this IPA 2018 Action will contribute to the investments for energy efficiency in natural gas transmission grid by feasibility studying of flare gas recovery systems as a continuation of the IPA 2013 gas transmission efficiency studies.

Another reason to prefer the WB as entrusted entity for indirect management of Technical Assistance under the IPA 2018 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 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. Separate Steering Committee meetings for projects whose beneficiary is DGEA will be held at the premises of the MENR, and the other at the respective beneficiary institutions (Municipalities, their subsidiaries and Municipal Service Providers, BOTAS, TEMSAN, TEIAS and EMRA) every quarter of the implementation years. MENR's DGFRIP and DGEA, BOTAS, TEMSAN, TEIAS, EMRA and the EUD will host and chair the steering committee meetings as per the projects thereof. NIPAC, CFCU (for supply and/or works contracts) and the World Bank (for Service contracts) will be the members of the steering committee meetings. Additionally, result-oriented monitoring will be provided through the IPA project implemented by the Directorate for EU Affairs, Ministry of Foreign Affairs.

In line with the IPA II Implementing Regulation 447/2014, 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[4]. A Reference Group comprising the key stakeholders of this action will be set up for every evaluation to steer the

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

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 EUR 268.000 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.

**INDICATOR MEASUREMENT**

| Indicator | Baseline (value + year) | Target 2020 | Final Target (year) | Source of information |
|---|---|---|---|---|
| CSP indicator: Quality of electricity supply (SAIDI, SAIFI, MAIFI) | (2015)<br>SAIDI: 1610,15<br>Minutes per customer<br>SAIFI: 11,15<br>Number of interruption per customer<br>MAIFI: 0,96<br>Number of interruption per customer | N/A[5] | | EMRA |
| Operational solar PV installed capacity (MW) at TEMSAN facilities | 0 (2018) | 0 | 1.25 MW (2023) | TEDAS |
| Operational solar PV installed capacity (MW) at BOTAS facilities | 0 (2018) | 0 | 5 MW (2023) | TEDAS |
| Operational renewable energy installed capacity (MW) at municipalities, their subsidiaries and municipal service providers funded by the EU | 0 (2018) | 7 MW | 9 MW (2023) | TEDAS |
| Percentage of increase in sales of efficient household appliances | 49 % (2016) | 52 % | 65 % (2024) | TURKBESD (White Goods Manufacturers' Association of Turkey) |
| Level of preparation of a Master Plan for TEIAS | No Master Plan (2018) | Master Plan is published | Master Plan is revised (2022) | TEIAS Annual Report, Load Dispatch Information System |
| Ratio of the published information market players need to access with respect to the data published on the REMIT portal | (2018)<br>Data on the TSO activities are published | All of the data | (2022)<br>All of the relevant information similar to | EMRA Website |

[5] 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.

| | | | | |
|---|---|---|---|---|
| | partially. Organized Natural Gas Wholesale Market data is not available since the market has not started since the market is in simulation stage. OTC market data are not published. | regarding the TSO activities and Organized Natural Gas Wholesale Market are published on the new platform in 2019 | the data published on the REMIT portal can be accessed through the new transparency platform as of the start of 2022 | |

## 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, energizing the rebound in economic growth. The gross electricity consumption in Turkey in **2017** was 294.9 TWh more than **doubling** the 128.3 TWh of **consumption in 2000**. According to the highly probable scenario electricity consumption in 2023 is expected to rise by 5.5% to 357.4 TWh. By the end of 2017, 8,568 MW capacity was added to the system, and as of the end of June 2018, Turkey's installed capacity has risen to around 87,138 MW almost tripling the 31.5 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 83 % since 2002. As of the end of June 2018, state-owned Electricity Generation Company (EUAS) had a share of 22.8 % in installed capacity of Turkey, as well as 60.6% share of the private sector, 7% of build-operate plants, 1.6% of build-operate-transfer plants, 2.3% of operationally transferred plants and 5.7% 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 2017, 37% of electricity generation was obtained from natural gas, 33% from coal, 20% from hydropower, 6% from wind, 2% from geothermal and 2% from other sources. As of the end of 2017, the distribution of Turkey's installed power by resources included 32% hydraulic, 27.2% natural gas, 21.9% coal, 7.6% wind, 1.2% geothermal power plants and 5.9% other sources. In this regard, Turkey set a 30% target for share of RE in power production by 2023. Last year Turkey already reached 31 % renewable energy share in electricity generation. MENR organized two auctions separately for the wind and solar energy each with 1 GW capacity by realizing the model of "RE-ZONE" last year. With broad participation from bidders in these auctions Turkey achieved record-low prices; namely 6.99 cent/kWh in Konya-Karapınar for solar energy auction while the price was 3.48 cent/kWh in the wind. 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 MW 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 mtoe 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 $4.2 billion.

Turkey also **privatised gas distribution** and trading activities as well as investing in infrastructure. 15 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 4 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 293 mcm/d as of June 2018. Bearing in mind the daily peak gas consumption which was 243 mcm/d as of the end of 2017, 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 Utilization 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 2015-2019 Strategic Plan, Electricity Market and Security of Supply Strategy Paper, NEEAP, National Renewable Energy Action Plan, 11$^{th}$ National Development Plan 2019-2023, 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 programs in the energy sector of Turkey. It is envisaged that the projects in IPA II period will have a stimulating effect on donors' loan programmes such as EBRD's TuRSEFF (Turkey Sustainable Energy Financing Facility) loans for municipalities, their subsidiaries and municipal service providers, TuREEFF (Turkey Residential Energy Efficiency Financing Facility) loans for households and the World Bank's upcoming credit lines for Energy Efficiency in Public Buildings, Resource Efficiency and Clean Energy Development, Solar Rooftop PV, and Municipal Waste-to-Energy programs as well as successor programs in the upcoming period.

## 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.

This action will make sure that equal opportunities are applied in technical assistance activities and in the technical specifications for the works to be carried out as part of energy efficiency measures.

### 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. Furthermore the activity related to the development of a tariff mechanism which will also address vulnerable customers provides positive impacts on certain 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. In order to inform the public about energy efficiency 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. Preliminary meetings and other activities of need analysis will also be held to create awareness about the objectives of action and integrate the approaches of various stakeholders into the implementation process.

### 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 utilization. In this respect, increased utilization 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 provide effective implementation of energy efficiency strategies towards households by relevant line ministries and institutions (such as TURKSTAT, Ministry of Labor, Social Services and Family, Ministry of Industry and Technology, Ministry of National Education, Energy Efficiency Association, and Ministry of Environment and Urbanization and etc.) as per the NEEAP action under the coordination of MENR-DGEA, by enhancing the institutional capacity for implementing and monitoring awareness raising activities towards households and enhancing the policy of replacement of inefficient household appliances. Also, this Action will create awareness and leverage energy efficiency and renewable

energy investments in public utilities such as municipalities, their subsidiaries and municipal service providers, BOTAS and TEMSAN that run large facilities with high energy efficiency and emission reduction potential. These pilot applications will mobilize further investments and constitute a leverage for EBRD's TuRSEFF (Turkey Sustainable Energy Financing Facility) loans for municipalities, their subsidiaries and municipal service providers, TuREEFF (Turkey Residential Energy Efficiency Financing Facility) loans for households and the World Bank's upcoming credit lines for Energy Efficiency in Public Buildings, Resource Efficiency and Clean Energy Development, Solar Rooftop PV, and Municipal Waste-to-Energy programs as well as successor programs in the upcoming period. On the other hand, by supporting TEIAS in its R&D and planning capacity, larger amounts of renewable energy penetration to the grid will become possible. Last but not the least, this Action will contribute to the capacity of EMRA to regulate and monitor transparency and transactions in the natural gas market exchanges in line with REMIT.

## 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 CFCU and the EUD to Ankara. The CFCU 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 CFCU 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 CFCU 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 CFCU and beneficiary logo. If the consultant is a consortium, only the logo of the consortium leader will be displayed.

Any publication by the Supplier, in whatever form and by whatever medium, including the Internet, shall carry the following or a similar warning: "This document has been produced with the financial assistance of the European Union". In addition, the back cover of any such publications by the Supplier should also

contain the following disclaimer: “The contents of this publication is the sole responsibility of name of the author/Supplier/implementing partner – and can in no way be taken to reflect the views of the European Union”.