



REPUBLIC OF TURKEY MINISTRY
OF ENERGY AND NATURAL
RESOURCES

National Energy Efficiency Action Plan

2017-2020

Progress Report



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**DEPARTMENT OF ENERGY
EFFICIENCY AND ENVIRONMENT**

Department of Planning and Supervision

EXECUTIVE SUMMARY

The National Energy Efficiency Action Plan (2017-2023), developed under the coordination of the Ministry of Energy and Natural Resources, was published in the Official Gazette no. 30289 (Repetitive) of 02/01/2018 upon the approval of the High Planning Council on 29/12/2017.

The National Energy Efficiency Action Plan, (2017-2023) is aimed at reducing Turkey's primary energy consumption by 14 percent by 2023 through 55 actions addressing the principal energy sectors, namely, buildings and services, energy, transport, industry, and technology, agriculture and cross-cutting areas. In this direction, a cumulative saving of 23,9 Mtoe is projected for 2023, requiring an investment of \$10.9 billion. The cumulative savings to be achieved by 2033 is \$30.2 billion according to 2017 prices, with the effect of certain savings continuing until 2040.

The monitoring and evaluation of progress is to be carried out semi-annually, for which those tasked with the preparation of the reports will draw upon the information provided by the institutions and bodies responsible for implementing the actions, as well as sectoral reports, statistics (MoTF, TURKSTAT data, energy, road transport, etc.), energy balance sheets and ODEX analyses. The Plan aims to ensure that progress in the implementation process is effectively monitored and evaluated, that any deviations from the targets are assessed, and that any necessary measures are taken in a timely manner.

The related sectors experienced the following developments in 2020:

- Despite the global pandemic, Turkey's economy showed a 1.8% growth in 2020.
- Energy imports, which account for the largest share of Turkey's total imports of \$219.5 billion, decreased by 30.7 percent compared to the previous year, falling to \$28.9 billion. Net energy imports, on the other hand, showed an improvement of 27.3 percent, reaching \$24.2 billion.
- In addition to energy efficiency efforts, energy imports were suppressed by reduced consumption in the transport sector and slowed down demand in domestic economic activities due to the global pandemic in 2020.
- Regarding Cross-cutting Issues:
 - As part of the IPA Project titled Technical Assistance for Enhancement of Institutional Capacity in Energy Efficiency, 17 trainings were held with the participation of 205 representatives from 37 institutions and organizations responsible for the implementation of the National Energy Efficiency Action Plan in 2019 and 2020.
 - Within the scope of the cooperation protocol signed between the Ministry of Energy and Natural Resources and the ENVER Association in 2019, a public survey was conducted (as a result of face-to-face interviews with 3,000 people aged 16 and over residing in the city centers of 26 provinces) to establish an Energy Efficiency Awareness Index, and the “Public Awareness Index on Energy Efficiency” was calculated as 157.7 for 2019. This value means that the public has a medium-high level of awareness.

- The MoENR received a total of 272 audit reports from 18 public buildings, 118 commercial buildings, and 136 industrial enterprises as part of the mandatory energy audits in 2020.
- Buildings and Services Sector:
 - The Presidential Circular on Energy Savings in Public Buildings was published, setting a minimum energy saving target of 15 percent by the end of 2023 for public buildings that are obliged to assign an energy manager.
 - The “World Bank Energy Efficiency in Public Buildings Project”, with a budget of \$200 million, was signed and the works for the Project began.
 - Energy efficient technologies and renewable energy technologies were incorporated into the Construction and Installation Unit Prices Book.
 - Energy Efficiency Technology Atlas for the Buildings Sector was published.
 - The heating and cooling demand of the building sector has been determined, and the heat demand has been calculated in each of the high-resolution (1 km² resolution) areas, in which Turkey is divided into approximately 15,000 regions to determine the most suitable areas for the implementation of district heating systems, and the mapping on the basis of regions (neighborhoods) has been done using the Copernicus Monitoring Program. Furthermore, cost-benefit analyses were conducted in selected regions with different climates and population densities in an attempt to identify the cost-effectiveness of district heating systems.
- Industry and Technology Sector:
 - Efforts were made in relation to such areas as process efficiency, energy management, industrial symbiosis, and the establishment of green Organized Industrial Zones (OIZs) through national and international collaborations.
 - Within the scope of the Efficiency Improvement Project Support Program, TRY 36 million of support was provided for 308 projects in the 2009-2020 period, achieving financial savings of TRY 120 million and energy savings of 72 thousand toe.
 - Activities for the establishment of Capability and Digital Transformation Centers (Model Factory) and Innovation Centers are ongoing. Model Factories in Ankara, Bursa, Konya, Kayseri, Mersin, Gaziantep, and İzmir provinces continue their activities within the framework of their respective programs. Works for the establishment of İzmir, Mersin, and Adana Innovation Centers are continuing to start their operations in 2021.
 - Projects for Developing National Lifecycle Assessment Database and Promoting Energy Efficient Engines in Small and Medium Scale Enterprises in Turkey were carried out.
- Energy Sector:
 - With the efforts to reduce technical and non-technical losses in electricity transmission and distribution of electricity, savings of 22.85 ktoe and cumulative savings of 114.07 were achieved in 2020.
 - With the efforts to reduce technical and non-technical losses in the transmission and distribution of electricity, the grid loss rate was reduced to 11.23 percent in 2020, compared to 13.42 percent in 2016.

- With the studies "Energy Efficiency in Thermal and Hydraulic Power Plants" and "Determination and Mapping of Heating and Cooling Demand in the Building Sector", analyzes were carried out to determine the waste heat potential of industrial and electricity generation plants.
- The Rules and Procedures for the Use of LED Fixtures in General Lighting Plants were published. Implementation will start in the new plants to be constructed in 2021.
- Demand Response Reserve service was defined in the Ancillary Services In Electricity Market Regulation published in the Official Gazette on 27 January 2021.
- With the enactment of regulations, consumers are now provided with comparable and more detailed information in their electricity bills, including information on their daily average energy consumption and total consumption in the current and previous calendar years.
- Studies have been carried out also in the natural gas and heating sectors, as well as in the electricity sector. Within the scope of the IPA Project: Energy Efficiency in the Natural Gas Transmission System, supported by EU, energy audits were conducted in compressor stations.
- For thermal power plants with an installed capacity of 20 MW and above, the obligation to carry out energy audits was introduced to evaluate the utilization of waste heat primarily in buildings for heating and cooling as well as in other sectors such as industry, agricultural production, aquaculture, cold storage rooms, and freshwater production.
- Transport Sector:
 - Grant support was provided to municipalities by the Ministry of Environment and Urbanization in cooperation with Ilbank to support the construction of bicycle lanes, green walking trails, environment-friendly streets, and noise barriers.
 - A total of 16 port facilities have been granted "Green Port Certificates" to date.
 - The total railway line has reached 12,803 km, 1,213 km of which is for high-speed trains.
 - Four different distribution networks have been examined to identify the effects of electric vehicles on Turkey's distribution grid, and it was concluded that as of 2030, total passenger car capacity will be sufficient for the integration of electric vehicles at a 10 percent rate.
- Agriculture Sector:
 - Fifty-percent grant support was provided for the modernization of individual on-farm irrigation systems; 18,466 projects were included in the grant program, and 1,832,952 decares of land were provided with modern irrigation systems.
 - As part of the renovation of irrigation facilities, the construction of 30,267 hectares of land was completed. Construction work on 81,149 hectares of land is underway.
 - The renovation works of 248 irrigation facilities serving 1,165,461 hectares of net irrigation area were commenced by the State Hydraulic Works and the institutions that have taken over the irrigation facilities.

- Support payments were made for tractor purchases in 5,400 projects, and applications were received for 28 projects involving the purchase of combine harvesters.
- Fifty percent grant financing for the ongoing projects of farmers has continued under the Program for the Support of Rural Development Investments. Support was provided to 18 greenhouses using renewable energy and 31 renewable energy generation plants. In 2020, 17 project applications were accepted and 66 projects that completed their installation activities received support payment and 139 projects that were accepted in previous periods are still being set up. In addition, grant support was provided to 10 greenhouse projects using renewable energy.
- The registration procedures for land consolidation on a total area of 4,76 million hectares were completed between 2017-2020.

According to the analyzes, it is estimated that a total of \$ 635 million was invested in energy efficiency in 2020 in Turkey and that as a result, 451 ktOE of primary energy savings, for which the monetary value is \$ 158 million, have been made. The pandemic and its economic effects have led to delay in energy efficiency investment decisions on a global scale. Global developments have also negatively affected Turkey's energy efficiency sector, causing the realization rate of the Action Plan in 2020 to remain at 53 percent. Final calculations for November 2021 will be completed after the publication of the energy balance table for 2020 and presented in the next progress report.

It is calculated that between 2017 and 2020, a total of \$ 4,783 million was invested in energy efficiency and as a result, 3,190 ktOE of cumulative energy savings, for which the monetary value is \$1,117 million, have been achieved.

The cumulative targets within the scope of the NEEAP for the 2017-2020 period were realized at a cumulative rate of 97 percent. It is expected that the increase in energy demand will also affect the service and industry sectors with the projected recovery in the transportation sector in 2021. On the other hand, with the impacts of the pandemic decreasing and the increasing oil prices reflected on energy prices, energy efficiency is considered to be among the factors supporting competition on a global scale in 2021.

The energy efficiency efforts of our country carried out under the National Energy Efficiency Action Plan are summarized in this Report. As mentioned under the "Implementation, Coordination and Monitoring" section in the National Energy Efficiency Action Plan, this report has been prepared to ensure transparent, investor-friendly, and predictable market conditions, and to provide information about the activities being carried out.

Potential updates and changes with the responsible and relevant institutions/bodies involved in the Action Plan will be reflected in the next progress report.

ANNEX 1: VARIOUS ENERGY, TRADE AND POPULATION INDICATORS OF TURKEY FOR 2018

Indicator	Value	Unit	Source
Primary Energy Consumption	144.205	ktoe	Energy Balance Sheet (MENR, v. 15.02.2021)
Primary Energy Intensity	0.114	ktoe/1000 2010\$	Energy Balance Sheet (MENR, v. 15.02.2021)
Final Energy Consumption	110.649	ktoe	Energy Balance Sheet (MENR, v. 15.02.2021)
Final Energy Consumption by Industrial Sector	34.300	ktoe	Energy Balance Sheet (MENR, v. 15.02.2021)
Final Energy Consumption by Transport Sector	27.687	ktoe	Energy Balance Sheet (MENR, v. 15.02.2021)
Final Energy Consumption by Pipeline Transport	283	ktoe	Energy Balance Sheet (MENR, v. 15.02.2021)
Final Energy Consumption by Residential Sector	23.368	ktoe	Energy Balance Sheet (MENR, v. 15.02.2021)
Final Energy Consumption by Trade and Services Sector	12.241	ktoe	Energy Balance Sheet (MENR, v. 15.02.2021)
Final Energy Consumption by Agricultural Sector	4.712	ktoe	Energy Balance Sheet (MENR, v. 15.02.2021)
Non-energy Consumption	7.076	ktoe	Energy Balance Sheet (MENR, v. 15.02.2021)
Gross Domestic Product	1.772.232	million TRY	MTF, Chained Volume, reference year 2009
Manufacturing Sector GDP	282.240	million TRY	MTF, Chained Volume, reference year 2009
Services Sector GDP	1.008.439	million TRY	MTF, Chained Volume, reference year 2009
Equivalent Household Disposable Income	28.522	TRY	MTF, in current prices
Power Generation by Thermal Power Plant	15.060	ktoe	TEIAS (TEİAŞ)
Fuel Consumption by Thermal Power Plants	37.858	ktoe	TEIAS (TEİAŞ)
Passenger-km	377,94	billion passenger -km	General Directorate of Highways
Ton-Km	299,91	billion ton-km	General Directorate of Highways
Population	83.154.997	person	TURKSTAT
Total Households	24.001.940	household	TURKSTAT
Energy Losses from Transmission and Distribution Systems	2.690	ktoe	TEIAS (TEİAŞ)

ANNEX 2: ENERGY SAVINGS ACHIEVED IN NEEAP SECTORS

Sector Name, Action Code and Name	Savings [ktoe]	Cumulative Savings [ktoe]
HORIZONTAL ISSUES	11.25	29.80
Y9-Energy Efficiency Audits	11.25	29.80
BUILDINGS AND SERVICES SECTOR	231.41	1,082.046
B3. Set energy saving targets for public buildings	12.88	12.88
B4- Improving Energy Efficiency in Municipal Services	2.70	8.10
B5-Rehabilitate existing buildings and improve energy efficiency	45.15	259.75
B9-Promote Energy Efficiency in New Buildings	141.13	682.33
B11-Scale up the use of renewable energy and cogeneration systems in buildings	29.54	127.56
B12-Allocate funds to buildings of SME category for energy efficiency audit programmes and audits	0.01	0.03
INDUSTRY AND TECHNOLOGY SECTOR	85.00	1,418.80
S3- Improve efficiency in industry (calculated by ODEX methodology)*	85.00	1,418.80
ENERGY SECTOR	22.85	114.07
E8-Improving Efficiency Increases in Electricity Transmission and Distribution Activities	22.85	114.07
TRANSPORT SECTOR	96.40	460.70
Transport Sector (calculated by ODEX methodology)	96.40	460.70
AGRICULTURAL SECTOR	3.60	84.41
T1. Promote the replacement of tractors and harvesters with energy-efficient ones	3.60	3.60
T2- Switch to energy-efficient irrigation methods	0.00	80.52
T3- Support energy efficiency projects in agriculture sector	0.00	0.15
T4- Promote use of renewable energy resources in agricultural production	0.00	0.14
TOTAL	450.51	3,190.23

*The data will be updated following the publication of the 2020 Energy Balance Sheet.

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