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OF ENERGY AND NATURAL
RESOURCES

National Energy Efficiency Action Plan

2019

Progress Report



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DEPARTMENT OF ENERGY
EFFICIENCY AND ENVIRONMENT

Department of Planning and Supervision

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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, to be implemented between 2017-2023, is aimed at reducing Turkey's primary energy consumption by 14% by 2023 through 55 actions defined in six categories, namely, buildings and services, energy, transport, industry and technology, agriculture and horizontal areas. By 2023, cumulative savings of 23.9 Mtoe are expected, for which investments of \$10.9 billion are required. At 2017 prices, the cumulative savings to be achieved by 2033 amount to \$30.2 billion, and the effects of some savings will be felt until 2040.

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 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.

In 2019, following developments are observed in relevant sectors:

- The Turkish economy grew by 0.9%, reaching 4.3 trillion TRY in current prices. Growth was above the rate forecast in the New Economy Program (NEP), which was 0.5%.
- With the increase in the exchange rates, gross domestic product (GDP) decreased by 4.5% compared to the previous year, falling to \$754 billion. GDP per capita decreased by 5.8% when compared to 2018, contracting to \$9,127.
- Energy imports, which account for the largest share of Turkey's total imports of \$210.3 billion, decreased by 4.3% compared to the previous year, falling to \$41.7 billion. Net energy imports, on the other hand, improved by 12%, reaching \$33.3 billion.
- In addition to energy efficiency efforts, the fall of Brent oil prices by 10% from \$71 in 2018 to \$64 dollars in 2019, the unseasonably high temperatures and the slowdown in domestic economic activities reduced the demand for energy products, and consequently, energy imports.
- In the Buildings and Services Sector:
 - The Presidential Circular on Energy Savings in Public Buildings was published, setting a minimum energy saving target of 15% 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 project activities had been commenced.
 - With the amendment to the Regulation on Energy Performance in Buildings, it has become obligatory to support the generation of hot water through the use of solar energy in non-residential buildings in which accommodation is provided, such as hotels, hospitals, dormitories and sports centers, with a floor area of 2,000 m² and above.
 - The energy efficiency applications in existing buildings have been granted exemption from renovation licenses.
 - The amount of loans to be extended for buildings holding Class A and B Energy Performance Certificates was increased.

- Studies on incorporation of energy efficient technologies and renewable energy technologies into the Construction and Installation Unit Prices Book were continued.
- The EU-supported IPA Project entitled “Renewable Energy and Energy Efficiency Technical Assistance Project for Municipalities and Universities (YEVDES)” was launched to support studies on energy efficiency and renewable energy in municipalities and universities.
- The heating and cooling demand of the buildings sector was determined; the heating demand in each of the 15,000 high-resolution (1 km² resolution) zones obtained by dividing the territory of our country to determine the optimum areas for the implementation of district heating systems was calculated; and the mapping of the districts was carried out 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.
- In the Industry and Technology Sector:
 - Efforts were made in relation to such areas as process efficiency, energy management, industrial symbiosis, and the creation of green OIZs through national and international collaborations.
 - Enterprises consuming 500-1,000 TOE were added to the Efficiency-Improvement Project incentive program. The investment cost of efficiency-improvement projects was increased from 1 million TRY to 5 million TRY, and the maximum rate of grant financing from 20% to 30%. The grants made available for voluntary contracts was increased from 200,000 TRY to 1 million TRY, and the maximum rate of energy consumption from 20% to 30%.
 - A total of 9,171,744 TRY was paid in grant funding to 67 completed Efficiency Improvement Projects. The total investments made into the projects was 38,393,646 TRY and total monetary savings of 21,484,987 TRY were achieved.
 - Within the scope of the activities to establish Competency and Digital Transformation Centers (Model Plants) and Innovation Centers, work was carried out to establish such centers in Bursa, Izmir, Gaziantep, Mersin, Kayseri and Konya, in addition to Ankara.
 - Projects to develop a National Lifecycle Assessment Database and to Promote Energy-Efficient Motors in Small- and Medium-Scale Enterprises in Turkey were carried out.
- In the Energy Sector:
 - With the efforts to reduce technical and non-technical losses in the transmission and distribution of electricity, the loss/theft rate was reduced from 13.42% in 2016 to 11.78% in 2018.
 - Thanks to such distributed generation systems as cogeneration plants and rooftop solar panels, the amount of network loss prevented was 2.38 ktoe in 2019 and 11.31 ktoe in the NEEAP period (cumulative).
 - The Rules and Procedures for the Use of LED Fixtures in General Lighting Plants were drafted (published on 31.01.2020). Implementation will begin in the new plants to be constructed in 2020.
 - The amendment to the relevant regulation concerning the establishment of the market infrastructure for demand-side response was drafted and presented to public opinion.
 - 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, in addition to the electricity sector. Under the EU-supported IPA project entitled “Energy Efficiency in the Natural Gas Transmission System”, energy audits were conducted in compressor stations. Heat regulations were amended to ensure the widespread use of efficient district heating and cooling systems, and cost-benefit analyses and GIS-based heat demand mapping studies were completed.
- In the Transport Sector:
 - A special consumption tax rebate of 15% was granted for certain hybrid vehicles. The motor vehicle tax for electric vehicles is charged at a rate of 25%.
 - 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.
 - Railway construction and renovation, signaling and electrification works were carried out to strengthen rail transport.
 - Four different distribution networks have been examined to identify the effects of electric vehicles on the distribution network of Turkey, and an analysis was conducted to check whether there is sufficient capacity for a 10% rate of electric vehicles in the total passenger car stock by 2030.
- In the Agriculture Sector:
 - A total of 208.6 million was given out in grants for individual irrigation systems of investors under 9,016 different projects. 969,520 decares of land were equipped with modern pressurized irrigation systems.
 - Irrigation facilities were renovated on 30,267 hectares of land. The construction of irrigations systems for 81,149 hectares of land is underway.
 - 50% grant financing has been provided to the ongoing projects of farmers 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.
 - The registration procedures for land consolidation on an area of 525,000 hectares were completed.

In order to coordinate the energy efficiency efforts in all these sectors and to achieve the targets set in the National Energy and Mining Policy, the Department of Energy Efficiency and Environment was established as an autonomous department by the Presidential Decree of January 10, 2019. In 2019, training courses were delivered to 693 participants with authorized bodies to develop competent human resources in the private sector. The first energy efficiency supervisions were conducted in 30 industrial enterprises and public and service buildings.

Analyses revealed that in 2019, a total of 1,182 million USD was invested in energy efficiency in Turkey, thereby achieving 858 ktoe of primary energy savings, valued at 300 million USD. The realization of the Action Plan for 2019 was calculated to be 102%. It is calculated in the NEEAP implementation period, 2,744 ktoe of cumulative energy savings with a value of 960 million USD were achieved. Final calculations for 2019 will be completed after the publication of the energy balance sheet for 2019 and presented in the next progress report.

While the growth in population and GDP in Turkey is expected to lead to an increase in demand for energy, and thus increased consumption of and expenditures for energy in 2020, the energy efficiency improvements to be made in the sectors, the increased domestic and renewable energy generation and the expected fall in oil prices at global scale may limit the mentioned increase.

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 heading “Implementation, Coordination and Monitoring” 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.

Updates and changes made by and within the responsible and relevant institutions/bodies detailed in the Action Plan will be reflected in the next development report.

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

Indicator	Value	Unit	Source
Primary Energy Consumption	143,666	ktoe	Energy Balance Sheet (MENR, v. 17.02.2020)
Final Energy Consumption	109,438	ktoe	Energy Balance Sheet (MENR, v. 17.02.2020)
Final Energy Consumption by Industrial Sector	36,155	ktoe	Energy Balance Sheet (MENR, v. 17.02.2020)
Final Energy Consumption by Transport Sector	28,441	ktoe	Energy Balance Sheet (MENR, v. 17.02.2020)
Final Energy Consumption by Pipeline Transport	293	ktoe	Energy Balance Sheet (MENR, v. 17.02.2020)
Final Energy Consumption by Residential Sector	21,313	ktoe	Energy Balance Sheet (MENR, v. 17.02.2020)
Final Energy Consumption by Trade and Services Sector	11,985	ktoe	Energy Balance Sheet (MENR, v. 17.02.2020)
Final Energy Consumption by Agricultural Sector	4,581	ktoe	Energy Balance Sheet (MENR, v. 17.02.2020)
Non-energy Consumption	6,296	ktoe	Energy Balance Sheet (MENR, v. 17.02.2020)
Gross Domestic Product	1,742,023	million TRY	MTF, Chained Volume, reference year 2009
Manufacturing Sector GDP	286,729	million TRY	MTF, Chained Volume, reference year 2009
Services Sector GDP	969,114	million TRY	MTF, Chained Volume, reference year 2009
Equivalent Household Disposable Income	24,199	TRY	MTF, in current prices
Power Generation by Thermal Power Plants	18,669	ktoe	TEIAS (TEİAŞ)
Fuel Consumption by Thermal Power Plants	43,121	ktoe	TEIAS (TEİAŞ)
passenger-km	370.83	billion pkm	General Directorate of Highways
Ton-km	311.78	billion tkm	General Directorate of Highways
Population	82,003,882	persons	TURKSTAT
Total Households	23,221,218	household	TURKSTAT
Energy Losses from Transmission and Distribution Systems	2,720	ktoe	TEIAS (TEİAŞ)

ANNEX 2: ENERGY SAVINGS ACHIEVED IN NEEAP SECTORS

Sector Name, Action Code and Name	Cumulative Savings [ktoe]
HORIZONTAL ISSUES	22.54
Y9-Energy Efficiency Audits	22.54
BUILDINGS AND SERVICES SECTOR	851.05
B4- Improving Energy Efficiency in Municipal Services	5.40
B5-Rehabilitate existing buildings and improve energy efficiency	214.60
B9-Promote Energy Efficiency in New Buildings	541.20
B11-Scale up the use of renewable energy and cogeneration systems in buildings	89.83
B12-Allocate funds to buildings of SME category for energy efficiency audit programmes and audits	0.02
INDUSTRY AND TECHNOLOGY SECTOR	1,333.80
S3- Improve efficiency in industry (calculated by ODEX methodology)*	1,333.80
ENERGY SECTOR	91.22
E8-Improving Efficiency Increases in Electricity Transmission and Distribution Activities	91.22
TRANSPORT SECTOR	364.30
Transport Sector (calculated by ODEX methodology)	364.30
AGRICULTURAL SECTOR	80.81
T2- Switch to energy-efficient irrigation methods	80.52
T3- Support energy efficiency projects in agriculture sector	0.15
T4- Promote use of renewable energy resources in agricultural production	0.14
TOTAL	2,743.72

*The data will be updated following the publication of the 2019 Energy Balance Sheet.

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