Some Gray (engineering) and Soft (administrative) Adaptation Actions in the energy sector

Gray: Reduction of losses and leakages in electricity distribution
Soft: Inclusion of climate change parameters among site selection and planning criteria
Gray: Taking necessary supportive measures to rehabilitate and strengthen distribution networks and direct them to “Smart Grid” practices
Soft: Evaluation of the entire technical and economic potential of hydroelectric energy on a basin basis, taking into account economic, environmental and social conditions
Soft: Establishment of a single institution responsible for water allocation and quality, including surface water and groundwater resources, allowing a holistic water resources management
Gray: Reduction of primary energy density
Soft: Evaluation on a basin basis by considering hydraulic, social, economic and environmental conditions in stream basins and sub-basins

Soft: Conducting research and assessments for the integration of climate change impacts into water resources planning studies
Soft: Creation, development and dissemination of innovative solution options that increase the capacity of climate change adaptation
Soft: Planning of renewable energy resources by taking into account the effects of climate change and the sustainability of ecosystem services that increase resilience to climate change
Gray: Increasing the share of renewable energy to 30% in total electricity generation in Turkey by 2023
Soft: Considering the pressure of climate change on water resources and natural systems, rational use of water resources without destroying the nature and using HPPs
Gray: Turkey should benefit from various energy resources, mainly coal, hydroelectric, wind, geothermal and solar energy, which are domestic resources, in line with energy supply security and climate change targets
Gray: Accelerating erosion control projects in all basins, especially in dam and pond basins

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TURKEY'S ENERGY POLICY AND CLIMATE ADAPTATION

REPUBLIC OF TURKEY
MINISTRY OF ENVIRONMENT
AND URBANISATION

Environment and Climate Action
Sector Operational Programme

İKLİMİ DUY

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With an annual average increase of 4,3% in the last ten years, Turkey is one of the countries with the highest increase in energy consumption among both OECD countries (0,4%) and non-OECD countries (3,1%).

Within the scope of the National Energy Efficiency Action Plan to be implemented in the 2017-2023 period, it is aimed to reduce Turkey's primary energy consumption by 14% until 2023.

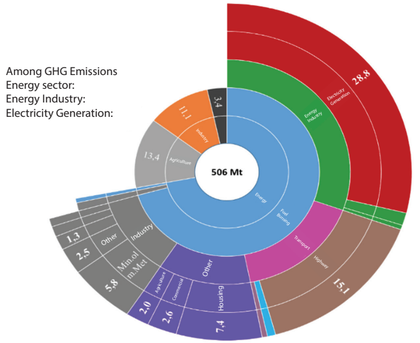
1. Ministry of Environment and Urbanization, Ministry of Energy and Natural Resources, TEİAŞ (Turkish Electricity Transmission Company), TKİ (Turkish Coal Enterprises), TTK (Turkish Hard Coal Enterprise) Strategic Plans
2. Electricity Sector Reform and Privatization Strategy Document
3. Renewable Energy Action Plan (2014-20019)
4. Republic of Turkey Climate Change Strategy (2010-2023)
5. Energy Efficiency Strategy Document (2012-2023)
6. National Energy Efficiency Action Plans (2017-2023)
7. Climate Change Adaptation Strategy and Action Plan (2011-2023),
8. Action Plan for Combating Erosion, Strategy and Action Plan for Combating Agricultural Drought, National Basin Management Strategy (2014)
9. National Biodiversity Strategy and Action Plan (2007)
10. National Drought Management Strategy Document and Action Plan (2017)

Energy and Climate Change Policy Documents

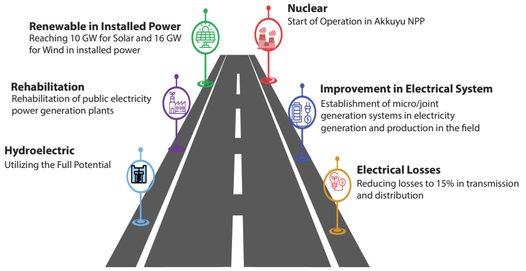
Anthropogenic (human-induced) greenhouse gas emissions in Turkey:

- The main source is the energy sector (73%), which is defined as the burning of fuels.
- The emission of the energy industry (resulting from the burning of fuels used in the production, refining, distribution and transportation of energy) within the energy sector is 30.4% of the total greenhouse gas emissions.
- Almost all (28.8% of 30.4%) of emissions from fuels burned to produce and distribute energy originates from electricity generation

Distribution of greenhouse gas emissions by sectors[1]



- The Intent for National Contribution (INDC), which draws a clear framework for Turkey's energy and climate policies, the roadmap for the use of energy resources until 2030.



[1] *Turkish GHG Inventory Report 1990-2019, https://unfccc.int/documents/271544*

Hydroelectric Power Plants:
Adaptation measures consist of increasing the share of hydroelectricity in electricity generation and increasing the dam height in existing power plants and/or if the flow is expected to increase, constructing small dams upstream, constructing or increasing water storage reservoirs, changing the number and type of turbines to make them more suitable for expected water flow rates, changing the channels or tunnels to handle changes in the expected water flow rates.

Solar Energy:
Solar photovoltaic panels have an operating life of 20 years or more, and photovoltaic systems are vulnerable to hail, wind and extreme temperatures.

Wind Energy:
Since electricity generation is highly dependent on wind speed, a small change in wind speed has a significant impact on electricity generation, income and financial viability.

Oil Refining Industry:
The reasons that most of Turkey's refining is on the coast, sea levels rise and there is potential for more severe storms, pose a threat to the Turkish oil and gas industry. In addition to large structures such as seawalls and embankments, construction standards for storage tanks should be reviewed and updated to reflect estimates of future risks.

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