TURKEY

Country at a glance

- Population: 72.7 million (2010) [1]
- Total area: 783,562 sq. km [2]
- Carbon emissions per capita: 3.65 metric tons (2010) [3]
- Energy consumption per capita: 16.81 MWh (2010) [4]
- Percentage of global carbon emissions: 0.88% (2010) [3]

Windfarm at Bozcaada, Turkey. Permission Under CC BY-NC 2.5 License en.wikipedia.org/wiki/File:Bozcaada_windfarm.jpg

Wind Farms in Turkey

Located at the northern part of Turkey, on the Aegean Sea, the island of Bozcaada is home to a 10 MW wind farm made for the island's consumption. Built in 2000 and manufactured by Enercon, the Bozcaada wind farm is one of many wind facilities across Turkey providing not only clean and renewable energy, but also self-sufficiency to surrounding communities.

Table 1 Breakdown of energy use, electricity and heat generation, 2010

	Primary energy sourced within country		Energy imports minus exports	Primary energy used within the country[a]			Electricity Generation[b]		Heat Generation[c]	
unit	ktoe	%	ktoe	ktoe	GWh	%	GWh	%	GWh	%
Coal, including brown coal & peat	17,524	54	13,849	32,034	372,552	30	55,047	26	240	2
Oil fuels	2,478	8	29,348	30,119	350,279	29	2,180	1	261	2
Natural gas	562	2	30,777	31,386	365,020	30	98,144	46	13,699	96
Nuclear	0	0	0	0	0	0	0	0	0	0
Hydroelectric	4,454	14	0	4,454	51,805	4	51,796	25	0	0
Biofuels and waste	4,558	14	0	4,558	53,015	4	457	0	0	0
Solar photovoltaics	0	0	0	0	0	0	0	0	0	0
Solar thermal	432	1	0	432	5,023	0	0	0	0	0
Tide, wave and ocean	0	0	0	0	0	0	0	0	0	0
Wind	251	1	0	251	2,917	0	2,916	1	0	0
Geothermal	1,966	6	0	1,966	22,861	2	668	0	0	0
Electricity (imported)	0	0	-67	0	0	0	0	0	0	0
Sub total Renewables	11,661	36	0	11,661	135,621	11	55,837	26	0	0
Totals	**32,225**	**100**	**73,907**	**105,200**	**1,223,472**	**100**	**211,208**	**100**	**14,199**	**100**

Source: Based on World Energy Statistics and Balances Database 2012, "World Energy Balances." © OECD/IEA, 2012.

Notes:

Standard conversion used is 1 ktoe = 11.63 GWh

(a) Sum of energy sourced within country, energy imports minus exports, international marine and aviation bunkers and stock change flows.

(b) Includes all electricity generation, including any exported.

(c) Does not include electrical heating. Includes waste heat recovery from electicity generation plants.

Table 2 Breakdown of transport fuel use, 2010

(in ktoe)	Total transport mix	%	Domestic aviation	Road	%	Rail	Pipeline transport	Domestic navigation	Non-specified (transport)
Oil products	14,354	98	413	13,191	100	153	0	597	0
Natural gas	218	1	0	59	0	0	159	0	0
Biofuels and waste	6	0	0	6	0	0	0	0	0
Electricity	52	0	0	0	0	22	19	0	12
Sub total Renewables	6	0	0	6	0	0	0	0	0
Total	**14,631**	**100**	**413**	**13,256**	**100**	**175**	**178**	**597**	**12**

Source: Based on World Energy Statistics and Balances Database 2012, "World Energy Balances." © OECD/IEA, 2012.

Stand on climate change

The Republic of Turkey acceded to the Kyoto Protocol in 28 May 2009. Being part of the EU Customs Union, Turkey is an Annex I member country of the protocol. The Kyoto Protocol was later enforced on 26 August 2009, a few months after the accession.

National climate change programmes

The National Climate Change Strategy for Turkey was approved by the Higher Planning Council and took effect in May 3 2010. The National Vision in this strategy is defined as: "Turkey's national vision within the scope of climate change is to become a country fully integrating climate change-related objectives into its development policies, disseminating energy efficiency, increasing the use of clean and renewable energy resources, actively participating in the efforts for tackling climate change within its special circumstances, and providing its citizens with a high quality of life and welfare with low-carbon intensity."

As for the Climate Change Strategy 2010-2020 document, Turkey's strategic targets within the scope of basic principles are listed as follows [5]:

- To integrate policies and measures for mitigating and adapting to climate change into national development plans, consistent with the UNFCCC principle of "common but differentiated responsibilities" and its special circumstances
- To contribute to the global greenhouse gas emission mitigation policies and measures, within its own capacity, by limiting the rate of growth of national greenhouse gas emissions, without disrupting its development programme aligned with sustainable development principles
- To increase national preparedness and capacity in order to avoid the adverse impacts of global climate change and to adapt to these impacts; to share emerging experiences and knowledge from such efforts with other countries in the region; and to develop bilateral and multilateral joint research projects for mitigation and adaptation
- To comply with the design and implementation of global strategic objectives of mitigation, adaptation, technology transfer and finance that accounts for responsibilities of the parties, and to take an active role in international activities
- To increase access to the financial resources required for undertaking mitigation and adaptation activities
- To develop national research and development (R&D) and innovation capacities towards clean production and to establish national and international financial resources and incentive mechanisms aimed at increasing competitiveness and production in this area by taking into consideration our current technology and development levels
- To facilitate climate change adaptation and mitigation activities by ensuring efficient and continuous coordination and decision-making processes based on transparency, stakeholder participation, and a strong reliance on a science focus
- To raise public awareness in support of changing consumption patterns in a climate friendly manner through joint efforts of all parties such as the public sector, private sector, universities and NGOs
- To establish an integrated information management system in order to increase the flow and exchange of knowledge in national climate change efforts

Some notable sectoral targets and measures are [6]:

Energy Sector [7]:

- Reduce primary energy intensity by 10% from levels of 2008 by 2015 as a result of implemented and planned policies and measures
- Develop the capacity for energy efficiency by 2015
- Support research and development (R&D) activities on energy efficiency
- Increase ministerial support for energy efficiency applications to 100% by 2015
- Develop capacity of renewable energy infrastructure by 2015
- Ensure technological advancement by 2020 for production of energy from renewable resources
- Increase average cycle efficiencies of coal-fired thermal plants until 2023
- Reduce nation-wide electricity distribution losses to 8% by 2023

Building Sector [8]:

- Establish heat insulation and energy-efficient systems meeting standards in commercial and public buildings with usable areas larger than 10 thousand square meters and in at least 1 million residential buildings by 2023
- Effective implementation of the Regulation on Energy Performance in Buildings (BEP) and other energy–efficiency regulations until 2017
- Issue "Energy Performance Certificates" to all buildings until 2017
- Decrease annual energy consumption in the buildings and premises of public institutions by 10% until 2015 and by 20% until 2023
- At least 20% of the annual energy demand of new buildings to be met via renewable energy resources as of 2017
- Reduce greenhouse gas emissions in new settlements by at least 10% per settlement in comparison to existing settlements by 2023

Industry Sector [9]:

- Limiting greenhouse gases (GHG) emissions originating from energy usage (including electrical energy share) in the industry sector
- Developing the financial and technical infrastructure for limitation of GHG emissions
- Develop and use new technologies for limitation of GHG in the industry sector until 2023
- Building the information infrastructure for limitation of GHG emissions in the industry sector until 2015

Transportation Sector [10]:

- Increasing the share of railroads in freight transportation (from 5% in 2009) to 15% and passenger transportation (from 2% in 2009) to 10% for both by 2023
- Increasing the share of seaways in freight transportation (from 2.66% in ton-km in 2009) to 10%, and passenger transportation (from 0.37% in passenger-km in 2009) to 4% as of 2023
- Decreasing the share of highways in freight transportation (from 80.63% in ton-km in 2009) below 60%, and passenger transport (from 89.59 in passenger-km in 2009) to 72% as of 2023
- Preparing and putting in practice the "Transportation Master Plan" until 2023
- Limiting the emission increase rate of individual vehicles in intra-city transport
- Developing the necessary legislation, institutional structure and guidance documents until the end of 2023 for implementation of sustainable transport planning in cities
- Making legal arrangements and building capacity to increase use of alternative fuels and clean vehicles until 2023

Waste Sector [11]:

- Reduce the quantity of biodegradable wastes admitted to landfill sites, taking year 2005 as a basis, by 75% in weight till 2015, by 50% till 2018 and by 35% till 2025
- Establish integrated solid waste disposal facilities across the country, and dispose 100% of municipal wastes in these facilities, until the end of 2023

- Establish the recycling facilities foreseen within the scope of the Solid Waste Master Plan with the EU-aligned Integrated Waste Management approach
- Termination of uncontrolled disposal of wastes 100% by 2023

Agriculture Sector [11]:

- Determine and increase the quantity of carbon stock captured in the soil
- Identifying and increasing topsoil and subsoil biomass
- Decrease the increasing rate of GHG emissions originating from vegetal and animal production

Land use and forestry Sector [11]:

- Increase the amount of carbon sequestered in forests by 15% of the 2007 value by 2020 (14,500 Gg in 2007, 16,700 Gg in 2020)
- Reduce deforestation and forest damage by 20% of the 2007 values by 2020
- Integrate the climate change factor in land use and land use changes management strategies by 2015
- Increase the amount of sequestered carbon as a result of agricultural forestry activities by 10% of the 2007 values by 2020
- Identify the amount of sequestered carbon in pastures and meadows in 2012 and increase carbon stock 3% by 2020
- Identify the existing carbon stock in wetlands in 2012, and maintain the level until 2020
- Identify the quantity of carbon stored in settlement areas in 2012 and increase stored carbon 3% by 2020 through green planting

Ministries involved in climate change/energy policy making:

Ministries involved	Web links
Ministry of Energy and Natural Resources	www.enerji.gov.tr/index.php?dil=en
Ministry of Foreign Affairs	www.mfa.gov.tr/default.en.mfa
Ministry of Environmental and Planning	www.csb.gov.tr/turkce/index.php
Ministry of Transport, Maritime and Communication	www.ubak.gov.tr/
Ministry of Industry, Science and Technology	www.sanayi.gov.tr/
Ministry of Food, Agriculture and Livestock	www.tarim.gov.tr/Sayfalar/Anasayfa.aspx

Education institutes involved in climate change/energy policy making:

Education Institutes involved	Web links
Marmara Research Center – Environment Institute	www.mam.gov.tr/english/CE/index.html
Environmental Research Center – Bogazici University	www.esc.boun.edu.tr/main/index.aspx
Scientific and Technological Research Council of Turkey	www.tubitak.gov.tr/

References

[1] "World Population Prospects: The 2010 Revision." Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat.

[2] "CIA - The World Factbook." Available at: https://www.cia.gov/library/publications/the-world-factbook/geos/th.html. [Accessed: 12-Mar-2013].

[3] CO_2 Emissions from Fuel Combustion Statistics database 2012, "Indicators for CO_2 emissions." © OECD/IEA, 2012.

[4] World Energy Statistics and Balances database 2012, "World Energy Balances." © OECD/IEA, 2012.

[5] National Climate Change Strategy – Republic of Turkey. Available at: http://iklim.cob.gov.tr/iklim/Files/Stratejiler/%C4%B0DES_ENG.pdf

[6] Climate Change Action Plan 2011-2023 – Republic of Turkey. Available at: http://iklim.cob.gov.tr/iklim/Files/IDEP/%C4%B0DEP_ENG.pdf

[7] Energy Strategy – Ministry of Foreign Affairs. Republic of Turkey. Available at: http://www.mfa.gov.tr/data/DISPOLITIKA/EnerjiPolitikasi/Turkey's%20Energy%20Strategy%20(Ocak%202009).pdf

[8] Energy Efficiency in Buildings – Energypedia. Republic of Turkey. Available at: https://energypedia.info/wiki/Turkey-_Energy_Efficiency_in_Buildings

[9] Turkish Industrial Strategy Document 2011-2014 – Ministry of Industry and Trade. Republic of Turkey. Available at: http://www.sanayi.gov.tr/Files/Documents/TurkiyeSanayiStratejisiIngilizce.pdf

[10] Transportation Master Plan and Strategy – Republic of Turkey. Available at: http://www.iasi.cnr.it/ewgt/16conference/ID125.pdf

[11] Climate Change Action Plan 2011-2023 – Republic of Turkey. Waste Sector, Agriculture, Land use and Forestry. Available at: http://iklim.cob.gov.tr/iklim/Files/IDEP/%C4%B0DEP_ENG.pdf(Page 77, 85, 97)

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