

GREECE



Country at a glance

- Population: 11.4 million (2010) [1]
- Total area: 131,975 sq. km [2]
- Carbon emissions per capita: 7.42 metric tons (2010) [3]
- Energy consumption per capita: 28.3 MWh (2010) [4]
- Percentage of global carbon emissions: 0.28% (2010) [3]



Busy air traffic at Athens airport, Greece

Holiday air traffic to and from popular destinations like Greece, has become a major consumer of aviation fuel.

Traffic at Athens International Airport by Hansueli Krapf. Permission Under CC-BY-SA-3.0 upload.wikimedia.org/wikipedia/commons/5/53/2012-02-29_12-06-25_Greece_Athina_Sp%C3%A1ta.jpg

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	GWh	%	GWh	%	GWh	%
Coal, including brown coal & peat		7,315	77	401	7,863	91,448	28	30,797	54	529	98
Oil fuels		105	1	17,021	13,854	161,119	50	6,089	11	10	2
Natural gas		8	0	3,230	3,234	37,607	12	9,830	17	0	0
Nuclear		0	0	0	0	0	0	0	0	0	0
Hydroelectric		642	7	0	642	7,461	2	7,460	13	0	0
Biofuels and waste		919	10	157	1,075	12,507	4	319	1	0	0
Solar photovoltaics		14	0	0	14	158	0	158	0	0	0
Solar thermal		183	2	0	183	2,132	1	0	0	0	0
Tide, wave and ocean		0	0	0	0	0	0	0	0	0	0
Wind		233	2	0	233	2,714	1	2,714	5	0	0
Geothermal		27	0	0	27	314	0	0	0	0	0
Electricity (imported)		0	0	491	491	5,707	2	0	0	0	0
Sub total Renewables		2,017	21	157	2,174	25,287	8	10,651	19	0	0
Totals		9,445	100	21,299	27,615	321,167	100	57,367	100	539	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 electricity 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	7,322	98	237	6,347	98	20	0	717	0
Natural gas	14	0	0	14	0	0	0	0	0
Biofuels and waste	128	2	0	128	2	0	0	0	0
Electricity	16	0	0	0	0	4	0	0	12
Sub total Renewables	128	2	0	128	2	0	0	0	0
Total	7,480	100	237	6,489	100	24	0	717	12

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

Stand on climate change

Greece ratified the Kyoto Protocol on 31 May 2002 and it came into force on 16 February 2005. Then Greek Prime Minister, George A. Papandreou announced on 22 March 2010 that the Greek Government would adopt a "green development" model in their bid to mitigate climate change as well as develop a sustainable living environment. However, Greece's Ministry for the Environment, Energy and Climate Change (MEECC) has made it their goal to move Greece towards a "greener", more sustainable environment.

Greece's electricity generation system is mainly comprised of thermal and hydroelectric units. Despite being heavily dependent on fossil fuels, over recent years however, there has been an increase in the use of renewable energy sources (RES), with wind and hydro energy being the bulk of RES used. All of which is aimed to meet the 2020 energy targets set by the UN in efforts to curb climate change and reduce emissions.

National climate change programmes

In line with the "20-20-20" target set by the European Commission, the Greek Government is aiming for the gross final consumption of energy from renewable sources to be at least 20% by 2020. It has prioritized the use of RES as the main means to reach the country's climate and energy policies. Some of the national programs and policies that Greece has adopted are as follows [6]:

- 2nd National Climate Change Programme (established and adopted in 2002), which aims to meet the country's Kyoto target in reducing GHG emissions as compared to base year emissions
- European common and coordinated policies and measures (CCPM), which consist of a legislative framework that supports and sets targets for GHG emissions, as well as matters related to end-use energy consumption
- EU – Emissions trading System (EU-ETS), which involves 140 industrial installations in the country's different sectors to help Greece accomplish its targets set under the Kyoto Protocol
- Financing mechanisms which involve the funding of policies and measures that are directed towards climate change mitigation through GHG emission reduction. Funding Programmes such as the Operational Programme for Energy (OPE) and the Operational Programme Competitiveness (OPC) finance measures that promote the use of RES and also other interventions that support GHG emissions in the country's different sectors
- Fiscal measures that target the industry and transport sector

Key Legislation for climate change mitigation [6]

- Promotion of co-generation of two or more energy sources
- Measures to improve energy efficiency in end-use and energy services
- Special programme for the deployment of photovoltaic up to 10kW on buildings and especially roofs
- Framework for the installation of PVs on buildings and open yards and the framework for the installation of PVs beyond limits of existing zoning plans
- Coverage of 60% of hot water needs in new buildings through solar thermal systems after 1 Jan 2011
- Measures to reduce energy consumption in buildings
- Further development of the distribution grid on the smart grid principals

- Exclusion of hybrid vehicles from the traffic restrictions in Athens
- Reinforcement of the interconnection capacity with neighbouring countries thus integration of the electricity system into the European grid through the western Balkans

Ministries involved in climate change/energy policy making:

Ministries involved	Web links
Ministry of Environmental, Energy & Climate Change	www.ypeka.gr/
Ministry of Economy, Competitiveness and Shipping	www.yen.gr/
Ministry of Agriculture Development and Food	www.minagric.gr/
Ministry of Foreign Affairs	www.mfa.gr/
Ministry of Labour and Social Security	www.ypakp.gr/
Ministry of the Interior, Decentralisation and E-Government	www.ypes.gr/en/
Ministry of Infrastructure, Transport and Networks	www.yme.gr/
Ministry of Finance	www.minfin.gr/
Ministry of Culture and Tourism	www.visitgreece.gr/
Ministry of Health and Social Solidarity	www.yyka.gov.gr/
Regulatory Authority for Energy	www.rae.gr/old/en/
The Transmission System Operator of the Greek Electricity Transmission System	www.desmie.gr/
The Public Power Corporation (PPC)	www.dei.gr/
The Centre for Renewable Energy Sources and Saving (CRES)	www.cres.gr/kape/

Education institutes involved in climate change/energy policy making:

Education Institutes involved	Web links
Hellenic National Metrological Service (HNMS)	www.hnms.gr/hnms/english/index.html
National Observatory of Athens	www.noa.gr/indexen.html
Academy of Athens	www.bioacademy.gr/
Hellenic Centre for Marine Research	www.hcmr.gr/en/
National Technical University of Athens	www.ntua.gr/index_en.html
National Kapodistrian University of Athens	en.uoa.gr/
Aristotle University of Thessaloniki	www.auth.gr/en
University of the Aegean	www.aegean.gr/aegean/en/intro_en.htm
National Agricultural Research Foundation	www.nagref.gr/index.html
Agriculture University of Athens	www.aua.gr/index.php
The University of Patras	www.upatras.gr/
The Technical University of Crete	en.tuc.gr/
The Greek Biotope/Wetland Centre	www.ekby.gr/ekby/en/EKBY_Profile_en.htm

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- [3] CO₂ Emissions from Fuel Combustion Statistics database 2012, "Indicators for CO₂ emissions." © OECD/IEA, 2012.
- [4] World Energy Statistics and Balances database 2012, "World Energy Balances." © OECD/IEA, 2012.
- [5] Greenhouse Gas Emission Trends and Projections in Europe 2011, "Tracking Progress Towards Kyoto and 2020 Targets" Available at: http://www.ab.gov.tr/files/ardb/evt/1_avrupa_birligi/1_6_raporlar/1_3_diger/environment/ghg_emissions_trends_and_projections.pdf
- [6] Ministry of Environment, Energy and Climate Change, "5th National Communication to the United Nations Framework Convention on Climate Change. Available at: http://unfccc.int/resource/docs/natc/grc_nc5.pdf
- [7] Ministry of Environment, Energy and Climate Change, "2nd National Energy Efficiency Action Plan 2008-2016", Available at: <http://www.google.com.sg/url?sa=t&rct=j&q=greece%20l.3855%2F2010%20%E2%80%9Cmeasures%20to%20improve%20energy%20efficiency%20in%20end-use&source=web&cd=4&cad=rja&ved=0CDsQFjAD&url=http%3A%2F%2Fwww.buildup.eu%2Fsystem%2Ffiles%2Fcontent%2FEL%2520-%2520Energy%2520Efficiency%2520Action%2520Plan%2520EN.pdf&ei=pHXJUInflulrAeUkoFA&usg=AFQjCNF-uR7h7vzl0Dxf1vp1uuukFPcxXQ&bvm=bv.1355272958,d.bmk>



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