

PORTUGAL

Country at a glance

- Population: 10.67 million (2010) [1]
- Total area: 92,090 sq. km [2]
- Carbon emissions per capita: 4.51 metric tons (2010) [3]
- Energy consumption per capita: 25.6 MWh (2010) [4]
- Percentage of global carbon emissions: 0.16% (2010) [3]



Expansion loops in oil pipelines in Portugal

These expansion loops in this oil pipeline near to Sines in Portugal are always needed in pipelines to allow for expansions and contractions according to the ambient temperatures.

Pipeline near to Sines, in Portugal by Traroth. Permission Under CC BY-SA 3.0 commons.wikimedia.org/wiki/File:Portugal_pipeline.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	ktoe	GWh	%	GWh	%	
Coal, including brown coal & peat		0	0	1,629	1,657	19,271	7	7,100	13	0	0
Oil fuels		0	0	12,684	11,547	134,297	49	3,008	6	795	14
Natural gas		0	0	4,504	4,487	52,189	19	14,900	28	5,058	86
Nuclear		0	0	0	0	0	0	0	0	0	0
Hydroelectric		1,389	25	0	1,389	16,151	6	16,148	30	0	0
Biofuels and waste		3,137	56	-208	3,178	36,961	14	2,943	5	0	0
Solar photovoltaics		18	0	0	18	211	0	211	0	0	0
Solar thermal		58	1	0	58	677	0	0	0	0	0
Tide, wave and ocean		0	0	0	0	0	0	0	0	0	0
Wind		790	14	0	790	9,184	3	9,182	17	0	0
Geothermal		190	3	0	190	2,207	1	197	0	0	0
Electricity (imported)		0	0	226	226	2,623	1	0	0	1	0
Sub total Renewables		5,581	100	-208	5,623	65,391	24	28,681	53	0	0
Totals		5,581	100	18,835	23,540	273,772	100	53,689	100	5,854	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	6,061	94	155	5,768	95	16	0	122	0
Natural gas	13	0	0	13	0	0	0	0	0
Biofuels and waste	322	5	0	322	5	0	0	0	0
Electricity	41	1	0	0	0	41	0	0	0
Sub total Renewables	322	5	0	322	5	0	0	0	0
Total	6,436	100	155	6,102	100	57	0	122	0

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

Stand on climate change

Portugal signed the Kyoto Protocol on 29 April 1998 and ratified it on 31 May 2002. However, it was not entered into force until 16 February 2005.

National climate change programmes

Under the Kyoto Protocol, Portugal is obliged to reduce its GHG emissions by 0.3% from that of 1990 levels. Portugal has undertaken the following measures for GHG reductions:

National Energy Strategy:

This strategy has been in place since 2001, but certain new targets were set for 2010. The targets of this strategy are mainly regarding renewable energy and energy efficiency. The measures include actions regarding security in energy supply which was crucial in order to achieve the following targets:

- Reduce dependence on external energy sources
- Build adequate levels of strategic storage
- Increase renewable energy through investments
- Improve and promote energy efficiency

Furthermore, to promote renewable energy usage, financial incentives were introduced to support the projects in renewable energy machineries and equipment with tax deductions. For installation of renewable generation facilities, remuneration will also be given.

The National Plan of Action for Energy Efficiency:

This action plan was approved in 2008 with measures targeted at improving energy efficiency; 10% relative to the final energy consumption and energy services in 2015. The measures in the plan are categorized into the different sectors: Transport, Residential and Services, Industry and Public Sector. Additionally, it establishes three cross areas; Behaviors, Taxes, Financing and Incentives. For these areas, there were 12 programmes of action created to achieve the targets of the plan [5]:

1. Vehicle renewal
2. Urban mobility
3. Transport efficiency system
4. Home and office renewal
5. Building efficiency system
6. "Renewables just in time" and Solar Programme
7. Industry Efficiency System
8. State Energy Efficiency

9. Plus Programme
10. Operation E – Programme for youngsters and schools
11. Green Taxes
12. Incentives and Financing, Energy Efficiency Fund

Apart from these 12 programmes, other measures are also implemented to complement National Action Plan of Action for Energy Efficiency:

- Revision of vehicle tax based on the amount of CO₂ that is produced by the vehicle
- Establishment of tax on inefficient light bulbs
- “Renewables just in time”
- Reduction of electricity tariff to consumers with lower energy consumption
- Pricing schemes in favor of energy efficiency
- Efficiency incentive: Monetary rewards worth 10% or 20% of annual electricity costs if there are verified energy reductions
- Subsidized low interest personal line of credit: EUR250 million per year for investments in energy efficiency measures. There is a reduction of 4% on interest rate provided for credit
- Creation of Agreement for Rationalization of Energy Consumption
- “Green Taxis”: Low emission level taxis
- The System for Energy and Indoor Air Quality Certification of Buildings: Every new building will have a certificate for its energy consumption and a set of measures that would help to reduce energy consumption in the building
- Regulation on heating ventilation and air-conditioning systems in buildings
- Regulation on thermal behavior of buildings

Information and communication measures:

- Energy Plus Bonus programme: Reward excellence in energy efficiency

Financial measures and incentives:

- Taxation for vehicles and industrial fuels
- Accelerated depreciation regime for investments in energy efficient equipment and vehicles
- Incentives for micro-electricity production
- Tax system aligned with energy certificates of building: giving different benefits for buildings with different rating
- Encouraging reduction of electricity consumption by providing incentives for major consumers
- Energy Efficiency Fund

Resident and services sector:

- Sustainable urban rehabilitation programme
- Allowing energy efficient construction projects to be carried out
- Project to turn homes into electricity producers by 2015
- Equipping one in every 15 buildings with solar hot water heaters
- Reducing the number of state vehicles that produce CO₂ emissions that is more than 110g/km by 20%
- Phasing out inefficient street lighting

Industrial sector:

- Management System of Intensive Energy Consumption: This regulation is to promote energy efficiency and the energy consumption of facilities
- Agreements with manufacturing industry to reduce energy consumption by 8%

Transport sector:

- Voluntary agreements with car importers to ensure that the vehicles sold in the country are efficient
- Decreasing road transport from 80% to 75% by 2015 through the construction of a national logistical platform network
- Phasing out state vehicles with CO₂ emissions above a certain level while maintaining a quota of 20% of low emission vehicles

Apart from sectoral measures, some notable regulations for electricity generation from renewable energy sources:

- Decree-Law 225/2007: Introducing tariffs for emerging technologies (wave energy and concentrated solar power). It provides the legal basis for the government to use public maritime areas to produce electricity [6].
- Decree Law 288/2007: Lay down amendments and provide for measures to simplify and streamline licensing procedures in the electricity sector [7].
- Decree-Law 363/2007: Covers renewable energy sources from renewable energy micro-generation and cogeneration [8].

Ministries involved in climate change/energy policy making:

Ministries involved	Web links
Climate Change Commission	www.clima.pt/
Ministry of Foreign Affairs	www.portugal.gov.pt/en/the-ministries/ministry-of-foreign-affairs.aspx
Ministry of Agriculture, Sea, Environment and Spatial Planning	www.portugal.gov.pt/en/the-ministries/ministry-of-agriculture,-sea,-environment-and-spatial-planning.aspx
Ministry of Education and Science	www.portugal.gov.pt/en/the-ministries/ministry-of-education-and-science.aspx

Education institutes involved in climate change/energy policy making:

Education Institutes involved	Web links
University of Lisbon	www.ul.pt/portal/page?_pageid=173,1&_dad=portal&_schema=PORTAL
Portuguese Environment Agency	www.apambiente.pt/
Portuguese Geographic Institute	www.igeo.pt/
National Energy Regulator	www.erse.pt/pt/Paginas/home.aspx
Portuguese Energy Regulator	www.apenergia.pt/
Portuguese Energy Association	www.apren.pt/
Portuguese Association of Independent Producers of Electricity from Renewable Sources	www.edp.pt/en/Pages/homepage.aspx
Energias de Portugal	www.edp.pt/en/Pages/homepage.aspx
Statistics Portugal	www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_main

References

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- [4] World Energy Statistics and Balances database 2012, "World Energy Balances." © OECD/IEA, 2012.
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- [8] Decree on Renewable Energy Sources from micro-generation and co-generation. Energias de Portugal. Available at: http://www.odyssee-indicators.org/publications/PDF/portugal_nr.pdf (Page 55)