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Portugal

Portugal's energy imports are expected to increase significantly in coming years, as the country lacks domestic resources for energy production.

Note: The information contained in this report is the best available as of July 2004 and is subject to change.



BACKGROUND

Portugal is a member of the European Union (EU) and the common European currency, the euro. Portugal is a relatively poor country economically in comparison to its neighbors, with the lowest nominal per-capita GDP of all EU member states in 2003. However, since joining the EU, the country's economy has expanded, with an average real economic growth rate of 3.7% per year from 1986 to 2000. Funds to invest in the country's infrastructure received from the European Commission have helped contribute to Portugal's successful economic performance.

In 2002, Portugal received a formal reprimand from the European Commission (EC) for the size of the country's budget deficit, which reached 4.3% of the country's gross domestic product (GDP) in 2001, breaching the 3% ceiling allowed by the EU's Stability and Growth Pact. In response, then Prime Minister José Manuel Durão Barroso introduced an austerity program to bring the budget deficit under control. In May 2004, Portugal was removed from the EC's list of countries facing disciplinary action for breaching the Stability Pact. Although the Portuguese government succeeded in reducing the budget deficit to 2.7% of GDP in 2002 and 2.8% in 2003, its austere fiscal policy, in conjunction with weaker global growth, stifled economic growth in those years with real GDP growth of 0.5% and -1.3% respectively. The economy, however, is projected to expand

1.4% in 2004.

In June 2004, Prime Minister Barroso was appointed president of the EU Commission, following his resignation as prime minister. Portuguese President Jorge Sampaio formally appointed Pedro Santana Lopes as prime minister on July 12, 2004.

ENERGY OVERVIEW

Portugal has extremely limited domestic energy reserves and consequently imports about 90% of its

energy requirements, much of which is oil (66% in 2002). The country's largest domestic energy resource is hydropower; however, its contribution fluctuates depending on rainfall, making it, to a certain extent, unreliable. For example, domestic hydropower accounted for 7% of Portugal's total primary energy consumption in 2002, down from 13% in 2001. Portugal's energy imports, mainly natural gas, are transported through Spain via pipelines while oil arrives at the country's Sines and Porto terminals. Natural gas is relatively new to Portugal's energy mix, with imports from Algeria via Spain beginning in 1996. In 1998, Portugal began importing liquified natural gas (LNG) from Nigeria, which is regasified at Spain's Huelva LNG terminal. In October 2003, Portugal's new LNG import terminal ([Sines](#)) received its first shipment, diversifying and increasing its natural gas supply. In order to further diversify the country's energy mix, as well as to fulfill EU requirements, the Portuguese government has been promoting the development of [renewable energy resources](#), such as wind, mini-hydro (under 10 megawatts-MW), wave and biomass.

Since November 2001, Portugal has been working with Spain towards integrating the two countries' electricity markets in order to create a regional market, known as [Mibel](#), within the broader EU internal electricity market. In April 2004, the Portugal and Spain formally inaugurated Mibel, but the market will not officially begin operations until later in 2004. Besides Mibel, the Portuguese government is pushing ahead with restructuring and further privatizing its oil and natural gas holding company, [Galp Energia](#), as well as auctioning its remaining stake in formerly state-owned utility Electricidade de Portugal (EdP).

OIL

Portugal holds no proven commercially viable oil reserves. In 2003, the country consumed 351,000 barrels per day (bbl/d) of oil, all of which was imported. In 2002, oil accounted for 66% of the total Portuguese primary energy consumption.

Exploration and Production

Despite decades of exploration activity, Portugal has yet to discover a commercially viable oil deposit. In 2002, the Portuguese government offered 14 deep-water-offshore blocks for exploration and production contracts.

After the licensing round expired on

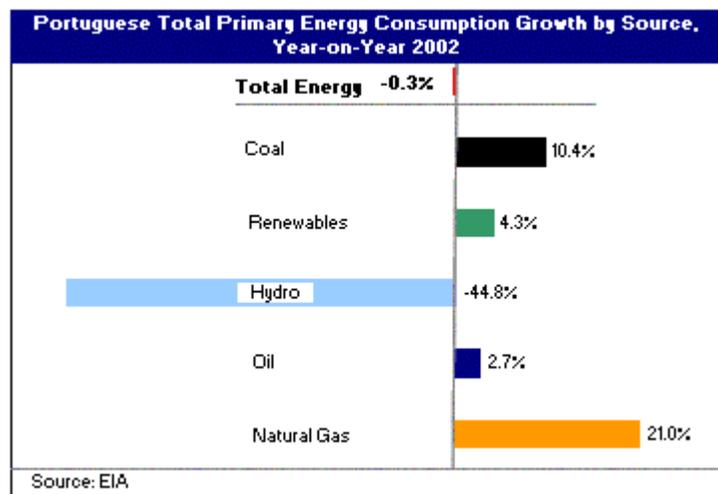
December 2, 2002, only Repsol-YPF, in partnership with RWE of Germany, made bids for [Blocks 13 and 14](#). It remains unclear whether the Portuguese government awarded the two companies a permit to proceed with exploration activities in those blocks.

Refining/Downstream

Portugal has two refineries, located in the coastal cities of Sines and Porto. Petr6leos de Portugal (Petrogal) operates the two refineries, which have a combined capacity of 304,174 bbl/d.

Restructuring of Galp Energia

In April 1999, the Portuguese government created the holding company Petr6leos e G6s de Portugal, SGPS, S.A. (Galp) to operate and manage the country's oil and natural gas industries (Decree Law No. 137-A/99). Galp holds shares from Petrogal, G6s de Portugal (GdP, gas distribution) and Transg6s (natural gas import, transmission and sales company)(see [shareholder structure](#)). The initial owners of Galp were the state (34.8%), Italian utility Eni (33.3%),



Electricidade de Portugal (EdP) (14.3%), Portuguese public bank Caixa Geral de Depósitos (13.5%), and Spanish utility Iberdrola (4%), and others 0.1%. In April 2003, the Portuguese government approved a plan to demerge and to privatize Galp by restructuring the holding company's assets. These measures include bundling the company's natural gas assets under GdP, including Transgás. Galp would retain Petrogal's upstream (oil production in Brazil and Angola) and downstream operations (distributing petroleum products and operating Portugal's two refineries at Sines and Porto).

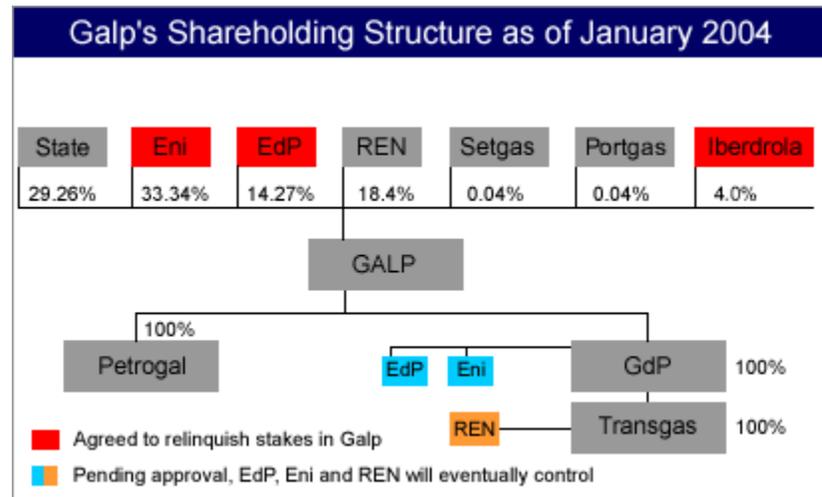
In February 2004, after months of negotiations, Galp's major shareholders reached an agreement. Iberdrola agreed to relinquish its 4% stake in Galp in exchange for €125 million in cash and stakes of 58.5% and 40.9% in natural gas distributors Beiragás and Tagusgás, respectively. EdP, Eni affiliate Eni Portugal Investment and Rede Eléctrica Nacional (REN, Portugal's electricity transmission operator) agreed to purchase 100% of GdP. The shareholders initial stakes are as followed: EdP 33.34%; Eni 33.33%; and REN 33.33%.

REN's participation is only temporary and after 18 months it will leave the group in exchange for Transgás. Following the exit of REN, EdP and Eni will hold stakes of 51% and 49% respectively. As owners of GdP, EdP and Eni would also have joint control over the Sines LNG terminal. This issue, however, remains unresolved, as Portugal's energy regulator ERSE may insist on the terminal's transfer to REN, according to reports. Eni and EdP also agreed to sell their stakes (33.34% and 14.27%) in Galp to state-owned investment arm, Participacoes Publicas, marking the companies' exit from Portugal's oil refining and marketing sectors. In July 2004, the Portuguese government agreed to sell a 33.34% stake in Galp (Petrogal) to a Portuguese led consortium called Petrocer, which beat out a second bidder led by the Jose de Mello industrial group.

These agreements are still subject to approval from the EU Competition Commission. Outside observers have sharply criticized Portugal's privatization of Galp, citing lack of transparency and favoring domestic companies. Internally, Portugal's own competition authority (Autoridade da Concorrência) has expressed concern that the restructuring will do little to improve competition, rather it will consolidate the natural gas and oil sectors in the hands of a few large companies, hindering the entrance of new companies. If the mergers are approved, EdP will increase its presence as a significant electricity and natural gas player on the Iberian peninsula. The company already owns a 40% stake in Spain's utility company Hidrocarburo and a 62% stake in Naturcorp, a natural gas distributor in Spain's Basque region, as well as controls much of Portugal's electricity sector.

NATURAL GAS

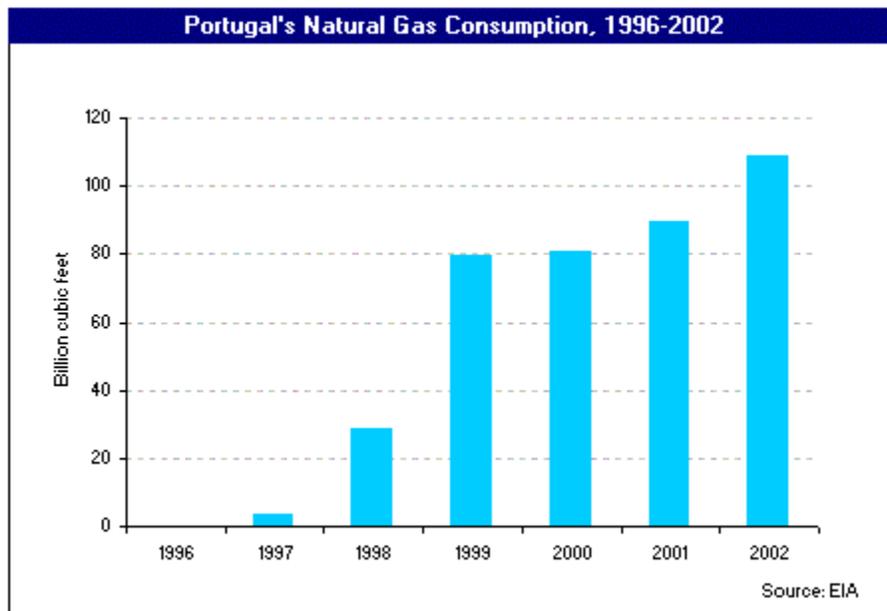
The Portuguese natural gas sector has grown considerably over the past few years, despite lacking any commercially viable reserves. Annual consumption was nearly non-existent prior to 1997 when the country consumed 4 billion cubic feet (Bcf). In 2002, consumption of natural gas reached 109 Bcf. The increase in natural gas consumption can be attributed to import infrastructure, namely the Sines liquified natural gas (LNG) import terminal and Maghreb-Europe pipeline, which connects



the Iberian Peninsula to Algerian natural gas sources.

Gás de Portugal (GdP) currently remains the dominant player in Portugal's natural gas sector, controlling gas imports, distribution, transmission and sales of natural gas. GdP has a stake in all of the country's six regional natural gas distributors (Lisboagás, Portgás, Lusitâniagás, Setgás, Tagusgás, and Beiragás). Due to the infancy of the country's natural gas market, Portugal has been granted a temporary exemption from fulfilling

many of the requirements outlined in the [EU Directive 98/30/EC](#) on liberalizing the natural gas market (the exemption clause is outlined in Article 26 (3) and (4) in [Directive 98/30/EC](#)).



Exploration and Production

As with oil, companies have not been successful in discovering natural gas in commercially viable volumes in Portugal. One of the last exploration operations in Portugal were undertaken by U.S.-based Mohave Oil and Gas Corporation and the U.K.-based Desire Petroleum PLC. The companies discovered natural gas at the Alijubarrota field but, in June 2001, the companies plugged the well after it proved not to contain commercial quantities of natural gas.

Liquefied Natural Gas (LNG)

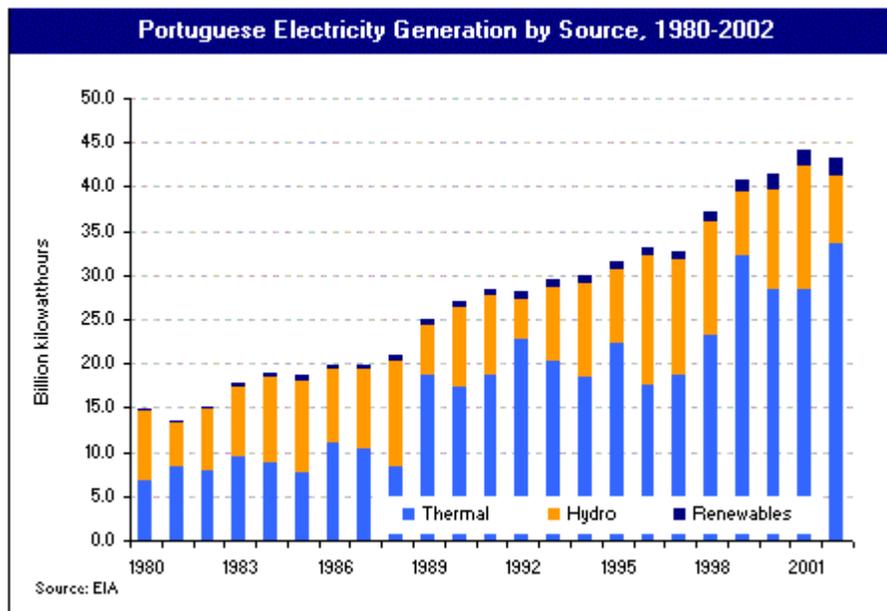
In October 2003, Portugal's new LNG terminal, Sines, processed its first shipment. Prior to Sines, Portugal purchased LNG from Nigeria but it was regasified in Spain and sent to Portugal via pipelines. The Sines terminal allows Portugal to diversify its natural gas supply, which previously was dependent on Spain's natural gas network to process and transport natural gas from Algeria and Nigeria. The Sines terminal, which is operated by [Galp Atlântico](#), has an annual import capacity of 195 Bcf (regasified).

COAL

Portugal has not produced coal since its last mine closed in 1994. It does import relatively small amounts of coal for electricity generation, especially in periods of decreased hydropower. In 2002, coal consumption increased 10.4% year-on-year, mainly due to decreased hydropower production, which dropped an estimated 44.8% year-on-year.

ELECTRICITY

In 2002, Portugal consumed 42.2 billion kilowatthours (Bkwh) and generated 43.3 Bkwh of electricity. Hydropower accounted for about 17.8% of Portugal's total electricity generation in 2002, a substantial decrease in comparison to 2001 when hydropower accounted for 31.5% of total electricity generation, during a period of particularly wet weather. Likewise, Portugal's oil and coal consumption for power generation increased in 2002 to 77.7% from 63.4%; thermal power and hydropower tend to exhibit an inverse relationship in Portugal (see graph).



50%

and 47%, respectively. While installed capacity for fuel oil decreased during the period, natural gas, which did not become a major source for electricity generation until 1998, increased. With the inauguration of the Sines LNG terminal (October 2003) and EdP's 1,200-megawatt (MW) combined cycle natural gas-fired plant (known as Central Termoelectrica do Ribatejo)(April 2004), natural gas' share will grow further.

The Portuguese electricity grid is connected with Spain's and consists of 44,127 miles of high/medium voltage transmission lines and 69,640 miles of low voltage transmission lines. Up to 10% of Portugal's power demand could potentially be imported from and/or through Spain (and vice-versa). Despite rapidly increasing energy consumption (6% per year average 1973-1998), Portugal still had the lowest per capita power consumption in the EU, as of 2002. Portugal's electricity market is due to be fully opened to competition by July 2004, in line with EU Directive on electricity liberalization.

Sector Organization

There are two electricity systems in Portugal, the Public and the Independent. The Public Electricity System (PES) is regulated to ensure a guaranteed power supply under long term contracts between power generators and transmission grid operator Rede Eléctrica Nacional (REN) (the state 70% and EdP 30%). Generators in PES comprise Companhia Portuguesa de Produção de Electricidade (CPPE) (EdP 100%) and two independent power producers: Tejo Energia (International Power 45%, Endesa 45% and EdF 10%) which operates the 600-MW coal-fired Pego power plant; and Turbogás (RWE 80% and EdP 20%) which operates the 990-MW Tapada do Outeiro natural gas-fired power plant. PES includes four distribution companies.

The Independent Electricity System (IES) includes a Non-binding Electricity System (NES) and the so-called Special Regime (SR). In NES, generation and distribution services are unrestricted and allows eligible consumers to choose their suppliers. In SR, power producers are small, generating power from mini-hydro (less than 10 MW), cogeneration, and other renewables. Erse, Portugal's energy market regulator, oversees these systems to ensure that operators abide with the PES and IES rules, as well as sets power tariffs. EdP remains the dominant player in both PES and IES, generating most of the power in each system. Moreover, the company controls power distribution activities through its subsidiary -- EdP Distribuição de Energia.

Single Iberian Electricity Market (Mibel)

In November 2001, Spain and Portugal signed an agreement that calls for complete integration of their electricity markets and creating the *Mercado Ibérico de Electricidade* (Mibel). Mibel was formally launched on April 26, 2004, although some legislative delays on the Spanish side have postponed its effective start until later in 2004. Despite administrative delays, there has been physical evidence of integration, namely, a new 40-kilovolt transmission line between the prospective countries at Cartelle-Lindosa. Portugal's power market operator OMIP and Spain's equivalent, OMEL, are expected to merge in April 2006, creating OMI, a single operator for the Mibel electricity market. The integration of the markets includes the creation of an Iberian Market Operator (OMI) to negotiate the sale of electricity, a merger of logistics networks, and increased interconnection of the countries' grids. In addition, all companies will operate under the same competition guidelines, and tariffs will be harmonized.

Key to market integration has been the government's plan to terminate long-term power purchase agreements (PPAs) in Portugal between generators and REN that accounts for an estimated 90% of Portugal's total power production. According to the plan, EdP, Tejo Energia and Turbogás, the power producers holding PPAs, will be compensated for the difference in price they would be paid under the PPAs and the expected reference price in Mibel. These compensation payments are known as CMECs (Custos para a Manutenção do Equilíbrio Contatual). Portugal's competition authority (Autoridade da Concorrência) has, however, remained skeptical whether the elimination of PPAs will bring competition to a market. According to a [report](#) commissioned by the authority, the compensation plan will likely have "the same economic effect as the PPAs" on Portugal's electricity market, namely hindering competition and distorting the market (please see [report](#) for further details).

Promoting Renewables

In June 2004, the Ministry of Economy provided a reported \$51.4 million grant to fund 20 wind park projects, with a combined installed capacity of 244.5 megawatts (MW). This is part of the government's efforts to increase renewables overall contribution to Portugal's power mix, which, up to now, has been highly dependent on oil-fired generation. Portugal is also subject to the requirements of [EU Directive 2001/77/EC](#) on electricity from renewable energy sources, which requires the EU to increase renewable energy's share of total energy consumption to 12% and electricity produced from renewables to 22.1% by 2010 (Article 3, paragraph 4). According to a recent status report on [renewables](#) in the EU, Portugal is expected to increase its share of gross electricity consumed from renewables to 39%, in order for an enlarged EU to meet its 22.1% target by 2010. Currently, production of electricity from renewables in Portugal is dominated by large hydropower plants. In 2002, hydro accounted for approximately 80% of electricity generated from renewables. The Portuguese government wants to increase renewables' share in the country's power mix, focusing its efforts away from large large scale-hydro towards increasing installed generation capacity of wind (with an expected capacity of 3,750 MW by 2010) and small hydro (400 MW by 2010).

In order to attract investment, the government established a new tariff regime, which awards higher rates per kilowatt-hour depending on technology and monthly usage. In response, companies, such as Iberdrola (Spain), Enersis (Chile), Gamesa (Spain), and Generg (Portugal), have invested in wind, solar and wave power projects. Portugal currently is building the world's largest solar power plant in Moura (southern Portugal), with an installed generation capacity of 64 MW. The plant is expected to be completed in 2009. Iberdrola has under development a 75-MW wind farm and is negotiating for permits to install another 174 MW. In May 2004, the company acquired an 18-MW wind farm—Catefica—from Spain's Gamesa.

Nuclear Power

Portugal has no nuclear power plants. While there has been some interest and discussion regarding the construction of a nuclear plant, there has been no action toward this end.

COUNTRY OVERVIEW

Head of State: President Jorge Sampaio (since 1996; re-elected in 2001)

Prime Minister: Pedro Santana Lopes (appointed July 2004)

Independence: 1143; from Spain 1640 (republic proclaimed October 5, 1910)

Capital City: Lisbon

Population (2003E): 10.4 million

Location/Size: Southwestern Europe, bordering the North Atlantic Ocean, west of Spain/92,391 sq km (slightly smaller than Indiana)

Language: Portuguese

Religion: Roman Catholic 97%, Protestant denominations 1%, other 2%

ECONOMIC OVERVIEW

Finance Minister: Maria Manuela Dias Ferreira Leite

Currency: Euro

Exchange Rate (July 12, 2004): 1 US Dollar = 0.806 Euros

Gross Domestic Product (GDP, nominal, 2003E): \$147 billion

Real GDP Growth Rate (2003E): -1.3% **(2004F):** 1.4%

Inflation Rate (consumer prices, 2003E): 3.4% **(2004F):** 2.7%

Unemployment Rate (2003E): 4.6%

Merchandise Exports (2003E): \$31.1 billion

Merchandise Imports (2003E): \$45.0 billion

Trade Deficit (2003E): \$13.7 billion

Main Destinations of Exports (2003E): Spain 28.7%, Germany 19.2%, France 16.3%, UK 13.3%

Major Export Products: textiles, footwear, leather goods, machinery and transport equipment, wood and cork, agricultural goods and foodstuffs

Main Origins of Imports (2003E): Spain 37.9%, Germany 19.2%, France 12.9%, Italy 8.3%

Major Import Products: Machinery and appliances, agricultural products and byproducts, chemical and plastic products, land transport equipment, mineral products

ENERGY OVERVIEW

Minister of the Economy: Carlos Manuel Tavares da Silva

Proven Oil Reserves: None

Crude Oil Production (2003E): 3,745 barrels per day (bbl/d) (only refinery gain)

Oil Consumption (2003E): 351,000 bbl/d

Net Oil Imports (2003E): 247,255 bbl/d

Crude Oil Refining Capacity (1/1/04E): 304,172 bbl/d

Natural Gas Reserves: None

Natural Gas Consumption (2002E): 109 billion cubic feet (all imported)

Coal Reserves (2001E): 40 million short tons (Mmst)(no longer mined)

Coal Consumption (2002E): 6.3 Mmst (all imported)

Electric Generation Capacity (2002E): 10.4 gigawatts (thermal 60%; hydro 38%; biomass, geothermal, solar, and wind 2.0%)

Electricity Generation (2002E): 44.3 billion kilowatthours (Bkwh)

Electricity Consumption (2002E): 41.5 Bkwh

ENVIRONMENTAL OVERVIEW

Minister for Cities, Environment and Planning: Amilcar Teias

Total Energy Consumption (2002E): 1.1 quadrillion Btu* (0.3% of world total energy consumption)

Energy-Related Carbon Dioxide Emissions (2002E): 67 million metric tons (0.3% of world total carbon dioxide emissions)

Per Capita Energy Consumption (2002E): 107.4 million Btu (vs. U.S. value of 339.1 million Btu)

Per Capita Carbon Dioxide Emissions (2002E): 6.7 metric tons (vs. U.S. value of 20.0 metric tons)

Energy Intensity (2002E): 6,467 Btu/\$ nominal-PPP** (vs U.S. value of 9,344 Btu/\$ nominal-PPP)

Carbon Dioxide Intensity (2002E): 0.39 metric tons of carbon/thousand \$ nominal-PPP ** (vs. U.S. value of 0.55 metric tons/thousand \$ nominal-PPP)

Fuel Share of Energy Consumption (2002E): Oil (66%), Coal (14%), Natural Gas (11%) Hydro (7%) Other renewable (2%)

Fuel Share of Carbon Dioxide Emissions (2002E): Oil (71%), Coal (20%), Natural Gas (9%)

Status in Climate Change Negotiations: Annex I country under the United Nations Framework Convention on Climate Change (ratified December 21st, 1993). Signatory to the Kyoto Protocol (signed April 29th, 1998 and ratified May 31, 2002).

Major Environmental Issues: Soil erosion; air pollution caused by industrial and vehicle emissions and water pollution (especially in coastal areas).

Major International Environmental Agreements: A party to Conventions on Air Pollution, Biodiversity, Climate Change, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping, Marine Life Conservation, Ozone Layer Protection, Ship Pollution, Tropical Timber 83 and Wetlands. Has signed, but not ratified: Air Pollution-Persistent Organic Pollutants, Air Pollution-Volatile Organic Compounds, Climate Change-Kyoto Protocol, Environmental Modification, Nuclear Test Ban, Tropical Timber 94.

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

**GDP figures from CIA Factbook estimates based on purchasing power parity (PPP) exchange rates.

Sources for this report include: BBC Worldwide Monitoring; CIA World Factbook; Direcção-Geral de Energia; Dow Jones; Global Insight; Economist; Economist Intelligence Unit; EIU ViewsWire; Electricidade de Portugal; Europe Information Service; European Union; Financial Times; Global Power Report; International Energy Agency; Petroleum Economist; Petrogal; Petroleum Economist; Platts International Gas Report; Platts Power in Europe; Platts Renewable Energy Report; Rede Eléctrica Nacional; Reuters; U.S. Energy Information Administration; Utility Week; World Gas Intelligence.

LINKS

For more information from EIA on Portugal, please see:

[Portugal Country Data](#)

Links to other U.S. Government Sites:

[CIA World Factbook - Portugal](#)

[U.S. State Department Consular Information Sheet - Portugal](#)

[U.S. State Department Background Notes - Portugal](#)

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