

COUNTRY ANALYSIS BRIEFS

France

Last Updated: April 2007

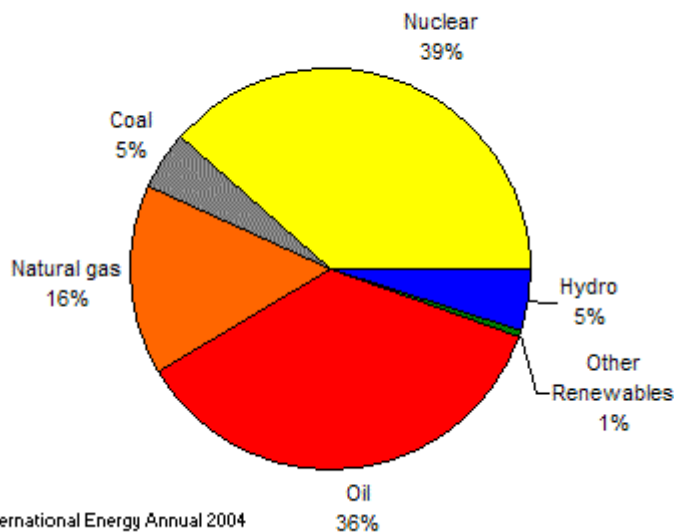
Background

France is one of the world's largest nuclear power producers, but has limited fossil fuel resources.

In 2004, France consumed 11.2 quadrillion Btu of total energy. Nuclear energy was the largest share, representing 39 percent, followed by oil (36 percent), natural gas (16 percent) and hydroelectricity (5 percent). France is the second-largest producer of nuclear power in the world, after the United States, however, nuclear energy is a much larger share of France's total energy consumption than the United States (8 percent in 2004).



Total Energy Consumption in France , by Type (2004)

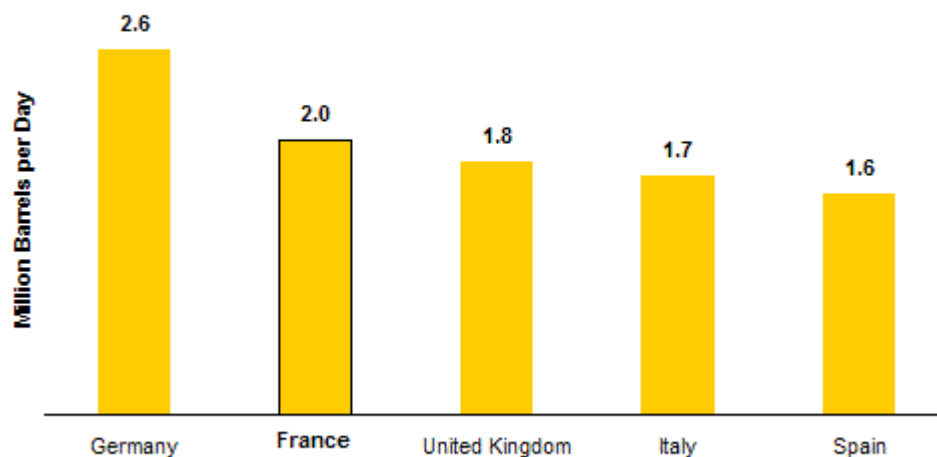


Oil Overview

Oil's share of France's total energy consumption has declined by almost half since 1973.

According to *Oil and Gas Journal (OGJ)*, France had 122 million barrels of proven oil reserves in January 2007. The country produced 78,900 barrels per day (bbl/d) of oil in 2006, which includes 21,500 bbl/d of crude oil, 8,000 bbl/d of natural gas liquids, and 49,400 bbl/d of refinery gain. In that same year, France consumed 1.97 million bbl/d. Due to the lack of domestic oil sources, the French government has encouraged the use of nuclear power as an alternative energy source to oil where possible, and the proportion of France's total energy consumption derived from oil has decreased from 71 percent in 1973 to 36 percent in 2004.

Top 5 OECD Europe Oil Consumers, 2006



Source: EIA Short Term Energy Outlook

Exploration and Production

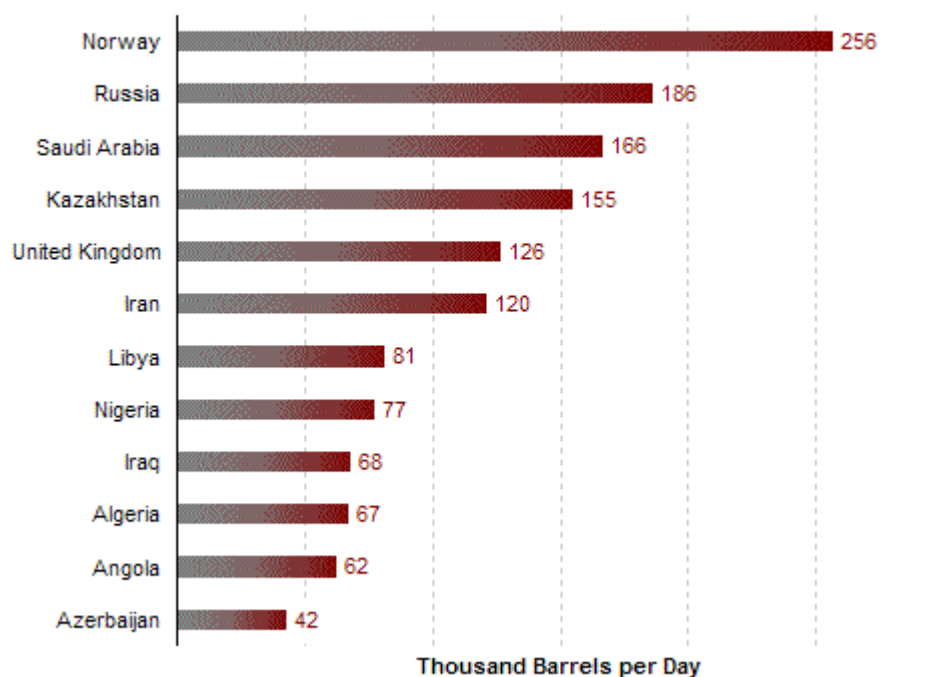
France's crude oil production peaked in the late 1980s at 67,000 bbl/d. The Paris and Aquitaine Basins contain the bulk of France's production capacity. The largest producer of crude oil in France is Vermilion, which controls some 25 percent of the sector. Vermilion also operates the single largest field in the country, Parentis, located near Biscarrosse in southwest France.

Despite its lack of domestic crude oil supplies, France is very active in international oil production. The French oil company Total SA is one of the world's largest oil-producing companies. Formed as TotalFinaElf in 2000 by the merger of French Total, Belgian Petrofina, and French Elf Aquitaine, Total is the fourth-largest publicly-traded oil producer in the world, with substantial operations in Africa, Europe, and the Middle East.

Oil Imports

According to Eurostat, France imported 1.57 million bbl/d of crude oil in 2006. The largest source of these imports was Norway (256,000 bbl/d), followed by Russia (186,000 bbl/d) and Saudi Arabia (166,000 bbl/d). France also imported 760,000 bbl/d of refined petroleum products in 2006, while exporting 519,000 bbl/d; the largest source of product imports were Russia, while the largest destination for exports was the Netherlands.

Top Sources of France's Crude Oil Imports, 2006



Downstream

According to OGJ, France's crude oil refining capacity in 2007 was 1.96 million bbl/d, the third-largest in Europe. The largest refinery in the country is Total's Gonfreville l'Orcher facility, with a capacity of 331,000 bbl/d. Total controls some 55 percent of France's refining capacity. Much of France's refining capacity is concentrated in the Fos-Lavera area, the third-busiest petroleum port in the world. The majority of France's petroleum products consumption is for road transportation, followed by household consumption and air transportation.

Within the EU-25, prices for gasoline and diesel fuel in France are above-average, according to Eurostat. In 2006, premium gasoline prices (including all taxes) averaged 1.27 euros per liter (\$4.60 per gallon) in France, versus an EU-25 average of 1.15 euros per liter (\$4.16 per gallon). For comparison, gasoline prices averaged \$2.77 per gallon in the United States in 2006. Diesel prices in France (including all taxes) averaged 1.09 euros per liter (\$3.94 per gallon), versus 1.04 euros per liter (\$3.76 per gallon) for the EU-25 average and \$2.71 per gallon in the United States. In France, taxes represent 63 percent of the gasoline price and 55 percent of the diesel price, versus 14 percent and 17 cents, respectively, in the United States (tax rates in the United States vary by state, those quoted here represent federal taxes plus a weighted average of state rates).

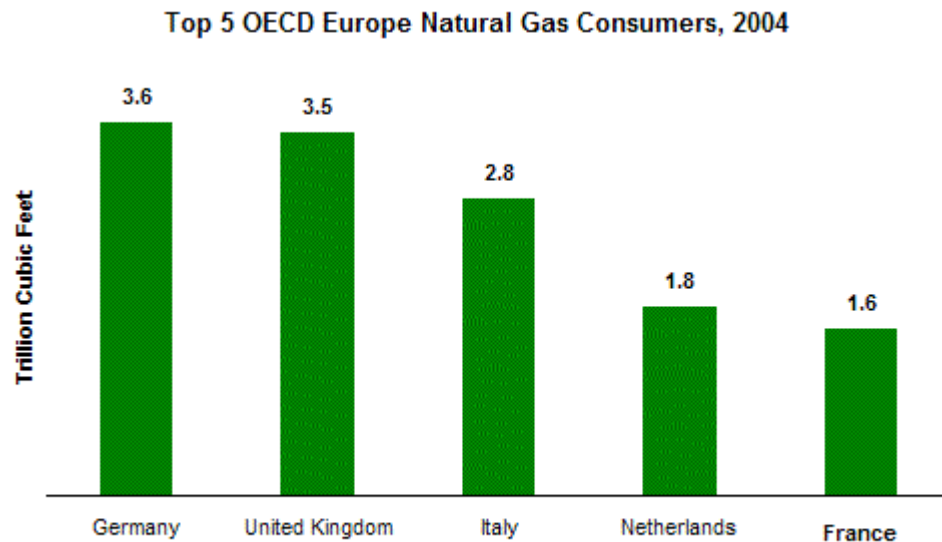
Natural Gas

Overview

France imports almost all of its

natural gas demand.

OGJ reported that France had 341 billion cubic feet (Bcf) of proven natural gas reserves in January 2007. In 2004, the country consumed 1.6 trillion cubic feet (Tcf) of natural gas, with less than 5 percent of demand met from domestic sources. The most important sources of France's natural gas imports are Norway, Russia, the Netherlands, and Algeria.



Source: EIA International Energy Annual

Sector Organization*Gaz de France*

Gaz de France (GdF), majority-owned by the French government, dominates all natural gas activities in the country. Prior to recent reforms, GdF had a legal monopoly on the production, distribution, transportation, and importation of natural gas in the country. In recent years, EU directives have forced member countries to open their natural gas sectors to foreign investors, and GdF has taken advantage of this openness to enter the domestic natural gas markets of other EU countries. As a result, almost one-third of GdF's 15 million customers are outside France.

Pipelines*Domestic System*

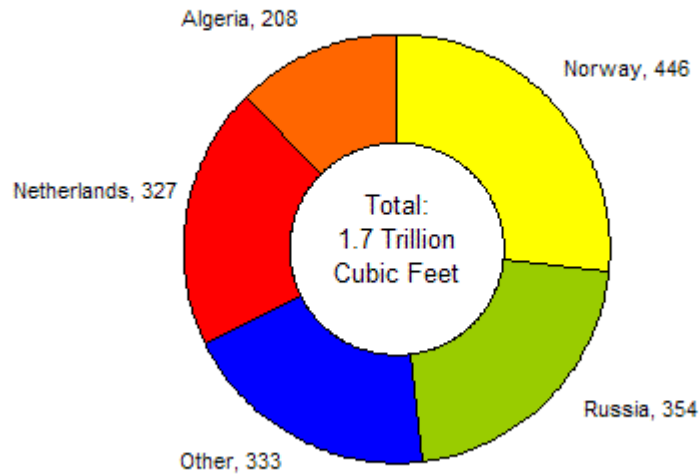
GdF operates the vast majority of France's domestic pipeline system. The company operates over 19,000 miles of natural gas pipelines in France, with an overall system capacity of 5.9 Bcf/d. The GdF systems covers the entire country, with main trunk lines connecting population centers to the import entry points of Dunkerque, Montoir-de-Bretagne, Fos-Cavaou, Cerville-Velaine, and Taisnières. GdF also maintains 0.28 Bcf of natural gas storage facilities at strategic locations in the transmission network.

France has natural gas pipeline connections to Norway, Spain, Russia, and the Netherlands.

International Pipelines

Because of its dependence on natural gas imports, France has numerous pipeline connections with its neighbors. The Franpipe, completed in 1998, links Norway's Draupner platform in the North Sea to the French port of Dunkerque. The 521-mile-long, 1.4-Bcf/d Franpipe was the first pipeline to directly link France with a natural gas field in a foreign country. Analysts predict that Franpipe will eventually supply one-third of France's total natural gas consumption. The Trans-Pyrenean natural gas pipeline, linking Calahorra, Spain to Lacq, France began operations in 1993. The 330-million-cubic-feet-per-day (Mmcf/d) connection allows Spain to import natural gas via France from Norway. France also imports natural gas from Russia through the Cerville-Velaine distribution center in northeast France and from the Netherlands through the Taisnières entry point. In October 2005, Total inaugurated the 48-Mmcf/d Euskadour natural gas pipeline between the liquefied natural gas (LNG) receiving terminal in Bilbao, Spain and southern France.

France's Natural Gas Imports, By Source, 2004
(Billion Cubic Feet)



Source: Eurostat

Future Projects

The proposed Medgaz natural gas pipeline would link Algeria to France via Spain. Algeria's Sonatrach (20 percent) and Spain's Cepsa (20 percent) are leading the project. Financial issues have delayed initial construction of Medgaz, as the consortium has not yet secured sufficient investments to start the project. However, if completed, Medgaz would have an initial capacity of 775 Mmcf/d.

France is the largest importer of LNG in the EU.

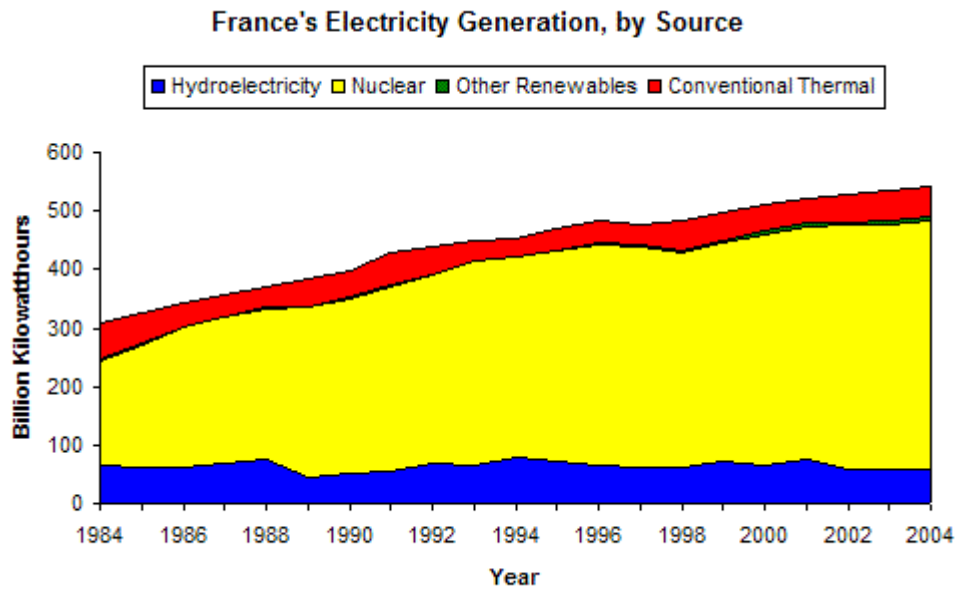
Liquefied Natural Gas

France has tried to position itself as a European hub for liquefied natural gas (LNG) imports. France is one of Europe's largest consumers of LNG, and the country receives some 25 percent of its natural gas imports in this form. Most French LNG imports come from Algeria, with smaller quantities from Nigeria. France currently has two LNG receiving terminals: the 440-Mmcf/d Fos-sur-Mer, located at the Fos Cavaou gas terminal on France's Mediterranean coast, and a 970-Mmcf/d terminal at Montoir-de-Bretagne, on the Atlantic coast. GdF is constructing a new, offshore LNG receiving terminal at Fos Cavaou, and ExxonMobil has also proposed building an LNG import terminal near Fos Cavaou by 2009.

France is the largest net exporter of electricity in the EU

Electricity

France has the second-largest electricity sector in the EU, behind Germany. In 2004, France produced 540.6 billion kilowatthours (Bkwh) of electricity and consumed 440.6 Bkwh. The country depends upon nuclear energy for 79 percent of its electricity generation. Electricite de France (EdF), owned by the French government, controls almost the entire market for electricity generation and distribution in the country. Gestionnaire du Reseau de Transport d'Electricite (RTE), a company nominally separate from but controlled by EdF, operates the national electricity grid.



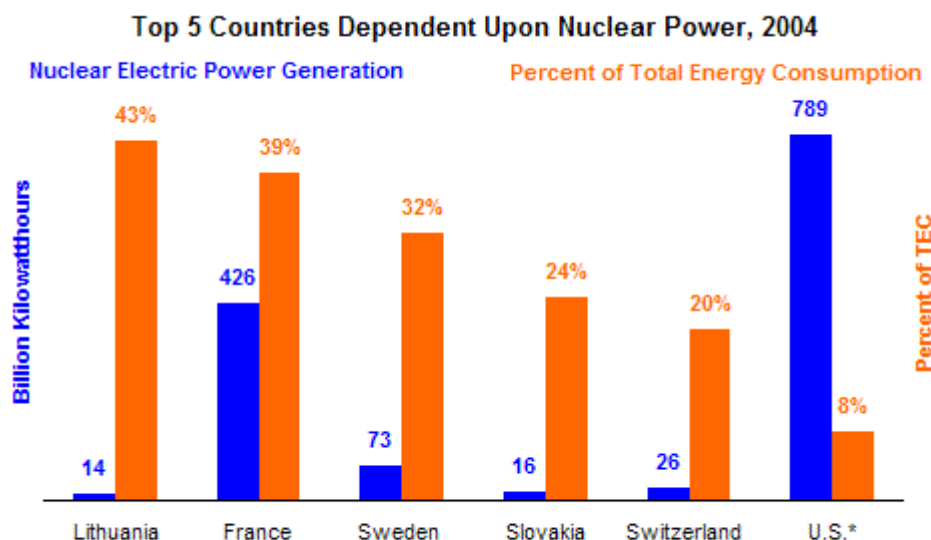
France is the largest net exporter of electricity in the EU, sending 100 Bkwh to its neighbors in 2004. France's reliance on nuclear energy allows it to produce electricity at lower cost than other European countries.

Sector Organization

As mentioned above, EdF has a monopoly on electricity generation and distribution in France. Facing criticism from the European Commission, France has begun to slowly privatize EdF and to open the electricity sector to other companies. Compagnie Nationale du Rhone (CNR) is the second-largest electricity utility in France, operating 19 hydroelectric plants on the Rhone River. Deruegulation has also allowed the entry of small distributors into the market. These distributors purchase wholesale electricity from EdF, then sell it to large industrial and commercial customers.

Nuclear Power

France is the second-largest generator of nuclear energy, behind the United States. In the 1970s, the French government began promoting nuclear power to reduce its reliance on energy imports. In 2004, France's nuclear reactors generated 425.8 Bkwh of electricity, or 79 percent of the national total. This represents a dramatic change from 1973, when fossil fuels accounted for an estimated 65 percent of French gross power output. French nuclear power is efficient and low cost, and French electricity tariffs are therefore the lowest in Europe. Central planning is crucial to France's nuclear industry, as there are only a few different reactor designs and common industry methods, practices which contribute to nuclear's relatively low cost. Government-owned Areva controls all aspects of the nuclear power sector in France, including the mining of nuclear fuels, construction and operation of reactors, and the disposal of nuclear waste and decommissioned plants.



Source: EIA International Energy Annual

*for comparison

Future of Nuclear Power

France has plans to further expand its nuclear power industry. A report released by the French government in November 2003 called for a significant expansion of the industry, including the construction of a third-generation of nuclear reactors and the upgrading of existing plants. France has partnered with Germany to develop the European Pressurized Reactor (EPR). The EPR is a third-generation reactor, designed to be safer, more efficient, and less susceptible to a terrorist attack. Each EPR reactor should produce around 1,600 megawatts (MW) of electricity, versus 900 MW for most second-generation reactors. EdF announced in November 2004 that it would build the world's first EPR at a site near Flamerville; EdF plans to complete the project by 2012, at a cost of \$3.8 billion. In March 2007, France's nuclear safety agency approved plans for the facility.

France has taken a leading role in the development of the International Thermonuclear Experimental Reactor (ITER). ITER, a consortium of the European Union, the United States, Japan, Russia, China, and South Korea, seeks to build a working fusion reactor at a testing site in Cadarache, France by 2015.

Profile

Country Overview

Chief of State	President Jacques Chirac (since 1995)
Location	Western Europe, bordering the Bay of Biscay and English Channel, between Belgium and Spain, southeast of the UK; bordering the Mediterranean Sea, between Italy and Spain
Independence	486 (unified by Clovis)
Population (2006E)	62,752,136

Economic Overview

Currency/Exchange Rate (April 3, 2007)	1 Euro (EUR) = \$1.333
Inflation Rate (2006E)	1.7%
Gross Domestic Product (GDP, 2006E)	\$2.2 trillion
Real GDP Growth Rate (2006E)	2.0%
Unemployment Rate (2006E)	8.7%

External Debt (2006E)	\$3.5 trillion
Exports (2006E)	\$484 billion
Exports - Commodities	machinery and transportation equipment, aircraft, plastics, chemicals, pharmaceutical products, iron and steel, beverages
Exports - Partners (2005E)	Germany 14.7%, Spain 9.7%, Italy 8.7%, UK 8.3%, Belgium 7.1%, US 7.1%
Imports (2006E)	\$471 billion
Imports - Commodities	machinery and equipment, vehicles, crude oil, aircraft, plastics, chemicals
Imports - Partners (2005E)	Germany 18.9%, Belgium 10.7%, Italy 8.3%, Spain 7%, Netherlands 6.6%, UK 5.9%, US 5.1%
Current Account Balance (2006E)	-\$32 billion

Energy Overview

Proven Oil Reserves (January 1, 2007E)	0.12 billion barrels
Oil Production (2006E)	78.9 thousand barrels per day, of which 27% was crude oil.
Oil Consumption (2006E)	1,970 thousand barrels per day
Crude Oil Distillation Capacity (2007E)	1,958 thousand barrels per day
Proven Natural Gas Reserves (January 1, 2007E)	0.3 trillion cubic feet
Natural Gas Production (2004E)	49.4 billion cubic feet
Natural Gas Consumption (2004E)	1,603.7 billion cubic feet
Recoverable Coal Reserves (2003E)	16.5 million short tons
Coal Production (2004E)	1 million short tons
Coal Consumption (2004E)	23.1 million short tons
Electricity Installed Capacity (2004E)	112.2 gigawatts
Electricity Production (2004E)	540.6 billion kilowatt hours
Electricity Consumption (2004E)	440.6 billion kilowatt hours
Total Energy Consumption (2004E)	11.2 quadrillion Btus*, of which Nuclear (39%), Oil (36%), Natural Gas (16%), Coal (5%), Hydroelectricity (5%), Other Renewables (1%)
Total Per Capita Energy Consumption (2004E)	186.1 million Btus
Energy Intensity (2004E)	7,209.4 Btu per \$2000-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2004E)	405.7 million metric tons, of which Oil (65%), Natural Gas (23%), Coal (12%)
Per-Capita, Energy-Related Carbon Dioxide Emissions ((Metric Tons of Carbon Dioxide)E)	6.7 metric tons
Carbon Dioxide Intensity (2004E)	0.3 Metric tons per thousand \$2000-PPP**
Environmental Issues	some forest damage from acid rain; air pollution from industrial and vehicle emissions; water pollution from urban wastes, agricultural runoff
Major Environmental Agreements	party to: Air Pollution, Air Pollution-Nitrogen Oxides, Air Pollution-Persistent Organic Pollutants, Air Pollution-Sulfur 85, Air Pollution-Sulfur 94, Air Pollution-Volatile Organic

Compounds, Antarctic-Environmental Protocol, Antarctic-Marine Living Resources, Antarctic Seals, Antarctic Treaty, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Hazardous Wastes, Law of the Sea, Marine Dumping, Marine Life Conservation, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands, Whaling

Oil and Gas Industry

Organization	Minor domestic production, largest producers are Vermilion (oil) and Gaz de France (natural gas). France-based Total is an important international oil company and controls the largest share of the country's refining capacity.
Major Oil/Gas Ports	Fos-sur-Mer, Montoir-de-Bretagne, Gonfreville
Foreign Company Involvement	BP, Ruhrgas.

* 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 OECD estimates based on purchasing power parity (PPP) exchange rates.

Links

EIA Links

[EIA - Country Information on France](#)

U.S. Government

[CIA World Factbook - France](#)

[U.S. Department of C](#)

[U.S. Embassy in France](#)

[U.S. State Department Background Notes on France](#)

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

Associations and Institutions

[Association Française du Gaz](#)

Foreign Government Agencies

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[French Embassy in the United States, Office for Nuclear Affairs](#)

[Institut National de la Statistique et des Etudes Economiques \(INSEE\)](#)

Oil

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[Societe Nationale d'Electricite et de Thermique](#)

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