

# COUNTRY ANALYSIS BRIEFS

## France

Last Updated: March 2005

### Background

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

France is a founding member of the European Union (EU) and one of Europe's most important economies. In 2004, France's gross domestic product (GDP) stood at \$2.01 trillion, the second-largest in the EU. Economic growth, though, has been unremarkable in recent years, with real GDP growth of only 2.1% in 2004. The lack of significant economic growth has strained France's public finances, and for the fourth consecutive year, France's budget deficit will exceed the limits of the EU Growth and Stability Pact.



Jacques Chirac has been President of France since 1995, leading a coalition of center-right parties. Since 2002, he has ruled in coordination with Prime Minister Jean-Pierre Raffarin. The two have set upon many reforms of France's economy, including a relaxation of labor market regulations, the privatization of state-owned enterprises, and an overhaul of the public pension scheme. Following the poor showing of the center-right coalition in the March 2004 regional elections, Chirac replaced the heads of several key government ministries and slowed the pace of these reforms. Public employee unions have been the most vocal critics of energy sector liberalization, staging many large demonstrations.

### Oil

#### Overview

France had 146 million barrels of proven oil reserves in 2005. Including refinery gain, the country produced 76,600 barrels per day (bbl/d) of oil in 2004. Despite the lack of significant domestic production, France is the tenth-largest consumer of oil in the world, consuming 2.04 million bbl/d in 2004. To meet this demand, France had net crude oil imports of 1.96 million bbl/d in 2004, the largest sources of these imports being Norway, Saudi Arabia, Russia, and the United Kingdom. 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% in 1973 to 37% in 2002.

***Oil's share of France's total energy consumption has declined from 71% in 1973 to 37% in 2002.***

## Exploration and Production

France's crude oil production peaked in the late 1980s at 67,000 bbl/d, before declining to only 23,300 bbl/d in 2004. The Paris and Aquitaine Basins contain the bulk of France's production capacity. The largest producer of crude oil in France is Vermilion, which controlled some 25% of the sector. Vermilion also operated the single largest field in the country, the 2,850 bbl/d Parentis 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 private oil producer in the world, with substantial operations in Africa, Europe, and the Middle East.

## Downstream

In 2004, France's crude oil refining capacity was 1.95 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 343,000 bbl/d. Total controls some 56% of France's refining capacity. France imported 599,400 bbl/d of petroleum products in 2004, with the largest sources of these imports being the former Soviet Union (27%), Germany (9%), and the United Kingdom (8%). The majority of France's petroleum products consumption is for road transportation, followed by household consumption and air transportation.

## Natural Gas

**France imported 97% of its natural gas needs in 2003.**

### Overview

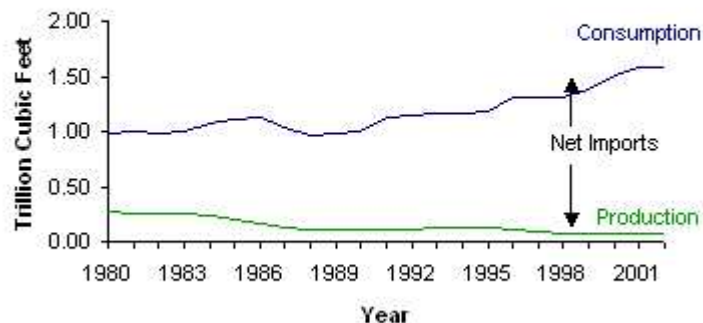
At the beginning of 2005, France had about 450 billion cubic feet (Bcf) of proven natural gas reserves. France has very little domestic natural gas production; in 2003, the country consumed 1.6 trillion cubic feet (Tcf), with only 3% of that demand met from domestic sources. The most important sources of France's natural gas imports are Norway, Russia, and Algeria. Natural gas is a small component of France's energy mix, representing only 15% of total energy consumption in 2002.

### Sector Organization

#### *Gaz de France*

Owned by the French government, Gaz de France (GdF) dominates all natural gas activities in the country. Prior to recent reforms (see below), 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. However, because France has been one of the slowest EU countries to open its own markets, there has been some backlash to GdF's foreign ventures, especially from the governments of Italy and Spain.

**France's Natural Gas Production and Consumption  
1980-2002**



Source: EIA

**France was one of the last EU members to open its natural gas sector to foreign companies.**

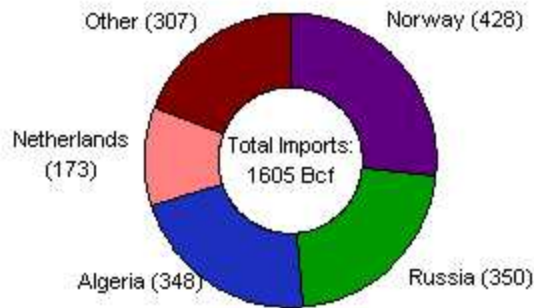
#### *Deregulation*

The EU has enacted numerous directives seeking to liberalize European natural gas markets. To date, France has been one of the slowest EU members to implement these directives into national law, though there has been considerable progress of late on this issue. Beginning in July 2004, non-residential customers could freely choose their gas distributor, with this freedom scheduled to extend to all customers by 2007. The French government has made some progress on liberalizing

GdF itself; in 2004, it legally changed GdF into a joint stock company. The most significant change caused by this new legal definition was that the French government would no longer guarantee GdF's debt. GdF planned to offer its stock to the public for the first time in 2005, though French law requires that at least 50% of GdF's stock remain held by the French government. France has also begun the process of privatizing its natural gas transport system, also a requirement of EU directives. By the end of 2005, distribution companies should be able to purchase stakes in the parts of the system that they utilize.

Since deregulation began, Total has been the private company with the most success in gaining access to the French market. While most natural gas enters France from the north, Total appears to have concentrated on natural gas customers in the south, where prices are higher and there are greater opportunities for undercutting the tariffs charged by GdF. In 2000, Total purchased Gaz du Sud-Ouest, a small regional gas transportation company in southern France. Total also planned to construct a new natural gas import pipeline from Spain, and it had a stake in the Medgaz pipeline from Algeria (see below). Foreign operators, such as BP and Ruhrgas, have also made some progress in gaining market share.

**France's Natural Gas Imports, by Origin (Bcf)  
2002**



Source: Eurostat

## 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 Taisnieres. 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 extensive 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 Taisnieres entry point

### *Future Projects*

In October 2004, Total began construction of the 48-Mmcf/d Euskadour natural gas pipeline. The pipeline will connect a liquefied natural gas (LNG) receiving terminal in Bilbao, Spain to southern France. Total expected to finish construction on the Euskadour pipeline by 2006.

The proposed Medgaz natural gas pipeline would link Algeria to France via Spain. Algeria's Sonatrach (20%) and Spain's Cepsa (20%) 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% of its natural gas imports in the form of LNG. 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.

### Coal

**The last coal mine in France closed in April 2004.**

France has relatively small coal reserves of 40 million short tons (Mmst). France's coal sector has declined steadily over the past several decades, as cheaper imports have replaced domestic sources. In 2002, France only produced 2.3 Mmst of coal. The state-owned coal monopoly, Charbonnages de France, closed its last production facility in April 2004. There have been some plans by foreign companies to resume coal production in France; in late 2004, ATH, a large British coal producer, announced that it would resume production at the Bertholene coal concession in south-central France by 2006.

Coal has become a less important part of France's energy supply, constituting only 5% of French total energy consumption in 2002. Nuclear power has replaced most of France's coal-fired power plants. Nevertheless, France still consumed 22.9 Mmst of coal in 2002, the seventh-most of the EU's 25 member countries, with the largest sources of France's coal imports coming from South Africa, Australia, and the United States. The few remaining coal-fired power plants represented about half of France's coal consumption in 2002, with most of the remainder consumed by the steel industry.

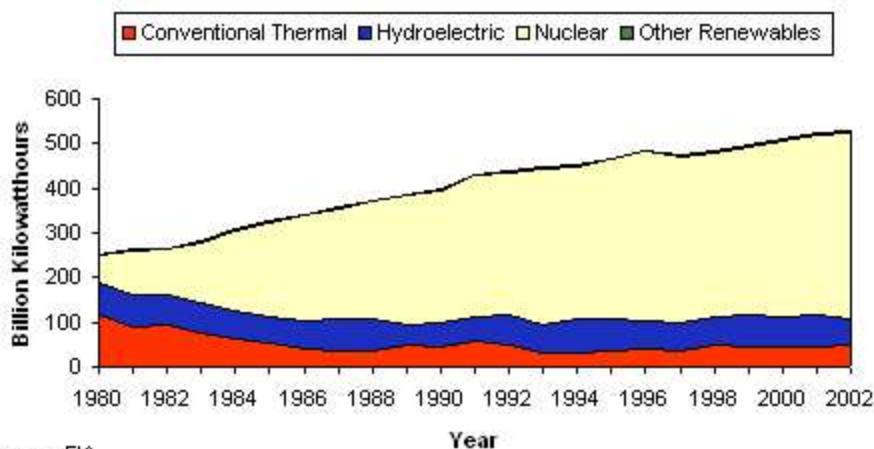
### Electricity

**France is the largest net exporter of electricity in the EU.**

France has the second-largest electricity sector in the EU, behind Germany. In 2002, France produced 528.6 billion kilowatthours (Bkwh) of electricity and consumed 414.7 Bkwh. The country depends upon nuclear energy for 78.5% of its electricity, followed by hydroelectricity (11.5%) and conventional thermal (9.3%). Electricite de France (EdF), owned by the French government, has a monopoly on electricity generation and distribution in the country. EdF also owns the French national electricity grid, though Gestionnaire du Reseau de Transport d'Electricite (RTE), a company nominally separate from but controlled by EdF, actually operates the grid.

France is the largest net exporter of electricity in the EU, sending 113.9 Bkwh to its neighbors in 2002. France's reliance on nuclear energy allows it to produce electricity at lower cost than other European countries. The largest sources of France's electricity exports in 2002 were Italy, Germany, and Belgium.

**France's Electricity Production, by Source  
1980-2002**



### Sector Organization

#### *Electricite de France*

As mentioned above, EdF has a monopoly on electricity generation and distribution in France. From this strong position in its home market, EdF has expanded its operations to other countries.

EdF has acquired stakes in a number of large foreign companies in the EU, such as London Electricity (now London Energy) and German utility EnBW (Energie Baden-Württemberg AG). The company has also made significant investments in electricity markets outside the EU, including Light in Brazil, Edenor in Argentina and natural gas-fired power plants in Mexico. EdF's acquisitions, however, have not been without criticism. Many claim that EdF has made aggressive acquisitions in the EU's liberalized electricity market, while France has been slow to open its own electricity sector to outside competition.

#### *Deregulation and Privatization*

Facing criticism from the European Commission and Europe's national governments, France has begun to slowly privatize EdF and to deregulate its electricity sector. France adopted its first deregulation legislation concerning electricity distribution in February 2000, a full year after the EU's first implementation deadline. In 2004, France allowed competition in the entire, non-residential sector, which represents over 70% of the French market; by 2007, deregulation will spread to the residential sector as well. French law has also deregulated electricity generation, but no significant independent generators have yet entered the market. EdF is not required to sell off its own generating capacity, so most newly-entering distributors continue to purchase electricity from EdF.

Along with deregulating the electricity sector, France has taken steps towards privatizing EdF. Like GdF, EdF formerly had a special status whereby the French government guaranteed its debts. The European Commission brought suit against the French government over this status at the behest of other EU member-states, arguing that the status amounted to an illegal state subsidy. After it announced plans to convert EdF into a traditional, joint stock company, the French government faced massive protests from public employee unions. Despite the opposition, the EdF conversion took place in July 2004. In an attempt to raise capital, EdF plans an initial public offering of its stock in 2005, a deal that analysts predict could raise at least \$14 billion. However, as is the situation with GdF, French law requires that the government maintain a 50% holding in EdF.

#### *Other Competitors*

Compagnie Nationale du Rhone (CNR) is the second-largest electricity utility in France. The company operates 19 hydroelectric plants on the Rhone River. The largest shareholder in CNR is Belgium's Electrabel, which holds just under 50% of the company's shares. Societe Nationale d'Electricite et de Thermique (SNET) operates four coal-fired power plants in France. SNET also operates a cogeneration facility in Poland and four power plants (three hydroelectric, one gas-fired) in Turkey. Formerly majority owned by Charbonnages de France, Spain's Endesa acquired Charbonnages de France's shares in 2004.

Following deregulation of the French electricity market, numerous small distributors have emerged. These distributors purchase wholesale electricity from EdF, then sell it to large industrial and commercial customers. These new companies, such as Poweo, undercut EdF's prices and are becoming a more important part of the power market. In addition, GdF has announced that it plans to begin offering electricity to its existing natural gas customers.

#### *National Grid*

*The French government created RTE in 2000. As mentioned above, RTE operates France's high-tension transmission network. While EdF owns the network, RTE is legally independent of EdF, and French law requires that RTE allow equal and non-discriminatory access to the grid for all electricity distributors and generators. The Powernext electricity trading market, founded in 2001, provides a spot market for electricity, auctioning standard hourly contracts to large electricity customers. Responsibility for delivering the contracts falls to RTE, while Clearenet, a subsidiary of the Euronext stock exchange, guarantees the auctions.*

**Per capita, France is the largest producer of nuclear power in the world.**

#### **Nuclear Power**

France is the world's largest nuclear power generator on a per capita basis and ranks second in total installed nuclear capacity behind the United States. In the 1970s, the French government began promoting nuclear power to reduce its reliance on energy imports. In 2002, France's 58 nuclear reactors generated about 79% of the country's electricity. This represents a dramatic change from 1973, when fossil fuels accounted for an estimated 65% 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.

In September 2001, the French government restructured its nuclear sector into a single, state-owned holding company, Areva. The group controls the country's major nuclear enterprises, including mining of nuclear fuels, construction of new reactors, treatment and recycling of nuclear waste, and decontamination of old plants. In 2004, the French government announced that it

would open 40% of Areva's shares to the public. In December 2003, Areva and Germany's Siemens won a contract to build a nuclear power plant in Finland, the first new nuclear plant in Europe in over a decade. Areva also plans to build an additional uranium enrichment plant at its Tricastin site in order to avoid dependence on fuel imports.

#### *Future of Nuclear Power*

Going against the trend in most other European countries, France has plans to further grow 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 Flamaville; EdF plans to complete the project by 2012, at a cost of \$3.8 billion.

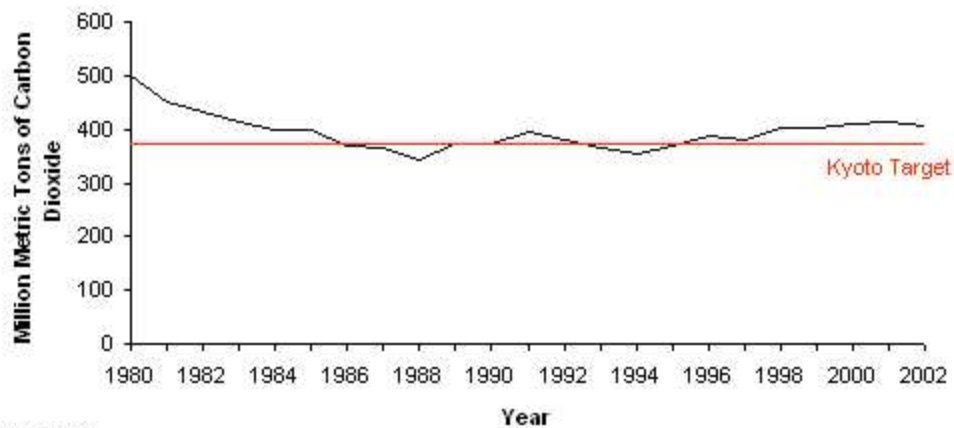
France has taken a leading role in the development of the International Thermonuclear Experimental Reactor (ITER). ITER, a consortium of the European Union, the United States, Japan, Russia, China, and South Korea, seeks to build a working fusion reactor by 2015.

## Environment

***Due to its reliance on nuclear power, the French economy has the third-lowest carbon intensity in the OECD.***

France emitted 407 million metric tons (Mmt) of carbon dioxide in 2002, the fourth-most in Europe. It also consumed 11.0 quadrillion British thermal units (Btu) of total energy, the second-largest amount in Europe. On the other hand, the energy intensity of France's economy in 2002 was well below the average for members of the Organization for Economic Cooperation and Development (OECD). Further, the carbon dioxide intensity of the French economy in 2002 was the third-lowest in the OECD, behind only Switzerland and Sweden, an indication of France's reliance upon nuclear energy.

**France's Carbon Dioxide Emissions  
1980-2002**



Source: EIA

#### **Specific Concerns**

France has been the victim of several major oil spills that resulted in severe environmental damage to France's coastline and caused serious economic harm to France's tourism and fishing industries. In response, the French government has taken a proactive approach to preventing marine pollution by establishing an extended ecological zone into the Mediterranean Sea and imposing more stringent conditions on oil tankers. Air pollution, especially in Paris, is still a problem, despite the adoption of measures to mitigate the effects of increased transportation and growing energy consumption from France's transportation sector. By European standards, France's development and use of renewable energy resources has been fairly limited. Market barriers thus far have stifled the use of renewables for electricity and heat production in France. Furthermore, the low cost of nuclear energy has meant that there is little economic justification to develop alternative fuel sources. Finally, there has been some opposition to nuclear power in France by environmentalists, including public protests and demonstrations.

## Profile

## Country Overview

<b>Location</b>	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
<b>Population (2005E)</b>	60,656,178
<b>Languages</b>	French 100%, rapidly declining regional dialects and languages (Provençal, Breton, Alsatian, Corsican, Catalan, Basque, Flemish)
<b>Religion</b>	Roman Catholic 83%-88%, Protestant 2%, Jewish 1%, Muslim 5%-10%, unaffiliated 4%
<b>Currency</b>	euro (EUR) note: on 1 January 1999, the European Monetary Union introduced the euro as a common currency to be used by financial institutions of member countries; on 1 January 2002, the euro became the sole currency for everyday transactions within the member countries
<b>Inflation Rate (2004E)</b>	2.3%
<b>Gross Domestic Product (GDP, 2004E)</b>	purchasing power parity - \$1.737 trillion
<b>Real GDP Growth Rate (2004E)</b>	2.1%
<b>Exports (2004E)</b>	\$419 billion f.o.b.
<b>Imports (2004E)</b>	\$419.7 billion f.o.b.

## Energy Overview

<b>Proven Oil Reserves (January 1, 2005E)</b>	0.1 billion barrels
<b>Oil Production (2004E)</b>	76.6 thousand barrels per day, of which 30% was crude oil.
<b>Oil Consumption (2004E)</b>	1,976.9 thousand barrels per day
<b>Proven Natural Gas Reserves (January 1, 2005E)</b>	0.5 trillion cubic feet
<b>Natural Gas Production (2003E)</b>	0.1 trillion cubic feet
<b>Natural Gas Consumption (2003E)</b>	1,544.5 billion cubic feet
<b>Recoverable Coal Reserves (2003E)</b>	16.5 million short tons
<b>Coal Production (2003E)</b>	1.9 million short tons
<b>Coal Consumption (2003E)</b>	21.4 million short tons
<b>Electricity Installed Capacity (2003E)</b>	112 gigawatts
<b>Electricity Production (2003E)</b>	536.9 billion kilowatt hours
<b>Electricity Consumption (2003E)</b>	433.3 billion kilowatt hours
<b>Total Energy Consumption (2003E)</b>	11.2 quadrillion Btus*, of which Nuclear (39%), Oil (37%), Natural Gas (15%), Hydroelectricity (6%), Coal (5%), Other Renewables (0%)
<b>Total Per Capita Energy Consumption (2003E)</b>	186.9 million Btus
<b>Energy Intensity (2002E)</b>	7,561.9 Btu per \$1995-PPP**

## Environmental Overview

<b>Energy-Related Carbon Dioxide Emissions (2003E)</b>	409.2 million metric tons, of which Oil (66%), Natural Gas (22%), Coal (12%)
<b>Per-Capita, Energy-Related Carbon Dioxide Emissions (2003E)</b>	6.8 metric tons
<b>Carbon Dioxide Intensity (2002E)</b>	0.3 Metric tons per thousand \$1995-PPP**

\* 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 Commerce Country Commercial Guide - France](#)

[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**

[Eurostat](#)

[French Agency for Environment and Energy Management \(ADEME\)](#)

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

[French Ministry of the Economy, Finance, and Industry](#)

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

**Oil**

[TotalFinaElf](#)

[Vermilion REP SA](#)

**Natural Gas**

[Gaz de France](#)

[Gaz du Sud-Ouest \(GSO\)](#)

[Energie du Rhone](#)

**Coal**

[Charbonnages de France](#)

**Electricity**

[Areva](#)

[Commissariat a l'Energie Atomique](#)

[Compagnie Nationale du Rhone](#)

[Electricite de France](#)

[La Commission de Regulation de l'Electricite \(CRE\)](#)

[Powernext](#)

[Poweo](#)

[Reseau de Transport d'Electricite](#)

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

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World Gas Intelligence  
World Markets Analysis  
Yorkshire Post