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April 2004

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France

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

The information in this report is the best available as of April 2004 and is subject to change.



BACKGROUND

France is a founding member of the European Union (EU) and in January 1999, adopted the European single currency, the Euro. In 2003, France's real gross domestic product (GDP) grew only 0.2%, the country's weakest performance since 1993. According to France's 2004 budget, the country's economy is projected to recover modestly, with GDP growing an estimated 1.7%. For the fourth consecutive year, the French government's budget deficit is expected to exceed the 3% of GDP limit allowed by the EU's Stability and Growth Pact.

France has been one of the slowest countries in the EU to open its electricity and natural gas sectors to competition in line with EU regulations. Staunch opposition from unions has also made it difficult for the government to privatize its

two state-owned energy companies: Electricité de France (EdF); and Gaz de France (GdF). In April 2004, after the government announced its intentions in the coming year to sell minority stakes in the two companies, unions held a countrywide strike, cutting power output and blocking natural gas imports.

In March 2004, after France's ruling party, Union for Popular Movement (UPM), lost elections in all but one of France's 22 metropolitan regions, President Jacques Chirac reshaped his administration, replacing the head of key ministries (finance, interior, and social affairs). President Chirac did not replace Prime Minister Jean-Pierre Raffarin, however.

ENERGY

French energy policy has been relatively consistent in recent decades, with the main objectives including securing energy supply, achieving international competitiveness, and protecting the environment. The focus on energy security has made France one of the world's top producers and

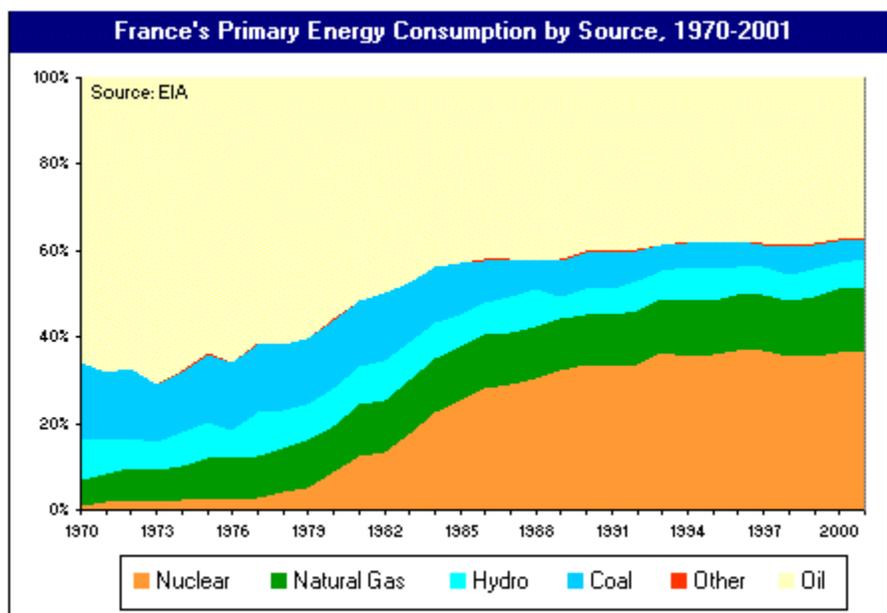
consumers of nuclear power (see [graph](#)). In spring 2003, the French government organized a national energy policy debate, which focused on determining France's energy mix for the next 30 years, particularly the status of nuclear power and the future role of renewables. In November 2003, the French government issued a [white paper](#), outlining recommendations resulting from the debate. Key of the aspects of the white paper included: increasing the use of renewables; improving energy efficiency; and maintaining the option to develop new nuclear generation facilities, i.e. the [European Pressurized Reactor \(EPR\)](#). The government has incorporated these recommendations into a new energy policy that will be debated in parliament in late-spring 2004.

OIL

The role oil plays in France's energy sector has decreased substantially since the 1970s. Overall, the contribution of oil to primary energy consumption in France fell from 71% in 1973 to 40% in 2001, while nuclear power increased from 2% to 39% over the comparable time period.

Exploration and Production

As of January 2004, France's proven crude oil reserves totaled only 148 million barrels, making the country highly dependent on oil imports. In 2003, France consumed an estimated 2.06 million barrels per day (bbl/d) of oil, of which 97%, or 1.99 million (bbl/d), was imported. The country's total oil production (including condensate, natural gas liquids and refinery gain) for the year was an estimated 73,100 bbl/d, of which 24,100 bbl/d was crude oil. France imports crude oil primarily from Saudi Arabia and Norway, and to a lesser extent, from United Kingdom, Iraq, Iran, Nigeria, and Russia.



Sector Organization

Total

Despite France's limited domestic crude oil reserves and production, the French oil industry is an important actor in world energy markets, particularly after French oil company Total merged with Belgium's Petrofina and France's Elf Aquitaine, in 1999 and in 2000, respectively. The merger created TotalFinaElf (now Total SA), the fourth largest oil company in the world by market value (as of December 2003), as well as one of the largest hydrocarbon producers (see [table](#)). Total has a global portfolio of oil production assets, with African operations accounting for an estimated 646,000 bbl/d in 2003, followed by European operations with 460,000 bbl/d, the Middle East with 388,000 bbl/d and South America with 130,000 bbl/d.

Total's Hydrocarbon Production in 2003			
Total Reserves (billion)	Total Production (million barrels of oil)	Total Liquids (million)	Natural Gas (billion)

New Developments

In February 2004, Total, along with the National Iranian Oil Company and Malaysia's Petronas, created Pars LNG, which will source its

	barrels of oil equivalent)*	equivalent per day)	barrels per day)	cubic feet per day)
Total	11.4	2.6	1.6	4.8
ExxonMobil	22.0	4.4	2.5	11.0
BP	18.0	3.6	2.1	8.6
<i>Source: Total, ExxonMobil and BP (2003 Annual Reports)</i>				
<i>* Total reserves includes all liquids (crude oil, condensates and NGLs) and natural gas</i>				

natural gas from [Iran's](#) South Pars gas field. Total also signed an agreement in November 2003 with Saudi Aramco and Shell to explore jointly for natural gas in the southern part of the Rub Al-Khali in Saudi Arabia. In Canada, Total has a 43.5% stake in the Surmont Oilsands Project, together with

partners ConocoPhillips (43.5%) and Devon (13%). Initial production is expected to begin in 2006, increasing to more than 100,000 bbl/d by 2012.

During the 1990s, Total and Elf Aquitaine reportedly discussed with [Iraq](#) the issue of development rights for the Majnoon and Nahr Umr oil fields. Majnoon is the largest of Iraq's oilfields slated for post-war development, with reserves of 12-30 billion barrels. It remains unclear, however, whether Total will be able to develop these fields according to the original contract. The Iraqi Oil Ministry reportedly hinted in December 2003 that it might exclude French companies from oil development projects in the country because of the French government's political stance before and after the U.S.-led war with Iraq.

Downstream

France's crude oil refining capacity was 1.95 million bbl/d, as of January 2004. The largest refinery in France is Total's Gonfreville l'Orcher facility, with a capacity of 342,914 bbl/d. Total also has the largest refining capacity in Europe, an estimated 2.17 million bbl/d, of which 968,000 bbl/d is located in France.

Increasingly strict EU environmental regulations have been forcing refineries in France, as well as in all EU member states, to upgrade their facilities not only to reduce their emissions but also to meet new fuel specifications. The EU's [Directive 2003/17/EC](#), for example, requires each EU member state to market in their prospective territories gasoline and diesel fuels with maximum sulfur content of 10 milligrams per kilogram (mg/kg) by no later than January 1, 2005. By January 1, 2009, all gasoline and diesel fuels marketed in EU member states must have a maximum sulfur content of 10mg/kg (see Articles 3(2) and 4(1) and Annexes III and IV in the [Directive](#) for more specifics). In addition, the EU is expected to inaugurate its EU Carbon Emissions Trading Program on January 1, 2005. Under the [Directive 2003/87/EC](#), member state governments will allocate annually emission allowances to companies (including refineries), which would in turn have to meet their allowance by either reducing CO2 emissions or by acquiring emission rights from other companies. ExxonMobil, for example, has already started upgrading its Port Jérôme refinery and desulfurization plant in order to meet these regulations. The upgrade is expected to be completed by the third quarter of 2004.

NATURAL GAS

France has limited natural gas reserves (506 billion cubic feet (Bcf) as of January 2004), and therefore imports almost all of the natural gas it consumes. In 2002, France produced only 65 Bcf of natural gas while it consumed 1.6 trillion cubic feet (Tcf). This reliance on imports will most likely increase, as the country's largest natural gas field, Lacq, in southwest France is nearly depleted. Despite France's limited reserves, natural gas has steadily increased its share of primary energy, from 5.9% in 1970 to 15.7% in 2001.

Sector Organization

Natural Gas Market Privatization

The French government has been slow to liberalize its natural gas market according to the [EU Directive \(98/30/EC\)](#). On January 3, 2003, the French parliament made the Directive into national law ([No 2003-8](#)), nearly three years past the EU deadline to do so. In July 2003, the EU Commission issued a second EU Directive on Natural Gas ([2003/55 EC](#)), aimed at speeding up the liberalization of the natural gas market. According to the Directive, EU member states are required to open their natural gas markets for non-residential customers by July 1, 2004 at the latest, and for all customers by July 1, 2007. The Directive also requires the unbundling of network and supply activities, as well as allowing third-party access to networks and to storage facilities (see [Directive](#) for more detail).

Gaz de France

Over the past decades, state-owned Gaz de France (GdF), has dominated the French natural gas industry, with a monopoly on importation and distribution of natural gas. Despite the EU's 1998 Directive, GdF still controls for the time being most of the natural gas market in France.

GdF Privatization

Movement towards changing the status of GdF from a state-owned enterprise to a joint stock company has been slow. Prime Minister Raffarin pledged in August 2002 to partly privatize GdF by early 2004 but that appears less likely after unions have repeatedly protested against such an action. GdF is also lobbying for legislation to change the rules that restrict the company's operations in France to the natural gas sector. GdF reportedly wants to expand into the electricity market in order to compete against multi-energy suppliers (both natural gas and electricity) already present in France, such as Suez-Electrabel electricity and gas group.

In August 2002, GdF's control of the country's pipeline system increased slightly, when the French government passed a law, allowing GdF and Total to purchase two smaller regional networks: Gaz du Sud-Ouest (GSO); and Compagnie Française du Méthane (CFM). Until December 2003, GdF held 30% and 55% stakes in GSO and CFM, respectively, while Total held the remaining stakes. In November 2003, Total and GdF signed a protocol of intent to separate their cross-holdings in the companies, giving GdF sole ownership of CFM and Total sole ownership of GSO. The agreement also gave Total a one-third interest in the Fos II LNG terminal being constructed by GdF and a portion of CFM's supply and trading portfolio. France's energy regulator, Commission de regulation de l'énergie (CRE) approved the asset-swap in December 2003, noting that the agreement would increase Total's share of France's natural gas market to 11%. GdF would still control 85% and new entrants 4%.

New Market Entrants

Since the natural gas market has opened, a number of suppliers have entered the French natural gas market, such as Total, Suez-Distrigas, BP and Ruhrgas. Nonetheless, competition in France still remains limited, according to the country's energy regulator CRE. At a conference on natural gas in September 2003, CRE's president pointed out the following hindrances to increasing competition in France: 1) the absence of competition in Southern France, as most import entry points are in the Northern France; 2) limited demand for natural gas from the power sector, as most of country's electricity is derived from nuclear; 3) long-term take-or-pay contracts which currently cover France's demand leave little room for competition; and 4) complicated procedures which discourage small operators from entering the market. In order to increase competition, CRE has been supportive of developing new import infrastructure, such as liquefied natural gas (LNG) terminals or natural gas interconnectors with Spain.

Imports

In 2002, France imported 29% of its natural gas from Norway, followed by Russia with 24%,

Algeria 24%, and The Netherlands 12%, according to the French government. The remainder was imported from the United Kingdom, Qatar and Nigeria.

Pipelines

Trans-Pyrenean: Lacq to Calahorra

In 1993, the Trans-Pyrenean natural gas pipeline, linking Calahorra, Spain to Lacq, France began operations. The connection allows Spain to import natural gas via France from Norway. There has been discussion of increasing the transport capacity of the pipeline, which currently stands at 85 Bcf per year.

Franpipe

In October 1998, France for the first time became directly linked via pipeline to a foreign production field. The Franpipe links Norway's Draupner platform in the Norwegian North Sea to the French port of Dunkerque. The 521-mile long pipeline has annually capacity of 530 Bcf/d. By 2005, the Norwegian pipeline is expected to supply one-third of France's total natural gas consumption.

Medgaz

Both GdF and Total have stakes in the proposed Medgaz natural gas pipeline, linking Algeria to Spain and eventually to France. Algeria's Sonatrach (20%) and Spain's Cepsa (20%), which 50% is owned by Total, are leading the project, along with BP, Endesa, GdF, and Iberdrola. Construction of the pipeline, however, has been delayed, as the final-go-ahead hinges on securing sufficient funding. The group expects the pipeline to have an initial capacity ranging between 283 and 353 Bcf per year.

Other Pipeline Entry Points

France also imports natural gas from Belgium via the Taisnières entry point. Belgium acts as a major cross-border transit center for natural gas coming via pipelines from Norway, the United Kingdom, The Netherlands and Russia. Belgium also imports LNG at its Zeebrugge terminal, which is available for re-export. France also transits a portion of the natural gas entering France from Belgium to Italy and to Spain. There also is another entry point on the border with Germany (Obergailbach).

New Regional Initiatives

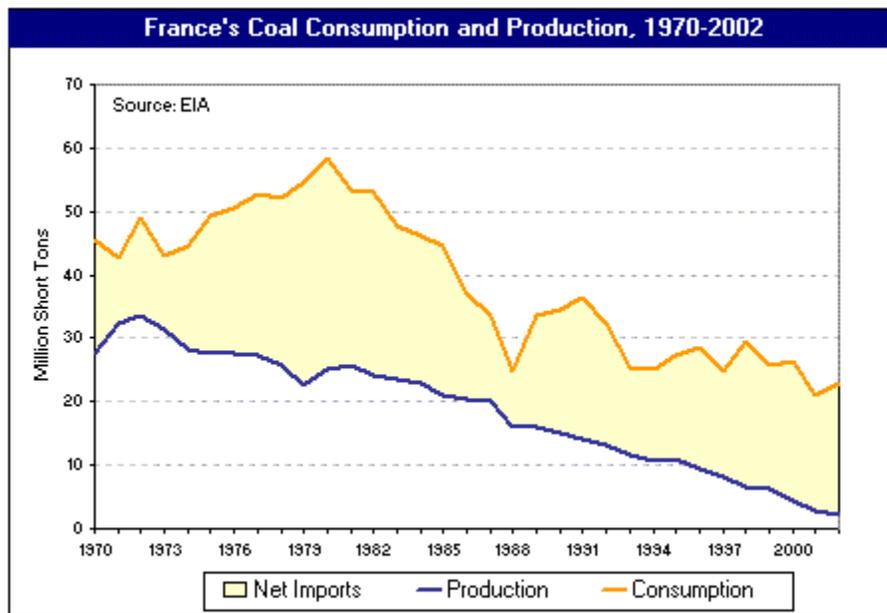
In July 2003, the energy regulators of France, Spain and Portugal held a meeting to discuss creating a southern hub for natural gas, spanning the Iberian and Southern France natural gas markets. In conclusion of the meeting, the regulators proposed three objectives: 1) increase the transport capacity of the Lacq to Colahorra pipeline; 2) construct a new pipeline linking Bilbao, Spain to Lussagnet, France; and 3) construct a new pipeline on the Mediterranean coast. In February 2004, Total, along with partner Gas de Euskadi, announced that they plan to build the Bilbao to Lussagnet line, with an initial capacity of 48 million cubic feet per day (Mmcf/d).

Liquefied Natural Gas

In 2002, France was the largest importer of LNG in Europe. Nearly 90% of the France's LNG imports in 2002 came from Algeria, with lesser amounts from Nigeria and Oman. GdF owns and operates the only two LNG import terminals in France: the 159-Bcf-per-year-capacity Fos-sur-Mer (Fos I) near Marseilles and the 353-Bcf-per-year-capacity Montoir-de-Bretagne, near Nantes. GdF is currently constructing a second import terminal at Fos-sur-Mer, with capacity of 288 Bcf per year. The terminal (Fos II) is expected to come onstream in 2006. Exxonmobil has also proposed building a third LNG import terminal at Fos-sur-Mer (Fos III), with an expected operational date of 2009.

COAL

France has relatively small coal reserves of only 40 million short tons (Mmst). In 2002, France produced 2.3 Mmst while consuming 22.8 Mmst, making the country highly dependent on imports. As a primary fuel source, coal's share has consistently declined, from 17.6% in 1970 to 4.6% in 2001. Much of this decline can be attributed to the increased use of nuclear power in France, which has displaced coal-fired generation power plants. In 1964, for example, France generated 46% of its power from coal and in 2001, only 5% (see [graph](#)).



In 2003, France's Charbonnages de France (CdF) closed two of its last three operating coal mines in France, Gardanne and Merlebach. CdF is expected to close its last operating coalfield, La Houve, in early 2004, bringing an end to coal production in France. Over the last decade, the coal industry has struggled, unable to compete against cheaper imported coal. CdF also has suffered from France's energy policy, which has focused on nuclear power.

ELECTRICITY

France is the second-largest electricity market, consumer and generator in the EU behind Germany. In 2002, France produced 528.6 billion kilowatthours (Bkwh) and consumed 414.7 Bkwh. For the year, the France exported 114 Bkwh, making it the largest exporter of electricity in the EU. In 2002, the country generated 78.5% of its electricity from nuclear power, followed by hydro electric facilities with 11.5% and thermal 9.3%.

Sector Organization

Electricity Market Privatization

France has slowly opened its electricity sector according to guidelines established by the EU's 1996 [Directive \(96/92/EC\)](#) on electricity. In February 2000, a full year after the EU's first implementation deadline, France adopted its first legislation ([Law No 2000-108](#)) on electricity. The Law allowed all consumers with an annual electricity consumption above 16 gigawatthours (Gwh) to choose their supplier. In February 2003, the government further lowered the consumer eligibility threshold to 7 Gwh, opening up 37% of France's electricity market to competition. In July 2003, the EU Parliament expedited the liberalization process, with the adoption of a second [Directive](#) on electricity. According to the Directive, EU member states are required to open their electricity markets for all non-residential customers (70% of the French market) by July 1, 2004, at the latest, and for all customers by July 1, 2007.

Other liberalization steps undertaken by the French government included the creation of the Electricity Transmission Network (Reseau de Transport d'Electricité, RTE). RTE, which became official on July 1, 2000, operates France's high-tension transmission network and is independent of EdF. RTE's mission is to assure all clients fair access to the network. In late November 2001, the

Powernext electricity trading market was launched in France. Powernext auctions standard hourly contracts for physical delivery of electricity to business customers under responsibility of the RTE and guaranteed by Clearent, a subsidiary of the Euronext stock exchange. Powernext aims to trade 10% of the French market by 2003-2004, and also to act as a price reference for the electricity market. Powernext plans to launch French electricity futures trading, which will include hedging products for all power-related risk (natural gas, electricity futures contracts, CO₂, and weather derivatives).

Electricité de France (EdF)

France's electricity sector is dominated by the state-owned utility company, Electricité de France (EdF), which produces, transports, and distributes most of the electricity in France. EdF is the last major state-run electricity monopolist in the EU, as most of France's neighbors have privatized their electricity companies.

EdF Privatization

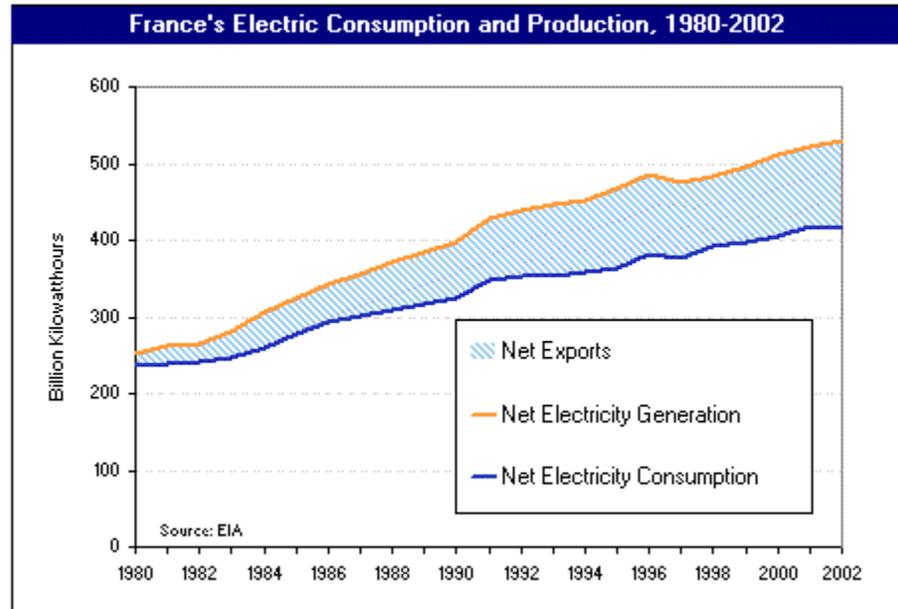
The French government plan to partly privatize EdF by 2004 continues to face opposition, particularly

from the company's unions, which fear job losses and changes to their lucrative pensions. EdF remains keen on reforming its retirement program, as the company's pension liability, reported in the billions, could be a major obstacle to attracting private investment, according to observers.

EdF Acquisitions

In recent years, 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 bought assets abroad, such as Light in Brazil, Edenor in Argentina and natural gas-fired power plants in Mexico. EdF's acquisitions, however, have not been without criticism, particularly from other EU member states and companies. Many claim that EdF has made aggressive acquisitions in the EU's liberalized electricity market while France has been slow to open its doors to competition in the electricity sector, let alone privatize EdF. All of this has protected EdF's market share in France from competition. The French government also has been critical of EdF's acquisition in Latin America, as economic and political problems have resulted in losses. According to the company's 2003 annual report, Argentina is returning to profits while Brazil continues to generate losses and Mexico is nearly breaking even.

The most notable opposition to EdF's acquisitions has come from Spain and Italy, which introduced decrees in December 1999 (Spanish Law 55/1999) and in May 2001 (Decree-Law No 192 converted into Law No 301 in July 2001), respectively, limiting voting rights of foreign public enterprises investing in companies in their prospective countries. In 2001, EdF gained limited control of Spain's HidroCantábrico after EnBW acquired a 35% stake in the company. In the case of Italy, EdF gained some control of Edison through its 18% stake in Italoenergia BIS (IEB), which acquired a 62.5% stake of Edison in 2001.



Over the past two years, EdF has been trying to reach an agreement with the Italian government that would allow Italy's state-owned Enel some access to the French power market in exchange for lifting voting restrictions placed on EdF's assets in Italy. In March 2004, EdF and Enel reportedly were getting closer to signing a memorandum of understanding (MOU) that would resolve the dispute. Details on the MOU remain, however, mainly speculative but some reported scenarios included: guaranteed power supplies to Italy; Enel participation in EdF's plans to build a new European Pressurized Reactor; and EdF increasing its shares in Edison. The EU Commission announced in December 2003 that it will be taking Italy to the Court of Justice because of its "anti-EdF" law, citing that it unnecessarily constrains the principle of the free movement of capital within the EU. In Spain, voting restrictions placed on EdF were lifted in October 2001 after the company agreed to increase capacity of a France-Spain power interconnector. Currently, there has been some speculation that EnBW is considering selling its stake in HidroCantábrico to Portugal's Electricidade de Portugal, which already owns 40% of the company.

Despite these setbacks, the company's "EdF 2003-2007 Project" has set an objective of substantially increasing its share of the European electricity market by 2007 (excluding France). Similar to GdF, EdF would like to change the policy (speciality principle) that forbids the company from operating in the natural gas market, thus creating multi-energy group.

EdF and the EU Commission

Another charge against EdF has been that its status as a state-owned monopoly has made it easier for it to purchase and outbid competitors abroad. Of particular controversy has been the company's status as an Etablissement Publique et Industrielle (EPIC) which grants EdF unlimited state guarantees against insolvency and bankruptcy. After an investigation by the EU Competition Commission, the French government announced in December 2003 that it would bring an end to EdF's unlimited state guarantees by December 2004. The Commission also ordered EdF to repay an estimated \$1 billion plus interest to the French state after receiving inappropriate tax relief between 1987 and 1997.

Other Players

There currently are only two companies in France that compete with EdF on a limited basis. The first is CNR, Compagnie Nationale du Rhône, France's second-largest electricity group, which produced an estimated 3% of France's electricity in 2002. CNR, an independent power producer since April 2001, operates 19 hydropower plants on the Rhône. In December 2003, Electrabel of Belgium, a subsidiary of the Suez Group, acquired shares in CNR held by EdF (22.22% of the share capital and 20% of the voting rights) and by the Chambre de Commerce et d'Industrie de Villefranche and Beaujolais (0.06% of the share capital and 0.10% of the voting rights). The transaction raised Electrabel's capital share and voting rights to 47.88% and 46.06%, respectively.

In January 2004, Electrabel and EdF agreed to modify a collaboration agreement on joint power generation and marketing. In the early 1970s, the two companies collaborated in constructing and operating the Tihange 1 nuclear power plant. Under the original agreement, EDF and Electrabel shared the power generated equally and subsequently marketed it in their prospective countries. The two companies also reached another agreement under which 12.5% of the electricity generated from the Tricastin nuclear power plant in France was allocated to Electrabel for distribution on the Belgian grid. The new agreement, reflecting the liberalization of the EU electricity market, allows each company to market the power generated from the plants as they see fit.

The second competitor to EdF in France is Société Nationale d'Electricité et de Thermique (SNET), a subsidiary of French coal utility Charbonnages de France (CdF). SNET's shareholders include CdF (51%), EdF (18.7%), and Spain's Endesa (30%). Pending approval from the EU and the French

privatization committee, Endesa will become the majority stakeholder in SNET after it reached an agreement with CdF to acquire an additional 35% in SNET on March 3, 2004. SNET operates five coal-fired plants in France, as well as power-generating facilities in Poland and in Turkey. With France's electricity market opening in July 2004, both CNR and SNET are currently trying to increase their market shares.

Nuclear

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 imports. In 2002, about 79% of France's electricity was generated from the country's 58 nuclear reactors. This represents a dramatic change from 1973, when fossil fuels accounted for an estimated 65% of French gross power output.

Restructuring

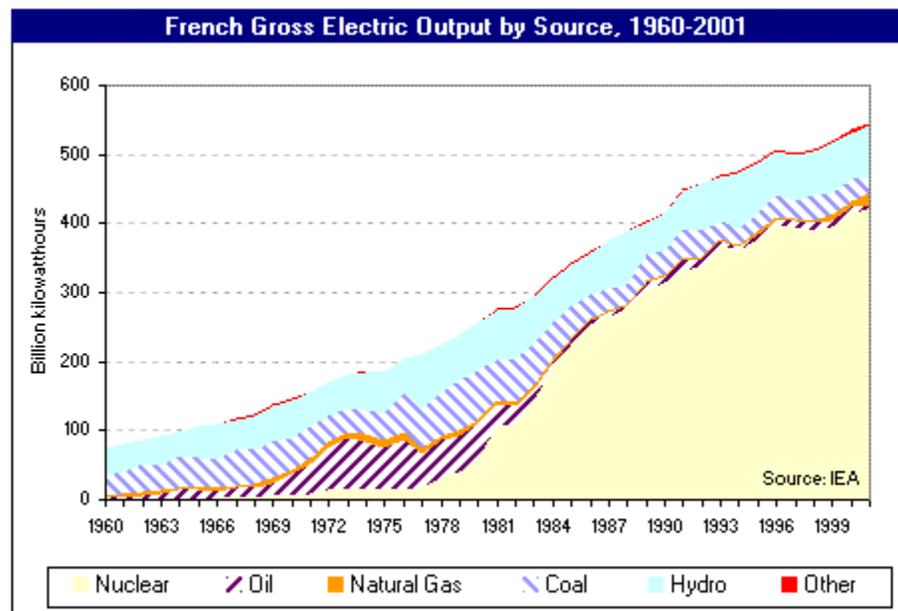
In September 2001, the French government restructured its nuclear sector into a single government holding company, Areva. The Areva Group is a combination of Cogema, Framatome, CEA Industrie, and the Commissariat à l'Energie Atomique (CEA), the French Atomic Energy Agency, which is the major shareholder of the Areva Group with nearly 80%. The group presides over the country's major nuclear enterprises, including mining, fuels, treatment, recycling, decontamination and engineering. The French government plans in the long term to offer Areva shares to outside investors, although the CEA will retain control. In December 2003, Areva, along with partner Siemens, won a contract to build the first nuclear power plant in Europe for more than a decade, in Finland. Areva also plans to build a new uranium enrichment plant at its Tricastin site in order to avoid dependence on imports in coming years.

Future of Nuclear

According to the white paper on the future of France's energy policy released in November 2003, France will maintain the nuclear option, despite increased environmental objections in recent years. France now must decide whether to replace obsolete nuclear plants with more modern ones, as a number of reactors will need to be shut down around 2015-2020. The current government has indicated that it is preparing to authorize EdF to begin

constructing a new nuclear unit, based on the [Franco-German EPR \(European Pressurized Reactor\)](#) design. The final decision on whether to move forward with the project, however, could be postponed until late 2004 or early 2005. Observers have pointed out that if France is contemplating replacing some of its reactors in the 2015-2020 timeframe, construction on the EPR will need to begin soon, due to long lead times for nuclear construction.

Nuclear power in France continues to face public opposition as protesters staged an anti-EPR



demonstration in March 2004. In addition, other concerns regarding nuclear power's reliability intensified after a heat wave in the summer of 2003 hindered some nuclear power facilities from meeting demand. Specifically high water temperature in rivers meant that some reactors could not operate at full capacity. France subsequently had to reduce power exports to neighboring countries, as well as increase imports from the United Kingdom to meet shortfalls.

International Thermo-nuclear Experimental Reactor (ITER)

The EU chose France as its candidate to host the [ITER project](#), the world's biggest nuclear fusion project. France currently is competing against Japan to host the project. The United States, Japan, the EU, China, Russia, and South Korea are planning to construct jointly ITER, which will be the first large-scale demonstration on earth of nuclear fusion.

ENVIRONMENT

France has been victim to several major oil spills in recent years 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 is taking a proactive approach to preventing [marine pollution](#) by establishing an extended ecological zone into the Mediterranean Sea, as well as attempting to impose more stringent conditions on the oil tanker transportation.

[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. However, efforts by successive French governments to improve energy efficiency and to promote conservation have reduced the country's level of [energy intensity](#). Likewise, France's level of [carbon intensity](#) is lower than that of its peers in Western Europe, largely due to its reliance on [nuclear energy](#). France's commitment to the use of nuclear power has allowed the country to cut its [carbon emissions](#) over the past 20 years, although the growth in France's carbon emissions in the mid-1990s may make it difficult for the country to live up to its commitments under the Kyoto Protocol.

By European standards, France's development and use of [renewable energy](#) resources has been fairly limited. Market barriers thus far has stifled the use of renewables for electricity and heat production in France. Nevertheless, despite (or perhaps because of) France's lack of fossil fuel resources, most energy-related environmental trends in France appear to be headed for greater efficiency and less environmental impact. France's plan for an "environment charter" to be added to its constitution is geared to make the country a world leader in promoting environmental concerns, making the [outlook](#) for France's environment quite favorable if the French government can follow through with that legislation and continue to improve its energy efficiency efforts.

Sources for this report include: CIA World Factbook; Dow Jones News Wire service; Economist; Economist Intelligence Unit Views Wire; Electricity Utility Week; Europe Information Service; Financial Times; French Ministry of the Economy, Finance and Industry; Global Insight; International Energy Agency; International Petroleum Finance; La Commission de Régulation de l'Electricité; Nucleonics; Oil and Gas Journal; Petroleum Economist; Petroleum Intelligence Weekly; Réseau de Transport d'Electricité; Reuters; U.S. Department of Labor; U.S. Energy Information Administration; Wall Street Journal; World Gas Intelligence.

COUNTRY OVERVIEW

President: Jacques Chirac (since May 1995)

Prime Minister: Jean-Pierre Raffarin (since May 2002)

Independence: 486 (unified by Clovis)

Population (2003E): 59.8 million

Location/Size: 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/547,030 sq km (slightly less than twice the size of Colorado)

Language: French 100%, rapidly declining regional dialects and languages (Provençal, Breton, Alsatian, Corsican, Catalan, Basque, Flemish)

Ethnic groups: Celtic and Latin with Teutonic, Slavic, North African, Indochinese, Basque minorities

Religions: Roman Catholic 83-88%, Protestant 2%, Jewish 1%, Muslim 5-10%, unaffiliated 4%

ECONOMIC OVERVIEW

Economy, Finance, and Industry Minister: Nicolas Sarkozy

Currency: Euro (EUR)

Exchange Rate (4/13/04): 1 U.S. Dollar = EUR 0.83

Nominal Gross Domestic Product (GDP, 2003E): \$1.76 trillion

Real GDP Growth Rate (2003E): 0.2% **(2004F):** 1.7%

Inflation Rate (consumer prices, 2003E): 2.1% **(2004F):** 1.7%

Unemployment Rate (2003E): 9.6% **(2004F):** 9.7%

Merchandise Exports (2003E): \$361 billion

Merchandise Imports (2003E): \$356 billion

Trade Surplus (2003E): \$5 billion

Major Trading Partners: Germany, Italy, Belgium, the United Kingdom, the United States

Major Export Products: Machinery and transport equipment, agricultural products, chemical products

Major Import Products: Machinery and transport equipment, agricultural products, chemical products, and energy

ENERGY OVERVIEW

Proven Oil Reserves (1/1/04E): 148 million barrels

Oil Production (2003E): 73,100 barrels per day (bbl/d), of which 24,100 bbl/d is crude oil

Oil Consumption (2003E): 2.06 million bbl/d

Net Oil Imports (2003E): 1.99 million bbl/d

Crude Oil Refining Capacity (1/1/04E): 1.95 million bbl/d

Natural Gas Reserves (1/1/04E): 506 billion cubic feet (Bcf)

Natural Gas Production (2002E): 65 Bcf

Natural Gas Consumption (2002E): 1.59 Tcf

Net Natural Gas Imports (2002E): 1.53 Tcf

Coal Reserves (2001E): 39 million short tons (Mmst)

Coal Production (2002E): 2.3 Mmst

Coal Consumption (2002E): 22.8 Mmst

Net Coal Imports (2002E): 20.5 Mmst

Electricity Generation (2002E): 528.6 billion kilowatthours (Bkwh), nuclear (78.5%), hydro (11.5%), thermal (9.3%), other renewables (0.8%)

Electricity Consumption (2002E): 414.7 Bkwh

Net Electricity Exports (2002E): 113.9 Bkwh

Electric Generation Capacity (2002E): 111.2 gigawatts

ENVIRONMENTAL OVERVIEW

Minister of Environment and Sustainable Development: Roselyne Bachelot-Narquin

Total Energy Consumption (2001E): 10.5 quadrillion Btu* (2.6% of world total energy)

consumption)

Energy-Related Carbon Dioxide Emissions (2001E): 396.4 million metric tons of carbon dioxide (1.6% of world carbon emissions)

Per Capita Energy Consumption (2001E): 177.8 million Btu (vs. U.S. value of 341.8 million Btu)

Per Capita Carbon Dioxide Emissions (2001E): 6.7 metric tons of carbon dioxide (vs. U.S. value of 20.2 metric tons of carbon dioxide)

Energy Intensity (2001E): 7,529 Btu/ \$1995 (vs U.S. value of 10,810 Btu/ \$1995)**

Carbon Dioxide Intensity (2001E): 0.28 metric tons of carbon dioxide/thousand \$1995 (vs U.S. value of 0.64 metric tons/thousand \$1995)**

Fuel Share of Energy Consumption (2001E): Oil (40%), Natural Gas (15.3%), Coal (4.6%)

Fuel Share of Carbon Dioxide Emissions (2001E): Oil (67%), Natural Gas (21.5%), Coal (11%)

Status in Climate Change Negotiations: Annex I country under the United Nations Framework Convention on Climate Change (ratified March 25th, 1994). Signatory to the Kyoto Protocol (April 29th, 1998) and ratified the Treaty on May 31, 2002.

Major Environmental Issues: Some forest damage from acid rain; air pollution from industrial and vehicle emissions; water pollution from urban wastes and agricultural runoff.

Major International Environmental Agreements: A party to Conventions on Air Pollution, Air Pollution-Nitrogen Oxides, Air Pollution-Sulphur 85, Air Pollution-Sulphur 94, Air Pollution-Volatile Organic Compounds, Antarctic-Environmental Protocol, Antarctic Treaty, 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, Tropical Timber 94, Wetlands and Whaling. Has signed, but not ratified: Air Pollution-Persistent Organic Pollutants, Climate Change-Kyoto Protocol.

* 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

For more information from EIA on France, please see:

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[U.S. Department of Commerce Country Commercial Guide - France](#)

[U.S. Department of Energy on French Nuclear Sector](#)

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

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

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Associations and Institutions

[Association Française du Gaz](#)

Coal

[Charbonnages de France](#)

Electricity (including nuclear)

[Areva](#)

[Commissariat à l'Energie Atomique](#)

[Compagnie Nationale du Rhône](#)

[Electricité de France](#)

[La Commission de Régulation de l'Electricité \(CRE\)](#)

[Powernext](#)

[Réseau de Transport d'Electricité](#)

[Société Nationale d'Electricité et de Thermique](#)

Government

[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 Études Économiques \(INSEE\)](#)

Oil and Natural Gas

[Compagnie Française du Méthane \(CFM\)](#)

[Energie du Rhône](#)

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Last Updated: April 15, 2004

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