

COUNTRY ANALYSIS BRIEFS

Italy

Last Updated: May 2007

Background

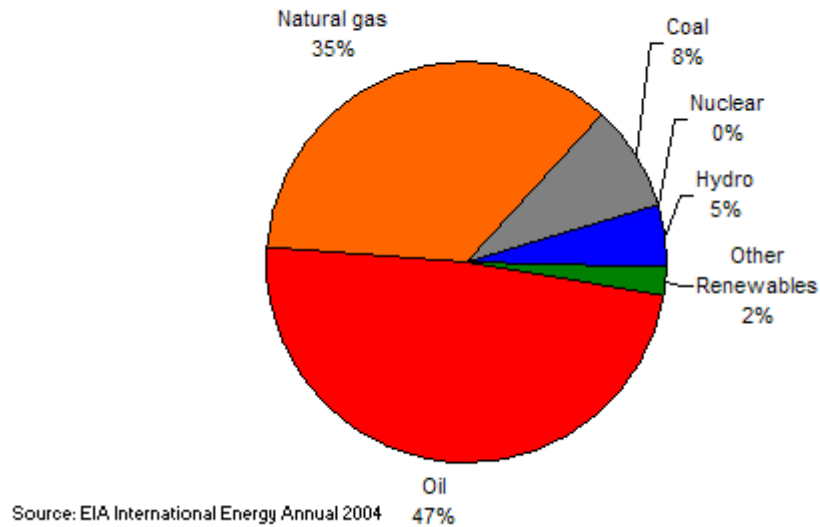
Italy is fourth-largest consumer of oil in the European Union.

With limited domestic energy sources, Italy is highly dependent on imports to meet its consumption needs. In absolute terms, oil consumption has remained relatively static since 1970, but oil's share of Italy's primary energy mix has decreased significantly, steadily replaced by natural gas. A pressing issue affecting Italy has been the country's electricity supply. Over the past decade, Italy's installed electricity generation has not been able to keep up with demand, resulting in an increased share of electricity imports as a percent of total consumption.



Oil is the largest source of Italy's energy consumption, representing 47 percent of primary energy consumption in 2004. Natural gas is the second-largest with 35 percent of primary energy consumption, followed by minor contributions from coal (8 percent), hydroelectricity (5 percent), and other renewables (2 percent). Unlike many other OECD countries, Italy still relies upon oil for a sizable portion of electricity generation: preliminary International Energy Agency (IEA) data for 2005 shows that Italy relied upon oil for 16 percent of its electricity generation, versus 5 percent for the OECD as a whole.

Total Energy Consumption in Italy, by Type (2004)

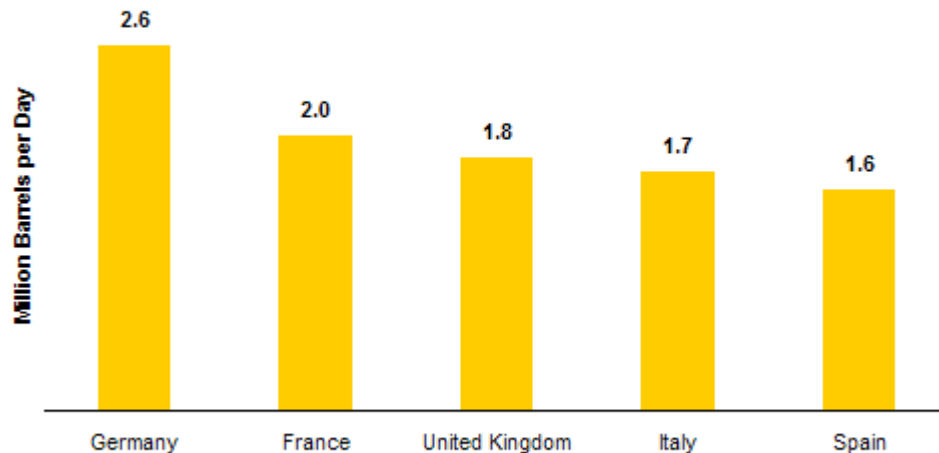


Oil

Italy relies on imports for almost all of its oil needs.

Italy is a large consumer and importer of oil. The country consumed 1.7 million barrels per day (bbl/d) of oil in 2006, slightly less than the previous year. Italy's domestic oil production in 2006 (total liquids) was 151,000 barrels per day (bbl/d), sufficient to meet only 9 percent of domestic oil needs. As a result, according to Eurostat, Italy imported 1.7 million bbl/d of crude oil in 2006, with the largest sources of these imports being Libya (27 percent), Russia (16 percent), and Saudi Arabia (12 percent). According to the *Oil and Gas Journal (OGJ)*, Italy had proven crude oil reserves of 600 million barrels in 2007, the third-largest in the EU behind the UK and Denmark.

Top 5 European Oil Consumers, 2006



Source: EIA Short Term Energy Outlook

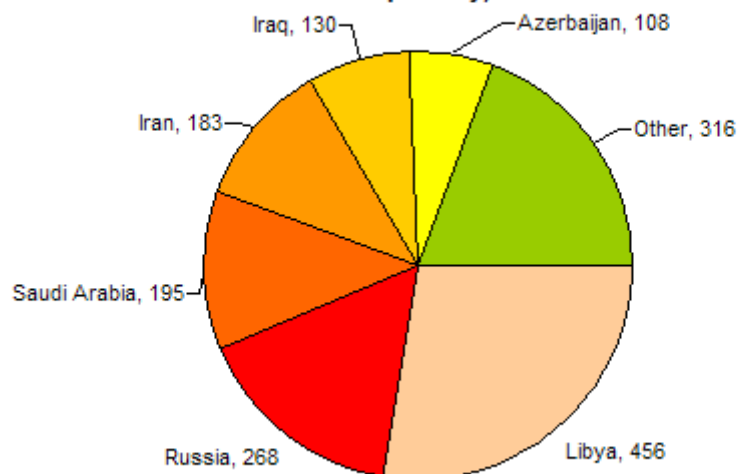
Sector Organization

Eni is the largest oil and natural gas company in Italy, as well as being one of the largest oil and natural gas companies in the world. In 1992, the Italian government passed legislation to transform Eni from a wholly state-owned enterprise into a joint-stock company. The government has slowly reduced its holdings in the company since the 1990s, but it still remains the single-largest shareholder with about one-third of total shares.

Exploration and Production

Italy produced 110,000 bbl/d of crude oil in 2006, with about three-quarters of that production coming from Eni. Three projects contributed the bulk of Eni's total production in Italy: Val d'Agri in southern Italy, Villafortuna in the north, and Aquila off the south-east Adriatic coast. Other important oil fields in the country include Ropso, Vega, Gela, and Ragusa. French oil major Total is leading development of the the Tempa Rossa project, adjacent to Val d'Agri. Tempa Rossa contains an estimated 200 million barrels of oil, and Total expects the project to come on stream by 2010, with peak production of 50,000 bbl/d.

Italy's Crude Oil Imports, by Source, 2006 (thousand barrels per day)



Source: Statistics Norway

Import Pipelines

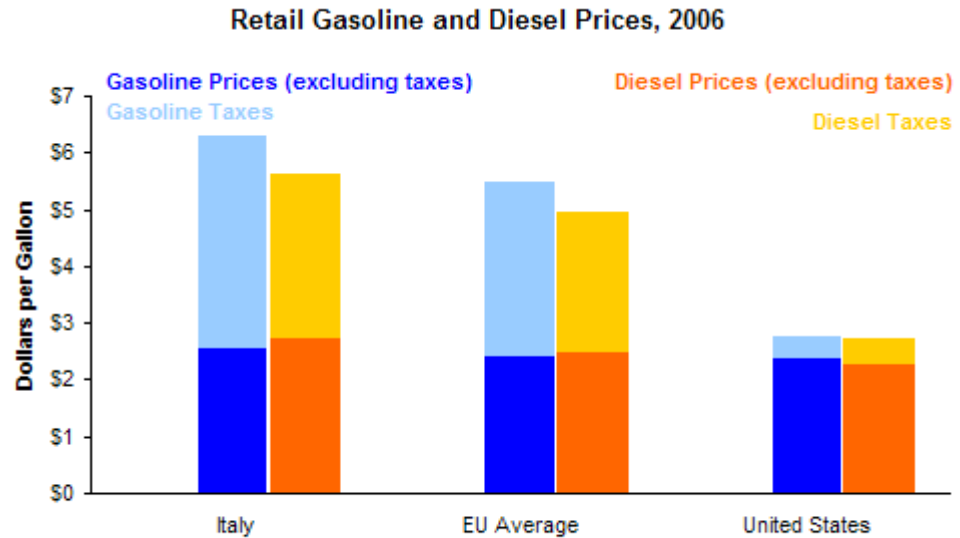
In April 2007, the European Commission and representatives of seven European governments signed an agreement to begin construction of the Pan-European Pipeline (also known as the Constanta-Trieste Pipeline). The system could link Constanta, Romania with Trieste, Italy, allowing crude oil from the Black Sea region to bypass the congested Bosphorus Straits. Current plans call for the pipeline to transport 800,000-1.8 million bbl/d of crude oil by 2012, at an estimated cost of \$2 billion.

Downstream

According to *OGJ*, Italy had 2.3 million bbl/d of total refining capacity, the second-largest in the EU behind Germany. The country has seventeen major refineries, concentrated along the Mediterranean coastline. The largest refinery in the country is the 300,000-bbl/d Sarroch facility on the island of Sardinia, operated by Saras S.p.A. Eni controls five refineries with combined capacity of 553,000 bbl/d, making it the largest refining company in the country. It also holds a 50 percent stake in the 241,000 bbl/d Milazzo plant. Other large refining companies include ERG (453,000 bbl/d) and ExxonMobil (372,000 bbl/d).

Petroleum Products

Prices for automotive gasoline and diesel fuel in Italy are above the EU average. According to Eurostat, premium unleaded gasoline averaged 1.32 euros per liter (\$6.29 per gallon) in 2006, while diesel prices averaged 1.18 euros per liter (\$5.62 per gallon). For comparison, the EU average for premium unleaded gasoline and diesel in 2006 were 1.15 euros per liter (\$5.47 per gallon) and 1.04 euros per liter (\$4.94 per gallon), respectively; in the United States, the comparable prices were \$2.77 and \$2.71 per gallon.



Source: EIA; Eurostat

Like many European countries, biodiesel is becoming increasingly more important to Italy's transportation fuel mix. According to an industry group, Italy produced 14.7 thousand bbl/d of biodiesel in 2006, with 40 percent of this production slated for domestic consumption and the remainder exported: Italian domestic supply of conventional diesel fuel was 527 thousand bbl/d in 2006.

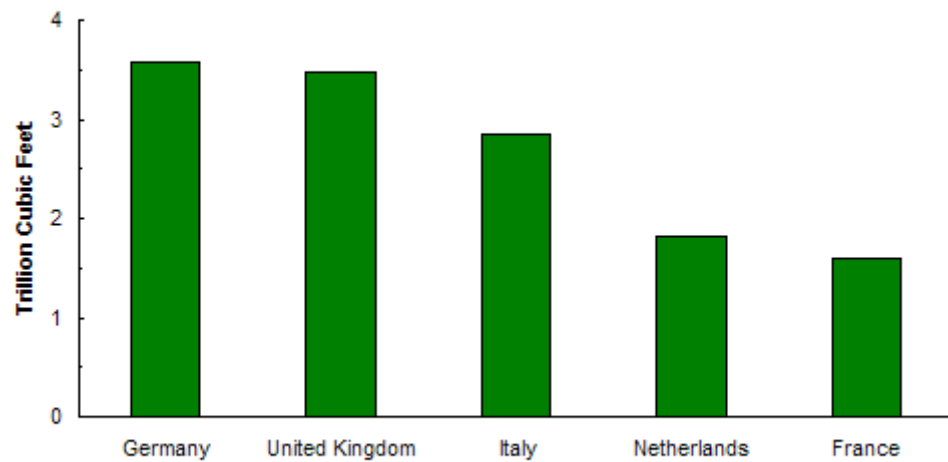
While Italy relies upon crude oil imports for the bulk of its domestic consumption, Italy is a net exporter of refined petroleum products. According to Eurostat, the country imported about 260,000 bbl/d of petroleum productions in 2006, while exporting 560,000 bbl/d. The largest amount of product exports went to Spain (16 percent), the United States (8 percent) and Belgium (8 percent).

Natural Gas

Natural gas consumption has grown rapidly in Italy in the past decade.

Italy produced 0.5 Tcf of natural gas in 2004, while consuming 2.8 Tcf. An increase in the construction of combined-cycle, gas-fired turbines (CCGFT) has been the principle driving force behind the increase in natural gas consumption. The maturation of Italy's natural gas fields and the rapid advance in domestic consumption have increased the country's reliance upon natural gas imports. According to Eurostat, Italy's natural gas imports supplied 84 percent of the country's domestic consumption in 2004, versus 59 percent in 1985. The largest sources of these imports in 2004 were Algeria (38 percent), Russia (32 percent), and the Netherlands (14 percent). According to *OGJ*, Italy had proven natural gas reserves of 5.8 trillion cubic feet (Tcf) in 2007.

Top European Natural Gas Consumers, 2004



Source: EIA International Energy Outlook

Sector Organization

Eni is the dominant actor in all aspects of the natural gas sector. The company controls almost all of Italy's natural gas production. An Eni subsidiary, Snam Rete Gas S.p.A. (Snam), owns and operates the domestic natural gas transportation system. Another Eni subsidiary, Stoccaggi Gas Italia S.p.A. (Stogit) manages most of the natural gas storage facilities in the country. Finally, Eni subsidiary Italgas controls one quarter of the retail natural gas distribution market.

Sector Liberalization

Italy has mostly brought its natural gas sector into compliance with EU regulations concerning liberalization. These areas include the opening of the sector to new entrants; the unbundling of production, distribution, and transmission activities; and the freeing of gas prices from state control. Natural gas liberalization has slowly eroded Eni's dominant position in the sector, with Eni's share of total natural gas delivered to the national grid declining from almost 100 percent prior to liberalization to 68 percent in 2003. Besides Eni, the other major players in the Italian natural gas sector include Edison (majority-owned by Italian automaker Fiat and France's Electricite de France) and Enel, the former electricity monopoly. There are also numerous, small companies in the retail distribution market that have arisen to challenge Italgas. One outstanding issue in Italy's liberalization plans is Eni's majority ownership of Snam; in 2005, the Italian government introduced legislation that would require Eni to reduce its holdings in Snam from 50 percent to 20 percent by the end of 2007.

Exploration and Production

Eni controls over 80 percent of Italy's domestic natural gas production. Important offshore natural gas fields operated by Eni include Barbera, Porto Garibaldi/Agostino, Angela/Angelina, Cervia/Arianna, Porto Corsini, Mare Ovest, and Luna. The company is currently developing the onshore Pizzo Tamburino, Fiumetto, and Samperi fields in Sicily.

Pipelines

Italy has the third-largest natural gas transmission system in Europe. According to Snam, the system consists of 19,000 miles of pipelines. Italian law guarantees open and nondiscriminatory access to the system.

Most of Italy's natural gas imports enter the country through international pipelines. The 670-mile Trans-Mediterranean (Transmed, also called Enrico Mattei) line runs from the Hassi R'Mel gas field in Algeria to Sicily, via Tunisia, where it interfaces with the domestic gas network. Completed in 1983 and doubled in 1994, Transmed has a capacity of 2.33 billion cubic feet per day (Bcf/d). There are plans to construct an additional compressor station along the Transmed that could increase capacity to 3.48 Bcf/d. The Trans-European Pipeline (TENP) and the Transigas pipeline bring natural gas from northern Europe (mostly the Netherlands and Norway) into Italy, entering

the country at the Passo Gries transit point near Milan. Italy imports natural gas from Russia at two entry points: via the Trans-Austrian Gas Pipeline (TAG) at Tarvisio, and via Slovenia at Gorizia.

Italy imports natural gas from Libya via the Greenstream pipeline linking Mellitah, Libya to Gela, Sicily. Majority-owned by Eni, the 370-mile Greenstream has a capacity of 970 million cubic feet per day (Mmcf/d) and connects Italy with the Western Libya Gas Project (see the [Libya Country Analysis Brief](#) for more information). In order to comply with Italian energy regulations, Eni has agreed to sell all gas supplied by Greenstream to other natural gas companies.

Proposed Pipelines

In 2002, Algeria's Sonatrach signed a deal with Italy's Enel and Germany's Wintershall to form Galsi, a consortium to build another natural gas pipeline from Algeria to Italy. Current plans call for an onshore pipeline from Gassi R'Mel to El Kal, Algeria, then an underwater section to Cagliari, Sardinia. This is to be followed by an onshore section to Olbia, Sardinia, then a final, offshore pipeline to C.D. Pescaia, Italy. Galsi estimates initial capacity on the 910-mile line will be 970 Mmcf/d, and there are plans for a parallel power cable. In May 2005, Sonatrach signed letters of intent with twelve potential natural gas purchasers, covering the entire planned capacity of the system. Galsi could complete the \$2-billion project by 2009-2010.

In November 2005, government officials from Italy and Greece signed an agreement to build a \$1.3-billion natural gas pipeline between the two countries. Current plans call for a 500-mile pipeline from northern Greece to south-eastern Italy, under the Strait of Otranto. The system will be an extension of a natural gas pipeline currently under construction between Greece and Turkey, allowing Italy potential access to natural gas supplies in Central Asia and the Middle East. If completed, the first natural gas shipments through the pipeline could occur by 2010.

Liquefied Natural Gas (LNG)

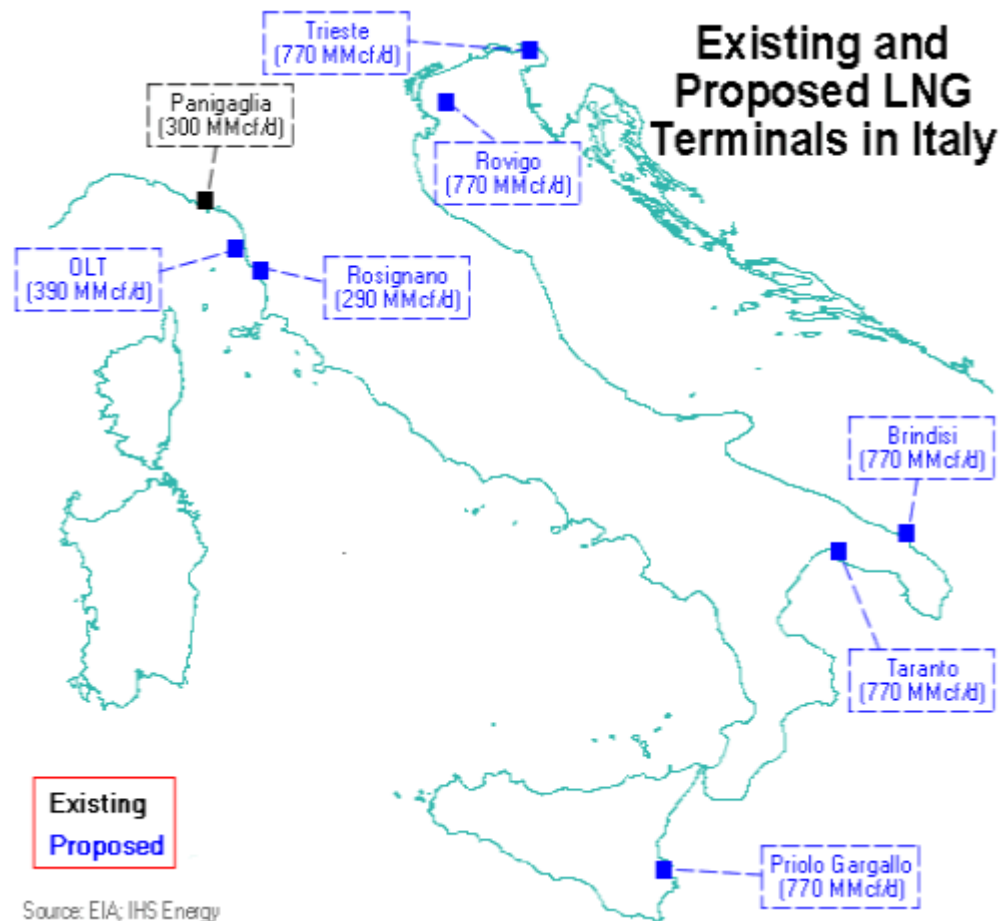
Imports of LNG constitute a very small portion of Italy's total natural gas imports. The country has a single LNG receiving terminal at Panigaglia, located on the country's western coast near La Spezia. According to Snam, the terminal's operator, the Panigaglia facility sent out 302.8 MMcf/d of natural gas in 2006, or around four percent of Italy's natural gas consumption.

Natural gas companies are planning to construct several LNG receiving terminals in Italy, in order to meet estimated future demand. BG plans to construct an LNG receiving terminal in Brindisi, along Italy's southeast coast. In late 2004, it awarded a contract for construction of the facility to Italy's Tecnimont. However, in early 2007, construction at the site came to a halt, due to an investigation by the Italian government into potential corruption charges. BG expected the facility to begin operations by 2010, with an initial sendout capacity of 770 Mmcf/d. BG has already secured a supply of LNG for the terminal from its own integrated production-gasification project in Egypt (see the [Egypt Country Analysis Brief](#) for more information).

ExxonMobil and Qatar Petroleum each hold 45 percent stakes in the proposed North Adriatic LNG project, an effort led by Italy's Edison to build an LNG receiving terminal on Italy's northern Adriatic coast. The project consists of a 770-Mmcf/d, offshore regasification facility near Rovigo, using LNG supplied by the RasGas II gas liquefaction project in Qatar (see the [Qatar Country Analysis Brief](#) for more information). Edison has stated that it expects initial production from the project in 2008.

The Italian city of Livorno, on Italy's central west coast, has been considered as a site for two LNG proposals. In May 2004, the Offshore LNG Terminal (OLT) consortium received environmental approval for its proposed LNG receiving terminal near Livorno; OLT, composed of Golar LNG and Italy's CrossGas, plans to permanently moor a standard LNG tanker offshore, convert it into a floating storage and regasification unit, then connect it to the coast via a sub-sea pipeline. Once completed, the Livorno offshore facility will have an initial capacity of 390-Mmcf/d. In March 2006, Endesa purchased a 25 percent stake in the project. Construction began in early 2007, with first operations scheduled for 2009.

A consortium of BP, Edison, and chemical company Solvay plan to construct a 290-Mmcf/d LNG terminal on the site of a former Solvay chemicals plant in Rosignano, near Livorno. In January 2005, Italy's environmental ministry approved plans for the construction of the project. However, local government leaders have expressed opposition to the project, which could delay its planned initial production date of 2012.



In March 2005, Spain's Gas Natural (GN) presented plans to local officials for the construction of two LNG receiving terminals in Italy, located in the northern city of Trieste and the southern port of Taranto. Under its proposal, GN would build facilities at each location with production capacities of 770 Mmcf/d each, in order to fuel its plans to expand its presence in the Italian natural gas market. In the case of the Trieste site, Endesa would join with GN in the project, offloading much of the plant's output for its nearby power plant. GN planned to complete the projects by 2010, though neither has yet to receive full regulatory approval. In January 2007, the city of Trieste voted to oppose the LNG terminal there in a non-binding opinion sent to the regional government.

Royal Dutch Shell signed an agreement in August 2005 with Italy's ERG to build an LNG receiving terminal next to ERG's oil refinery at Priolo Gargallo, Sicily. Construction of the \$510 million, 770-Mmcf/d facility could begin by the end of 2007, for completion in 2010.

It is unlikely that Italy's domestic market could absorb all of the proposed LNG projects, especially considering the expansion of piped gas imports from North Africa. However, there has been some talk of using Italy as a natural gas hub, landing LNG there for re-export to the rest of Europe.

Electricity

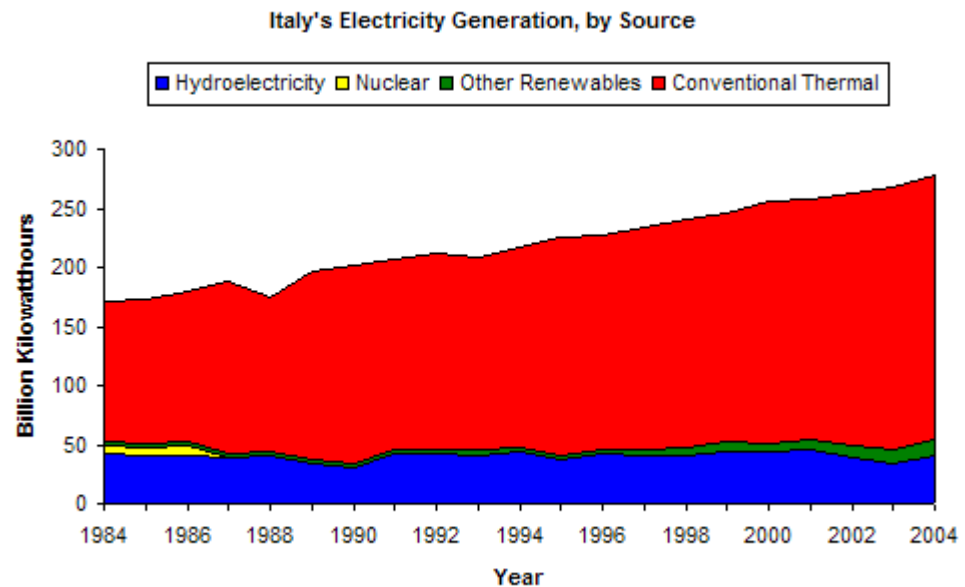
Italy has faced chronic blackouts during peak electricity usage, due to shortage of domestic generation capacity.

Italy had 71.4 gigawatts of installed electricity generating capacity in 2004. In that same year, Italy generated 277.6 billion kilowatthours (Bkwh) of electricity, while consuming 303.8 Bkwh. Most generation comes from conventional thermal sources, with smaller amounts from hydroelectricity and other renewables. Electricity imports made up for the country's supply shortfalls, and according to Eurostat, the largest sources of these imports are Switzerland, France, and Slovenia.

Sector Organization

Italy began liberalizing its electricity sector in 1999, initially allowing only large customers to choose their own supplier. Liberalization has now spread to the majority of the retail market. As part of the liberalization, the Italian government began to privatize Enel, the former, state-owned power monopoly that previously controlled all aspects of the electricity sector. In 2000, the Italian

government forced Enel to sell 27 percent of its generating capacity, and to that end, Enel created three new, independent generating companies: Elettrogen, Eurogen, and Interpower. Along with removing Enel's monopoly on electricity generation, distribution, and transmission, the Italian government began to divest its holdings in the company.



Source: EIA International Energy Annual

Terna owns the electricity transmission grid in Italy. The company was previously a wholly-owned subsidiary of Enel, but Enel has reduced its holdings in the company in order to satisfy Italy's energy liberalization goals: in 2005, Enel only held 5 percent of the shares of Terna. While Enel remains the dominant generator and distributor of electricity in Italy, other companies have emerged as significant players in the sector. The most important of these include Edison, Enipower, Acea, Energia Italia, Spain's Endesa, and Belgium's Electrabel. Many of these companies have extended their market share by purchasing the former assets of Enel: subsequent to the Enel divestiture in 2000 discussed above, Endesa Italia purchased Elettrogen; Edison purchased Eurogen; and a consortium of Belgium's Electrabel, Italy's Acea, and Italy's Energia Italia purchased Interpower, rebranding it Tirreno Power.

Electricity Generation

As mentioned above, Italy gets the majority of its electricity supply from conventional thermal sources, the bulk of which are oil-fired. The high cost of oil compared to other sources of thermal generation have caused Italian electricity consumers to pay some of the highest rates in Europe. In response, power generators have begun to switch to alternative fuel sources, especially natural gas and co-firing plants burning combinations of oil, natural gas, and coal. Most new investment in electricity generating capacity in Italy has been in the form of gas-fired plants, specifically combined-cycle, gas-fired turbines (CCGTs). Prompted by the 1986 Chernobyl incident, Italy banned nuclear power generation in a 1987 referendum.

Other Renewables

Italy has begun to push renewable energy sources as a way to increase its generating capacity, reduce its reliance on oil-fired plants, and decrease its carbon dioxide emissions. According to Enel, Italy is the fifth-largest producer of wind energy in the world, though the country does not have the same natural advantage for wind power as other European countries. It is estimated that Italy does have one of the largest potentials for solar energy in Europe.

Italy's most promising source of renewable electricity generation could be geothermal. The first-ever geothermal power generation took place in Larderello, Tuscany at the beginning of the 20th century. According to the International Geothermal Association (IGA), Italy has the fourth-largest installed geothermal capacity in the world (795 MW), and country has over 90 percent of the total geothermal electricity capacity in the EU. Analysts estimate that Italy could have the largest, per-capita geothermal potential in the world.

Profile

Country Overview

Head of Government	Prime Minister Romano Prodi (since May 2006)
Location	Southern Europe, a peninsula extending into the central Mediterranean Sea, northeast of Tunisia
Independence	17 March 1861 (Kingdom of Italy proclaimed; Italy was not finally unified until 1870)
Population (2007E)	58,147,733

Economic Overview

Currency/Exchange Rate (2006)	1 euro (EUR) = \$0.796
Inflation Rate (2006E)	2.3%
Gross Domestic Product (GDP, 2006E)	\$1.9 trillion
Real GDP Growth Rate (2006E)	1.9%
Unemployment Rate (2006E)	7%
External Debt (2006E)	\$2.0 trillion
Exports (2006E)	\$415 billion
Exports - Commodities	engineering products, textiles and clothing, production machinery, motor vehicles, transport equipment, chemicals; food, beverages and tobacco; minerals and nonferrous metals
Exports - Partners (2004E)	Germany 13.7%, France 12.1%, US 8%, Spain 7.3%, UK 6.9%, Switzerland 4.1%
Imports (2006E)	\$427 billion
Imports - Commodities	engineering products, chemicals, transport equipment, energy products, minerals and nonferrous metals, textiles and clothing; food, beverages and tobacco
Imports - Partners (2004E)	Germany 18.1%, France 10.7%, Netherlands 5.8%, Spain 4.7%, Belgium 4.4%, UK 4.3%, China 4.1%
Current Account Balance (2006E)	-\$42 billion

Energy Overview

Proven Oil Reserves (January 1, 2007E)	0.6 trillion
Oil Production (2006E)	151 thousand barrels per day
Oil Consumption (2006E)	1,700 thousand barrels per day
Crude Oil Distillation Capacity (2007E)	2.3 million bbl/d
Proven Natural Gas Reserves (January 1, 2007E)	5.8 trillion cubic feet
Natural Gas Production (2004E)	0.5 trillion cubic feet
Natural Gas Consumption (2004E)	2.8 trillion cubic feet
Recoverable Coal Reserves (2004E)	37 million short tons
Coal Production (2004E)	0.2 million short tons
Coal Consumption (2004E)	28.3 million short tons
Electricity Installed Capacity (2004E)	71.4 gigawatts

Electricity Production (2004E)	277.6 billion kilowatthours
Electricity Consumption (2004E)	303.8 billion kilowatthours
Total Energy Consumption (2004E)	8.3 quadrillion Btus
Total Per Capita Energy Consumption (2004E)	142.3 million Btus
Energy Intensity (2004E)	6,044 Btus per \$2000, PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2004E)	485.0 million metric tons
Per-Capita, Energy-Related Carbon Dioxide Emissions (2004E)	8.4 metric tons
Carbon Dioxide Intensity (2004E)	0.4 metric tons per \$2000, PPP**
Environmental Issues	air pollution from industrial emissions such as sulfur dioxide; coastal and inland rivers polluted from industrial and agricultural effluents; acid rain damaging lakes; inadequate industrial waste treatment and disposal facilities
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, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands, Whaling

Oil and Gas Industry

Organization	Eni, partially state-owned, is the most important company in the industry. Smaller stakes by domestic and foreign companies.
Major Oil/Gas Ports	Brindisi, Taranto, Livorno, Priolo
Foreign Company Involvement	BP, Shell, Total, Endesa
Major Pipelines (capacity, Mmcf/d)	Monte Alpi (150,000 bbl/d), Transmed (2.33 Bcf/d), TENP, TAG, Greenstream (970 Mmcf/d)
Major Refineries (capacity, bbl/d)	Sarroch (300,000), Milazzo (241,300), Melilli (238,000), Priolo (225,000)

* 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

U.S. Government

[CIA World Factbook, Italy](#)

[U.S. State Department's Consular Information Sheet for Italy, Holy See, and San Marino](#)

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

[U.S. Department of Commerce Country Commercial Guide: Italy](#)

Foreign Government Agencies

[Embassy of Italy in the United States](#)

[Italian Regulatory Authority for Electricity and Gas](#)

Oil and Natural Gas

[BG Group](#)
[Eni](#)
[Snam Rete Gas](#)
[Stogit](#)

Electricity

[Edipower](#)
[Edison](#)
[Endesa Italia](#)
[ENEL](#)
[Enipower](#)
[Gestore Rete Trasmissione Nazionale \(Italian Grid Operator\)](#)

Sources

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CIA World Factbook
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Economist Intelligence Unit
Enel
Europe Energy
European Daily Electricity Markets
Eurostat
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Le Monde
Lloyd's List
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Platts
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The Heren Report
U.S. Energy Information Administration
Utility Week
World Markets Analysis

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