



Home > Country Analysis Briefs > [Germany Country Analysis Brief](#)

PDF version | PDB version

November 2004

[Background](#) | [Oil](#) | [Natural Gas](#) | [Coal](#) | [Electricity](#) | [Environment](#) | [Profile](#) | [Links](#)

Germany

Germany is one of the world's largest energy consumers. Because the country has limited indigenous energy resources (except for coal), Germany imports most of its energy.

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



GENERAL BACKGROUND

Germany is one of the largest economies in the world, and a founding member of the European Union (EU). It joined the common European currency, the Euro, on January 1, 1999, and Frankfurt is the seat of the European Central Bank.

Germany's economy has struggled over the past few years, with real gross domestic product (GDP) contracting 0.1% in 2003, marking the first decline in GDP since 1993. During the first half of 2004, GDP growth picked up, bolstered by increased exports, one of the mainstays of Germany's economy. Nonetheless, domestic demand has remained stagnant as consumers reportedly remain cautious, despite tax cuts outlined in the government's Agenda 2020 plan. Much of this concern is due to Germany's struggling labor market, with unemployment reaching an estimated 10.5%

in 2003, up from the previous year's 9.5%. In 2003, Germany's public deficit once again exceeded 3% of its GDP, breaching the maximum allowed under the EU's 1997 Stability and Growth Pact. The German government expects to breach the Pact in 2004, but has pledged to bring the deficit below the 3% threshold in 2004. Although Germany's export-oriented economy exposes the country to global downturns, many outside observers consider domestic structural problems to be the main cause of recent sluggish performance, such as inflexible labor markets and heavily bureaucratic regulations.

In September 2002, Gerhard Schröder won his second term as German Chancellor, leading a coalition between Germany's Social Democrats (SPD), and the environmentalist Green Party. Gerhard Schröder has served as the German Chancellor since 1998. President Horst Köhler has served as the German President since March 2004.

ENERGY OVERVIEW

In 2002, Germany was the world's fifth largest energy consumer. With limited domestic hydrocarbon reserves, other than coal, Germany relies on imports to meet most of its energy needs. As observed in "Figure 1," Germany's reliance on imports increased from 44% in 1991 to 63% in 2002. Although oil was Germany's most important primary energy source in 2002, its share has decreased, albeit slightly, from 41% in 1991 to 40% in 2002 (see Figure 2). In

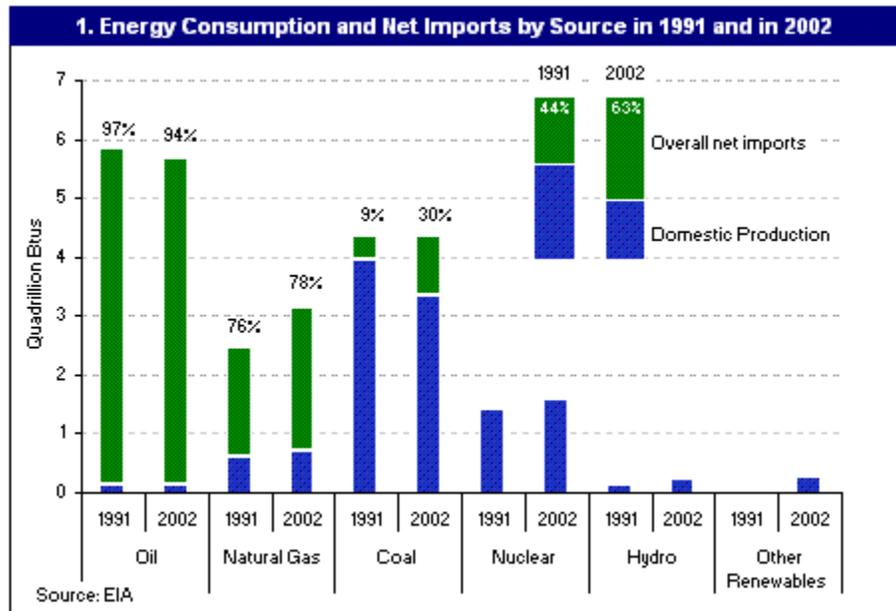
absolute terms, oil consumption dropped an estimated 189,000 barrels per day (bbl/d) during the same period. Coal and natural gas were the other important fuel sources, accounting for 23% and 22%, respectively, of total primary energy consumption in 2002. Overall, total energy consumption in Germany has been relatively stagnant during the past decade, despite moderate economic expansion and slight population growth.

In recent years, Germany's energy policy has experienced significant changes. Since the late 1990s, the government has been promoting the use of renewables to meet a larger share of the country's total primary energy consumption, as well as to reduce greenhouse gas emissions. In 2000, the German government set a goal of meeting 4.5% of the country's total primary energy consumption from renewables by 2010. According the German government, by 2050 half of Germany's entire energy demand is expected to be met by solar, wind, biomass, hydro and geothermal sources. The country is already the world's leader in power generation from wind.

Also in 2000, the government reached an agreement with power companies to phase out all of the country's nuclear power plants by 2021. The government plans to compensate for the loss of nuclear power with renewables and increased use of natural gas. Use of coal could also increase slightly. However, some analysts remain skeptical whether

Germany's current energy policy will be able to reconcile opposing demands of supply security and environmental welfare, particularly when the country's hydrocarbon reserves dwindle and dependence on natural gas, coal and oil imports increase.

Along with changing the country's energy mix, Germany has deregulated its electricity and natural gas sectors in line with EU directives. Although Germany is, at least in theory, completely open to competition, a handful of large power companies dominate both the country's electricity and natural



2. Primary Energy Consumption in Germany by Energy Source in 1991 and 2002

Percentages	2002	1991
Oil	40	41
Coal	23	30
Natural Gas	22	17
Nuclear	11	10
Hydro	2	1
Other Renewables	2	0
Total	100	100

Source: EIA

gas markets. As a result, electricity and natural gas prices are among the highest in Europe and third-party access to national grids remains limited. Germany also is the only EU member yet to have established a regulatory agency for natural gas and electricity markets, a requirement that all EU member states were expected to meet by July 1, 2004. Political wrangling reportedly has been responsible for delaying the adoption of a new energy law, which would create a regulatory agency. The German government hopes that the new energy law will enter into force on January 1, 2005.

OIL

Consumption

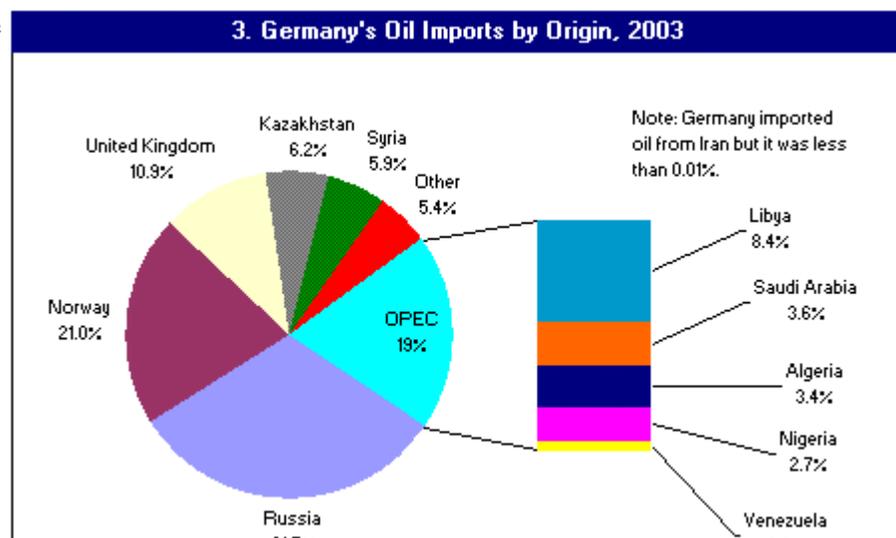
Although oil remains the largest primary energy source in Germany, its share of the country's fuel mix has been decreasing. In 2003, Germany consumed about 2.6 million barrels per day (bbl/d) of oil, down 3% year-on-year. Between 1998 and 2003, oil consumption in Germany decreased at an annual rate of 1.7%. According to the German oil industry group Mineralölwirtschaftsverband (MWV), annual oil consumption in Germany will slightly increase between 2004 and 2006, but then begin to decline in 2007. Overall, MWV has forecast that oil consumption in Germany will be 12% less in 2020 in comparison to 2003. Some of the reasons behind this decrease include shrinking population, moderate economic growth, higher oil prices and increased energy efficiency, according to MWV.

Production

As of January 2004, Germany had proven crude oil reserves of 442 million barrels, up nearly 23% year-on-year. The country's oil reserves, albeit small, were the fourth largest within the European Union, behind the United Kingdom, Denmark and Italy. Most of Germany's crude oil reserves are located north of the Elbe River in northern Germany, according statistics from the German Association for Natural Gas and Oil Producers (Wirtschaftsverband Erdöl- und Erdgasgewinnung – WEG).

In 2003, Germany's total oil production (including crude, refinery gain and other sources) was 158,700 bbl/d, of which 72,000 bbl/d was crude oil. The country's largest producing field, Mittelplate, is located in the Wattenmeer tidal flatlands off the western coast of German state Schleswig-Holstein. A 50:50 consortium, comprising RWE Dea and Wintershall AG, has been developing the Mittelplate field since 1987. In 2003, Mittelplate produced over two million tons of oil (40,000 bbl/d), accounting for over half of Germany's domestic crude oil production. Germany's onshore oil fields are located primarily in the north and northeast of the country, many of which are depleted and producing only small volumes of oil.

With limited domestic crude oil production, Germany must import most of its crude oil and petroleum product requirements. In 2003, Germany imported about 2.5 million bbl/d, making the country the third-largest oil importer in the world, behind the United States and Japan. In 2003, the main suppliers were Russia, Norway, the United Kingdom and Libya, according to the Bundesamt



für Wirtschaft und
Ausfuhrkontrolle (BAFA) (see [Figure 3](#)).

Downstream Refining

As of January 2004, Germany had a crude oil refinery capacity of 2,289,450 bbl/d, the seventh highest in the world, according to the *Oil and Gas Journal*.

Increasingly strict EU environmental regulations have been forcing refineries in Germany, as well as in all EU member states, to upgrade their refineries not only to reduce their emissions but also to meet new fuel specifications. [EU 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 [EU Directive 2003/87/EC](#), member state governments will allocate annually emission allowances to companies (including refineries), which would in turn have to meet their allowances by either reducing carbon dioxide (CO₂) emissions, or by acquiring emission rights from other companies. The Deutsche Emissionshandelsstelle (DEHSt) is responsible for allocating emission allowances for each refinery, as well as for all companies participating in the EU Carbon Emissions Trading Program.

Pipelines

Pipelines carry most of the oil destined for Germany's refineries. There are currently four crude oil and one petroleum product import pipelines operating in Germany. In southern Germany, two pipelines deliver oil to Germany's refineries: the [Trans-Alpine pipeline \(TAL\)](#) from Trieste, Italy; and the [SPSE \(the Southern European Pipeline\)](#) line which starts on France's southern coast in Lavera and connects to the 285,000 bbl/d Miro refinery in Karlsruhe, Germany. SPSE also delivers to crude oil to other refineries in France and in Switzerland.

In Northern Germany, the Druzba line carries oil from Russia, connecting to German domestic transport pipeline MVL (feeding refineries in Schwedt and in Spergau), while the N.V. Rotterdam-Rijn Pijpleiding Maatschallij (RRP) line transports crude oil from the Rotterdam in the Netherlands to refineries in Germany's Rhine-Ruhr region. An oil-products pipeline, the RMR, follows a similar route as the RRP, delivering products, such as diesel, kerosene, naphtha and gasoline, into northwestern Germany from Rotterdam.

Domestically, Germany has a number of pipelines that transport crude oil to refineries, such as the Northern Germany Pipeline and the North-West pipeline, which link Wilhelmshaven to Hamburg and to Cologne, as well as the previously mentioned MVL.

NATURAL GAS

Consumption

Over the past decade, natural gas consumption in Germany has increased steadily, with an annual growth rate of 1.2% from 1991 to 2002. At 3.2 trillion cubic feet (Tcf), Germany was the European Union's second largest consumer of natural gas in 2002, slightly less than the United Kingdom. Natural gas' share of total primary energy in Germany has also increased, from 17% in 1991 to 22% in 2002. Overall, consumption of natural gas is forecast to continue rising, particularly for electric power generation and for residential heat production. According to a report published by the Deutsche Institut für Wirtschaftsforschung (DIW), an estimated 46.6% of all apartments (17.5

million) in Germany were heated with natural gas in 2003.

Production

As of January 2004, Germany had 10.8 Tcf of proven natural gas reserves, down 4.4% year-on-year, according to the Oil and Gas Journal. Within the EU, Germany's natural gas reserves were third largest behind the Netherlands and the United Kingdom. Nearly all of Germany's reserves are located in the northwestern state of Niedersachsen between the Wesser and Elbe rivers.

Accordingly, nearly 90% of the country's natural gas is produced in the region, according to WEG. Germany's only offshore natural gas field (A6-B4) is located about 190 miles offshore in the North Sea, where production began in September 2000. The Deutsches Nordseekonsortium (German North Sea Consortium), comprising Wintershall (operator) (49.95%), BEB Erdgas und Erdöl (40.45%), RWE Dea (7.1%) and EWE (2.5%), operate the field. The field produces both natural gas and condensate, which are transported via two pipelines to a platform in the Dutch North Sea. From there, the condensate is loaded onto ships while the natural gas pipeline continues until it connects to the main Dutch offshore pipeline - NOGAT.

Within the EU, Germany ranks as one of the larger producers of natural gas. In 2002, domestic production amounted to 0.8 Tcf, covering nearly a quarter of domestic demand. From 1991 to 2002, natural gas production grew 1.4% annually. ExxonMobil, through its subsidiaries Mobil Erdgas-Erdöl GmbH (MEEG) and BEB Erdgas und Erdöl (50:50 joint venture with Shell), is the largest producer of natural gas in Germany. The prospect of discovering of new reserves in Germany, at least onshore, seems unlikely. Energy companies, however, have reportedly been requesting the German government to open offshore areas in the North Sea to exploration, which are currently protected by the Flora-Fauna-Habitat law.

Imports

In 2002, Germany imported 2.4 Tcf, about 75% of its domestic natural gas requirements. Germany has a diverse supply portfolio. In 2002, Russia provided 40.8% of Germany's natural gas imports, Norway 31.5%, the Netherlands 22.3%, and the United Kingdom and Denmark 5.4%, according to Germany's Federal Ministry of Economics and Labor (Bundesministerium für Wirtschaft und Arbeit –BMWA).

Infrastructure

Pipelines

Germany has a comprehensive pipeline network, allowing the country to import and to transit large volumes of natural gas. Domestically, Germany has eight major pipelines that feed into smaller, local distribution grids, as well as transit natural gas onto neighboring countries, such as Austria, Belgium, France, Italy and the Netherlands (see Figure 4). From the North Sea, the Norpipe (entrance point at Emden) and the Europipe I & II (entrance point at Dornum) supply Norwegian natural gas, while the Yamal and Brotherhood pipelines transport Russian natural gas. The Netherlands also exports natural gas via pipeline to Germany. Wingas, a joint venture between Wintershall (65%) and Gazprom (35%), Ruhrgas (E.On) and Verbundnetz Gas AG (VNG) control most of the larger pipelines in Germany.

4. Major Domestic Natural Gas Pipelines in Germany	
Lines	Capacity Per Year/Bcf
Megal (Czech Republic -France)	777
Tenp (the Netherlands-Switzerland)	247
Netra (Eztel-Bernau)	699
Midal (Emden-Ludwigshafen)	459
Stegal (Saxony-Thuringia)	353
Wedal (Belgium-Midal)	353
Jagel III (Malnow-Stegal)	848

Developments

Russian exports of natural gas to Germany could increase if Gazprom's Northern European Gas Pipeline is realized. The proposed 1,875-mile pipeline to Germany, with possible offshoots to Finland, Sweden and the United Kingdom, would follow a route through the Baltic Sea, thus circumventing the Ukraine and Belarus, through which Russia's Yamal and Brotherhood pipelines transit. Both the German and Russian governments have given their support to the project.

Poland has also been looking for an alternative to Russian natural gas supplies. IRB, a company owned by Ruhrgas and Bartimpex, has proposed constructing a pipeline from the German town of Bernau to Poland's Szczecin. If built, the pipeline which would have an annual capacity of 88 Bcf, with the potential of increasing to 177 Bcf per year. In a similar development, Polish Oil and Gas Company (PGNiG), along with VNG, intends to construct a Germany-Poland natural gas pipeline. Plans for the pipeline remain, however, preliminary. These pipelines would allow Poland to import natural gas from Norway and the Netherlands.

In September 2004, the Swedish government gave Sydkraft, a Swedish utility, authorization to construct a 125-mile pipeline linking the country to Germany. Sydkraft still needs to receive a permit from Denmark to run the pipeline through its territorial waters, as well as approval from the Swedish Environmental court. A final decision is expected to be made in 2005 on whether the pipeline will be built.

Storage

As of December 2003, there were 43 underground natural gas storage facilities in Germany, with an estimated total working storage capacity of 657 Bcf, according to Niedersächsisches Landesamt für Bodenforschung. On a global basis, Germany had the fourth largest working gas capacity, behind the United States, Russia and the Ukraine, according the International Gas Union. Germany also has Western Europe's largest underground storage facility - the 148-Bcf Rehden facility, located in Lower Saxony. Wingas owns and operates the Rehden facility.

Natural Gas Hub-North West European Hub Company (NWE-HubCo)

In September 2002, BEB, E.On, Statoil, and Wingas established NWE-HubCo, an international natural gas trading hub located between Bunde on the Dutch-German border and Emden, the terminus for the Norpipe on the North Sea coast. In April 2004, the Gastransport Services (GTS), the network operator of N.V. Nederlandse Gasunie and sole shareholder of EuroHub, a neighboring gas trading hub, joined NWE-HubCo, acquiring one third of the shares. GTS' acquisition essentially created a partnership between the neighboring trading hubs. The partnership is expected to increase liquidity at the hubs.

Sector Organization

Germany's natural gas sector comprises over 700 companies, with a handful of domestic producers and importers and a large number of wholesale transport companies and regional and local distribution companies. In 1998 and 1999, the government adopted two separate pieces of legislation, deregulating the German natural gas sector in accordance with the EU's Gas Directive 98/30/EC. The country's Federal Cartel Office became responsible for handling disputes and remedying anti-competitive practices, such as a grid company refusing to allow third party access. Up to now, Germany's natural gas sector has been self-regulating, allowing companies to negotiate privately grid access tariffs themselves according to the framework agreement known as the *Verbändevereinbarung*.

Although the new laws have opened the German natural gas market to competition, at least in principle, competition reportedly has remained underdeveloped and dominated by a few large

companies. Many analysts have pointed out that the German natural gas sector lacks gas-to-gas competition and that self-regulation and negotiated grid access have hindered transparency. In September 2003, the BMWA released a status report on the natural gas liberalization process in Germany, which further criticized the country's lack of progress in creating an open market. The report suggested changing the current point-to-point grid access model in favor of an entry-exit system based on a number of trading zones. Companies wishing to transport natural gas from one zone to another would be charged one flat fee for entering and exiting a zone, irrespective of how many different networks are used.

COAL

Consumption

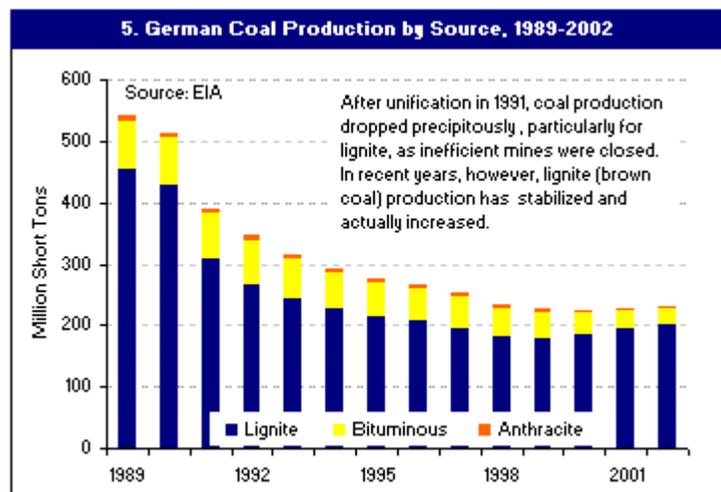
Although coal is Germany's most abundant indigenous energy resource, its role in the country's energy mix, albeit significant, has been decreasing, from 30% of total primary energy consumption in 1991 to 23% in 2002. Despite this decline, Germany was the world's fourth largest coal consumer in 2002, behind the United States, China and India. The drop in consumption can be attributed to the closure of coal-fired generation plants in the former East Germany, diversification of energy supply, restructuring of the country's coal sector and adoption of stricter environmental regulations.

Production

As of October 2001, Germany's total recoverable coal reserves stood at 72.8 billion short tons, by far the largest amount within the EU-15 (Greece had the second largest amount at 3.2 billion short tons). Total coal production has also dropped off considerably, from 540.7 million short tons (Mmst) in 1989 (includes both West Germany and the former East Germany) to 230.9 Mmst in 2002.

Germany produces two grades of coal: bituminous, also known as "hard coal", and lignite, or "brown coal." (Germany also produces a small amount of anthracite, which can be classified as hard coal). Germany is the world's largest producer of brown coal, accounting for an estimated 22% of global output in 2002. Brown coal is also Germany's most important indigenous energy resource, accounting for 45% of the country's total primary energy production in 2002, according to the organization Statistik der Kohlenwirtschaft. In the years following reunification, a number of inefficient coal mines in the former East Germany were closed, resulting in production dropping 50% from 1989 to 1994. In recent years, however, brown coal production has actually started to increase, mainly due to increased demand from power plants, such as from RWE's Niederaußem powerplant. In 2002, about 55% of Germany's brown coal was extracted in the Rhineland region.

Most of the country's hard coal deposits are located deep underground, making extraction expensive and only viable with heavy subsidization. In 1997, the German government reached an agreement with the hard coal mine operators on incrementally reducing subsidies between 1998 and 2005. The reduction in subsidies has resulted in considerable downsizing of the sector. For perspective, in 1991, Germany operated 26 hard coal mines and employed 66,073 miners, while in 2003, only 10 mines were in operation and 45,581 miners employed. After 2006, the German government will continue downsizing and rationalizing the coal industry, but intends to maintain



core capacity for domestic coal production.

These measures fall in line with those outlined in the European Commission's green paper, published in 2000 and adopted by the European Parliament in 2001, on a [European strategy for the security of energy supply](#). According to the report, it remains necessary to undertake measures "to guarantee access to coal reserves and hence a potential availability of Community coal." Regulation [1407/2002](#) (adopted in July 2002) permits three forms of aid: 1) reducing activity (this form expired on December 31, 2002); 2) maintaining access to coal reserves; 3) covering exceptional costs, such as costs related to environmental rehabilitation of former coal mining sites. In 2004, Germany provided the country's coal industry with an estimated \$3.7 billion in subsidies.

Imports

With declining domestic coal production, Germany is becoming a significant net-importer of coal. In 2002, Germany imported 43 Mmst. The country's largest suppliers in 2002 were South Africa, Poland, Colombia and Australia.

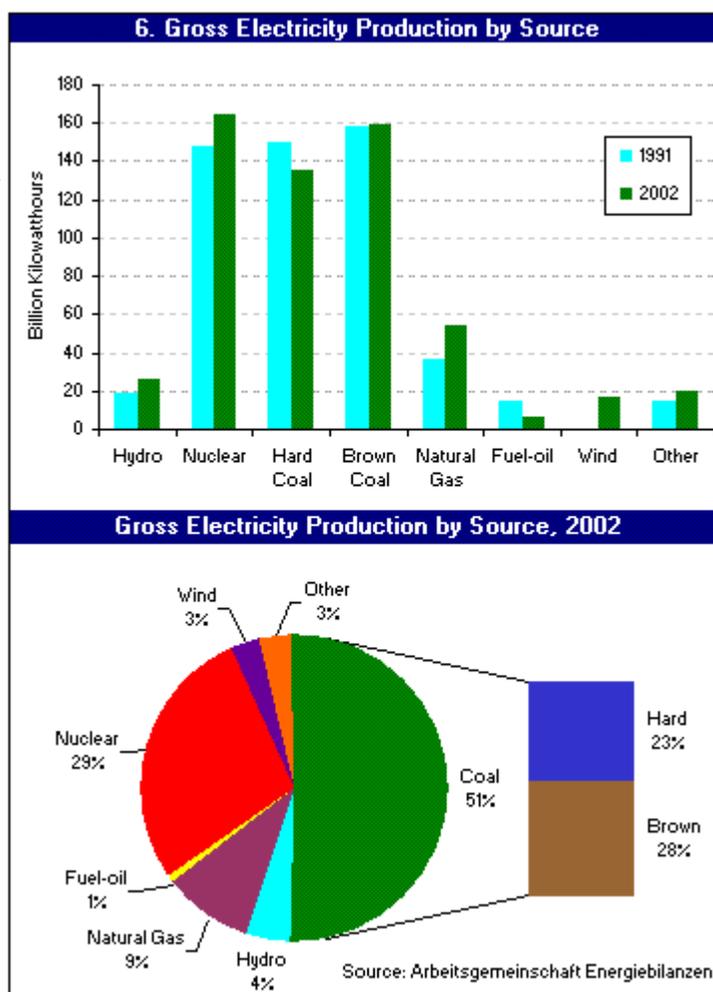
ELECTRICITY

Consumption

Germany has Europe's largest electricity market, consuming an estimated 512.9 billion kilowatthours (Bkwh) in 2002. Between 1991 and 2002, electricity consumption grew slightly, with an annual growth rate of 0.7%. This is in accord with the slow economic growth during the period.

Generation

Coal and nuclear power plants are the pillars of Germany's power generation. Coal is the most important energy source, accounting for 50.6% of the country's gross electricity production in 2002 (brown coal 27.4% and hard coal 23.2%), according to government statistics. Nuclear power was the second most important energy source, providing 28.4% of total gross electricity production. Natural gas accounted for 9.3%, down slightly year-on-year. The biggest increase in generation came from wind, which jumped 60% year-on-year, but only provided 2.9% of the total gross electricity generated for the year. In 2002, Germany generated 548.3 Bkwh, nearly unchanged from the previous year.



Installed Capacity

As of January 2002, Germany had an installed electric generating capacity of 115 gigawatts (GW). Thermal sources (coal, natural gas, and oil) accounted for 67% of the country's installed capacity, followed by nuclear with 22.4%, other renewables (mainly wind) with 9.4%, and hydro with 4%.

With nuclear power scheduled to be completely phased out in Germany 2021, electricity generated from natural gas, coal and renewables, particularly wind, are expected to increase (more information on Germany's nuclear phase out below).

Nuclear Power

As of December 2002, Germany ranked fourth worldwide in installed nuclear capacity, behind the United States, France, and Japan. E.On, RWE, HEW, and EnBW own nuclear generation capacity, with E.On holding stakes in 12 of Germany's 19 nuclear power plants.

After much controversy, the German government formally signed an agreement with utility companies in June 2001 to gradually phase out nuclear power, and in April 2002, an amended Atomic Energy Act entered into force, formally legalizing the phase-out. All of Germany's nuclear power plants are expected to be closed by 2021, but production from some plants could be extended. On November 14, 2003, E.On Energie closed its Stade nuclear power plant, marking the first plant to be decommissioned. Germany's oldest nuclear power plant, Obrigheim, is scheduled to be closed in 2005. There has been opposition, however, to the government's nuclear phase-out program. If the current ruling coalition (Social Democrats and Green Party) loses power, the phase-out could be overturned.

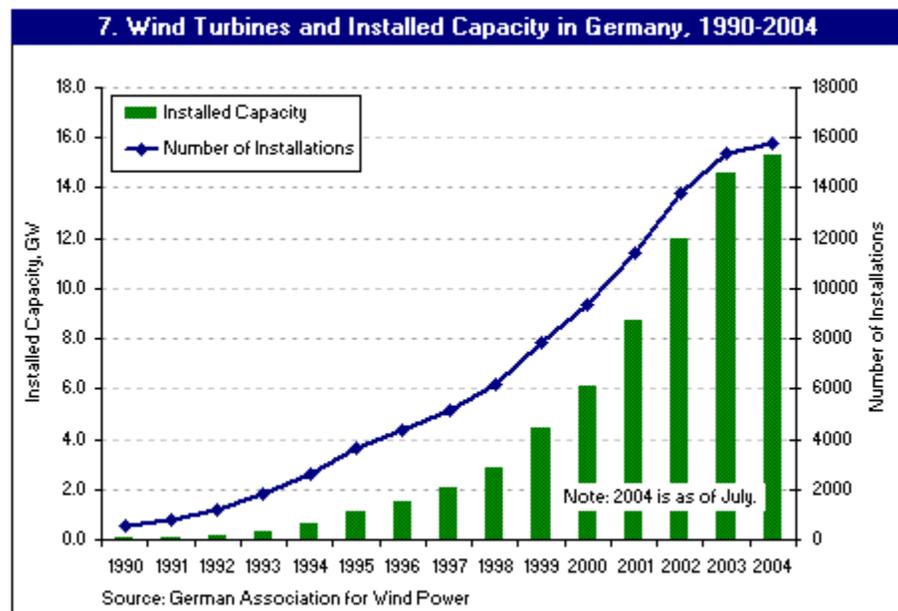
Renewables

According to the country's Renewable Energy Sources Act, Germany aims to increase the share of power covered by renewables to 12.5% by 2010, and to 20% by 2020. The country's long-term goal is to meet at least 50% of the country's total primary energy consumption with renewables by 2050. Between 1991 and 2002, consumption of renewable electricity (not including hydro) more than quadrupled. In 2002, consumption of power

generated from renewables reached 27 Bkwh, or approximately 5.3% of the country's total electricity consumption. Germany is currently the world leader in wind power, with more than a third of the world's installed wind capacity. As of the July of 2004, Germany had 15,797 wind turbines in operation, with an installed capacity of 15.3 GW (see [Figure 7](#)), according to Germany Association for Wind Energy. With suitable locations on land now becoming scarce, the government aims to develop large wind parks offshore.

Besides wind power, Germany is home to some of the world's largest solar energy facilities. In September 2004, Shell, along with partners GEOSAL and WestFonds, began operating a 5-MW solar power plant in Leipzig. City Solar AG reportedly is building a 7.4 MW solar power plant at Götterborn, the world's largest, according to City Solar.

In November 2003, geothermal was added to the country's power generation mix, when Germany's



first geothermal power plant began operating at Neustadt-Glewe, Mecklenburg-Western Pommern. There are currently two other geothermal projects being developed in Unterhaching and in Weinheim. There also are 34 major geothermal plants used for heat generation in Germany.

Sector Organization

Complete liberalization of the German electricity sector was completed in 1998 with the adoption of the Energy Industry Act of April 1998. Electricity market reform has progressed via agreements among major participants in the market but is not yet overseen by any regulatory body, which is now required by the EU. Similar to the natural gas network, the Verbändervereinbarung currently determines access to the grid system, which was first agreed upon in May 1998 and left transmission control mostly in the hands of the supra-regional companies.

Although an estimated 900 energy companies operate in the German electricity market, a large portion of electricity generation is still controlled by only four large companies known as "supra-regional companies", which also distribute their electricity with the help of local firms. These supra-regional companies include: RWE AG (Rheinisch-Westfälischen Elektrizitätswerks); E.ON Energie; Swedish-based Vattenfall; and Energie Baden-Württemberg AG (EnBW).

In the initial years following liberalization, electricity prices dropped. But since the beginning of 2001, prices have continued to climb, nearly reaching price levels prior to liberalization, particularly for industrial consumers. Some analysts have attributed the increases in electricity prices to government regulations, such as the Renewables Act, which guarantees higher prices for renewables, as well as to increased prices for natural gas and coal imports. Others have suggested that the dominance of the four super-regional power companies has hindered competition.

ENVIRONMENT

Germany has a strong commitment to protecting its environment. It has actively promoted the use of renewable energy, both under the Kohl government with the Electricity Feed Law, and now under Schröder's government with eco-taxes. In Germany's eco-tax regime, energy tax revenue is used to fund renewable projects.

In 2002, Germany emitted 223.2 million metric tons of carbon dioxide (CO₂) from the consumption of fossil fuels. Germany ranks third in total carbon emissions within the G-7, after the United States and Japan. Germany signed the Framework Convention on Climate Change in Rio de Janeiro in June 1992 and ratified it on December 9, 1993. Signers of the agreement pledged to stabilize per capita CO₂ emissions in the year 2000 and beyond at 1990 levels. In 2000, Germany set a goal of reducing the six greenhouse gases cited in the Kyoto Protocol by 21% between 2008 and 2012, within the context of the EU burden-sharing program. This has been made more achievable given the sharp drop in total German carbon emissions since 1990, due mainly to decreased consumption of energy overall (and in particular lignite) in the former East Germany. Germany ratified the Kyoto Protocol on May 31, 2002.

Sources for this report include: Arbeitsgemeinschaft Energiebilanzen; CIA World Factbook; Dow Jones; Economist Intelligence Unit Views Wire; Energy Intelligence Group; Eni's 2003 World Oil and Gas Review; Financial Times; Global Insight; Global Power Report; International Energy Agency; Mining Journal Ltd; Oil and Gas Journal; Petroleum Intelligence Weekly; Petroleum Economist; Platt's International Coal Report; Platt's Oilgram News; The German Electricity Association; The German Federal Ministry for Economics and Export Control; The German Federal Ministry for Economics and Labor; The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety; The United Nations Framework Convention on Climate Change;

U.S. Energy Information Administration; World Gas Intelligence.

COUNTRY OVERVIEW

President: Horst Köhler (since March 2004)

Chancellor: Gerhard Schröder (since September 1998)

Independence: January 18, 1871 (reunification of West and East Germany took place on October 3, 1990)

Population (2003E): 82.5 million

Location/Size: Central Europe, bordering the Baltic Sea and the North Sea, between the Netherlands and Poland, south of Denmark/137,821 square miles (slightly smaller than Montana)

Major Cities: Berlin (national capital since 10/3/90), Hamburg, Munich, Cologne, Frankfurt, Essen, Dortmund, Stuttgart

Language: German

Ethnic Groups: German 91.5%, Turkish 2.4%, other 6.1% (made up largely of Serbo-Croatian, Italian, Russian, Greek, Polish, Spanish)

Religions: Protestant 34%, Roman Catholic 34%, Muslim 3.7%, unaffiliated or other 28.3%

ECONOMIC OVERVIEW

Finance Minister: Hans Eichel

Currency: Euro

Exchange Rate (10/07/04): 1 US Dollar = 0.814 Euro

Nominal Gross Domestic Product (GDP, 2003E): \$2.4 trillion

Real GDP Growth Rate (2003E): -0.1% **(2004F):** 1.4%

Inflation Rate (consumer prices, 2003E): 1.1% **(2004F):** 1.7%

Unemployment Rate (2003E): 10.5% **(2004F):** 10.4%

Merchandise Exports (2003E): \$754 billion

Main Destinations of Exports (2003E): France (10.6%), the United States (9.3%), the United Kingdom (8.4%), Italy (7.4%)

Merchandise Imports (2003E): \$603 billion

Main Origins of Imports (2003E): France (9.0%), the Netherlands (7.8%), the United States (7.3%), Italy (6.1%)

Merchandise Trade Surplus (2003E): \$151 billion

Current Account Balance (2003E): \$56 billion

ENERGY OVERVIEW

Minister of the Interior: Otto Schily

Proven Oil Reserves (1/1/04E): 442 million barrels

Oil Production (2003E): 158,700 barrels per day (bbl/d), of which 72,300 bbl/d was crude oil

Oil Consumption (2003E): 2.64 million bbl/d

Net Oil Imports (2003E): 2.48 million bbl/d

Natural Gas Reserves (1/1/04E): 10.8 trillion cubic feet (Tcf)

Natural Gas Production (2002E): 0.8 Tcf

Natural Gas Consumption (2002E): 3.2 Tcf

Natural Gas Imports (2002E): 2.4 Tcf

Coal Reserves (2001E): 72.8 billion short tons

Coal Production (2002E): 230.9 million short tons (Mmst)

Coal Consumption (2002E): 273.9 Mmst

Net Coal Imports (2002E): 43.0 Mmst

Electric Generation Capacity (2002E): 115.0 gigawatts (GW)

Electricity Production (2002E): 548.3 billion kilowatthours (Bkwh)

Electricity Consumption (2002E): 512.9 Bkwh

Electricity Net Exports (2002E): 35.4 Bkwh

ENVIRONMENTAL OVERVIEW

Minister for Environment: Jürgen Trittin

Total Energy Consumption (2002E): 14.3 quadrillion Btu* (3.5% of world total energy consumption)

Energy-Related Carbon Dioxide Emissions (2002E): 223.2 million metric tons of carbon dioxide (3.4% of world total carbon dioxide emissions)

Per Capita Energy Consumption (2002E): 174.3 million Btu (vs U.S. value of 339.1 million Btu)

Per Capita Carbon Dioxide Emissions (2002E): 10.2 metric tons (vs U.S. value of 20.0 metric tons)

Energy Intensity (2002E): 7,378 Btu/ \$1995 (vs U.S. value of 10,619 Btu/ \$1995)**

Carbon Dioxide Intensity (2002E): 0.43 metric tons of carbon dioxide/thousand \$1995 (vs U.S. value of 0.63 metric tons/thousand \$1995)**

Fuel Share of Energy Consumption (2002E): Oil (40%), Coal (23%), Natural Gas (22%), Nuclear (11%), Hydro (2%), Other Renewables (2%)

Fuel Share of Carbon Emissions (2002E; includes natural gas flaring): Oil (42%), Coal (38%), Coal (20%)

Status in Climate Change Negotiations: Annex I country under the United Nations Framework Convention on Climate Change (ratified December 9th, 1993). Under the negotiated Kyoto Protocol (signed on April 29th, 1998, and ratified on May 31, 2002), Germany, as a member of the European Union, has agreed to reduce greenhouse gases 8% below 1990 levels by the 2008-2012 commitment period.

Major Environmental Issues: Emissions from coal-burning utilities and industries and lead emissions from vehicle exhausts (the result of continued use of leaded fuels) contribute to air pollution; acid rain, resulting from sulfur dioxide emissions, is damaging forests; heavy pollution in the Baltic Sea from raw sewage and industrial effluents from rivers in eastern Germany; hazardous waste disposal.

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, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands, Whaling . Has signed, but not ratified, Air Pollution-Persistent Organic Pollutants.

* 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.

ENERGY INDUSTRIES

Major Energy Companies: *Oil:* Deutsche Shell, Esso, Ruhr Oel; *Natural Gas:* Ruhrgas, Wintershall/Wingas; *Coal:* DSK, RAG; *Electricity:* RWE, E.On, EnBW, Vattenfall Europe

Major Refineries (crude capacity, bbl/d): Karlsruhe (285,800), Bayernoil (262,300), Schwedt (210,000), Gelsenkirchen (246,000), Leuna (222,800), Wilhelmshaven (220,000), Godorf (162,000), Wesseling (140,000), Ingolstadt (262,300)

LINKS

For more information from EIA on Germany, please see:

[EIA - Country Information on Germany](#)

Links to other U.S. Government sites:

[CIA World Factbook - Germany](#)

[U.S. Department of Energy's Office of Fossil Energy's International section - Germany](#)

[U.S. State Department's Consular Information Sheet - Germany](#)

[U.S. State Department's Country Commercial Guide - Germany](#)

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

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

The following links are provided solely as a service to our customers, and therefore should not be construed as advocating or reflecting any position of the Energy Information Administration (EIA) or the United States Government. In addition, EIA does not guarantee the content or accuracy of any information presented in linked sites.

Associations

[Arbeitsgemeinschaft Energiebilanzen](#)

[Der Bundesverband der Energie-Abnehmer e.V. \(VEA\)](#)

[Der Bundesverband der deutschen Gas- und Wasserwirtschaft \(BGW\)](#)

[Der Bundesverband Braunkohle](#)

[Der Bundesverband Erneuerbare Energie](#)

[Der Gesamtverband des deutschen Steinkohlen-Bergbaus](#)

[Niedersächsisches Landesamt für Bodenforschung](#)

[Solarenergie-Förderverein Deutschland \(SFV\)](#)

[Verein Deutscher Kohlenimporteure](#)

[Verband der Elektrizitätswirtschaft](#)

[Wirtschaftsverband Erdöl- und Erdgasgewinnung](#)

Coal

[BKB AG](#)

[Lausitzer and Mitteldeutsche Bergbau-Verwaltungsgesellschaft mbH](#)

[Mitteldeutsche Braunkohlegesellschaft mbH](#)

[RAG](#)

[RWE Rheinbraun AG](#)

[Romonta GmbH](#)

[Vatenfall Europe Mining AG](#)

Electricity

[Concord Power](#)

[Intergen](#)

[Energieversorgung Gera GmbH \(EGG\)](#)

[EWE AG Oldenburg](#)

[Geosol](#)

[MVV Energie AG RWE](#)

[Eon](#)

[EWE](#)

Government

[Deutsche Emissionshandelsstelle \(DEHSt\)](#)

Oil and Natural Gas

[BEB](#)

[EuroHub](#)

[Ruhrgas](#)

[Thyssengas](#)

[Verbundnetz Gas Aktiengesellschaft \(VNG\)](#)

[Wingas](#)

[Wintershall](#)

Refineries

[Bayern Oil](#)

[Mineraloelraffinerie Oberrhein](#)

[PCK Raffinerie GmbH](#)

[Total Raffinerie Mitteldeutschland](#)

Pipelines

[The North-West Pipeline \(Die Nord-West Oelleitung GmbH -NWO\)](#)

[The Southern European Pipeline \(SPSE\)](#)

[The Transalpine Pipeline \(TAL\)](#)

[Die Mineralölverbundleitung GmbH Schwedt](#)

You may be automatically notified via e-mail of updates for this or for other country analysis briefs. To join any of our emailing lists, go to http://www.eia.doe.gov/listserv_signup.html. and follow directions.

[Return to Country Analysis Briefs home page](#)

File last modified: November 2, 2004

Contact: Charles Esser

charles.esser@eia.doe.gov

Phone: (202)586-6120

Fax: (202)586-9753

[EIA Home](#)
[Contact Us](#)

URL: <http://www.eia.doe.gov/emeu/cabs/germany.html>