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# **United Kingdom**

With its significant North Sea reserves, the United Kingdom is a major European oil and natural gas producer. It is also one of the largest energy consumers in Europe.

Information contained in this report is the best available as of April 2005.



renewables.

## BACKGROUND

The United Kingdom (UK) is an important political and economic power in Europe and the world. It has the second-largest economy in the European Union (EU) with a nominal 2004 gross domestic product (GDP) of \$2.12 trillion. The UK economy grew by 3.1 percent in 2004, one of the fastest rates in the EU. Over the past 5 years, the UK economy has grown much faster than the rest of the EU, averaging 2.6 percent real GDP growth per year, versus 2.0 percent per year for the EU as a whole. Analysts predict the growth of the UK economy in 2005 to be 2.6 percent, slower than 2004 but still above the EU average. While the UK has been a member of the EU since 1973, it does not participate in the European single currency, the Euro. The Labour Party, led by Prime Minister Tony Blair, has governed the UK since 1997

The UK is the largest producer of petroleum and natural gas in the EU. However, after years of being a net exporter of both fuels, analysts predict that the UK will become a net importer of these fuels by the end of the decade. Production from UK oil and natural gas fields peaked in the late 1990s and has declined steadily over the past several years, as the discovery of new reserves has not kept pace with the maturation of existing fields. In response, the government has begun a three-pronged approach to address the predicted domestic shortfalls: 1) increasing domestic production through efficiency gains and the exploitation of marginal fields; 2) establishing necessary import infrastructure, such as liquefied natural gas (LNG) receiving terminals and transnational pipelines; and 3) investing in energy conservation and

## OIL

According to *Oil and Gas Journal (OGJ)*, the UK had 4.5 billion barrels of proven crude oil reserves in 2005, the most of any EU member country. The UK consumed 1.9 million barrels per day (bbl/d) of oil in 2004, a 7.9 percent increase over the previous year and the fourth-largest amount in the EU. However, the importance of oil to the UK economy has steadily declined over the past two decades, with oil's contribution to total energy consumption falling from in 41 percent in 1980 to 36 percent in 2002.

Most of the UK crude oil grades are light and sweet (30° to 40° API), which generally makes them attractive to foreign buyers. The UK has been a net exporter of crude oil since 1981; according to the British Department of Trade and Industry (DTI), the largest destinations of crude oil exports in 2003 were the United States (31 percent), the Netherlands (26 percent), France (16 percent), and Germany (14 percent). Much of the crude oil exported to the Netherlands is not actually consumed there, but rather sold at the Rotterdam spot market. In 2004, the UK exported 235,000 bbl/d of crude oil and 134,000 bbl/d of petroleum products to the U.S., contributing 2.3 percent and 4.7 percent to total U.S. crude oil and petroleum product imports, respectively.

## **Exploration and Production**

The UK Continental Shelf (UKCS), located in the North Sea off the eastern coast of the UK, contains the bulk of the country's oil reserves. There are also sizable reserves in the North Sea north of the Shetland Islands, with smaller amounts in the North Atlantic. Besides these offshore assets, the UK also has the Wytch Farm field, the largest onshore oil field in Europe.

Total oil production (including condensates, natural gas liquids, and refinery gain) in the UK was 2.08 million bbl/d in 2004, a 13 percent decrease from 2003 and 30 percent below than the peak of production in 1999. The UK government expects oil production in the country to continue to decline, reaching 1.38 million bbl/d by 2009. Reasons for this decline include 1) the overall maturity of the country's oil fields, 2) the application of new crude oil extraction technologies that lead to field exhausted at a quicker rate, and 3) increasing costs as production shifts to more remote and inhospitable regions.

## **Sector Organization**



As UK oil fields mature, the industry has shifted focus from discovering new reserves to increasing

the productivity of existing fields and developing smaller, previously avoided ones. This trend has prompted oil major such as BP and Shell to begin selling their UK assets in order to focus on high growth, international opportunities. The end result has been the entry into the UK oil sector of many small, independent operators. In 2003, U.S.-based Apache purchased BP's Forties field for \$630 million, and other independents such as Talisman, Perenco, and Paladin Resources have acquired significant production assets in the country. In late 2004, EnCana announced that it would sell its North Sea assets to Canada-based Nexen for \$2 billion. These smaller companies find smaller and maturing fields more economically viable than do the oil majors because they have lower overhead costs, are more flexible, and often employ newer production and recovery technologies.

#### **Pipelines**

There is an extensive network of pipelines in the UK to carry oil extracted from North Sea platforms to coastal terminals in Scotland and northern England. BP operates the 110-mile, 36-inch Forties-Cruden Bay pipeline, linking fields in the Forties system to the oil terminal at Cruden Bay, Scotland. The company also operates a 110-mile, 36-inch pipeline connecting the Ninnian system to the Sullom Voe oil terminal on Shetland Island. Total operates a 150-mile, 24-inch pipeline linking the Bruce and Forties fields to Cruden Bay and a 130-mile, 30-inch pipeline connecting the Piper system with Flotta on Orkney Island. Shell and Esso jointly operate a 93-mile, 36-inch connection between the Cormorant oil field and Sullom Voe. Talisman Energy owns a 37-mile, 16-inch pipeline connection between its Beatrice field and the Nigg Bay oil terminal. There are also numerous, small pipelines that connect each North Sea oil platform to these major backbones. Finally, the UK does have a few onshore crude oil pipelines, including a 90-mile, underground pipeline operated by BP that links the Wytch Farm field to the refinery at Fawley and the nearby oil export terminal at Southampton.

The UK has a single international crude oil pipeline, the 220-mile, 34-inch Norpipe operated by ConocoPhillips. With a capacity of 900,000 bbl/d, Norpipe connects Norwegian oil fields in the Ekofisk system to the oil terminal and refinery at Teesside.

#### **Downstream**

The UK had 1.8 million bbl/d of refining capacity in 2005, according to *OGJ*. ExxonMobil operates the single-largest refinery in the country, the 321,000-bbl/d Fawley facility in southern England. However, BP controls the largest total amount of refining capacity, with facilities in Grangemouth, Scotland (196,000 bbl/d) and Coryton, England (163,000 bbl/d). Other companies with significant refining capacity in the UK include Total (330,000 bbl/d), Shell (245,000 bbl/d), ConocoPhillips (221,000 bbl/d), and ChevronTexaco (210,000 bbl/d). According to DTI, refinery utilization in the UK stood at 89 percent in 2002, a 47 percent increase from 1980 but a 10 percent decline from the peak of 99 percent in 1997. The UK maintains an active international trade in refined petroleum products, exporting 447,000 bbl/d and importing 331,000 bbl/d in 2003.

## NATURAL GAS

According to *OGJ*, the UK held an estimated 20.8 trillion cubic feet (Tcf) of proven natural gas reserves in 2005, a 6 percent decline from the previous year. Most of these reserves occur in three distinct areas: 1) associated fields in the UKCS; 2) non-associated fields in the Southern Gas Basin, located adjacent to the Dutch sector of the North Sea; and 3) non-associated fields in the Irish Sea. In order to take advantage of its domestic reserves, the UK government has encouraged the use of natural gas, including its substitution for coal and oil in industrial consumption and electricity production. As a result, natural gas consumption in the UK has increased an average of 4.6 percent per year since 1980, reaching 3.7 Tcf in 2003 according to DTI. Further, the percentage of total energy consumption sourced from natural gas in the UK has increased from 20 percent in 1980 to

## 37 percent in 2002.

Since 1997, the UK has been a net exporter of natural gas. However, as is the case with the country's oil reserves, most natural gas fields have already reached a high degree of maturity, and the UK government estimates that the country will again become a net importer of natural gas by the end of the decade.

## **Exploration and Production**

The UK produced 4.0 Tcf of natural gas in 2003 according to DTI, the same as the previous year, but a decrease from the peak of 4.2 Tcf in 2000. The country is the fourth-largest producer of natural gas in the world, behind Russia, the United States, and Canada. The largest concentration of natural gas production in the UK is the Shearwater-Elgin area of the Southern Gas Basin. The area contains five non-associated gas fields, Elgin (Total), Franklin (Total), Halley (Talisman), Scoter (Shell), and Shearwater (Shell). Most of the leading oil companies in the UK are also the leading natural gas producers, including BP, Shell, and Total. The major gas distribution companies in the UK, such as Centrica and BG Group, also have a presence in this production sector. Like the oil industry, smaller independents have been able to acquire some maturing assets from larger operators, who find it difficult to profitably operate these older, declining fields.

## **Sector Organization**



The natural gas sector in the UK, including production, distribution, and transmission, is wholly privatized. The largest gas distributor in the UK is now Centrica, a spinoff of the distribution assets of formally state-owned British Gas. National Grid Transeco (NGT), formed in 2002 through the merger of Lattice and former parastatal National Grid, controls the domestic gas transmission system.

## **Pipelines**

## Domestic System

There are four main pipeline systems in the UK that carry natural gas from offshore platforms to coastal landing terminals. First, the Shearwater-Elgin Line (SEAL), operated by Total, transports gas from the Shearwater-Elgin area to the landing terminal at Bacton, England; according to DTI, the 290-mile, 34-inch pipeline carried 1.7 billion cubic feet per day (Bcf/d) in 2003. Second, ExxonMobil operates the 200-mile, 30-inch Scottish Area Gas Evacuation (SAGE), which transports associated natural gas from UKGS fields to the landing terminal at St. Fergus, Scotland; according to DTI, SAGE carried 1.5 Bcf/d in 2003. Third, the 250-mile, 36-inch Central Area Transmission System (CATS), operated by BP, links fields in the Graben area of the UKCS to Teeside; 1.4 Bcf/d of associated and non-associated gas flowed through CATS in 2003, according to DTI. Finally, Shell operates the Far North Liquids and Gas System (FLAGS) linking associated

gas deposits in the Brent oil system with St. Fergus; in 2003, DTI reported that the 280-mile, 36inch FLAGS transported 760 million cubic feet per day (Mmcf/d) of associated gas. Once brought onshore, the responsibility for transporting natural gas throughout the country belongs to NGT. The company operates over 4,200 miles of transmission lines, transporting 3 Tcf of natural gas per year.

#### International Pipelines

A consortium of companies, led by BG, Ruhrgas, and Distrigas, operates the Interconnector pipeline between Bacton, England and Zeebrugge, Belgium. The 145-mile Interconnector came onstream in 1998, and its current export capacity from the UK is 1.9 Bcf/d. The Interconnector can also operate in "import mode," instead sending 800 Mmcf/d to the UK from the Continent. The UK-Eire Interconnector connects the UK with the Republic of Ireland, running from Moffat, Scotland to Dublin. The UK imports natural gas through the Frigg pipeline system, operated by Total. Frigg connects the St. Fergus gas terminal with the Frigg gas field in the Norwegian sector of the North Sea.

In 2003, the UK and Norway finalized the necessary political conditions for construction of the Britpipe linking Norway's Ormen Lange natural gas field to Easington, England. The 750-mile Britpipe would be the longest sub sea pipeline in the world, with an initial capacity of 1.9 Bcf/d and planned maximum capacity of 2.9 Bcf/y. Both counties expect construction on Britpipe to finish by 2007. Gasunie plans to build a 146-mile gas pipeline linking Balgzand, the Netherlands to Bacton, England. Initial construction on the Balgzad-Bacton Line (BBL) began in October 2004, with completion of the project expected by the end of 2006. According to Gasunie, the BBL will have an initial capacity of 1.1 Bcf/d, with a maximum capacity of 1.7 Bcf/d. In 2004, the Russian government approved construction of the 1,100-mile North European Gas (NEG) pipeline linking Vyborg, Russia with Greiswald, Germany and, ultimately, the east coast of the UK. Gazprom has stated that NEG could come on-stream by 2010 with a maximum capacity of 2.9 Bcf/d. Despite the approval of the Russian government, the NEG is still in the early planning stages, and some analysts have raised questions about the economic feasibility of the project.

#### Liquefied Natural Gas (LNG)

Currently, the UK does not have any LNG terminals. There have been proposals in recent years to build three such facilities in anticipation of a future increase in UK gas imports. NGT received regulatory approval in 2003 to convert an existing natural gas storage facility on the Isle of Grain into an LNG receiving terminal. NGT expects the Grain LNG facility to come online in April 2005, with an initial capacity of 470 Mmcf/d and a planned maximum capacity of 1.5 Bcf/d.

ExxonMobil and Qatar Petroleum have received regulatory approval for the South Hook LNG receiving terminal in Milton Haven, Wales. The terminal will be dedicated to receiving LNG from the Qatargas II liquefaction project in Ras Laffin, Qatar, which is also a joint project between the two companies. The South Hook LNG project is scheduled to come online by 2007, with an initial capacity of 1.0 Bcf/d and a maximum capacity of 2.1 Bcf/d by 2009.

Finally, BG has partnered with Netherlands-based Petroplus and Malaysia-based Petronas to also build an LNG receiving terminal in Milton Haven on the site of an existing natural gas storage facility owned by Petroplus. The companies received regulatory approval from Ofgem in early 2005 for the project, called Dragon. However, the European Commission announced that it would launch an investigation into the project, because Ofgem had granted the Dragon facility a waiver from EU rules requiring that all LNG terminals be open to third-party access. If the project does attain final regulatory approval, Dragon should be completed by the end of 2007 with an initial capacity of 580 Mmcf/d.

## COAL

The UK has an estimated 1.65 billion short tons (Bst) of recoverable coal reserves. The country is the fifth-largest coal producer in the EU, with output of 31.1 million short tons (Mmst) in 2003. according to DTI. Coal production in the UK has declined steadily and dramatically over the past several decades, down 82 percent since the early 1970s. Decreasing



domestic consumption and a surge of low-cost imports have been the principle causes of the production decline. In 2003, DTI reported that the UK imported more coal than it produced domestically, 35.7 Mmst, principally from South Africa (38 percent), Australia (18 percent), and Russia (16 percent).

In line with the fall in production, DTI reported that coal consumption has also decreased from 175.9 Mmst in 1970 to 68.7 Mmst in 2003. Industrial users of coal have caused the largest declines in coal consumption, and the overall makeup of coal consumption has changed dramatically as overall consumption levels have declined. Final consumption, including industrial, residential, and other final uses, constituted 28 percent of total coal consumption in 1970 but only 3 percent in 2003. Electricity generation constituted 49 percent of total coal consumption in the UK in 1970, but increased to 86 percent of total consumption by 2003.

In order to meet its obligations under the Kyoto Protocol, the UK likely will continue to phase out coal consumption and production. Nevertheless, the UK government continues to provide financial support to the industry. In June 2003, the UK government launched the Coal Investment Aid program, with a budget of up to \$111 million. The goal of the project is to create or safeguard jobs in the UK coal industry by encouraging coal producers to enter into investment projects that maintain access to reserves.

## ELECTRICITY



The UK had installed electricity generation capacity of 78.5 gigawatts (GW) in 2003, according to DTI, of which 77 percent was conventional thermal, 15 percent nuclear, 5 percent hydropower (including pumped storage), and 2 percent other renewables.

In 2003, DTI reported that

the country's net power generation was 376.8 Bkwh, up 2.7 percent from the previous year, while electricity consumption in 2003 was 399.8 Bkwh, up 1.3 percent over 2002. The UK imported 5.1 Bkwh of electricity in 2003, according to DTI, with France providing the bulk of these imports.

## Sector Organization

The UK has a competitive, privatized electricity sector, where generators and distributors trade electricity on a wholesale market. The largest power producer in the country is British Energy (BE), which controls most of the nuclear power capacity and generates about 20 percent of the total electricity supply. Other important generating companies include E.ON UK, RWE npower, Scottish and Southern Energy (SSE), and ScottishPower (SP). Twelve regional monopolies control electricity distribution in the UK, most of which are owned by the leading generation companies. NGT owns and operates the national transmission system in England and Wales, whereas SSE and SP operate the grid in Scotland, and Northern Ireland Electricity (NIE), a subsidiary of the Viridian Group, operates the grid in Northern Ireland.

Currently, each part of the UK (England, Northern Ireland, Scotland, and Wales) has a separate electricity market, except for the integrated market of England and Wales. The UK government plans to integrate the entire electricity market of Great Britain (England, Wales, and Scotland) by the end of April 2005 through the British Energy Transmission and Trading Arrangements (BETTA), with eventual plans to incorporate Northern Ireland. SP and SSE have increased the transmission capacity between England and Scotland to allow them to sell more electricity to English and Welsh customers. In 2001, the first electricity interconnector between Scotland and Northern Ireland was built.

#### **Conventional Thermal**

As mentioned above. conventional thermal plants provide the bulk of the electricity supply in the UK. In 2003, DTI reported that natural gas accounted for 52 percent of total conventional thermal capacity, followed by coal (47 percent) and oil (2 percent). One of the largest power plants in the UK is the Drax facility in North Yorkshire, which consists of six coal-fired units with total capacity



of 4,000 megawatts (MW). The long-term trend in UK power generation has been a move from coal-fired plants to combined-cycle, gas-fired turbines (CCGFT). As a result, according to DTI, electricity generation from CCGFTs increased from zero in 1989 to 128.8 Bkwh in 2003.

## Nuclear

BE operates eight nuclear power stations in the UK, including seven stations using advanced, gascooled reactors (AGR) and one (Sizewell B) using a pressurized-water reactor (PWR). All of the AGR reactors will reach the end of their designed lifetime by 2023. British Nuclear Fuels Limited (BNFL), owned by the UK government, operates four nuclear plants containing first generation, magnesium-oxide (Magnox) reactors. The UK originally built 11 of these plants in the 1950s, and BNFL will close the remaining four by 2010. BNFL plans to convert one closed plant, Chapelcross, into a co-firing plant burning a combination of coal and locally grown willow trees.

#### Renewables

The UK government has introduced regulations that require electricity distributors to source a portion of their electricity supply from renewables, currently 3 percent but set to rise to 10 percent by 2010. Reports indicated that UK power companies planned to construct over 21 GW of renewables capacity by 2010, which would meet 14 percent of the country's electricity consumption forecasted for that year. Investments in wind power have increased substantially, aiming to take advantage of the natural geographic advantage that the UK has in this regard. However, many of these projects have faced opposition from local activists, who claim that wind farms are unsightly and destroy local bird populations. Another area of increased interest has been wave power. In 2004, the Pelamis project off the coast of Orkney delivered the first ever supply of electricity from wave energy to the UK national grid.

#### **ENVIRONMENT**

The UK emitted 552.8 million metric tons (Mmt) of energy-related carbon dioxide in 2002, a reduction of 7.9 percent since 1990. The country is one of only four Western European countries to achieve a drop in carbon dioxide emissions since 1990. While carbon dioxide emissions have declined, total energy consumption has increased over the same period by 11.2 percent, reaching 9.6 quadrillion British thermal units (Btu) in 2002. In 2002, the UK economy had a carbon dioxide intensity of 0.4 Mmt per thousand \$1995 GDP and an energy intensity of 8,650 Btu per \$1995 GDP, both well below the average for both the EU and the Organization for Economic Cooperation and Development (OECD). The UK has ratified the Kyoto Protocol; however, the EU has decided to meet its requirements under the Protocol as a whole, rather than as individual signatories, with each member state given a different emissions target by the EU Commission. Under the EU plan, the UK must reduce its carbon dioxide emissions by 12.5 percent below the 1990 level during the 2008-2012 commitment period; the country was 5 percent above this target during 2002.

The UK has seen dramatic improvements in air quality in recent decades, especially reductions in sulfur dioxide emissions: UK sulfur dioxide emissions dropped from 6.5 Mmt in 1970 to 1.0 Mmt in 2002. The principle driving force behind these reductions has been the transition away from coal-fired power plants, the drastic reduction in the use of coal for residential heating, and general economic shift from an industry-focused to service-based economy. In 2001, the UK government introduced the Climate Change Levy, a surcharge on energy produced from carbon dioxide-emitting sources charged to commercial and industrial energy users. By exempting renewable energy sources and co-generation facilities, the Levy has encouraged large energy consumers to increase conservation measures.

Sources for this report include: Aberdeen Press & Journal; BBC News; Centrica; CIA World Factbook; The Deal; Dow Jones Newswires; Economist; Economist Intelligence Unit ViewsWire; EnCana; Energy Compass; Europe Energy; European Union; Financial Times; Fluxys; Gasunie; Global Insight; Global Power Report; International Energy Agency; International Oil Daily; Nuclear News; Ofgem; Oil and Gas Investor; Oil & Gas Journal; Petroplus; Petroleum Economist; Petroleum Intelligence Weekly; Pipeline and Gas Journal; Platts; Power Economics; Power In Europe; Reuters; The Crown Estate; The Guardian; The Herald (Glasgow); The Scotsman; Statoil; The Times (London); UK Department of Trade and Industry; UK Electricity Association; UK Offshore Operators Association (UKOOA); Transco; US Energy Information Administration; Utility Week; World Gas Intelligence; World Markets Analysis

## **COUNTRY OVERVIEW**

Head of State: Queen Elizabeth II
Prime Minister: Anthony (Tony) Blair, since May 1997
Population (2004E): 60.3 million
Location/Size: Western Europe, islands including the northern one-sixth of the island of Ireland between the North Atlantic Ocean and the North Sea, northwest of France/244,820 sq km (slightly smaller than Oregon)
Capital City: London
Language: English
Ethnic groups: English 81.5%, Scottish 9.6%, Irish 2.4%, Welsh 1.9%, Ulster 1.8%, West Indian, Indian, Pakistani, and other 2.8%
Religions: Anglican and Roman Catholic 40 million, Muslim 1.5 million, Presbyterian 800,000, Methodist 760,000, Sikh 500,000, Hindu 500,000, Jewish 350,000

#### **ECONOMIC OVERVIEW**

**Currency:** Pound sterling Exchange Rate (3/30/05): 1 US Dollar = 0.53 pounds Gross Domestic Product (2004E): \$2.12 trillion Real GDP Growth Rate (2004E): 3.1% (2005F): 2.6% Inflation Rate (consumer prices, 2004E): 2.2% (2005F): 2.5% Unemployment Rate (2004E): 4.7% (2005F): 4.6% Merchandise Exports (2004E): \$350 billion Merchandise Imports (2004E): \$455 billion Merchandise Trade Deficit (2004E): \$105 billion Current Account Deficit (2004E): \$52 billion Major Exports: Manufactured goods, fuels, chemicals, food, beverages, tobacco Main Destinations of Exports (2003E): U.S. (15.7%), Germany (10.5%), France (9.5%), Netherlands (6.9%), Ireland (6.5%), Belgium (5.6%), Spain (4.4%), Italy (4.4%) Major Imports: Manufactured goods, machinery, fuels, foodstuffs Main Origins of Imports (2003E): Germany (13.5%), U.S. (10.2%), France (8.1%), Netherlands (6.3%), Belgium (4.9%), Italy (4.7%)

## **ENERGY PROFILE**

Proven Oil Reserves (1/1/05): 4.49 billion barrels Oil Production (2004E): 2.08 million bbl/d Oil Consumption (2004E): 1.86 million bbl/d Net Oil Exports (2004E): 0.22 million bbl/d Crude Oil Refining Capacity (1/1/03E): 1.8 million bbl/d Natural Gas Reserves (1/1/05E): 20.8 trillion cubic feet (Tcf) Natural Gas Production (2002E): 3.6 Tcf Natural Gas Net Exports (2002E): 0.3 Tcf Natural Gas Net Exports (2002E): 0.3 Tcf Recoverable Coal Reserves (2001E): 1.65 billion short tons Coal Production (2002E): 32.6 Mmst Coal Consumption (2002E): 64.2 Mmst Net Coal Imports (2002E): 31.6 Mmst Electrical Generation Capacity (2002E): 77.0 gigawatts (79.8% thermal, 17.9% nuclear, 2.0% hydro, 0.2% other)

**Electricity Generation (2002E):** 360.8 Bkwh **Electricity Consumption (2002E):** 343.9 Bkwh

## **ENVIRONMENTAL OVERVIEW**

**Total Energy Consumption (2002E):** 9.6 quadrillion Btu\* (2.3% of world total energy consumption)

**Energy-Related Carbon Dioxide Emissions (2002E):** 552.8 Mmt (2.3% of world carbon dioxide emissions)

**Per Capita Energy Consumption (2002E):** 162.2 million Btu (vs. U.S. value of 339.1 million Btu)

**Per Capita Carbon Dioxide Emissions (2002E):** 9.4 metric tons (vs. U.S. value of 20.0 metric tons)

Energy Intensity (2002E): 8,650 Btu/\$1995 (vs U.S. value of 10,620 Btu/\$1995)\*\* Carbon Dioxide Intensity (2002E): 0.4 metric tons/thousand \$1995 (vs U.S. value of 0.6 metric tons/thousand \$1995)\*\*

**Fuel Share of Energy Consumption (2002E):** Natural Gas (37.1%), Oil (35.7%), Coal (15.0%), Nuclear (10.9%), Other Renewables (0.7%), Hydroelectricity (0.5%)

**Fuel Share of Carbon Dioxide Emissions (2002E):** Oil (40.8%), Natural Gas (32.9%), Coal (26.3%)

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

**Major Environmental Issues:** Sulfur dioxide emissions from power plants contribute to air pollution; some rivers polluted by agricultural wastes and coastal waters polluted because of large-scale disposal of sewage at sea.

**Major International Environmental Agreements:** A party to Conventions on Air Pollution, Air Pollution-Nitrogen Oxides, 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, Marine Life Conservation, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands and Whaling.

\* 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 INDUSTRY**

Major Systems: Brent, Ninian, Forties, Flotta, Fulmar Major Fields: E. Brae, Brent, Forties, Magnus, Miller, Scott Oil and Gas Companies: Amerada Hess, BP Amoco, BHP, ChevronTexaco, ExxonMobil, Kerr-McGee, Phillips, Ranger Oil, Royal-Dutch/Shell.

## LINKS

For more EIA information on the United Kingdom: EIA - Country Information on the United Kingdom Electricity Restructuring and Privatization in the United Kingdom

Links to other U.S. Government sites: <u>CIA World Factbook - United Kingdom</u> <u>U.S. Department of Commerce Country Commercial Guide for United Kingdom</u> <u>U.S. State Department Consular Information Sheet</u>

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## Associations and Institutes

Society of British Gas Industry <u>The Gas Forum</u> <u>The British Wind Energy Association</u> <u>UK Offshore Operators Association (UKOOA)</u> <u>UK Petroleum Industry Association</u>

Coal British Geological Survey UK Coal

Government Department of Trade and Industry (Energy) Ofgem Ofreg The Scottish Parliament

## **LNG** Milford Haven Terminal

**Oil and Natural Gas Companies** 

BG-Group British Petroleum Edinburgh Oil and Gas EnCana Corporation Marathon Oil Corporation (North Sea Operations) Royal Dutch/Shell Talisman Energy (North Sea Operations)

## Pipelines

Interconnector UK Transco

## Power

<u>Centrica</u> <u>ScottishPower</u> Scottish and Southern Energy National Grid Northern Ireland Electricity British Energy

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