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October 2003

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Australia

Australia is the world's leading coal exporter and has very large natural gas reserves as well. Australia's proven oil and natural gas reserves have nearly doubled in recent years, though there is much exploration yet to be done. Infrastructure is being developed to bring more of Australia's natural gas reserves to market.

Note: information contained in this report is the best available as of October 2003 and can change.



BACKGROUND

Australia has exhibited robust economic growth over the last decade, with a 3.9% average annual increase in its real gross domestic product (GDP), which has made it one of the world's fastest growing industrialized countries. Some of this success can be attributed to expansionary government policy that fostered significant increases in domestic consumption, enabling Australia to weather both the 1997 Asian financial crisis and the 2001 global economic slowdown much better than many had expected. In 2002, real GDP growth was 3.6%, but is expected to be closer to 3% in 2003 due to weak external demand and a strong Australian dollar that has depressed exports. Lower expected economic growth can also be explained by the severe drought that has plagued the country during 2002 and 2003. Still, real GDP in 2004 is projected to grow by 3.5%, in conjunction

with an expected recovery in the world economy.

Australia's Liberal Party, under Prime Minister John Howard, has led the country since 1996, most recently winning reelection in November 2001. During its tenure, the Liberal Party has focused on stimulating domestic consumption by overhauling the tax system in 2000 and cutting interest rates six times in 2001. Australia's next election is scheduled for 2005.

ENERGY

Australia is an energy resource-rich country with significant petroleum, natural gas and coal reserves. Australia's energy consumption profile is dominated by coal, which fuels most of the country's power generation. Petroleum also accounts for a large share of energy consumption.

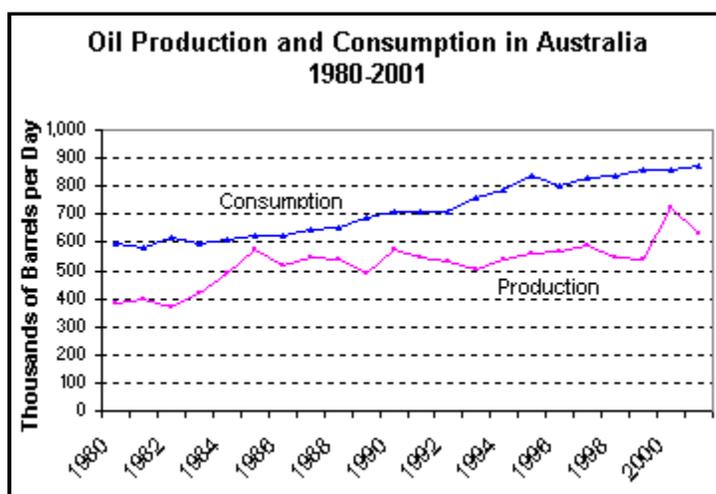
Natural gas use is relatively small, but has been growing rapidly in recent years. An important issue facing Australia is its growing dependence on petroleum imports, the result of expanding consumption in a period of declining production. This problem has been exacerbated by the country's difficulty in attracting new foreign investment into its energy sector, something many Australians have blamed on a restrictive regulatory climate and the government's failure to provide incentives for new potential investors. During 2003, several US-based companies made plans to leave the industry by putting their assets up for sale.

Australia is one of the few OECD countries that is a significant net energy exporter. Since 1986, it has been the world's largest coal exporter, and it is currently the sixth largest exporter of LNG. With Asia's steadily rising demand for both coal and LNG, Australia's prospects for expanding its energy exports are good. In the near future, however, it can expect to face greater export competition from China, in coal, and Indonesia, in both coal and LNG. In the longer term, growth of Australia's coal exports may depend on Asia's response to global warming concerns. Already, Japan, the largest importer of Australian coal, is considering imposing a tax on coal imports, in part to encourage greater consumption of other fuels.

OIL

At the end of 2002, Australia's oil reserves were estimated at 3.5 billion barrels, a 20% increase over 2001. The bulk of these reserves are located offshore of the northwestern and southeastern parts of the country. The two largest areas holding petroleum reserves are the Bass Strait off southern Australia, with 1.8 billion barrels, and the Carnarvon Basin off Western Australia, with 1.1 billion barrels.

In recent years, declining petroleum production coupled with climbing domestic oil consumption has increased concerns about the growing insufficiency of the country's fuel supply. Under pressure to promote exploration, the government has gradually responded with issuances of new exploration permits. Most significant was a March 2003 move by the government to open bidding for exploration permits in 35 new offshore areas, 22 of which are located in the Northern Territory and Western Australia, with the remaining scattered around southern Australia, including Tasmania and the Ashmore and Cartier Islands.



Prospects for new petroleum finds in Western Australia are considered good, following recent discoveries by Woodside Petroleum and BHP Billiton in February 2003. Interest in exploration off Southern Australia is led by Australian-based Santos, Inc., which was just awarded three new exploration permits in the region in September 2003. Much of the area around Southern Australia has not been explored yet because its adverse weather conditions and deeper waters have made potential ventures more costly. Furthermore, only 4 of 36 wells drilled in Australia's deepwaters since 1992 have actually yielded oil. In May 2003, Australia's Woodside Energy plugged and abandoned as dry the Gnarlyknots well it had drilled in the Great Australian Bight.

In the past, the majority of petroleum exploration in Australia has been carried out by the larger domestic oil firms, including BHP Billiton, Woodside Petroleum, and Santos. However, current exploration ventures have seen an increase in foreign interests and greater participation of smaller

Australian companies. Nonetheless, the country's existing tax laws are regularly criticised as a major obstacle to the attraction of substantial foreign investment in exploration. In October 2002, as a precursor to the wider revision of exploration laws, the government passed amendments that would cut oil industry compliance costs. In the same year, the government also made a four-year commitment of \$30 million in funding to AGSO-Geoscience Australia, a national agency, so that it could provide petroleum and natural gas companies with seismic and geological data in order to facilitate exploration.

Australia's oil production had increased gradually since 1980, peaking in 2000 at 805,000 bbl/d, 722,000 bbl/d of which was crude oil. In 2002, as was expected, production fell dramatically to 626,000 and since then, has continued to fall with production estimates for 2003 below 600,000 bbl/d. Australia's Bureau of Agriculture and Resource Economics (ABARE) has estimated that production will fall further to 560,000 bbl/d by 2006. Declines are due primarily to decreasing production at the Cooper-Eromanga and Gippsland basins. The country's other major basins, the Carnarvon and Bonaparte, have both yielded increasing amounts of oil in recent years, but have been unable to keep up with the country's rapidly growing demand.

While Australia's declining production is a major contributor to the country's growing oil deficit, the role of expanding petroleum consumption cannot be overlooked. Petroleum consumption has grown by 3% since 1995, and is expected to rise in tandem with Australia's economy over the next 20 years. In 2002, petroleum consumption averaged 881,000 bbl/d, resulting in net imports of 166,000 bbl/d. By comparison, net oil imports in 2000 averaged only 54,000 bbl/d. By 2010, the country is expected to slide from 80% self-sufficiency to 40%.

Besides conventional oil, Australia also has shale oil reserves in the northeastern state of Queensland. Estimates of Queensland's shale oil reserves run as high as 30 billion barrels. However, the primary developer of Queensland's shale oil, Southern Pacific Petroleum/Central Pacific Minerals (SPP/CPM), has until recently been unable to capitalize upon this resource due to protests by Greenpeace activists. Since 1998, Greenpeace has been staging public demonstrations in Queensland and pressuring Australian refiners to refuse shale oil, on the grounds that it is highly polluting. In 2001, all four major Australian refining firms refused to purchase Queensland's shale oil, despite government excise rebates, forcing the industry to look to the government for support in order to stay afloat. In May 2002, the government granted temporary support by extending existing excise rebates, originally designed only for the domestic sale of shale oil products, to international markets for a period of 12 months. In July 2002, SPP/CPM succeeded in securing a long-term contract for the domestic sale of naphtha, derived from shale oil, to Mobil Oil Australia.

Refining

Australia has eight refineries, two each owned by four companies, with a total crude oil distillation capacity of 848,250 bbl/d. Four of the refineries are located on the country's eastern coast, three are on the southern coast, and one is located in Western Australia. By international standards, Australia's refineries are relatively small, the three biggest being: British Petroleum Australia's Kwinana refinery, with a capacity of 138,500 bbl/d of crude oil; ExxonMobil's Altona refinery with a capacity of 135,000 bbl/d of crude oil; and Shell's Geelong refinery, with a capacity of 119,000 bbl/d. Australia's fourth refining company is Caltex.

For several years now, all eight refineries have experienced declining gross margins, due mainly to competition from larger foreign refineries that benefit from economies of scale. Other factors hurting the country's refiners include an oversupply of refining capacity in Asia and the relatively high cost of transporting crude oil to Australia. In addition, Australia's refineries are restrained by the 1970's government mandate under which they were constructed, which has left them equipped

to only process light, sweet crude oils, even though heavier, sour crudes might be cheaper. Adding to this cost burden in the future are new fuel quality standards that require refiners to upgrade their facilities by 2006. In April 2003, ExxonMobil announced its plans to close its 78,000 b/d Adelaide refinery in southern Australia, citing poor refining margins as responsible for its decision. Analysts have forecast additional closures in Australia's refining sector in the future.

NATURAL GAS

At the end of 200, Australia's natural gas reserves were estimated at 90 trillion cubic feet (Tcf), making them among the largest in the Asia Pacific region. The most abundant reserves are located offshore of the country's northwestern coast in the Carnavoran Basin (40 Tcf of proven natural gas), an area more well-known as the Northwest Shelf. Other important basins, including the Cooper/Eromanga basin in Central Australia and the Bass/Gippsland basin offshore of southern Australian, account for about 10 Tcf of reserves.

Meanwhile, the status of abundant reserves in the Timor Sea, north of Australia, has been partially resolved. In May 2002, Australia's claims to 25 Tcf of reserves in the Browse/Bonaparte Basin of the Timor Sea was challenged by East Timor. After achieving independence, East Timor expanded its claim on its maritime territory, backing away from a previous agreement reached between Australia and Indonesia. The resulting border dispute between Australia and East Timor was addressed in March 2003 with the Timor Gap Agreement, which established a Joint Development Area (JDA) between the two countries and set the division of royalties arising from hydrocarbon production at 90:10 in favor of East Timor. Of the two major natural gas fields in the Browse/Bonaparte Basin, only the Bayu Undan, with an estimated 3.4 Tcf of natural gas, lies wholly within the JDA. In contrast, 80% of the 9.3-Tcf Greater Sunrise field is located outside of the JDA. Both fields are currently in the planning stages of development for future LNG production. Still, despite agreement on the JDA, Australia and East Timor have not come to agreement on the exact demarcation of the maritime border between them, an issue they plan to address by the end of 2003. The Timor Sea also contains natural gas in the Evans Shoal, Petrel, and Tern gas fields. Combined, these fields are estimated to contain 4 Tcf of natural gas and are currently operated by Santos.

Recent natural gas exploration in Australia has resulted in a few important discoveries including, most notably, ExxonMobil's June 2002 discovery of 20 Tcf of natural gas in the Jansz field of the Northwest Shelf. In 2001, new natural gas discoveries were also made in Southern Australia's Otway Basin, pushing estimates of that basin's reserves up to 1.6 Tcf. In the near term, there is the likelihood that additional natural gas discoveries will be made inadvertently as a byproduct of the recent surge in petroleum exploration in the country. Past petroleum exploration in the deepwaters of Southern Australia has primarily resulted in the discovery of natural gas.

Natural gas production in Australia has increased rapidly since 1995, from 690 Bcf to 1.17 Tcf in 2001. Production is expected to grow 2.8% in 2003 and 3.5% in 2004, despite declining production capacity in the Cooper/Eromanga Basin. This growth in production can be attributed in part to growth in consumption, as concerns about declining petroleum production have led to greater substitution of natural gas for petroleum products. At present, natural gas plays a relatively small role in Australia's fuel mix (approximately 18%), but consumption has grown steadily, from 710 Bcf in 1995 to 824 Bcf in 2001. Over the next two decades, Australia's natural gas consumption is projected to grow twice as fast as consumption of other energy sources with the expectation that natural gas will account for 24% of the country's total energy consumption by 2019-2020. Currently, natural gas that is produced in the country for domestic consumption comes from both central and southern Australia as well as the Northwest Shelf.

A more significant driver of natural gas production growth is Australian LNG production for export. In 2002, Australia was the sixth largest LNG exporter, accounting for 7% of global LNG exports. The country produced 330 Bcf of LNG in 2001, over 80% of which was exported. Japan is the primary destination of Australia's LNG supplies, with smaller shipments to South Korea and Spain. The government of Australia has shown its support for the LNG industry by launching a new policy framework in 2000, aimed at facilitating LNG industry growth through various measures including less-stringent environmental policies and the relaxation of tariffs on imported capital equipment.

The Northwest Shelf Venture (NSV), a consortium of six energy companies, is currently the only producer and exporter of Australian LNG. NSV operates three offshore LNG facilities, relying on natural gas supplies from the 19.3 Tcf of estimated reserves in the North Rankin and nearby fields of the Northwest Shelf. NSV began operation in 1989, and since then its production of LNG grew rapidly until about 1996 when it began to level off. In 2001, the consortium received approval to expand its 3-train facility to a 4-train facility, a project that is scheduled to be completed in mid-2004. Meanwhile, with LNG demand in East Asia growing rapidly and the prospect of competition from other LNG suppliers on the horizon, NSV has already considered the construction of a fifth train on which a decision is to be made in 2004. Support for a fifth train may be influenced by NSV's recent success in winning a bid to supply China's Guandong Terminal beginning in 2005.

While NSV currently dominates Australia's LNG market, there are three LNG projects under development that may provide NSV with competition in the future. One project is proposed for the Northwest Shelf's 12.9-Tcf Gorgon field and is being developed independently by NSV members ChevronTexaco (with 57% ownership), Shell (29%) and ExxonMobil (14%). The project entails the construction of a pipeline to transport natural gas from the Gorgon field to Australia's Barrow Island, where a liquefaction plant with annual capacity of 238 Bcf per year is to be constructed. In September 2003, the state of Western Australia approved the project after a lengthy delay resulting from environmental opposition to the liquefaction plant. While federal approval of the project is still pending, ChevronTexaco has secured an agreement with an affiliate for the delivery of 95 Bcf per year from the Gorgon Venture to North America over a 20-year period, beginning in 2008.

Following approval of the Timor Sea Agreement, ConocoPhillips has proceeded with plans to construct a liquefaction plant at Darwin, on Australia's northern coast, that will be supplied by natural gas from the Bayu Undan field. ConocoPhillips has a majority interest (64.4%) in the project which it is developing with Santos (11.83%), Italy's ENI (12%), and Japan's Inpex (11.71%). Earlier, in March of 2002, ConocoPhillips made arrangements to sell 3 million tons of LNG per year from the Darwin plant to Tokyo Electric Power Company and Tokyo Gas company for 17 years beginning in 2006.

A third LNG project, led by Woodside Petroleum (33%) in a consortium with ConocoPhillips (30%), Royal Dutch/Shell (27%) and Osaka (10%), has been proposed for the Greater Sunrise natural gas field in the Timor sea. At the end of 2002, the consortium announced its plans to develop the project by constructing the first floating LNG plant. The plant's proposed capacity is 238 Bcf per year, with production slated to begin in 2008.

Pipelines

Given the anticipated increase in importance of Australia's offshore gas resources, growth in the country's natural gas industry will depend on the successful expansion of its pipeline infrastructure. Australia's existing network is fragmented and was built to carry gas from the country's centrally located fields to coastal urban hubs like Sydney and Melbourne. But with centrally located fields such as those in the Cooper/Eromonga Basin in decline, and offshore projects like the Northwest

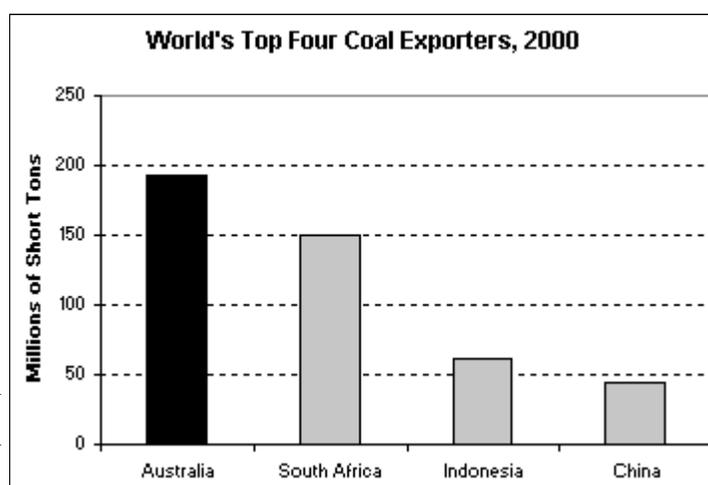
Shelf, Otway Basin, and Timor Gap on the horizon, it has been estimated that large investment in the country's pipeline infrastructure will be necessary to bring additional natural gas into the grid. However, ongoing tensions between pipeline companies and regulators may discourage the entry of new investors. These tensions are exemplified by Australian Epic Energy's decision in September 2003 to put its pipeline assets up for sale after determining that pipeline tariffs set by Western Australia's regulator were too low for it to operate profitably. Other companies, such as Australia's Pipeline Trust, have halted construction on proposed pipelines out of concerns about the regulatory environment. This has led many Australian and international investors as well as the Australian Pipeline Industry Association (APIA), to call for regulatory reforms that support new pipeline investment.

Current natural gas pipeline projects reflect Australia's changing supply base. These include offshore projects that have been proposed to support the LNG ventures described above. A few projects are also underway to exploit natural gas resources offshore of southern Australia, including the 423-mile, Sea Gas pipeline that will bring natural gas from the Otway Basin, offshore of Victoria, to Southern Australia's Quarantine power station in Adelaide. Construction on the Sea Gas project is nearly finished and expected to be completed by the end of this year. Also near Victoria, in the Bass strait, construction is continuing on a 110-mile pipeline to bring gas from the Yolla gas fields to market.

Meanwhile, controversy surrounding the viability of a proposal for Australia's first international natural gas pipeline from Papua New Guinea (PNG) may diminish in the near future. The 1300-mile pipeline has been proposed to deliver gas from Kutubu/Moran natural gas fields in PNG to the northern part of Queensland in Australia. For three years, progress on the pipeline has been paralyzed by the lack of commitment from its potential buyers. In July 2003, the successful closing of a long-term contract with Australian-based Energex provided new hope for the pipeline, which needs to secure long-term commitments for half of its throughput before it can proceed. The main developers of the PNG pipeline are Oil Search Ltd. (45%), ExxonMobil (39%), and ChevronTexaco (10%).

COAL

Australia is estimated to contain 90.5 billion short tons (Bst) of coal reserves concentrated along the country's eastern seaboard. The Bowen Basin in the state of Queensland contains the largest reserves, with approximately 37.8 Bst. Reserves in the Sydney-Gunnedah Basin and surrounding areas of northern New South Wales (NSW) contain about 32.1 Bst. Minor reserves are also located in Southern and Western Australia as well as Tasmania. Together, Queensland and NSW account for 95% of Australia's annual coal production. While both states produce both coking and thermal coal, production of coking coal is significantly higher in Queensland, while NSW leads in thermal coal production. Over the last decade, coal production in Australia has grown by 4% annually, reaching 356.9 million short tons (Mmst) in 2001. For 2003, growth in production is expected to slow to about 1%.



Australia's coal industry is dominated by four companies: BHP Billiton; Anglo American (UK); Rio Tinto (Australian-UK); and Xstrata (Switzerland). The small number of players in the country's coal

sector is the result of series of consolidations in recent years, including the merger of Anglo Coal Australia with Mitsui Coal Holdings in April 2002 and the acquisition of MIM Holdings by Xstrata in June 2003. Australia holds an important role in global coal markets as the fourth largest producer. More importantly, the country exports 60% of its annual production, making it the largest absolute exporter of coal (28% of global coal exports).

This dominance is clearly present in the market for coking coal, where Australia was responsible for 55% of exports in 2001. Australia also leads thermal coal exports, although it accounts for a smaller share of that market, around 21%. Recently though, Australia's thermal coal exports began to face new competition from China, raising the possibility that its share of that market may shrink in the future. Still, ABARE forecasts growth in Australia's thermal coal exports will be 4.7% over the coming year, while coking coal exports will grow 1.3%.

Japan is the destination of over 60% of Australia's coal exports, while other important export markets include non-Japan Asia and Europe. Since the end of the 1990's, Australian suppliers have set the prices for their coal exports directly with Japanese utilities, the major consumers of Australian coal. As a result, the annually negotiated price of these contracts has a large effect on the Australia's coal export earnings. In 2001, Australia's coal exporters saw record earnings, benefitting from both high coal contract prices and a weak Australian dollar. For the 2002-2003 fiscal year, coal export earnings are estimated to be lower as excess global coal supply has enabled Japanese coal importers to negotiate lower coal prices and the Australian dollar's weakening trend has reversed.

ELECTRIC POWER

As of January 2001, Australia had electric generating capacity equal to 43 million kilowatts. Approximately 85% of this capacity was thermal (mostly coal) while 14% was renewables (mostly hydro). Not surprisingly, coal-fired generating capacity is primarily located in the eastern part of the country near its coal reserves, while Western and Southern Australia rely on large amounts of natural gas to fuel their power plants. During 2001, Australia generated 198.2 billion kilowatthours (bkwh) of electricity and consumed 184.4 bkwh. According to the Electricity Supply Association of Australia (ESAA), consumption is expected to grow rapidly during the next few years, rising to 206 Bkwh by 2008. Most of this growth in consumption will be concentrated in the states of Queensland, NSW and Victoria.

In 1996, major reforms were instituted in Australia's electricity industry. Prior to 1996, electric utilities were owned independently by states, but under the 1996 changes, many state-owned utilities were split up and privatized. Key to these reforms has been the creation of the National Electricity Market (NEM), which is a wholesale "pool" operated by the National Electricity Market Management Company (NEMMCO), serving the states of Queensland, New South Wales, Victoria, Southern Australia, and the Australian Capital Territory via an interconnected national grid. The NEM currently does not include the states of Tasmania, Western Australia, or the Northern Territories, although Tasmania is expected to join when construction on an electricity link to the mainland is completed this year. Geographic distance is the main obstacle to the inclusion of the other two states in the NEM. As a result, in November 2002, the government of the state of Western Australia adopted its own plans for reforming its electricity sector which include the unbundling of the state's regulated utility, Western Power, and the establishment of a wholesale power market by 2005.

Consumer reviews of Australia's electricity reforms have been mixed. Electricity prices overall fell about 11% in the period 1996-2000, although the majority of those savings went to large industrial/commercial customers who had the option to choose retailers. During 2000 and 2001, the

NEM experienced a significant increase in price volatility arising from unusual temperature conditions and supply shortages. Retail competition was introduced to NSW and Victoria in January, 2002. Since these two states have been combined into a two-state regional market, reforms have sharply reduced electricity prices due to overcapacity and strong competition, although prices have begun to rise recently as increasing demand uses up spare capacity. In Southern Australia, reforms actually have led to higher prices following the introduction of retail competition in January 2003. Meanwhile, Queensland has indefinitely postponed introducing retail competition, a decision that could be indicative of the provincial government's reluctance to abdicate its control over the electric power sector.

On the supply side, the NEM has been successful in encouraging new investment: between 2000 and 2002, 3,300 MW of new generating capacity was added. Still, rapid growth in demand for electricity has resulted in shrinking reserve margins in eastern Australia, a problem that could become acute by 2005 if there is not sufficient investment in new generating capacity. Presently, the prospects for new foreign investment are grim, as several US and UK companies with stakes in Australia's generating assets have recently made plans to exit the industry. These include El Paso Energy, Dominion Energy, AEP, Scottish Power, and PowerGen, which have either already put their assets up for sale or plan to do so in the near future. While several companies have cited issues in their home markets as the main reason for their departure, many Australians believe that ongoing interconnection problems and other issues arising from the lack of a national electricity regulator have made Australia less attractive to investors.

ENVIRONMENT

Energy commodities are a major source of export earnings in Australia and development of these resources in a sustainable manner is a primary policy goal of the country. Although coal is a major component of Australia's primary **energy** mix, increasing urban **air pollution** levels are more a consequence of automobile usage than coal consumption. The Australian government realizes the cost-effectiveness of reducing the environmental impacts of the energy sector. Improving end-use **efficiency** in the various economic sectors remains a key element of Australia's sustainable energy policy, as does the utilization of **renewable** energy resources. As part of this goal, the government has sought to increase the amount of electricity generated by renewable resources to 8% by the end of this decade. This has led to a proposal by Pacific Hydro, the country's largest renewables company, to expand the country's wind power capacity. Earlier this year, work also began on the development of Australia's first geothermal project.

In 2001, Australia accounted for 1.5% of the world's total energy-related **carbon** emissions. Partially because of the greenhouse gas emissions associated with agriculture, the Australian Institute, an independent public policy research center, indicated that if statistics included total greenhouse gas emissions, as opposed to only energy-related emissions, then Australia would have the highest **per capita** carbon emissions in the developed world.

COUNTRY OVERVIEW

Prime Minister: John Howard (since 3/11/96)

Independence: January 1, 1901 (from the United Kingdom)

Population: 19,731,984 (July 2003E)

Location/Size: Oceania, continent between the Indian Ocean and the South Pacific Ocean/7,686,850 sq. km (2,971,081 sq. mi), about the size of the contiguous United States

Major Cities: Sydney, Melbourne, Canberra (capital), Brisbane, Perth, Adelaide

Languages: English, native languages

Ethnic Groups: Caucasian (92%), Asian (7%), aboriginal and other (1%)
Religions: Anglican (26%), Catholic (26%), other Christian (24%), non-Christian (11%)

ECONOMIC OVERVIEW

Currency: Australian Dollar (\$A)
Market Exchange Rate (10/17/03): US \$1=\$A1.44321
Nominal Gross Domestic (GDP, 2002E -- Purchasing Power Parity exchange rates): US\$528 billion
Real GDP Growth Rate (2002E): 3.6% **(2003E):** 2.9%
Inflation Rate (Consumer prices; 2002E): 3.1% **(2003E):** 3.1%
Unemployment Rate (2002E): 6.3% **(2003E):** 6.2%
Current Account Balance (2002E): -\$15.9 billion **(2002E):** -\$24.1 billion
Major Trading Partners: Japan, other Far East, European Union, United States
Major Export Products: crude materials, food and live animals, mineral fuels and lubricants
Major Import Products: machinery and transport equipment, manufactured goods, chemicals

ENERGY OVERVIEW

Minister for Industry, Tourism and Resources: Ian E. McFarlane
Proven Oil Reserves (1/1/03E): 3.5 billion barrels
Oil Production (2002E): 714,877 barrels per day (bbl/d), of which 625,967 bbl/d was crude oil
Oil Consumption (2002E): 881,000 bbl/d
Net Oil Imports (2002E): 166,123 bbl/d
Crude Refining Capacity (1/1/03E): 848,250 bbl/d
Natural Gas Reserves (1/1/03E): 90 trillion cubic feet (Tcf)
Natural Gas Production (2001E): 1.17 Tcf
Natural Gas Consumption (2001E): 824 billion cubic feet (Bcf)
Recoverable Coal Reserves (2001E): 90,489 million short tons
Coal Production (2001E): 356.9 million short tons (Mmst)
Coal Consumption (2001E): 144.4 Mmst
Electric Generation Capacity (1/1/01E): 42.7 million kilowatts (85% thermal, 14% hydroelectric)
Net Electricity Generation (2001E): 198.2 billion kilowatthours
Electricity Consumption (2001E): 184.4 billion kilowatthours

ENVIRONMENTAL OVERVIEW

Minister for the Environment & Heritage: David Kemp
Minister for Forestry & Conservation: Ian McDonald
Total Energy Consumption (2001E): 4.97 quadrillion Btu* (1.2% of world total energy consumption)
Energy-Related Carbon Emissions (2001E): 99.0 million metric tons of carbon (1.5% of world carbon emissions)
Per Capita Energy Consumption (2001E): 255.2 million Btu (vs U.S. value of 341.8 million Btu)
Per Capita Carbon Emissions (2001E): 5.1 metric tons of carbon (vs U.S. value of 5.5 metric tons of carbon)
Energy Intensity (2001E): 10,131 Btu/ U.S.\$1995 -- PPP (vs U.S. value of 10,810 Btu/ \$1995 -- PPP)**
Carbon Intensity (2001E): 0.20 metric tons of carbon/thousand U.S.\$1995 -- PPP (vs U.S. value of 0.17 metric tons/thousand \$1995 -- PPP)**
Fuel Share of Energy Consumption (2001E): Coal (44.0%), Oil (34.5%), Natural Gas (17.8%)
Fuel Share of Carbon Emissions (2001E): Coal (55.6%), Oil (31.6%), Natural Gas (12.8%)
Status in Climate Change Negotiations: Annex I country under the United Nations Framework Convention on Climate Change (ratified December 30th, 1992). Signatory to the Kyoto Protocol

(April 29th, 1998). Under the Protocol, Australia has agreed to an 8% increase from 1990 emissions levels of a basket of greenhouse gases.

Major Environmental Issues: Soil erosion from overgrazing, industrial development, urbanization, and poor farming practices; soil salinity rising due to the use of poor quality water; desertification; natural habitat of many unique animal and plant species is threatened by clearing for agricultural purposes; the Great Barrier Reef off the northeast coast, the largest coral reef in the world, is threatened by increased shipping and its popularity as a tourist site; limited natural fresh water resources.

Major International Environmental Agreements: A party to the Antarctic-Environmental Protocol, Antarctic Treaty, Biodiversity, Climate Change, 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 and Wetlands. Has signed but not ratified, Desertification.

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar and wind 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 based on OECD data at Purchasing Power Parity (PPP)

OIL and GAS INDUSTRIES

Major Oil and Gas Producing Regions: Western Australia; Victoria; South Australia; Queensland; Northern Territory

Major Ports: Sydney; Melbourne; Geelong; Fremantle; Adelaide; Brisbane

Major Oil Fields: Roller, Skate, Bass Strait, Wanea-Cossack, Laminaria, Corallina

Major Gas Fields: Bass Strait, Cooper Basin, North Rankin, Goodwyn, Gorgon

Major Oil Refineries (crude oil capacity): BP Amoco - Bulwer Island (69,825 bbl/d), BP Amoco - Kwinana (138,500 bbl/d), Caltex - Kurnell (114,000 bbl/d), Caltex - Lytton (105,500 bbl/d), Inland Oil Refiners - Eromanga (1,425 bbl/d), ExxonMobil - Adelaide (74,000 bbl/d), ExxonMobil - Altona (135,000 bbl/d), Shell - Clyde (85,000 bbl/d), Shell - Geelong (119,000 bbl/d)

COAL INDUSTRY

Major Coal Producing Regions: New South Wales; Queensland; Victoria

Major Export Ports: Newcastle; Hay Point; Gladstone; Port Kembla

Sources for this report include: AAP Information Services; Alexander's Oil and Gas Connections; Asia Pulse; Australian Petroleum Production and Exploration Association Ltd.; Australian Financial Review; Coal Week International; Dow Jones News wire services; Economist Intelligence Unit ViewsWire; Financial Times; GlobalInsight; Hart's Asian Petroleum News; Oil and Gas Journal; Petroleum Intelligence Weekly; Platt's International Coal Report; The Times (London); U.S. Commerce Department, International Trade Administration -- Country Commercial Guides; U.S. Energy Information Administration; World Markets Energy.

LINKS

For more information from EIA on Australia, please see:

[EIA - Country Information on Australia](http://www.eia.doe.gov/emeu/cabs/australi.html)

Links to other U.S. government sites:

[CIA World Factbook - Australia](#)

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

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

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

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

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

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[Australian Coal Association](#)

[Australia's Department of Industry, Tourism, and Resources](#)

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