

COUNTRY ANALYSIS BRIEFS

Australia

Last Updated: December 2005

Background

Australia continues to find new coal deposits as it leads the world in total coal exports.

Australia has exhibited robust economic growth over the last decade in spite of a strong Australian dollar that has depressed exports. The country achieved a 3.5 percent increase in real gross domestic product (GDP) in 2004. Increased inflation, interest rates and high oil prices all contributed to a deceleration of economic growth in 2005. Real GDP growth for 2005 and 2006 is forecast at 2.4 percent and 2.7 percent, respectively.



Despite its recent slowdown, Australia's economy continues to be one of the fastest growing in the industrialized world. The Liberal Party, under the leadership of Prime Minister John Howard, came to power in 1996 and won reelection in 2004. During its tenure, it has focused on stimulating domestic consumption by overhauling the tax system and cutting interest rates. Expansionary fiscal policy, along with the deregulation of many domestic markets, has fostered significant increases in domestic consumption in recent years.

Australia's Energy

Australia is a natural resource-rich country with significant petroleum, natural gas and coal reserves. Australia's energy consumption 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 it has been growing rapidly in recent years. As a result of expanding energy consumption in a period of declining energy production, Australia is facing growing dependence on petroleum imports.

Australia is one of the few countries belonging to the Organization for Economic Cooperation and Development (OECD) that is a significant net energy exporter. Australia is the world's largest coal exporter and is the fifth largest exporter of liquefied natural gas (LNG). Australia's prospects for expanding energy exports in the future are promising, as Asian demand for both coal and LNG rises. However, Australia can expect increasing export competition from China (coal) and Indonesia (coal and LNG). Japan, the largest importer of Australian coal, is considering taxing coal imports to encourage consumption of other fuels. Finally, long-term growth of Australia's coal

exports is contingent on Asia's response to global warming concerns.

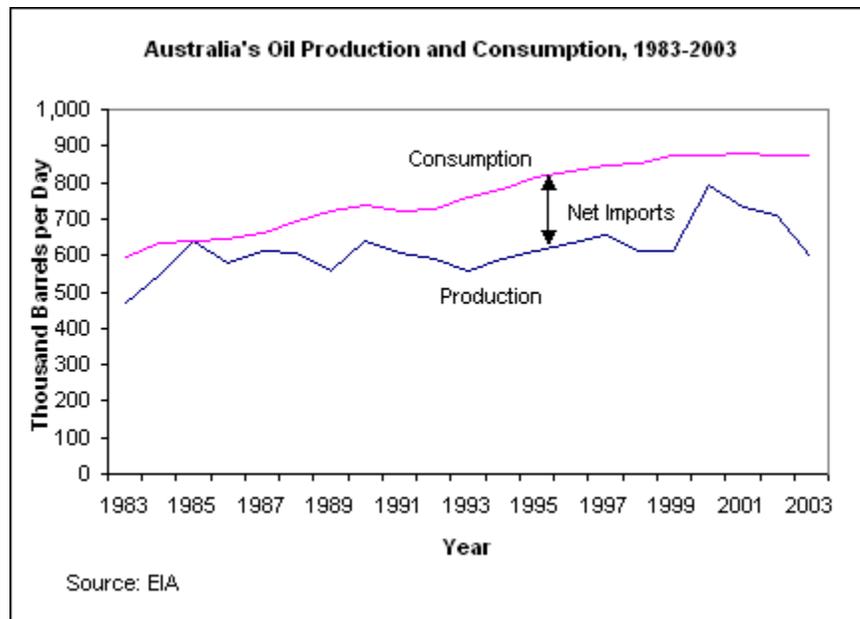
In July 2005, the Australian Energy Regulator (AER) was formed. AER will assume responsibility for electricity transmission and wholesale energy prices, natural gas transmission and prices and the enforcement of market rules. The 13 government bodies that have regulated energy in Australia will transfer regulation responsibility to the AER by 2007. Australia has enjoyed high foreign investment in the energy sector, but many Australians believe that a restrictive regulatory climate and the government's failure to provide incentives for potential investors have lessened further growth. Ian Macfarlane, the Australian Minister of Industry and Resources, believes investment in the energy sector will be more attractive once the older and more complicated regulatory system has been removed. The AER is seeking \$23 billion over the next 15 years in infrastructure investments.

In June 2004, the Australian government issued the report, "Securing Australia's Energy Future," commonly known as the "White Paper," which forecast that energy demands would grow 50 percent by 2020. The paper's endorsement of the increased use of coal has been controversial with the Australian public and environmental groups, especially since the recently reelected government has made no commitment to ratify the Kyoto Treaty.

Oil

With increases in petroleum consumption and decreases in petroleum production, Australia's net oil imports have been increasing.

According to *The Oil and Gas Journal (OGJ)*, Australia had 1.5 billion barrels of proven oil reserves as of January 1, 2005. The majority of these reserves are located offshore in the Bass Strait off southern Australia and the Carnarvon Basin off western Australia. Oil production in Australia has increased gradually since 1980, peaking in 2000 at 805,000 thousand barrels per day (bbl/d). In 2003, production fell dramatically to 630,522 bbl/d. For 2005, oil production is estimated at 553,331 bbl/d. The reasons for decreased production are varied. First, oil producing basins such as Cooper-Eromanga and Gippsland have experienced natural declines. Second, although, oil basins such as the Carnarvon and Bonaparte have yielded increasing volumes of oil in recent years, the increase has been offset by the steady rise in domestic consumption. Third, oil production declines have been attributed to the Australian tax system, which makes investment unattractive for domestic producers.



In 2005, petroleum consumption is forecast at 918,000 bbl/d, resulting in net imports of around 364,669 bbl/d. By comparison, net oil imports in 2000 averaged only 54,000 bbl/d. The Australian government expects petroleum import dependency to increase to 50 percent by 2010. The majority of Australia's imported crude comes from the UAE, Malaysia, Vietnam, and Papua New Guinea. Australia's key oil producers, Santos and Woodside, have shown signs of increasing domestic exploration and bringing new projects onstream by 2007 in hopes of increasing domestic oil supplies and reducing imports.

Sector Organization

The Australian government does not own any of the country's oil companies. Applications for onshore exploration and production projects are managed by state governments, while the Commonwealth government has jurisdiction over Australia's offshore projects. Australia's oil sector is regulated by the Ministry of Industry, Tourism and Resources (MITR) and the Ministerial Council of Energy (MCE). In 1967, the Petroleum (Submerged Lands) Act was passed, giving jurisdiction rights to the federal and state governments over petroleum exploration and development. Currently, the government is in the process of rewriting the Act for simplification purposes and to create new incentives to increase oil production.

Major oil production companies in Australia include Woodside Petroleum Limited, ExxonMobil/Esso Australia, Santos Incorporated and Apache Corporation. The companies averaged net oil production for 2004 of 343,100 bbl/d, 174,100 bbl/d, 31,500 bbl/d and 26,600 bbl/d, respectively.

Exploration and Production

The Australian government is continuing to issue new exploration permits in hopes of increasing domestic petroleum supply. In 2005, the government opened bidding for exploration permits in 29 new offshore areas in 13 regions. Larger blocks included areas in the Outer Exmouth Plateau, Bremer Sub-basin and Otway basin, while medium to smaller block areas were in the Northern Browse Basin and Carnarvon Basin. The first round of bidding closed in October 2005 and the second round will close in April 2006.

There is hope that new projects being brought on line will stabilize Australia's oil production for a few years. New developments include the Mutineer-Exeter project led by Santos. The companies involved in the Mutineer-Exeter project are expecting production levels between 70,000 bbl/d and 90,000 bbl/d. In addition, ConocoPhillips plans to develop two fields in the Timor Sea, Zoca and Coleraine, with combined reserves of 150 million barrels. There are also a number of fields off Australia's northwest coast that have recently come on line. These include Eni's Woollybutt, Apache's "String of Pearls" and Woodside's Legendre and Lambert fields.

Exploration off Southern Australia is led by Santos, which has identified more recoverable natural gas reserves than petroleum. Because its adverse weather conditions and deeper waters make potential ventures costly, much of the area around Southern Australia has not yet been explored. Furthermore, only four of the 36 wells drilled in Australia's deep waters since 1992 have yielded oil. Australia's Woodside Energy abandoned as dry its Gnarlyknots well in the Great Australian Bight in May 2003. But Santos remains hopeful about locating oil in the Otway and Sorrell Basins.

The majority of past petroleum exploration in Australia has been carried out by large domestic oil firms, including BHP Billiton, Woodside Petroleum, and Santos. In contrast, current exploration ventures have seen greater participation of smaller Australian companies, as well as increases in foreign interest. In September 2004, for example, Oilex announced a discovery in Queensland's Surat Basin expected to have reserves of 12 million barrels.

Australia has shale oil reserves in Queensland estimated as high as 30 billion barrels. Until recently, environmentalists had prevented the primary developer of Queensland's shale oil, Southern Pacific Petroleum/Central Pacific Minerals (SPP/CPM), from utilizing the resource. As a result, every major Australian refining firm refused to purchase Queensland's shale oil in 2001, forcing the industry to look to the government for support. In May 2002, the government extended existing excise rebates, originally designed only for the domestic sale of shale oil products, to international markets for 12 months. Two months later, SPP/CPM secured a long-term contract for the domestic sale of naphtha, derived from shale oil, to Mobil Oil Australia.

In 2004, the Australian government introduced a tax incentive designed to promote offshore petroleum exploration. Because of high cost and risk, around 50 percent of Australia's offshore basins have not been explored. The tax incentive, which applies to frontier blocks opened between 2004 and 2008, will help to lower some of the exploration cost incurred by the oil companies. In addition, the Australian government made a four-year, \$30 million commitment to fund AGSO-Geoscience Australia, a national agency that provides petroleum and natural gas companies with seismic and geological data.

Pipelines

Australia has a well-developed oil pipeline network. The Australian Pipeline Trust, with 4,350

miles of pipeline, is the largest operator. Epic Energy is the second largest, with 2,500 miles of pipeline. Two major domestic pipelines that are used for carrying oil and oil products include the Jackson to Brisbane line that spans 500 miles, and the Mereenie to Alice Springs line that spans 167 miles. Both of these are operated by Santos. In addition, the 432-mile Moomba to Stony Point pipeline, with a capacity of 394.2 Mmcf/d, is operated by Epic Energy and is used for carrying a mixture of natural gas liquids and crude oil. Finally, the Longford to Long Island Point pipeline is 115 miles long and is operated by Esso Australia Ltd.

Refining

Australia has eight refineries, two each owned by four companies, with total crude oil distillation capacity of 754,975 bbl/d. Four of the refineries are located on the country's eastern coast, three on the southern coast and one in Western Australia. Australia's refineries are relatively small, the three biggest being: BP Australia's Kwinana refinery (132,050 bbl/d crude oil capacity); ExxonMobil's Altona refinery (130,000 bbl/d crude oil capacity); and Shell's Geelong refinery (110,000 bbl/d crude oil capacity). Australia's fourth refining company is Caltex.

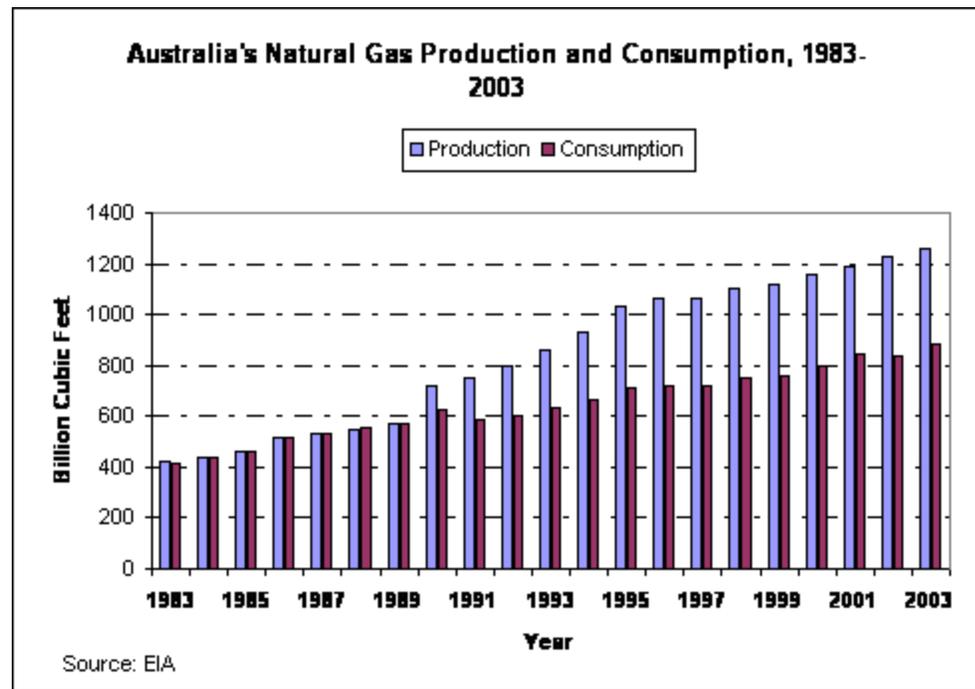
All eight refineries have experienced declining gross margins for several years, mainly due to competition from foreign refineries benefiting from economies of scale. An oversupply of refining capacity in Asia, coupled with the relatively high cost of transporting crude oil to Australia, has been another factor hurting the country's refiners. Beginning in 2006, Australian refineries will be held to higher fuel quality standards. In order to comply, most of the refineries will need facility upgrades. Currently, Australia's refineries are equipped to mainly process light, sweet crude oils, even though heavier, sour crude oils may be cheaper. In April 2003, ExxonMobil announced plans to close its 78,000-bbl/d Adelaide refinery, citing poor refining margins. Analysts have forecast additional closures in Australia's refining sector in the future.

Natural Gas

Australia has the largest natural gas reserves in the Asia-Pacific region.

According to *The Oil and Gas Journal (OGJ)*, Australia's natural gas reserves as of January 1, 2005 are estimated at 29 trillion cubic feet (Tcf), the largest reserves in the Asia-Pacific region. Natural gas reserves are located in all of Australia's states except New South Wales and Tasmania. The most abundant reserves are located offshore of the northwestern coast in the Carnarvon Basin, 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, are located offshore of southern Australia.

Natural gas production in Australia has increased steadily over the last decade, from 860 billion cubic feet (Bcf) in 1993, to 1,257 Bcf in 2003. In the same time period, consumption has grown as well, from 630 Bcf in 1993 to 886 Bcf in 2003. Australia's natural gas consumption is projected to grow twice as fast as the consumption of other energy sources over the next two decades, accounting for 22 percent of total energy consumption by 2025. Australia is expected to maintain natural gas self-sufficiency for the ensuing decade at a minimum.



Sector Organization

The Australian government has no ownership stake in the domestic natural gas industry. However, the industry is regulated by the Ministry of Industry, Tourism and Resources (MITR) and the Ministerial Council of Energy (MCE). Natural gas policy is directed by the Ministerial Council on Energy (MCE), which was established in 2001 as a means to build policy coordination between the federal and state governments.

Exploration and Production

Recent natural gas exploration in Australia has resulted in several important discoveries. Natural gas samples from the Henry-1 exploration well, located in the Otway Basin (estimated reserves 1.6 Tcf.), have given Santos good indication of yielding quality natural gas. The well is located a few miles from the Casino field. Both the well and the field are part of the VIC/P44 block in which Santos holds a 50 percent stake. In addition, ExxonMobil discovered natural gas in the Jansz field in the Northwest Shelf region. The June 2002 discovery added reserves of 20 Tcf. to Australia's total. Further natural gas discoveries will likely be made inadvertently as a byproduct of Australia's recent surge in petroleum exploration, as past exploration in the deep waters off Southern Australia has primarily resulted in the discovery of natural gas.

The Timor Sea was the site of a new gas discovery in September 2005, by ConocoPhillips and Santos. Early estimates at the Caldita One well, which is located near the Bayu Undan liquefied natural gas (LNG) project, suggest that natural gas flow could be as high as 33 million cubic feet per day (Mmcf/d). ConocoPhillips is the principal operator of the well. Control in the Timor Sea region has been contested during the past few years. In May 2002, East Timor expanded its maritime territory claim and challenged Australia's claim to 25 Tcf of reserves in the Browse/Bonaparte Basin. In March 2003, the Timor Gap Agreement was established, creating a Joint Development Area (JDA) between the countries and setting the division of royalties from hydrocarbon production at 90:10 in favor of East Timor. Only the Bayu Undan natural gas field (3.4 Tcf), which began operation in February 2004, lies wholly within the JDA. Eighty percent of the Greater Sunrise field (9.3 Tcf) is located outside of the JDA. The Timor Sea also contains natural gas in the Evans Shoal, Petrel, and Tern gas fields, estimated to contain 4 Tcf of natural gas combined. ConocoPhillips, Woodside, and Shell are the main operators in the Timor Sea.

Liquefied Natural Gas (LNG)

Australia's LNG exports have increased steadily since 1989. During July 2004-June 2005, LNG exports totaled 569,629 million cubic feet (MMcf). In 2004, Australia was the third largest LNG producer in the Asia-Pacific region and the world's fifth largest LNG producer. Japan is the primary destination of Australia's LNG exports, with smaller shipments to South Korea and Spain. Australia secured contracts to supply LNG to China in 2002 and South Korea in 2003. Australia is

also negotiating with the United States regarding possible export of LNG to markets on the US west coast.

Australia's natural gas reserves are located primarily in the Bass Strait, the Cooper/Eromanga Basin, and on the west and northwest coasts. The majority of these reserves are located in remote areas where converting the natural gas into LNG for export is more economical than building a pipeline to carry it inland. The Northwest Shelf Venture (NSV), a consortium of six energy companies led by Woodside Petroleum, operates four offshore LNG trains. It relies on natural gas supplies from North Rankin (19.3 Tcf) and nearby fields in the Northwest Shelf (NWS). NWS produces 8 percent of world LNG supplies, mostly for export to Japan. In June 2005, plans for construction of a fifth LNG train were announced. The train will be used for NWS facilities on the Burrup Peninsula, with startup date of 2008. The cost for the project is an estimated \$1.5 billion. China's need for LNG imports has also given support to the fifth train's development. The development of pipelines across the western half of the country may allow NWS to supply domestically to Australia's southeastern states in the future as well.

Although NSV dominates Australia's LNG market, other LNG projects are being developed as well. ChevronTexaco (50 percent ownership), Shell (25 percent) and ExxonMobil (25 percent) are starting the front-end engineering and design of the NWS's Gorgon field. The area contains proven reserves of 12 Tcf. 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 an annual capacity of 238 Bcf per year is to be constructed. 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. In April 2004, Australia began talks with China's largest oil firm, China National Offshore Oil Corporation (CNOOC), to purchase a 12.5 percent share of Gorgon's proven reserves. An estimated \$19 billion in sales over 25 years would make such a deal the largest export commitment in Australian history. A final decision on the project is due in 2006, which would allow gas to come onstream by 2010.

ConocoPhillips has proceeded with plans to construct a liquefaction plant on Australia's northern coast (at Darwin) to be supplied with natural gas from the developing Bayu/Undan field (3.4 Tcf) this year. The project is owned by a consortium of companies and ConocoPhillips is the majority owner with 64.4 percent. In March 2002, ConocoPhillips arranged to sell 175,271 MMcf of LNG per year from the Darwin plant to Tokyo Electric Power Company and Tokyo Gas Company for 17 years beginning in 2006.

Woodside Petroleum is leading another LNG project that is taking place in Browse Basin. The project entails construction of two LNG trains processing natural gas from various fields off Australia's west coast. The project could come onstream as early as 2011. Woodside, with a 50 percent stake, would be joined by BP, Chevron, Shell and BHP Billiton. China has a role in deciding the outcome of the project, as its need for LNG imports continues to rise. In addition, Woodside is moving ahead with the newly discovered, wholly-owned, Pluto natural gas field. A proposed plant at the site, located off the western coast of Australia, would have capacity of 267.8 to 365.1 MMcf of LNG per year. The plant could be operational as early as 2010.

The Kipper field, operated by Esso Australia, is set to come onstream by 2009. Esso has a 32.5 percent stake in the field, which is estimated at having recoverable natural gas reserves up to 620 Bcf. Esso Australia, along with partners, BHP Billiton (32.5 percent), Woodside Petroleum (21 percent) and Santos (14 percent) plans to supply the natural gas to the Gippsland region in southern Australia over the medium term.

India has plans to import large quantities of LNG from Australia in coming years. The Gas Authority of India Ltd. (GAIL) has responsibility to help find LNG for its 2,150-megawatt (MW) Dabhol gas-fire power plant. India chose Australia as a good source for LNG. GAIL has earmarked between \$300 and \$500 million for gas exploration, production and liquefaction operations and LNG terminals across Australia.

Pipelines

Australia's existing pipeline infrastructure is fragmented, designed to carry gas from centrally located fields to coastal urban hubs like Sydney and Melbourne. With centrally located fields in decline and offshore projects on the rise, a large investment in the country's pipeline network will be necessary to bring additional natural gas into the grid. Australia estimates that it will require \$5.5 billion of new investment over ten years to efficiently use natural gas to generate power. At present, the Australian Pipeline Trust (APT) operates over 4,350 miles of pipelines (oil and gas

combined), while Epic Energy operates around 2,485 miles of pipelines (oil and gas combined). Australian Gas Light (AGL) is the leading owner of natural gas pipelines in the country, which APT operates.

Ongoing tensions between pipeline companies and regulators may discourage the entry of new investors. For example, Australian Epic Energy put its pipeline assets up for sale in September 2003 after determining that regulated pipeline tariffs were too low for profitable operation. Other companies, including the Australian Pipeline Trust, have halted construction on proposed pipelines due to regulatory environmental concerns. In August 2004, the Australian Pipeline Trust began negotiations with US-based CMS Energy to sell \$158 million of gas pipelines in Western Australia. Many Australian and international investors, as well as the Australian Pipeline Industry Association (APIA), are calling for regulatory reforms to improve the situation.

The proposed 1,300-mile Papua New Guinea (PNG) to Australia pipeline received increased support in 2005. The pipeline would deliver gas from the Kutubu/Moran natural gas fields in PNG to Queensland. In February 2004, Oil Search Ltd, the main developer of the pipeline, committed to begin its design without the requisite funding, noting that natural gas could flow by 2008 with investment of \$70 million from minority partners. During the summer of 2005, Australian Gas Light Company (AGL) took a stake in the project by agreeing to buy around \$3.3 billion of natural gas from the PNG project over a 20-year period. Alcan, the Canadian based aluminum producer, has also agreed to buy from the PNG project over a 20-year period.

In March 2005, APT submitted a bid for a transcontinental pipeline to transport gas from offshore Blacktip field to Alcan's aluminum refinery at Gove. The pipeline would be constructed over 2 years, with first delivery in January 2008. In addition, the Australian government has been working on a feasibility study of a possible 1,800-mile transcontinental pipeline to ship gas from the Carnarvon and Browse Basins to southeastern domestic markets. The study began in January 2004.

Coal

Australia is the world's fourth largest coal producer and largest net exporter.

As of June 2005, Australia is estimated to contain 86.5 billion short tons (Bst) of recoverable coal reserves, the majority of which are concentrated along the country's eastern seaboard. The Bowen Basin in Queensland contains the largest reserves (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.

Sector Organization

Australia has more than 100 privately owned coal mines located throughout the country. Around 60 of these mines are open cut operations, with the remainder being mined underground. As a result of several consolidations in recent years, Australia's coal industry is dominated by four companies: BHP Billiton; Anglo American (UK); Rio Tinto (Australia-UK); and Xstrata (Switzerland).

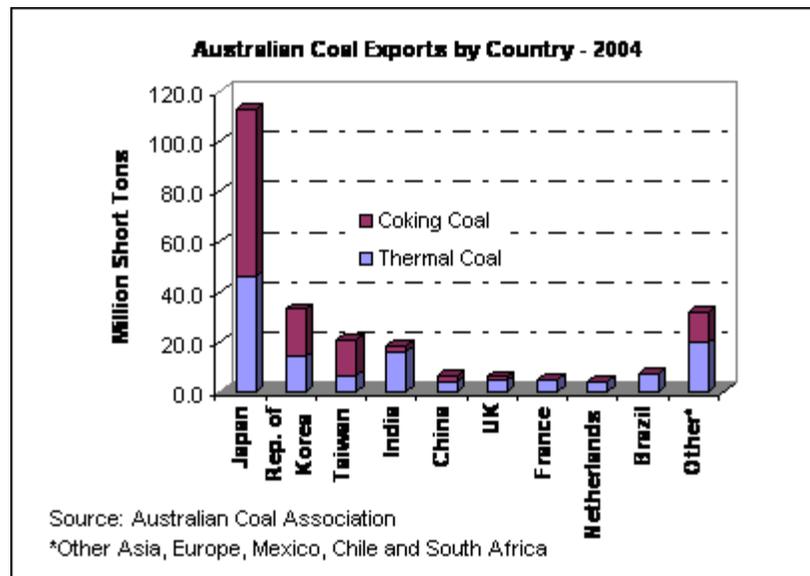
Coal Production

Australia is the world's fourth largest coal producer. In 2003, total Australian coal production was 373.4 million short tons (Mmst). Together, Queensland and NSW account for almost 97 percent of Australia's annual coal production and 100 percent of Australia's black coal exports. 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 percent annually, with new projects continuing to come online every year. In the first half of 2005, four new projects were completed in NSW and Queensland that will add an additional 11 Mmst to Australia's annual coal output. In addition, there were 21 projects in advanced stages of development and 25 projects being considered.

Coal Exports

Australia exports approximately 60 percent of its annual coal production, making it the largest net exporter of coal (29 percent of global coal exports) in the world. Australia is dominant in the market for coking coal, where it is responsible for over half of all world exports. Australia also leads the world in thermal coal exports, accounting for 21 percent of that market. Australia's thermal coal exports recently began to face new competition from China, raising the possibility that its share of that market may shrink in the future.



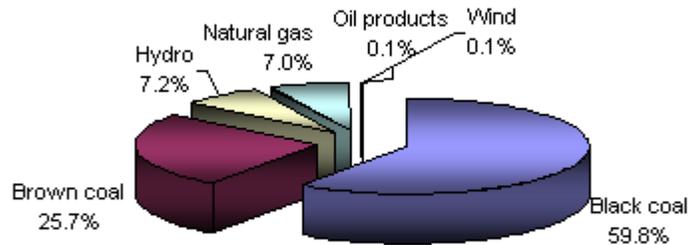
Japan is the destination for over 60 percent of Australia's coal exports. Additionally, some analysts are expecting China to be a growing market for Australian coking coal in the next few years, as that country's economy and need for raw materials both grow. Other important export markets include the rest of Asia and Europe. Australian suppliers set prices for their coal exports directly with Japanese utilities. The annually negotiated price of these contracts has a large effect on Australia's coal export earnings. In April 2004, the Australian government announced that Japanese electricity producers could pay up to 70 percent more for Australian coal as a result of rising demand coupled with limited supply. Analysts are expecting close to record prices for Australian coal through 2007 at the least.

Electric Power

Australia is heavily dependent on coal to generate electricity.

As of 2003, Australia had electric generating capacity equal to 47.1 gigawatts (GW). Approximately 75 percent was produced from coal with around 55 percent being black coal. Overall, Australia generated around 215.8 billion kilowatthours (Bkwh) of electricity in 2003. After accounting for the electricity used by the power plants and other losses, 200.7 Bkwh remained for consumption. The Energy Supply Association of Australia (ESAA) has predicted that consumption will grow in coming years, rising to 206 Bkwh by 2008. The majority of that growth will be concentrated in Queensland, NSW and Victoria.

Electric Generation by Source, 2005



Source: Electricity Gas Australia - 2005

Sector Organization

Prior to 1996, electric utilities were owned by state governments, but 1996 reforms privatized many state-owned utilities. Key to these reforms was the creation of the National Electricity Market (NEM), a wholesale “pool” operated by the National Electricity Market Management Company (NEMMCO). The NEM serves Queensland, New South Wales, Victoria, Southern Australia, and the Australian Capital Territory via an interconnected national electricity grid. Tasmania, Western Australia, and the Northern Territories are not members of the NEM, although Tasmania is expected to join in the next few months via the Basslink interconnector, a high voltage direct current (HVDC) submarine cable. In November 2002, the government of the state of Western Australia adopted its own plans for reforming its electricity sector by unbundling the state’s regulated utility, Western Power and establishing a wholesale power market in 2005.

Electricity prices fell approximately 11 percent between 1996 and 2000, with the majority of the savings going to large industrial/commercial customers. 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. Due to overcapacity and strong competition, electricity prices have decreased since the states were combined into a two-state regional market, although prices have recently begun to rise as increasing demand reduces spare capacity. In Southern Australia, reforms have led to higher prices following the introduction of retail competition in January 2003. Queensland has indefinitely postponed introducing retail competition, a decision that could reflect the provincial government’s reluctance to abdicate its control over the electric power sector.

Future Expansion

The NEM has been successful in encouraging new investment. Between 2000 and 2002, 3,300 megawatts (MW) of new generating capacity was added. Rapid growth in demand for electricity has nonetheless resulted in shrinking reserve margins in eastern Australia, a problem that could increase without sufficient investment in new generating capacity. The prospects for new foreign investment are questionable, however, as several US and UK companies with stakes in Australia’s generating assets have recently made plans to exit the industry.

Domestic Expansion

Australian Gas Light (AGL), the largest power retailer, has made plans to build a 370-MW power plant in the state of Queensland. The state has a liberalized power market, and AGL wishes to increase its generation capacity there with the new gas-fired plant. NEMMCO has warned that during peak demand times, Queensland may risk a power generation shortage by 2008-2009. AGL has indicated that it will have the plant in operation by 2009. In addition, this past October, AGL acquired Southern Hydro from Meridian Energy Limited. Southern Hydro has a total

generating capacity of 736 MW and is the largest privately held, renewable energy company in Australia.

In conjunction with AGL's project in Queensland, another gas-fired electricity plant is being developed by Babcock and Brown with the help of ERM Power. The Braemar project will provide 450 MW to Queensland during the summer season of 2006-2007, but will increase its generation in subsequent years. The Queensland government has required that 13 percent of electricity sold in-state must come from electricity generated by natural gas.

Renewable Energy

As of January 1, 2003, Australia had total installed renewable energy capacity of 1.2 GW. Australia's Mandatory Renewable Energy Target (MRET) is set at 9.5 Bkwh of total electricity generation. Australia hopes to reach this target of electricity generation from renewable energy sources by 2010. Currently, there are numerous investments being made in the renewable energy sector across Australia. Babcock and Brown Wind Partners, AGL and Pacific Hydro are three of the most prominent companies currently investing in renewable energy in Australia.

Environment

Australia aims to help the environment by increasing renewable energy use.

Because energy commodities are a major source of export earnings in Australia, development of these resources in a sustainable manner is a primary policy goal of the government. Improving end-use efficiency in various economic sectors remains a key element of Australia's sustainable energy policy, as does the utilization of renewable energy resources. Australia's Mandatory Renewable Energy Target (MRET) mandates that 9.5 Bkwh of total electricity generation come from renewable sources by 2010. This mandate led to a proposal by Pacific Hydro, the country's largest renewables company with a total generating capacity of 112.7 MW, to expand the country's wind power capacity. In 2003, work also began on the development of Australia's first geothermal project in the Cooper Basin, where some of the world's hottest rocks are thought to be located.

In 2003, Australia accounted for 1.5 percent of the world's total energy-related carbon emissions. Although coal constitutes a major part of Australia's energy mix, increasing urban air pollution levels are more a consequence of automobile usage than coal consumption.

In February 2004, Enviromission announced an optimistic end to a feasibility study concerning the completion of a 200-MW solar tower in Mildura. Following the announcement, in June 2004, the government pledged \$56 million for "solar cities" trials in urban settings.

Click [here](#) to view the full Australian environment report.

Profile

Country Overview

Chief of State	Queen Elizabeth II – February 6, 1952
Head of Government	Prime Minister John Winston Howard – March 11, 1996
Location	Oceania, continent between the Indian Ocean and the South Pacific Ocean
Independence	1 January 1901 (federation of UK colonies)
Population (2005E)	20,090,437
Languages	English 79.1%, Chinese 2.1%, Italian 1.9%, other 11.1%, unspecified 5.8% (2001 Census)
Religion	Catholic 26.4%, Anglican 20.5%, other Christian 20.5%, Buddhist 1.9%, Muslim 1.5%, other 1.2%, unspecified 12.7%, none 15.3% (2001 Census)
Ethnic Group(s)	Caucasian 92%, Asian 7%, aboriginal and other 1%

Economic Overview

Minister of Trade	The Honorable Mark Vaile MP
Currency/Exchange Rate (11/17/05)	Australian dollar (AUD)/US\$1=\$AUD1.36236
Inflation Rate (2004E, 2005E)	2.3%, 2.6%
Gross Domestic Product	\$689 billion – purchasing power parity

(2005E)

Real GDP Growth Rate (2004E, 2005E, 2006F)	3.5%, 2.4%, 2.7%
Unemployment Rate (2005E)	5.1%
External Debt (2005E)	\$393.1 billion
Exports (2005E)	\$106.2 billion f.o.b.
Exports - Commodities	coal, gold, meat, wool, alumina, iron ore, wheat, machinery and transport equipment
Exports - Partners (2005E)	Japan 18.6%, China 9.2%, US 8.1%, South Korea 7.7%, New Zealand 7.4%, India 4.6%, UK 4.2%
Imports (2005E)	\$121.3 billion f.o.b.
Imports - Commodities	machinery and transport equipment, computers and office machines, telecommunication equipment and parts; crude oil and petroleum products
Imports - Partners (2005E)	US 14.8%, China 12.7%, Japan 11.8%, Germany 5.8%, Singapore 4.4%, UK 4.1%
Current Account Balance (2005E)	-\$40.2 billion

Energy Overview

Minister of Resources	The Honorable Ian Macfarlane MP
Proven Oil Reserves (January 1, 2005E)	1.5 billion barrels
Oil Production (2005E)	553.3 thousand barrels per day, of which 75% was crude
Oil Consumption (2005E)	918.0 thousand barrels per day
Net Oil Imports (2005E)	364.6 thousand barrels per day
Crude Oil Distillation Capacity (2005E)	755.0 thousand barrels per day
Proven Natural Gas Reserves (January 1, 2005E)	29 trillion cubic feet
Natural Gas Production (2003E)	1.3 trillion cubic feet
Natural Gas Consumption (2003E)	885.7 billion cubic feet
Net Natural Gas Imports (2005E)	None
Recoverable Coal Reserves (2005E)	86.5 billion short tons
Coal Production (2003E)	373.4 million short tons
Coal Consumption (2003E)	144.1 million short tons
Net Coal Exports (2005E)	303.1 million short tons
Electricity Installed Capacity (2003E)	47.1 gigawatts
Electricity Production (2003E)	215.8 billion kilowatt hours
Electricity Consumption (2003E)	200.7 billion kilowatt hours
Total Energy Consumption (2003E)	5.1 quadrillion Btus*, of which Coal (44%), Oil (34%), Natural Gas (17%), Hydroelectricity (3%), Other Renewables (1%), Nuclear (0%)
Total Per Capita Energy Consumption (2003E)	260.4 million Btus
Energy Intensity (2003E)	9,075.6 Btu per \$2000-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2003E)	376.8 million metric tons, of which Coal (56%), Oil (31%), Natural Gas (13%)
Per-Capita, Energy-Related Carbon Dioxide Emissions (2003E)	19.1 metric tons
Carbon Dioxide Intensity (2003E)	0.7 Metric tons per thousand \$2000-PPP**
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; clearing for agricultural purposes threatens the natural habitat of many unique animal and plant species; 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 Environmental Agreements	party to: Antarctic-Environmental Protocol, Antarctic-Marine Living Resources, Antarctic Seals, Antarctic Treaty, Biodiversity, Climate Change, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Marine Life Conservation, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands, Whaling signed, but not ratified: Climate Change-Kyoto Protocol

Oil and Gas Industry

Organization	Woodside Petroleum, Santos Inc., BHP Billiton, Shell Australia, ExxonMobil Australia (The government does not own any of the oil or gas businesses)
Major Oil/Gas Ports	Sydney; Melbourne; Geelong; Fremantle; Adelaide; Brisbane
Foreign Company Involvement	ExxonMobil, BP, Chevron, Shell, ConocoPhillips, Anglo American, Rio Tinto (partially Australian owned) and Xstrata
Major Oil Fields (production, bbl/d)	Roller, Skate, Bass Strait, Wanea-Cossack, Laminaria, Corallina
Major Natural Gas Fields (production, Mmcf/d)	Bass Strait, Cooper Basin, North Rankin, Goodwyn, Gorgon
Major Pipelines (capacity)	condensate/gas 492 km; gas 28,680 km; liquid petroleum gas 240 km; oil 4,773 km; oil/gas/water 110 km
Major Refineries (capacity, bbl/d)	BP Amoco - Bulwer Island (84,500 bbl/d), BP Amoco - Kwinana (132,050 bbl/d), Caltex - Kurnell (105,500 bbl/d), Caltex - Lytton (105,500 bbl/d), Inland Oil Refiners - Eromanga (1,425 bbl/d), ExxonMobil - Adelaide (74,000 bbl/d), ExxonMobil - Altona (130,000 bbl/d), Shell - Clyde (85,000 bbl/d), Shell - Geelong (110,000 bbl/d)

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

**GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

Links

EIA Links

[EIA - Country Information on Australia](#)

U.S. Government

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

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

Associations and Institutions

[Australian Greenhouse Office](#)

[Australia Institute](#)

[Australian Institute of Petroleum](#)

[Australian Gas Association](#)
[Australian Petroleum Production and Exploration Association](#)
[Australian Pipeline Trust](#)
[Australia's Uranium Information Centre](#)
[Energy Supply Association of Australia](#)
[Enviromission Limited](#)
[Securing Australia's Energy Future \("The White Paper"\)](#)
[Australian Coal Association](#)
[Australian Bureau of Agricultural and Resource Economics](#)
[Australia's Department of Industry, Tourism, and Resources](#)
[Australian Embassy in the United States](#)
[AGSO-Geoscience Australia](#)

Oil and Natural Gas

[BHP Billiton](#)
[Caltex Australia](#)
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[Oil Search Limited](#)
[Oilex](#)
[Origin Energy](#)
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 Electricity Gas Australia
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 The Times (London)
 U.S. Commerce Department, International Trade Administration -- Country Commercial Guides
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 World Markets Energy

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