



2006 Minerals Yearbook

NEW ZEALAND

THE MINERAL INDUSTRY OF NEW ZEALAND

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New Zealand had more than 600 identified mineral occurrences in 25 different mineral deposit types. New Zealand's mineral production included gold, iron sand, and silver; such industrial minerals as aggregate (crushed stone and gravel), building and dimension stone, clay, diatomite, feldspar, lime and limestone for agriculture and industrial uses, magnesite, marble, phosphate rock, salt, sulfur, and zeolite; and mineral fuels.

The Crown Minerals Act 1991 and the Crown Minerals Amendment Act 2003 set the broad legislative policy for prospecting, exploring, and mining of Crown-owned (meaning Government-owned on behalf of all New Zealanders) minerals in New Zealand. These include all naturally occurring gold, petroleum, silver, and uranium, and substantial quantities of coal and other metallic and industrial minerals. The Ministry of Energy prepares and manages the mineral programs and issues minerals permits for coal under the Crown Minerals Act. The Government planned to review regulations in a timely manner to address the needs of the rapidly changing mineral industry (Ministry of Economic Development, 2006, p. 7-11).

In 2006, New Zealand's total exports were valued at NZ\$32.7 billion (\$23.9 billion) and its total imports were valued at NZ\$40.8 billion (\$29.8 billion). Australia continued to be New Zealand's main import and export trading partner. The United States and Japan were New Zealand's second and third ranked export markets, respectively. China surpassed the United States as New Zealand's second ranked source of imports. Aluminum and its products accounted for 4.52% of the total export value, and mineral fuels, 1.68%. Petroleum and its products were New Zealand's most valuable imported commodities and together accounted for 15.0% of the total import value (Statistics New Zealand, 2007).

Minerals in National Economy

New Zealand's mineral resources were dominated by gold and aggregate, which accounted for 80% of the total value of New Zealand's mineral resources. Gold, iron sand, and silver were major commodities that made a significant contribution to New Zealand's economy. Other metallic minerals, such as bauxite, copper, lead, and zinc, could potentially be economic if technologies and prices become favorable. Excluding the petroleum industry, the value of New Zealand's mineral production accounted for about 1% of the gross domestic product (GDP). The total value of New Zealand's minerals and mineral fuels accounted for about 2% of the GDP. During the fiscal year from July 2005 to June 2006, New Zealand's total exploration expenditure on minerals and mineral fuels was NZ\$776.9 million (\$567.1 million), of which petroleum accounted for 95% of the total (Ministry of Economic Development, 2006, p. 3).

Production

Data on mineral production are provided in table 1.

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities in New Zealand.

Commodity Review

Metals

Aluminum.—New Zealand Aluminium Smelters Ltd. was the sole primary aluminum producer in New Zealand. Raw material (alumina) was sourced from Australian Queensland Alumina Ltd., of which Rio Tinto Aluminium Co. held a 38.6% share. Primary aluminum production was for domestic and overseas markets. About 86% of the metal was exported to Japan (Rio Tinto Aluminium Co., 2007).

Gold.—New Zealand's gold production was mainly from two hard-rock gold mines—the Macraes and the Martha Mines—and a large number of alluvial mines. The Martha Mine is located in Waihi and is owned by Newmont Waihi Gold, which is a subsidiary of Newmont Mining Corp. of the United States. The Martha Mine had been scheduled to close in 2007. Following several years of drilling in the mine site area, however, Newmont discovered an underground ore body (the Favona deposit) at the processing plant site. The company began work on the Favona deposit in 2004 and was expected to begin operations there in late 2006. The deposit was estimated to have reserves of 354,000 troy ounces (oz), or about 11 metric tons (t), of gold and 1.3 million oz, or about 40 t, of silver and indicated and inferred mineral resources of 600,000 oz, or 18.7 t, of gold, and 2.3 million oz, or 71.5 t, of silver (Ministry of Economic Development, 2004; Newmont Mining Corp., 2007).

The Macraes Mine was New Zealand's leading gold operation. It is located in the Otago region of the South Island. The Macraes Goldfield mineralization extends for more than 35 kilometers (km) and Oceana Gold Ltd. had permits for its entirety. The Macraes Mine is an open cut mine in the Macraes Goldfield that produced 182,288 oz [5,669 kilograms (kg)] of gold in 2006 and was expected to have a mine life of 7 more years. Oceana Gold planned to extend the production of the mine by constructing the Frasers underground mine on one of the deeper extensions of the Macraes ore body. Startup of the Frasers operation was scheduled to begin at the end of 2007 and was expected to increase annual production at the Macraes Goldfield to about 230,000 oz (7,152 kg) of gold. Development of the Reefton Goldfield on the west coast of the South Island was underway. The Globe Progress project, which is located within the Reefton Goldfield, was expected to start operation in the first quarter of 2007. Globe Progress was an open cut mine

that had ore reserves of 6.46 million metric tons at a grade of 2.55 grams per metric ton gold. The company planned to recover approximately 460,000 oz (14,306 kg) during the 7-year life of the mine. The Globe Progress processing plant was designed to produce a concentrate that would be transported to the Macraes processing facility for gold recovery. Oceana Gold also had an exploration project underway at Sam Creek at the north end of the South Island (Oceana Gold Ltd., 2007, p. 12-19).

Iron and Steel.—New Zealand's iron ore is mainly titanomagnetite iron sand deposits that extend along 480 km of coastline from Kaipara Harbour south to Wanganui on the west coast of the North Island. Deposits at Waikato North Head and Taharoa were being mined. Iron sand from Waikato North Head was used by New Zealand Steel Ltd., a subsidiary of BlueScope Steel Ltd. of Australia, which was located at Glenbrook. Iron sand from Taharoa was exported. New Zealand Steel was an integrated steel plant that had a steel output capacity of 650,000 metric tons per year (t/yr); the steel was then transferred to a continuous caster and then to a rolling mill to produce flat-rolled steel products.

Industrial Minerals

Cement.—New Zealand's cement industry was dominated by two producers—Golden Bay Cement and Holcim New Zealand Ltd. Golden Bay's cement plant was located at Portland, 8 km south of Whangarei on the North Island, and had an output capacity of 600,000 t/yr using the dry process. Holcim's cement plant was located at Cape Foulwind, Westport, on the South Island; the plant had an output capacity of 500,000 t/yr using the wet process. During the past year, demand for cement in New Zealand led the country to import cement to meet the gap between its domestic production and consumption. To meet the long-term growth in demand for cement in New Zealand, Holcim was considering either replacing the existing cement plant with a dry process cement plant at Westport or building a new cement plant at Weston near Oamaru on the South Island. Holcim continued to evaluate these options and did not expect to make a decision before 2008 (Holcim New Zealand Ltd., 2007, p. 7).

Mineral Fuels

Coal.—New Zealand's coal resources were estimated to be 15 billion metric tons (Gt), of which about 8.6 Gt was economically recoverable. About 45 coal mines were in operation in New Zealand. Bituminous coal resources are located in the West Coast region; subbituminous coal resources are found mainly in the Waikato region, as well as in the Otago, the Southland, and the West Coast regions. Lignite resources are found in the Otago and the Southland regions. New Zealand consumed more than 4 Mt of coal during the past several years and exported its coal surplus to Japan (which received 30% of New Zealand's coal exports), India (28%), Chile (17%), and

others (25%). The power sector accounted for about 44% of domestic coal consumption followed by the steel sector, 35%; dairy, 6%; industrial processing, 4%; cement, 2%; and others (9%) (Solid Energy New Zealand Ltd., 2007, p. 12).

State-owned Solid Energy New Zealand Ltd. was the major coal producer in New Zealand, and its coal output accounted for about 80% of the country's total. In 2006, Solid Energy produced 4.67 Mt of coal from its coal mines, which included the Stockton Opencast Mine in the Buller coalfield (which is located north of Westport on the West Coast of the South Island), the Rotowaro Opencast Mine (located in the Waikato area of the North Island), the Spring Creek Underground Mine (located in Seven Mile Valley north of Greymouth on the West Coast of the South Island), the Terrace Underground Mine (located on the northeast edge of Reefton township on the West Coast of the South Island), and the Huntly East Underground Mine (located north of Huntly township on the North Island). Coal from the Huntly East mine was sold mainly to New Zealand Steel. Solid Energy planned to develop coal resources in the Huntly North, the Otago, and the Southland areas (Solid Energy New Zealand Ltd., 2007, p. 18-27).

Outlook

The economy of New Zealand is expected to grow at a rate of 1% to 2% in the next several years. Most mineral production is consumed locally with the exception of aluminum, coal, and amorphous silica. The development of the mining sector in New Zealand is constrained by the environmental awareness and sensitivity of the country and its location far from major industrial markets. Production of New Zealand's mineral wealth is expected to continue to increase contingent on mineral policies being consistent with that trend.

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TABLE 1
NEW ZEALAND: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2002	2003	2004	2005	2006	
METALS						
Aluminum metal, smelter:						
Primary	333,900	334,400	342,000	351,449	337,264	
Secondary ^c	21,500	21,500	21,500	21,500	22,000	
Total	355,400	355,900	363,500	372,949	359,264	
Gold, mine output, Au content	kilograms	9,770	9,300	10,151	10,583	10,618
Iron and steel:						
Iron sand, titaniferous magnetite, gross weight	thousand metric tons	1,740	1,947	2,329	2,207	2,146
Pig iron ^c	do.	600	600	650	652 ^r	664
Steel, crude ^c	do.	750	800	850	889	862
Lead, refinery output, secondary ^c		10,000	10,000	10,000	10,000	10,000
Silver, mine output, Ag content	kilograms	28,720	29,920	30,084	43,003	27,221
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	1,000	1,080	1,100	1,050 ^e	1,120 ^e
Clays:						
Bentonite		7,800	10,940	10,050	7,590	3,028
Kaolin, pottery		17,200	14,770	15,500	15,750	14,864
For brick and tile		47,500	56,550	57,350	41,170	46,667
Diatomaceous earth		20	320	240	20	142
Lime ^c		20,000	20,000	20,000	20,000	20,000
Marble ^c		15,000	15,000	15,000	15,000	15,000
Nitrogen, N content of ammonia ^c		109,200 ²	110,000	110,000	110,000	110,000
Perlite		7,050	5,000	5,600	7,310	3,552
Pumice		203,700	173,400	280,950	245,080	303,659
Salt ^c		70,000	70,000	70,000	100,000	100,000
Sand and gravel:						
Silica sand, glass sand		60,150	48,400	60,080	65,350	58,705
Other industrial sand		575,700	2,207,190	1,753,140	1,574,050	2,433,165
For roads and ballast	thousand metric tons	18,522	18,500	21,720	24,712	23,981
For building aggregate	do.	8,026	9,267	11,362	10,921	8,518
Stone:						
Dolomite		24,720	21,920	12,000	--	1,626
Limestone and marl:						
For agriculture	thousand metric tons	2,472	2,557	1,913	2,594	2,326
For cement	do.	1,697	1,652	1,839	1,741	1,762
For other industrial uses	do.	865	731	561	891	944
Serpentine		61,300	68,960	60,880	62,320	41,000
Dimension		30,200	37,300	26,110	29,270	22,880
Zeolite		3,700	4,850	11,440	18,790	9,041
MINERAL FUELS AND RELATED MATERIALS						
Coal, all grades	thousand metric tons	4,459	5,180	5,154	5,267	5,768
Liquefied petroleum gas	thousand 42-gallon barrels	2,101	1,701	1,710	1,946	1,900 ^e
Natural gas:						
Gross production	million cubic meters	6,431	4,892	4,500	4,223	4,100 ^e
Marketed production	do.	6,431	4,492	4,114	3,911	3,900 ^e
Petroleum:						
Crude	thousand 42-gallon barrels	11,257	8,712	7,625	7,032	7,000 ^e
Refinery products ^c	do.	34,000	34,000	34,000	34,000	34,000

^cEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. --Zero.

¹Table includes data available through August 15, 2007.

²Reported figure.

TABLE 2
NEW ZEALAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity ^e
Aluminum		New Zealand Aluminium Smelters Ltd.	Southland, Invercargil	350
Cement		Golden Bay Cement	Portland	600
Do.		Holcim New Zealand Ltd.	Cape Foulwind, Westport	500
Coal		Solid Energy New Zealand Ltd.	Greymouth	1,000
Do.		do.	Hamilton	1,500
Do.		do.	Huntly	400
Do.		do.	Reefton	100
Do.		do.	Westport	2,500
Gold	metric tons	Newmont Waihi Gold (subsidiary of Newmont Mining Corp.)	Waihi	5
Do.	do.	Oceana Gold Ltd.	Otago	6
Iron and steel:				
Iron ore		BlueScope Steel Ltd.	Taharoa, 150 kilometers south of Auckland	1,300
Do.		do.	Waikato North Head, 30 kilometers south of Auckland	1,000
Steel		do.	Glenbrook	650
Silver	metric tons	Newmont Waihi Gold (subsidiary of Newmont Mining Corp.)	Waihi	30
Do.	do.	Oceana Gold Ltd.	Otago	1

^eEstimated.