



2009 Minerals Yearbook

NEW ZEALAND

THE MINERAL INDUSTRY OF NEW ZEALAND

By Pui-Kwan Tse

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 agricultural and industrial uses, magnesite, marble, phosphate rock, salt, sulfur, and zeolite; and mineral fuels. The New Zealand mining industry is a small player in the international market compared with its neighboring country Australia.

The Crown Minerals Act 1991 and the Crown Minerals Amendment Act 2003 set the broad legislative policy for the prospecting and exploring for and the mining of Crown-owned (meaning Government-owned on behalf of all New Zealanders) minerals within New Zealand's territorial area (to 12 nautical miles off the New Zealand coast). The Ministry of Economic Development, through the Crown Minerals Group, is responsible for the overall management of all state-owned minerals in New Zealand. Crown-owned minerals include gold, petroleum, silver, uranium, and all minerals on or under Crown land. In some cases, the Crown also has rights to certain minerals on some private land. The Crown Minerals Group also advises on policy and operational regulation and promotes investment in the mineral sector. The royalty regimes for coal, minerals, and petroleum are defined in the Government mineral program that is reviewed every 10 years. In 2009, the Government announced that it would set a plan to review the legislative, regulatory, taxation, and royalty arrangements for minerals and petroleum. The proposed changes would allow more flexibility on permit duration (to deal with operating challenges, such as the limit of 5 years for an exploration permit), set up a new permit class, and ensure that the regime is able to cover new technologies and resources. The Government also evaluated Schedule 4 of the Crown Minerals Act 1991 that restricted mineral-related activity in specified public conservation areas. Schedule 4 land areas accounted for about 40% of public conservation land, or 13% of New Zealand's total land area. The Government had no plans to change the current public conservation land area, however (Ministry of Economic Development, 2010c, p. 1-20).

In 2009, New Zealand's total exports were valued at \$NZ39.7 billion (\$32.3 billion), and its total imports were valued at \$NZ40.2 billion (\$32.6 billion). Australia continued to be New Zealand's main import and export trading partner. The United States and China were New Zealand's second and third ranked export markets, respectively. China and the United States were New Zealand's second and third ranked sources of imports, respectively. Mineral fuels accounted for 4.4% of the country's total export value. Mineral fuels were New Zealand's most valuable imported commodities and they accounted for 7.5% of the country's total import value (Statistics New Zealand, 2010a).

Minerals in the National Economy

New Zealand's mineral resources were dominated by aggregate and gold, which together accounted for 80% of the total value of New Zealand's mineral resources. Gold, iron sand, and silver were major metallic commodities that made a significant contribution to New Zealand's economy. Production of other metallic minerals, such as bauxite, copper, lead, and zinc, could potentially be economically feasible if technologies and prices become favorable. Excluding the petroleum industry, the value of New Zealand's mineral production of coal, metals, and industrial minerals accounted for about 1% of the gross domestic product (GDP). The total value of New Zealand's minerals and mineral fuel production accounted for about 2% of the GDP (Statistics New Zealand, 2010b, p. 3).

Production

In 2009, production of such mineral commodities as bentonite and serpentine increased by more than 10% compared with that of 2008. Mineral commodities for which production decreased significantly included iron sand, limestone, pumice, silica sand, and silver. Data on mineral production are in table 1.

Structure of the Mineral Industry

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

Commodity Review

Metals

Gold.—New Zealand's gold production was dominated by Newmont Mining Corp. of the United States and OceanaGold Corp. The Martha gold field is located in Waihi and was owned by Newmont Waihi Gold, which was a subsidiary of Newmont Mining. The Martha open pit mine had been scheduled to close in 2007 but Newmont Mining was evaluating ways to extend mining at the open pit to 2012 and was actively exploring in another part of the region. Mining was started at an underground ore body (the Favona deposit) at the processing plant site in late 2006. In 2009, Newmont Mining's Waihi operation produced 3.7 metric tons (t) (118,200 troy ounces), which was lower than the 4.5 t (144,000 troy ounces) produced in 2008. Newmont Mining joined with Glass Earth Gold Ltd. to explore a gold prospect southwest of Whangamata and at the Wharekiriponga prospect, which is located about 11 kilometers (km) north of the Waihi operation (Newmont Mining Corp., 2010, p. 26).

OceanaGold's Macraes gold project consisted of the Macraes open pit mine and the Frasers underground mine, which started production in January 2008. OceanaGold's Reefton gold

project is located about 7 km from Reefton on the west coast of the South Island. The Reefton project included four open pits—the Empress, the General Gordon, the Globe Progress, and the Souvenir—and a 1-million-metric-ton-per-year (Mt/yr) processing plant. The concentrate was sent by rail to the Macraes pressure oxidation facility for final processing. In 2009, the company produced a total of 9.4 t (300,391 troy ounces) of gold, which was an increase of 16% from that of 2008. The mine life of the Macraes operation was about 8 years; that of the Reefton operation was about 4 years under the current production rate (OceanaGold Corp., 2010).

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 Taharoa and Waikato North Head 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 is located at Glenbrook. New Zealand Steel was an integrated steel producer that had a steel output capacity of 650,000 metric tons per year (t/yr); the steel was first transferred to a continuous caster and then to a rolling mill to produce flat-rolled steel products. The production of Taharoa’s iron sands was mainly for export to China and Japan.

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. Bituminous coal resources are located in the West Coast region of the South Island; subbituminous coal resources are found mainly in the Waikato region of the North Island, as well as in the Otago, the Southland, and the West Coast regions of the South Island. Lignite resources are found in the Otago and the Southland regions of the South Island. New Zealand exported nearly all its bituminous coal output from the South Island. Five underground and 17 opencast mines were operating in 2009 and about 63% of output was from 2 opencast operations at Rotowaro near Huntly and Stockton in the Buller field. New Zealand’s coal production decreased by 7% in 2009 compared with production in 2008. The reduction was caused by the operator staff strikes in two of the largest coal mines. Although lignite accounted for 80% of the country’s coal resources, it accounted for 6% of the total coal output in 2009. Bituminous coal was produced in the West Coast region of the South Island. Subbituminous coal was mainly from the Waikato region of the North Island. Lignite was from the Southland region of the South Island. State-owned Solid Energy New Zealand Ltd. accounted for about 80% of the country’s coal output. The country’s coal exports were bituminous coal and went mainly to India and Japan, with a small quantity going to Brazil, Chile, China, South Africa, and the United States. Imported coal was largely to supply the Huntly powerplant. Coal accounted for about 4% of the country’s total energy consumption. New Zealand consumed 3.1 million metric tons (Mt) of coal in 2009. The power sector accounted for 53% of domestic coal use followed by the steel sector (Ministry of Economic Development, 2010b, p. 35-37).

Pike River Coal Ltd. started the construction of its Pike River coal mine at about 50 km northeast of Greymouth on the west coast of the South Island in 2006. A 2,300-meter (m) adit was built to reach the estimated recoverable resource of 18 Mt of low-ash coking coal, which is located under Department of Conservation-administered land, including part of the Paparoa National Park. The mine was designed to produce 1 Mt/yr for 18 years beginning in 2010. The company estimated that the area contained 58.5 Mt of coking coal. The coal seam thickness was 4 m to 9 m. Coal would be transported from the underground mine by a 10.6-km-long slurry pipeline to a preparation plant for dewatering and electronic grading; it would be stockpiled and eventually trucked to rail-loading facilities for transport across the Southern Alps to Lyttelton, and then exported. Owing to technical difficulties, the first shipment of 60,000 t of coking coal would be delayed until the first quarter of 2010 from its originally scheduled delivery date of November 2009. Pike River signed contracts to deliver nearly all its coking coal output through March 31, 2010, to buyers in India and Japan at a cost of \$128 per metric ton (Pike River Coal Ltd., 2009).

Solid Energy decided to shut down the Terrace underground coal mine in 2009. The operation struggled to remain profitable because of high production costs. The shutdown of the mine would not affect the Reefton distribution center, and the company planned to explore other prospects near the town and to consider resuming the operation of mining at Island Block, which contained about 5 Mt of coking coal resources. Solid Energy continued reviewing some small coal mine operations throughout the country in the face of increasing production costs. Solid Energy planned to build a lignite briquetting plant at Matura to develop the lignite resources in eastern Southland. Solid Energy and GTL Energy of Australia would perform jointly a feasibility study of the briquetting plant and expansion of the New Vale Mine’s output capacity to 100,000 t/yr. Solid Energy also planned to invest \$1.5 billion in a coal-to-fertilizer plant in Eastern Southland. The fertilizer plant would have an output capacity to produce 1.2 Mt/yr of nitrogen fertilizer from 2 Mt/yr of lignite in the Matura-Gore area (Ministry of Economic Development, 2009).

FMG Pacific Ltd., which was a subsidiary of Fortescue Metals Group of Australia, received two permits to explore coal resources in the Greymouth region. The first tenement (EP52157) covered an area of 9,773 hectares (ha) to the north and west of Greymouth, and the second tenement (EP52158) covered an area of 353 ha in the Rewanui area. The company planned to drill and geophysically log at least 10 exploration drill holes within the first 3 years of the 5-year permit life (Ministry of Economic Development, 2010a).

Natural Gas and Oil.—New Zealand’s natural gas and oil were produced from 18 fields, all of which were located in the Taranaki Basin. Natural gas was produced from 14 fields. In 2009, New Zealand’s oil production decreased by about 8% compared with that of 2008. The Maari project, which is located 80 km off the South Taranaki coast south of the Maui field and in which OMV New Zealand Ltd. (the operator) held a 69% equity interest, came onstream in February 2009. This field accounted for the major share of the country’s oil

production. The Tui field produced 32.5% of the country's total oil output followed by the Maari field, 30.5%; Pohokura field, 20.9%; the Maui field, 7.6%; the Kapuni field, 2.0%; and others, 6.5%. The Tui field was expected to produce 50 million barrels of oil in its first year of operation. The Government extended the tax exemption for exploration companies until December 31, 2014, to encourage exploration for offshore hydrocarbons in New Zealand territory. The Government was scheduled to offer the Offshore Reinga Block for exploration in 2010. In 2008, the Government awarded nine exploration permits to a number of new and existing explorers. As a result, more exploration wells would be drilled in the next several years. New Zealand was a net oil importing country, and oil import dependency peaked at 95% in 2006. In 2009, oil import dependency increased to 63% from 59% in 2008 as a result of a decrease in domestic oil production. About 57% of imported oil was from Middle Eastern countries and about 29% was from Asian countries, mainly Indonesia and Brunei. The Marsden Point Oil Refinery was the country's only oil refinery; it was operated by New Zealand Refinery Co. (Ministry of Economic Development, 2010b, p. 45).

Outlook

Most mineral production is consumed locally with the exception of aluminum, coal, gold, and amorphous silica. Coal, gold, and oil are the leading exported commodities. The Government proposed to remove some restrictions on public restriction areas where significant mineral potential for

exploration could make a significant contribution to creating a wealthier and more prosperous New Zealand. The development of the mining sector in New Zealand, however, is constrained by the population's environmental awareness, the ecological sensitivity of the country, and New Zealand's location far from major industrial markets. Consistent with these trends, New Zealand's mineral development is expected to continue to increase only gradually.

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TABLE 1
NEW ZEALAND: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2005	2006	2007	2008	2009
METALS					
Aluminum metal, smelter:					
Primary	351,449	337,264	351,100	315,500	271,000
Secondary ^c	21,500	22,000	22,000	22,000	22,000
Total	372,949	359,264	373,100	337,500	293,000
Gold, mine output, Au content	10,583	10,618	10,628	13,403 ^r	13,442
Iron and steel:					
Iron sand, titaniferous magnetite, gross weight	2,207	2,146	1,723	2,020	585
Pig iron ^e	652	664	679	622 ^r	608
Steel, crude ^e	889	810	845	799 ^r	765
Lead, refinery output, secondary ^e	7,000	7,000	7,000	9,000 ^r	13,000
Silver, mine output, Ag content	43,003	27,221	10,568	18,269 ^r	14,264
INDUSTRIAL MINERALS					
Cement, hydraulic	1,050	1,120	1,200 ^e	1,200 ^e	1,200 ^e
Clays:					
Bentonite	7,590	3,028	6,154	753	880
Kaolin, pottery	15,750	14,864	14,130	12,761	9,016
For brick and tile	41,170	46,667	55,645	34,650	37,230
Diatomaceous earth	20	142	14	14	10
Lime ^e	20,000	20,000	20,000	20,000	20,000
Marble ^e	15,000	15,000	15,000	15,000	15,000
Nitrogen, N content of ammonia ^e	120,000	120,000	125,000	125,000	125,000
Perlite	7,310	3,552	7,873	--	8,848
Pumice	245,080	303,659	354,903	174,729	159,357
Salt ^e	100,000	100,000	100,000	100,000	100,000
Sand and gravel:					
Silica sand, glass sand	65,350	58,705	86,461	48,575	43,458
Other industrial sand	1,574,050	2,433,165	1,896,343	1,160,543	1,453,793
For roads and ballast	24,712	23,981	23,782	20,889	15,471
For building aggregate	10,921	8,518	9,601	9,743	7,198
Stone:					
Dolomite	--	1,626	62,770	16,962	14,508
Limestone and marl:					
For agriculture	2,594	2,326	2,180	1,918	1,929
For cement	1,741	1,762	1,965	2,018	1,888
For other industrial uses	891	944	947	874	664
Serpentine	62,320	41,000	45,648	4,494	14,197
Dimension	29,270	22,880	22,934	16,998	16,442
Zeolite	18,790	9,041	17,039	25,800	21,750
MINERAL FUELS AND RELATED MATERIALS					
Coal, all grades	5,267	5,768	4,835	4,909	4,563
Liquefied petroleum gas	1,946	1,786	1,263	979	900 ^e
Natural gas:					
Gross production	4,223	4,100	4,712	4,484	4,644
Marketed production	3,911	3,900	4,310	3,994	4,097
Petroleum:					
Crude	7,032	6,808	15,011 ^r	21,436 ^r	19,617
Refinery products ^e	34,000	34,000	35,000 ^r	34,000	35,000

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

¹Table includes data available through August 10, 2010.

TABLE 2
NEW ZEALAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Thousand metric tons unless otherwise specified)

Commodity		Facilities, major operating companies, and major equity owners	Location of main facilities	Annual capacity ^e
Aluminum		Tiwai Point smelter [New Zealand Aluminium Smelters Ltd. (Rio Tinto Alcan, 79.36%, and Sumitomo Chemical Co., 20.64%)]	Southland, Invercargill	350
Cement		Golden Bay Cement (Fletcher Building Ltd.)	Portland	900
Do.		Holcim New Zealand Ltd.	Cape Foulwind, Westport	500
Coal		Stockton open pit mine (Solid Energy New Zealand Ltd., 51%, and Cargill Inc., 49%)	Buller, 35 kilometers northeast of Westport	2,500
Do.		Pike River underground mine (Pike River Coal Ltd.)	50 kilometers northeast of Greymouth	1,000
Do.		Spring Creek underground mine (Solid Energy New Zealand Ltd.)	Greymouth	1,000
Do.		Rotowaro open pit mine (Solid Energy New Zealand Ltd.)	Huntly	1,500
Do.		Huntly East underground mine (Solid Energy New Zealand Ltd.)	do.	500
Do.		New Vale open pit mine (Solid Energy New Zealand Ltd.)	50 kilometers northeast of Invercargill	300
Do.		Ohai open pit mine (Solid Energy New Zealand Ltd.)	Ohai	200
Do.		Terrace underground mine (Solid Energy New Zealand Ltd.)	Reefton	100
Gold	metric tons	Newmont Waihi Gold (subsidiary of Newmont Mining Corp.)	Waihi	5
Do.	do.	Macraes gold project (OceanaGold Corp.)	Otago	6
Do.	do.	Reefton gold project (OceanaGold Corp.)	Reefton	10
Iron and steel:				
Iron ore		New Zealand Steel Ltd. (BlueScope Steel Ltd. of Australia)	Taharoa, 150 kilometers south of Auckland	1,300
Do.		do.	Waikato North Head, 30 kilometers south of Auckland	1,000
Steel		do.	Glenbrook	650
Do.		Otahuhu Mill [Pacific Steel Group (Fletcher Building Ltd.)]	Auckland	300
Kaolin		Imerys Tableware New Zealand Ltd.	80 kilometers northwest of Whangarei	25
Petroleum refinery	barrels per day	Marsden Point Oil Refinery (New Zealand Refinery Co., operator)	Marsden Point	95,000
Salt		Dominion Salt Ltd.	South of Blenheim	70
Silver	metric tons	Newmont Waihi Gold (Newmont Mining Corp.)	Waihi	30
Do.	do.	OceanaGold Corp.	Otago	1

^eEstimated. Do., do. Ditto.