



2006 Minerals Yearbook

BHUTAN AND NEPAL

THE MINERAL INDUSTRIES OF BHUTAN AND NEPAL

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BHUTAN

Bhutan is a small landlocked country located between China and India. Industry, which included the mineral industry, and services accounted for 43% and 31% of the country's gross domestic product (GDP), respectively. Mining of industrial minerals was insignificant to Bhutan's economy except for the production of ferrosilicon. The country's rugged terrain provides sites to harvest hydropower. The exploitation of this large hydropower potential has driven rapid growth in the transport and construction sectors, including the startup of a number of local cement operations. The 1,020-megawatt Tala hydroelectric project, which was funded by the Government of India, was begun in 1998 and completed in 2005 (U.S. Department of State, 2005).

Production

The country's mineral industry was small and insignificant to its economy and was dominated by the production of cement, coal, dolomite, gypsum, and limestone. Known resources included deposits of beryl, copper, graphite, lead, mica, pyrite, tin, tungsten, and zinc. A graphite processing plant was established at Paro Dzong (table 1).

Structure of the Mineral Industry

The Government, a private-sector company, and a Japanese company formed a joint venture to produce ferrosilicon and other alloys. Cement production also was under the control of the Government (table 2).

The Department of Geology and Mines under the Ministry of Trade and Industry has two divisions: the Geological Survey of Bhutan and the Mining Division. The latter is responsible for the inspection and regulation of various mines. In addition, the Ministry's Department of Energy is in charge of the hydropower development in the energy sector (Ministry of Trade and Industry, 2006).

Commodity Review

Bhutan Ferro Alloys Ltd. produced mainly ferrosilicon, which was exported to India and Japan. The production capacity of its plant at Phuentsholing was 18,000 metric tons per year (t/yr) of ferrosilicon, 4,200 t/yr of micro silica, and 2,400 t/yr of magnesium ferrosilicon. Indigenous quartzite produced by the company's own captive mines was supplied to the plant. Bhutan Ferro Alloys ordered an 18-megavoltampere smelting furnace to produce other silicon and manganese alloys. The expansion was completed in 2005. The company was a joint venture of the Government, Marubeni Corp. of Japan, and the local Tashi Commercial Corp. (Bhutan Ferro Alloys Ltd., 2005).

Dolomite quarrying near the Pugli hills at Gomtu in southwestern Bhutan affected agriculture (tea plantations) and wild animals in neighboring Indian State of West Bengal. Landslides and erosion caused by quarrying left 14 properties prone to flooding. Dolomite sediments turned the tea plantations' soil alkaline and airborne dust from the quarry choked the plants. Animals were unable to drink river water made red and cloudy by the quarrying (Iran Daily, The, 2007).

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NEPAL

In 2006, the Maoist rebels declared a ceasefire and signed a peace deal with the Government of Nepal to end a decade of conflict against the monarchy. The country's economy was dominated by agricultural production followed by industry and tourism. Nepal's mineral resources were largely unexploited with mining and quarrying accounting for only 0.5% of the GDP (U.S. Department of State, 2006).

Production

The country produced cement, red clay, coal, limestone, dead-burned magnesia, marble, and rolled steel (table 1). Mineral commodities accounted for 8% of the export earnings. Nepal has small deposits of cobalt, copper, iron ore, lead, limestone, magnesite, mica, and zinc. A lead and zinc deposit near Lari in the Ganesh Himal region was known to contain an estimated resource of 2 million metric tons (Mt) with average grades of 14.7% zinc, 3.0% lead, and 23.5 grams per metric ton silver (Nepal Metal Co. Ltd., 2006).

Structure of the Mineral Industry

The Department of Mines and Geology (DMG) under the Ministry of Industry, Commerce, and Supplies is responsible for conducting geoscientific research; carrying out exploration; evaluating mineral resources, including natural gas and petroleum; and promoting mineral-based industries in the country. Private-sector companies operated several cement plants. State-owned Hetauda Cement Industries Ltd. was the leading producer of cement (table 2).

Commodity Review

The Thoshe iron ore deposit in the Ramechhap District in central Nepal was assessed by the DMG; two mineralization bands of 2 to 3 meters (m) thick and 4 kilometers long along strike from Arubote to Singate were delineated. Preliminary geologic reserves were estimated to be about 10 Mt of iron ore with an average grade of about 40% iron. The unavailability of basic infrastructure, however, and the low price of iron ore made the deposit uneconomic as a low-grade and medium-tonnage type (Department of Mines and Geology, 2006).

Hetauda cement plant resumed operations in September after a 2-month closure that had been caused by a lack of limestone and machine malfunctions. A total of 980 workers were employed at the plant. The plant had a cement production capacity of 260,000 metric tons per year.

Nepal had the potential to exploit natural gemstones in the future. Jasper, nephrite, and tugtupite were found extensively in

most of the rivers from the Bardia to the Dang. An opal deposit was found at Bhotechaur in the Sindhupalanchowk District. The Government had yet to establish a clear policy on the gemstone sector, including setting appropriate rules and regulations for the licensing of gemstone miners and for the import of equipment, machinery, and technology (eKantipur.com, 2006).

References Cited

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TABLE 1
BHUTAN AND NEPAL: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Country and commodity ²	2002	2003	2004	2005	2006 ^c
BHUTAN					
Cement ^c	160,000	160,000	170,000	170,000	180,000
Coal, bituminous	88,567	66,324	29,631	85,279	82,000
Dolomite	388,056	367,402	452,336	388,711	410,000
Ferrosilicon ^c	21,000	21,000	21,147 ³	20,000	20,000
Granite square meters	516	1,076	200	877	900
Gypsum	105,658	122,829	131,236	150,585	160,000
Iron ore, gross weight	--	--	--	5,679	5,300
Limestone	506,268	551,525	560,807	536,030	550,000
Marble square meters	298	579	314	372	480
Quartzite	47,464	52,058	42,599	52,694	50,000
Shale, green and pink	937	--	--	363	450
Slate square meters	567	5,386	11,779	270	560
Stone	319,702	316,068	246,508	146,767	120,000
Talc	23,118	23,101	39,797	42,791	45,000
NEPAL					
Cement ^c	290,000	295,000	285,000	290,000	295,000
Clay, red	2,600 ^c	32,966	29,234	35,484	34,000
Coal:					
Bituminous	9,612	11,848	10,459	9,259	11,963
Lignite	--	--	58	30 ^r	--
Total	9,612	11,848	10,517	9,289 ^r	11,963
Gemstones:					
Quartz kilograms	1,720	1,765	1,215	1,092	1,100
Tourmaline do.	--	--	--	7	7
Total do.	1,720	1,765	1,215	1,099	1,107
Lime, agricultural	20,000	13,025	--	--	--
Magnesia, dead-burned	--	--	50	56	--
Salt thousand metric tons	5	5	4	2	--
Steel, rolled ^c	100,000	100,000	95,000	90,000	90,000
Stone:					
Limestone	356,218	269,379	388,109	263,701	402,130
Marble:					
Chips	537	395	481	436	384
Slab, cut square meters	46,156	46,197	56,014	23,850	28,110
Craggy do.	2,279	681	728	--	--
Quartzite ^c	2,800	2,900	2,900	3,000	3,000
Talc	2,621	6,905	3,435	5,832	6,648

^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 July 17, 2007.

²In addition to the commodities listed, crude construction materials, such as sand and gravel and a variety of stone, presumably are produced in Bhutan and Nepal, but information is inadequate to make reliable estimates of output.

³Reported figure.

TABLE 2
BHUTAN AND NEPAL: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^c
BHUTAN			
Cement	Penden Cement Authority Ltd.	Gomtu, Samtse District	100
Dolomite	Jigme Mining Corp. Ltd.	do.	900
Ferrosilicon	Bhutan Ferro Alloys Ltd.	Phuentsholing	18
NEPAL			
Cement	Hetauda Cement Industries Ltd.	Makawanpur	260
Do.	Himal Cement Co. Ltd.	Chobhar	130
Lead and zinc	Nepal Metal Co. Ltd.	Lari	NA
Magnesite	metric tons	Nepal Orind Magnesite Ltd.	50
Marble	Godavari Marble Industries Ltd.	Latitpur	NA

^cEstimated. NA Not available.