

THE MINERAL INDUSTRY OF

NEPAL

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The Kingdom of Nepal, a small landlocked country with an area about the size of Arkansas, is bordered on the north by Tibet in China, on the east by Sikkim and West Bengal in India, and on the south and west by Bihar and Uttar Pradesh in India. Nepal remained one of the poorest nations in the world with a per capita income of about \$180² in 1994. Nepal's mineral resources, identified by its Department of Mines and Geology (DMG) under the Ministry of Industry, included beryl, clay, dimension stone, coal, copper, dolomite, gemstones, gold, iron ore, lead, limestone, magnesite, mica, quartzite, salt, silica sand, talc, tin, and zinc. Actively mined were clay, coal, limestone, marble, quartz, quartzite, salt, and talc.

DMG is the only Government agency responsible for implementing the country's mineral policy and carrying out geological prospecting and mineral resources development, according to the Nepal Mines Act of 1966 and the Mineral Concession Rules of 1961. In 1993, the Government approved the Mines and Mineral (First Amendment) Act 2050. Mines and Mineral Regulation, which provides specific legal provisions on environmental management for mining and mineral resources development, had been drafted and submitted by DMG to the Ministry of Industry for cabinet approval in 1994.³ The Foreign Investment and Technology Act of 1981 provided some incentives to develop the mining industry.

Nepal's mining sector, comprised of numerous small-scale industrial minerals mining companies, has been the smallest sector of the economy. Nepal's gross domestic product (GDP) was estimated to have grown 6.2% to \$3.4 billion in 1994. The output of the mining and quarrying industry was valued at about \$6.8 million, or 0.2% of Nepal's GDP. Most of Nepal's mineral production was for domestic consumption. Exports of mineral commodities were estimated to have accounted for less than 10% of total export earnings of about \$440 million. Nepal's imports of mineral commodities were estimated at about 15% of total imports, or about \$950 million, in 1994.

Mining operations of various industrial minerals by privately owned small mining firms were sparsely distributed throughout the country. Limestone was mined for the production of cement and lime and for construction materials. Boulders, clay, marble, quartz, quartzite, and sand were mined for domestic consumption and for export, principally to India. Nepal produced a small amount of coal (lignite) and salt, but most of the coal and salt requirements were met

by imports from India. According to a purchase agreement signed in 1993, India was to supply Nepal with about 125,000 metric tons (mt) of coal annually. In 1994, the Salt Trading Corp. of Nepal signed an agreement with Hindustan Salt Ltd. of India to import about 115,000 mt of salt annually from India.

Mining of crude magnesite at Kharidhunga in Dolkha District, about 110 kilometers (km) northeast of Kathmandu, the national capital, had stopped in 1990 because of technical problems at a processing plant producing saleable dead-burned magnesite. According to DMG, ore reserves at the Kharidhunga deposit were estimated at 180 million metric tons (Mmt), of which 66 Mmt were refractory-grade magnesite. Of this 66 Mmt, 25 Mmt were high-grade recoverable reserves. The Kharidhunga deposit is a crystalline, breunnerite type. The magnesium oxide (MgO) content of ore varies from 88% to 96%, with a maximum 4.5% each for silica (SiO₂) and iron oxide (Fe₂O₃), and 1% each for aluminum oxide (Al₂O₃) and calcium oxide (CaO).

Nepal Orind Magnesite Ltd., an owner and operator of the crushing plant at Kharidhunga and a 50,000 metric tons per year (mt/a) dead-burned magnesite processing plant in Mankha Village near Lamosangu in Shindhupalchowk District, undertook in 1994 a minor modification project with Government funds and technology provided by Refractories Consulting & Engineering GmbH of Austria. Upon completion of this first-stage redevelopment project, the plant was expected to operate at 50% capacity. The company also was seeking additional investors from Nepal and foreign countries to participate as partners in the second-stage major upgrade of the processing plant to achieve full capacity. In addition, the company operated an open pit talc mine and talc grinding plant at Kharidhunga in Dolkha District. The 10,000 mt/a talc plant has been operating since April 1983. The proven talc reserves in the Kharidhunga area were estimated at 300,000 mt.⁴

Estimated cement production remained at the same level as that of 1993. According to DMG, Himal Cement Co. Ltd., which has a limestone quarrying operation with 15.3 Mmt of proven reserves, operated a 360 metric tons per day (mt/d) cement plant at Chobhar in Lalitpur District. Hetauda Cement Industries Ltd., which has a limestone quarrying operation with 9.6 Mmt of proven reserves, operated a 750 mt/d cement plant at Bhainse in Makawanpur District. Cement-grade limestone produced from the Okhare deposit in Makawanpur District, with 9 Mmt of proven reserves, also

supplied Hetauda's cement plant. Udayapur (Udaipur) Cement Industry Ltd., which has a limestone quarrying operation with 73.5 Mmt of proven reserves, operated a 800 mt/d cement plant at Jaljale in Udaipur District. Additionally, there were two small privately owned cement plants with 30-mt/d capacity operating at Jogimara and at Beldanda, both in Dhading District.

According to the DMG, gold and uranium were found in 1994 in the alluvial deposit of Mahakli and Chamaliya Rivers on the boundary between Darchula and Baitadi Districts in western Nepal. Prospecting for gemstones, such as aquamarine, garnet, ruby, and tourmaline, was undertaken by DMG and private entrepreneurs in the Dhading, Gorkha, Manang, Sankhuwashaba, Ilam, Taplejung, Jajarkot, Lamjung, Sinduli and Rasuwa Districts.

Nepal has 7,080 km of roads, of which 2,898 km is paved, 1,660 km gravel or crushed stone; and 2,522 km of seasonally drivable tracks. It also has 52 km of 0.762-meter gauge railroad, all in Terai, near the Indian border. The 10-km railroad from Raxal to Birganji is Government-owned. The country has five major airports with permanent-surface runways. Telephone and telegraph services were poor. Nepal has 300,000 kilowatts of electricity generating capacity and produced about 1 billion kilowatt hours of electricity for consumption by Kathmandu and several larger cities, but there was no national power distribution and transmission system.

Nepal's enormous hydroelectric potential remains largely

untapped. To develop its hydroelectric power, the Nepalese Government had announced a new hydropower development policy in 1992. Under the new policy, small hydropower projects were to be constructed in the hilly and Himalayan regions; a rural electrification system was to be adequately extended; and private local and foreign investment would be encouraged.

Future development of the Nepalese economy will rely heavily on foreign financial and technical assistance. Japan was providing the most help, followed by the United States, Germany, the United Kingdom, Switzerland, Finland, Canada, China, and India. Various United Nations-affiliated international organizations, such as UNDP and the World Health Organization, were among the important multilateral providers of assistance. Infrastructure projects in progress were several small hydroelectric power stations, bridge construction, installation of a high-power transmission line between Nepal and India, and construction of a highway in western Nepal. The potential for mineral development remains largely untapped.

¹Text prepared Mar. 1995.

²Where appropriate, values have been converted from Nepalese rupees to U.S. dollars at the rate of NRs48.6=US\$1.00 in 1993 and Nrs.49.2=US\$1.00 in 1994.

³Kayastha, N.B. Department of Mines and Geology (Kathmandu). Minerals and Mineral-Based Industries in Nepal, 1994, p. 13.

⁴———. Mineral and Mineral-Based Industries in Nepal, 1994, p. 2.

TABLE 1
NEPAL: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/	1990	1991	1992	1993	1994 e/
Beryl kilograms	500 r/	-- r/	-- r/	-- r/	--
Cement	107,000	136,000	196,000	190,000 e/	190,000
Clay, red	8,240 r/	8,850	15,400 r/	8,950 r/	8,000
Coal:					
Bituminous	70	200	1,900	1,150	1,200
Lignite	7,810	10,200	14,100 r/	3,810 r/	4,000
Total	7,880	10,400	16,000 r/	4,960 r/	5,200
Copper ore:					
Gross weight	18	21 r/	12 r/	23 r/	22
Cu content	3 r/	4	2 r/	2 r/	2
Gemstones:e/					
Garnet kilograms	-- r/	-- r/	-- r/	-- r/	--
Quartz do.	12,500	1,060	6,000	5,000	5,000
Tourmaline do.	4/ r/	4 r/	-- r/	4/ r/	--
Total do.	12,500 r/	1,060 r/	6,000 r/	5,000 r/	5,000
Lime, agricultural	45,000 e/	24,500	24,500 e/	24,000 e/	25,000
Magnesite, crude	-- r/	-- r/	-- r/	-- r/	--
Salt	6,900	7,300	6,500 r/	6,600 r/	7,000
Stone					
Limestone	180,000 r/	222,000	368,000 r/	296,000 r/	300,000
Marble:					
Chips	898 r/	1,040 r/	567 r/	292 r/	300
Slab, cut square meters	161,000 r/	24,700 r/	20,400 r/	27,900 r/	28,000
Craggy do.	5,450 r/	6,460 r/	6,430 r/	2,940 r/	3,000
Quartzite do.	1,770	2,980	2,360	2,550	2,500
Talc	1,800 r/	3,170 r/	3,820 r/	1,340 r/	1,500

e/ Estimated. r/ Revised.

1/Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Table includes data available through Mar. 31, 1995.

3/ In addition to the commodities listed, construction materials such as sand and gravel and other varieties of stone presumably are produced, but available information is inadequate to make reliable estimates of output levels.

4/ Less than 1/2 unit.

Source: Ministry of Industry, Department of Mines and Geology (Kathmandu). Minerals and Mineral-Based Industries in Nepal, Dec. 1994, p.