

# THE MINERAL INDUSTRY OF

# BHUTAN

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The mineral resources of Bhutan include beryl, coal, copper, dolomite, graphite, gypsum, iron, lead, limestone, marble, mica, precious stones, pyrite, quartzite, silver, slate, talc, tin, tungsten, and zinc. Among these mineral resources, only coal and variety of industrial minerals were produced in 1996.

Information about most of Bhutan's mineral resources was sparse, largely because much of the country is extremely mountainous and lacks roads. Systematic exploration and geologic mapping in Bhutan by the Division of Geology and Mines of the Ministry of Trade and Industry, assisted by the Geological Survey of India, were still at an early stage. However, the Himalayas were known to include thick sequences of carbonate rocks and mineral reserves of dolomite, limestone, and quartzite were considered to be quite large. According to an estimate by the United Nations' Economic and Social Commission for Asia and Pacific (United Nations, 1991), reserves of dolomite and limestone were about 13.4 billion metric tons and 121.2 million metric tons, respectively.

The annual growth of Bhutan's economy had been at about 5% for the past 5 years. However, Bhutan economic growth, as measured by real growth in gross domestic product (GDP), rose to about 7% in 1996, because of increased production of hydroelectric power, industrial minerals, and value-added industrial mineral products (Far Eastern Economic Review, 1997). According to the Government, the output of hydroelectric power alone contributed about 8% to Bhutan's GDP and exports of hydroelectric power accounted for about 25% of total export earnings in 1996. Exports of calcium carbide and cement also contributed significantly to Bhutan's export earnings in 1996. For further development of its economy, Bhutan needs more investment to upgrade its infrastructure, especially in highway network and telecommunication, and needs to expand its hydroelectric power generating capacity.

In 1996, the minerals production of Bhutan included coal, dolomite, gypsum, limestone, marble, quartzite, sand and gravel, slate, and talc. (See table 1.) For exports, Bhutan also processed some of its industrial minerals into value-added mineral products, such as calcium carbide, cement, and ferrosilicon. Most dolomite, gypsum, and limestone were mined for the manufacture of cement and calcium carbide. Quartzite was mined for the production of ferrosilicon and microsilica. Most of the cement and calcium carbide production was for export, mainly to India, and most of the ferrosilicon production was exported, mainly to India and Japan.

According to the Division of Geology and Mines, most industrial minerals mining was by privately owned companies

(Togashi, Yukio, 1995). Mining of coal was by Penden Drukpa Coal Mines, a joint venture of the Government and a local private company, at Bangtar, Chenangri, and Deothang in southeastern Bhutan. Mining of dolomite was by Chundu Enterprise at Khagrikhola and Pugli and by Bhutan Mining Enterprise at Pugli, all in the Samchi District of southwestern Bhutan; by Tashi Commercial Corp. at Kalesore and by Singye Dolomite Industries at Duarpani in the Samdrup-Mongar and Shemgang Districts of southeastern Bhutan. Mining of gypsum was by the state-owned Shumar Gypsum at Khothakpa near Pemagatsel in southeastern Bhutan. Mining of marble was by Bhutan Marble and Minerals at Gidakhom. Mining of slate was by the state-owned Sha Slate Mine at Sha Bhel. Mining of talc was by Penden Cement Authority at Kalapani.

Quartzite mining for ferrosilicon production was by Bhutan Ferro Alloys Ltd. at Tintali, by Dendup Enterprise at Suktikhola, and by Bhutan Stone and Minerals Exporting Co. at Kamji. All quartzite mining was in the southeastern part of Bhutan. Chemical-grade limestone mining for calcium carbide production was by Bhutan Carbide and Chemical Ltd. at Haurie Khola and at Rongri in the southwestern Bhutan. Limestone mining for cement production was by the state-owned Penden Cement Authority at Pugli and by Namgyel Cement at Kalesore, both in Samchi District of southwestern Bhutan; by Lhaki Cement at Titi and by Yangzom Cement at Duarpani, both in southwestern Bhutan.

Bhutan's cement industry, comprised of two state-owned companies and two privately owned small cement works, had a combined annual capacity of 182,000 metric tons. The state-owned Penden Cement Authority operated a 100,000-metric-ton-per-year (t/yr) plant at Pugli and a 35,000-t/yr plant at Gomtu under the name of Lhaki Cement. The two privately owned cement companies were Namgyel Cement operating a 35,000-t/yr plant at Pasakha and Yangzom Cement operating a 12,000-t/yr plant at Samchi. All four cement plants were located in the southwestern part of Bhutan. A 500-metric-ton-per-day cement plant was under construction at Nanglam in southeastern of Bhutan by a private investor from India. All cement production from the Nanglam plant would be exported to India.

## References Cited

- Far Eastern Economic Review (Hong Kong), 1997, Nepal: Asia 1997 Yearbook, p. 90.
- Togashi, Yukio, 1995, [Industrial mineral resources of Bhutan and their development]: Chishitsu [Geological] News, no. 485, p. 34. (In Japanese.)
- United Nations, Economic and Social Commission for Asia and the Pacific, 1991, Atlas of mineral resources of the ESCAP Region, v. 8, Bhutan, Explanatory Brochure: Bangkok, Thailand, p. 26, 34, 51, 53.

**Major Source of Information**

Ministry of Trade and Industry  
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TABLE 1  
BHUTAN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/	1992	1993	1994	1995	1996 e/
Cement	116,420	107,810	120,000 e/	140,000 e/	160,000
Coal	56,000	56,000	63,912	71,112	75,000
Dolomite	270,000	206,000	212,629	249,253	260,000
Ferrosilicon e/	--	--	2,000	12,000	13,000
Gypsum	25,000	20,000 e/	45,097	52,102	55,000
Limestone	167,000	190,000	232,317	266,591	275,000
Marble	square meters	4,130	3,825	2,841	3,946
Quartzite		--	--	15,647	49,900
Slate	square meters	--	--	1,030	8,560
Talc		--	--	169	3,332

e/ Estimated.

1/ Table includes data available through Mar. 7, 1997.

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

Sources: Ministry of Trade and Industry, Royal Government of Bhutan.