# The Mineral Industry of Burma

By Gordon L. Kinney[1]

Burma's mineral output was small by world standards but important to its domestic economy. Its most important mineral or mineral-related production was cement, copper, natural gas, nitrogen fertilizer, gem stones, lead, crude oil, silver, tin, and tungsten. By far the most valuable was oil and gas, its dollar value being several times the combined value of the other minerals. Burma was one of the few South or East Asian nations that has been self-sufficient in crude oil. That enviable position, however, was in danger of changing as energy needs have increased while crude oil production has at best shown no real gain in the last few years. As such, Burma has had an increasingly severe shortage of petroleum that has affected all segments of the economy. A firm policy of not importing oil, mainly because of a severe shortage of foreign exchange, was exacerbating the problem. The Government has set the highest priority on finding additional onshore crude oil reserves.

Burma was a major producer of lead and silver before World War II and in 1986 was still considered to have good potential for developing or expanding the production of antimony, copper, lead, tin, tungsten, and zinc among the metals and barite, fluorite, and several other industrial minerals.

About 74,000 persons were employed in state-owned mining activities and another 13,000 by the cooperative and private sectors. In all, 0.6% of the labor force was employed in the mining sector.

After several years of economic growth, Burma, like many other developing countries dependent on exports of primary products, found itself in increasing difficulty. World prices for rice and minerals, two of Burma's major export earners, have fallen precipitously. Burma has increased its volume of exports but had not been able to prevent a decline in overall export earnings. At the same time, economic growth has slowed with the growth of Burma's debt burden and the expiration of grace periods on many of its bilateral and multilateral loans. In 1986, Burma was dependent on exports of primary goods for more than 90% of its foreign exchange earnings. In one case, the foreign exchange shortage forced the Government to export portland cement despite a chronic shortage on the homefront. Burma's international debt grew to more than $2.6 billion in fiscal year (FY) 1985.[2] Debt service payments were $240 million, resulting in a debt service ratio of more than 70%. While the debt service payments were increasing, world prices for rice, Burma's major export, decreased from nearly $400 per ton in FY 1982 to less than $200 per ton in FY 1985. The decline in export earnings forced the Government to reduce imports in FY 1983 and FY 1984 then allow a slight increase in FY 1985. The resulting shortage of spare parts and raw materials, combined with an energy shortage, began to take its toll in declining production in the manufacturing sector. The same problems also affected the country's ability to maintain exports. Mineral exports were particularly affected in FY 1985. Fuel and spare parts shortages adversely affected exports of lead, silver, and zinc.[3]

## PRODUCTION

In FY 1985, net output of the mining sector grew by 22%. Production of lead ore, steel ingot, and concentrates of copper, tin, and tungsten increased significantly. Production decreased for most industrial minerals except fire clay powder, white clay, dolomite, graphite, gypsum, and soapstone. The effects of continuing foreign exchange shortages were becoming more evident. Production of jade, lead, silver, and zinc was down because of shortages of imported machinery and spare parts. The increase in copper production was not as large as planned because of a lack of spare parts at the Monywa facility.[4] Production figures for 1986 showed that only concentrates of zinc among the metals increased whereas concentrates of tin, tungsten and mixed tin-tungsten, and refined lead all declined substantially.

**Table 1.—Burma: Production of mineral commodities[1]**

(Metric tons unless otherwise specified)

| Commodity[2] | 1982 | 1983 | 1984 | 1985 | 1986[p] |
|---|---|---|---|---|---|
| METALS | | | | | |
| Copper: | | | | | |
| Mine output, Cu content | 101 | 4,200 | 12,000 | 16,700 | 11,368 |
| Matte, gross weight | 223 | 173 | 173 | 173 | 144 |
| Iron and steel: Pig iron | 13,328 | 15,200 | 7,764 | -- | -- |
| Lead: | | | | | |
| Mine output, Pb content | [e]16,050 | 23,146 | 21,937 | 21,935 | 18,156 |
| Metal: | | | | | |
| Refined | 7,829 | 7,636 | 6,996 | 9,585 | 5,359 |
| Antimonial lead (18% to 20% Sb) | 279 | 313 | 254 | [e]300 | 299 |
| Nickel: | | | | | |
| Mine output, N content[e] | 20 | 20 | 20 | 20 | 20 |
| Speiss, gross weight | 81 | 80 | 80 | 80 | 86 |
| Silver, mine output thousand troy ounces | 526 | 558 | [r]455 | 568 | 527 |
| Tin, mine output, Sn content: | | | | | |
| Of tin concentrate | 804 | 629 | 745 | 622 | 600 |
| Of tin-tungsten concentrate | 877 | 1,013 | 1,283 | 1,129 | 895 |
| Total | 1,681 | 1,642 | 2,028 | 1,751 | 1,495 |
| Tungsten, mine output, W content: | | | | | |
| Of tungsten concentrate | 243 | 235 | 216 | 171 | 102 |
| Of tin-tungsten concentrate | 601 | 695 | 880 | 774 | 613 |
| Total | 844 | 930 | 1,096 | 945 | 715 |
| Zinc, mine output, Zn content | 5,382 | 4,537 | 5,320 | 4,353 | 4,643 |
| INDUSTRIAL MINERALS | | | | | |
| Barite[3] | 16,029 | 9,989 | 9,967 | 8,100 | 8,149 |
| Cement, hydraulic | 344,225 | 334,685 | 311,179 | 477,000 | 433,811 |
| Clays:[3] | | | | | |
| Ball clay | 409 | 404 | [r]960 | 110 | 496 |
| Bentonite | 1,463 | 710 | [r]725 | 710 | 851 |
| Fire clay[4] | 1,633 | [e]1,780 | [r]1,220 | 1,370 | 2,040 |
| Industrial white clay | 813 | 810 | [r]357 | 610 | 203 |
| Feldspar[3] | 2,540 | [e]2,700 | 6,220 | 2,446 | 2,861 |
| Graphite[3] | 279 | 200 | 234 | 234 | 722 |
| Gypsum[3] | 26,079 | 34,278 | [r]27,580 | 38,594 | 38,889 |
| Nitrogen: N content of ammonia | 51,000 | 53,900 | 56,916 | 125,795 | 133,130 |
| Precious and semiprecious stones: Jadeite[3] kilograms | 9,682 | [r]45,700 | [r]90,990 | 43,145 | 12,804 |
| Salt[5] thousand tons | 269 | 288 | 280 | 320 | 321 |
| Stone:[3] | | | | | |
| Dolomite | 3,250 | 4,400 | 1,305 | 2,383 | 5,253 |
| Limestone, crushed and broken thousand tons | 1,221 | 1,247 | 1,210 | 1,541 | 1,329 |
| Quartz | 39 | -- | -- | -- | -- |
| Talc and related materials: Soapstone[3] | [r]165 | 128 | [r]91 | 128 | 56 |

See footnotes at end of table.

**Table 1.—Burma: Production of mineral commodities[1] —Continued**

(Metric tons unless otherwise specified)

| Commodity[2] | 1982 | 1983 | 1984 | 1985 | 1986[p] |
|---|---|---|---|---|---|
| MINERAL FUELS AND RELATED MATERIALS | | | | | |
| Coal, lignite | 38,200 | 34,500 | r44,232 | 43,000 | 43,848 |
| Gas, natural: | | | | | |
| Gross[e] million cubic feet | 19,000 | 20,000 | 26,000 | 34,000 | 40,000 |
| Marketed[3] do | 17,400 | 18,190 | r24,417 | 32,962 | 38,290 |
| Petroleum: | | | | | |
| Crude (gross wellhead)[3] thousand 42-gallon barrels | 9,789 | 10,168 | r11,200 | 10,253 | 10,103 |
| Refinery products[e] do | 7,000 | 7,000 | 8,000 | 8,000 | 7,500 |

[e]Estimated. [p]Preliminary. [r]Revised.

[1]Table includes data available through June 10, 1987.

[2]In addition to the commodities listed, pottery clay, common sand, glass sand, other varieties of crude construction stone, and other varieties of gem stones are produced, but available information is inadequate to make reliable estimates of output levels.

[3]Data are for fiscal years beginning Apr. 1 of that stated.

[4]Includes fire clay powder.

[5]Brine salt production as reported by the Burmese Government was as follows: 1982—73,901; 1983—200,944; 1984—81,166; 1985—44,508; and 1986—40,000 (estimated).

## TRADE

After a modest decline during FY 1984, Burma suffered a nearly 50% decline in mineral export earnings in FY 1985.[5] This was caused mainly by generally lower prices for its mineral exports in the world market despite an increase in volume of mineral trade. Energy shortages and a lack of spare parts and raw materials have begun to affect Burma's ability to export. Mineral exports were particularly hit in FY 1985. Diesel oil shortages and machinery breakdowns led to declines in exports of lead, silver, and zinc. Spare parts shortages prevented No. 1 Mining Corp. from bringing copper production over 70% of capacity. No. 2 Mining Corp. stopped exporting tin in October 1985 because of the International Tin Council crises. Since then, both tin and tungsten exports have been severely depressed. Export figures were not available through yearend 1986 but were believed to have remained well below former levels. Sales at the 22d Annual Gem Emporium in February 1985 hit a record-high level of $9.3 million on gem stones mined earlier. Jade production, however, declined severely in FY 1985. Two factors contributed to the decline—a shortage of mine explosives and a large inventory of jade. It was the lowest jade output since FY 1978.

To reduce its vulnerability to cyclical changes in the world commodity market, the Government attempted to diversify its exports. Mineral sector exports included copper concentrates, which Burma began producing for export in FY 1984, and urea and liquefied petroleum gas, which it exported for the first time in FY 1985.

## COMMODITY REVIEW

### METALS

**Steel.**—The modernization work on the 28-year-old Ywama steelworks was progressing well and was scheduled for completion by yearend. A Japanese consortium led by Kobe Steel Ltd. and C. Itoh & Co. Ltd. was awarded the $14 million contract in 1984. The work included increasing an electric arc furnace's capacity to 12,000 tons per year; increasing annual rolling capacity from 28,800 to 48,800 tons, a slight increase over the originally planned 43,000 tons; and doubling the wire mill capacity to 16,400 tons per year. A 12,000-ton-per-year continuous billet caster was being installed to improve the plant's operating efficiency, material flow, and quality of products. Funding was provided by the Japanese Overseas Economic Cooperation Fund.

Work on the steel grinding-ball mill continued at the No. 1 Iron and Steel plant at Anisakan. Initial production of 3,000 tons was scheduled to begin in 1987 according to a Government report.[e] Capacity was apparently to be 5,250 tons of grinding balls for the Burmese mining industry. Foreign exchange savings and new employment oppor-

tunities were additional benefits of the project.

**Tin and Tungsten.**—Production of high-grade tin and tungsten concentrate and tin ingot increased substantially in FY 1985 but exports of concentrate and tin ingot were believed to have declined. Burma's tin export policy was determined by a Government committee from the Ministry of Mines and Nos. 1 and 2 Mining Corp. Tin was sold by tender two or three times each year with the majority going to Penang's smelters. Apparently some recent tenders were terminated in midnegotiation when the committee decided tin prices had fallen to an unsatisfactory level. No. 2 Mining Corp. was storing a considerable amount of tin until the prices become more attractive.

Burma's security forces have been occupied with insurgents activity in the Northeast and have left the tin producing South relatively less protected. As a result, it was believed that illegal gravel pump operators were selling tin and tin-tungsten concentrates across the nearby Thai border to Thai and Malaysian traders.[7] The quantities of concentrates involved were not known but it could have involved a fair proportion of total output.

The Government has been counting on increasing tin and tungsten exports to earn foreign exchange but the low world prices and costly infrastructure for new major tin mines were delaying development. The main casualty has been the Tenasserim project, which would have increased Burmese tin production by 60%. The project would have included a foundry and a central ore concentration plant and maintenance workshop in Mergui to provide service and repair facilities to the five proposed alluvial tin mines. Modern machinery and equipment would have been acquired and foreign technical trainers provided to No. 2. Mining Corp. The mining project was estimated to cost $40 million and would have employed 1,800 workers. In addition to the infrastructure cost, the lack of investment funds and foreign exchange were major problems. Also, the paucity of engineers familiar with modern mining technology contributed to the delay of the project.[8] It was likely that this would be the first new tin project undertaken by the Government when economic conditions improve.

## MINERAL FUELS

Despite a study by Petro-Canada International Assistance Corp. concluding that development of the natural gas reserves in the Gulf of Martaban was economically feasible, the Government has reportedly shelved plans for the $1 billion project and indefinitely suspended further offshore petroleum exploration. The main reasons apparently for postponement were a shortage of foreign exchange and the depressed world price of oil.

The energy ministry will apparently concentrate on onshore development of known gas reserves and continued onshore exploration for crude oil. An indication of this was the completion of a 254-millimeter gas pipeline from the Payagon Gasfield in the Irrawaddy Delta to Rangoon where it was supplying a brick factory, steel rolling mill, other light industries, and several electric powerplants. Also being studied was the possibility of laying gas pipelines from Rangoon through Pa-an and Thaton, to Moulmine. Although reportedly justified on economic grounds, the pipeline would run partially through an area of political instability, which could complicate the construction and maintenance of the pipeline.

Officials were considering the installation of a compressed natural gas system for the Rangoon area also using gas from Payagon Gasfield. The compressed gas would be used for the public transportation system and fueling Government-owned trucks.

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[1]Physical scientist, Division of International Minerals.
[2]The Burmese fiscal year begins Apr. 1 of the year stated.
[3]U.S. Embassy, Rangoon, Burma. State Dep. Airgram A-12, July 22, 1986, p. 5.
[4]———. State Dep. Airgram A-007, May 9, 1986.
[5]Page 4 of work cited in footnote 3.
[6]Ministry of Planning and Finance. Report to the Pyithu Hluttaw on the Economic and Social Condition of the Socialist Republic of the Union of Burma for 1986/87. 1986, p. 315.
[7]Tin International. V. 59, No. 10, Oct. 1986, p. 354.
[8]Work cited in footnote 7.