

# The Mineral Industry of Burma

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Burma's "hard rock" part of the mineral industry had another lackluster year in 1970. Production from the Bawdwin enterprise near Lashio and the Chinese border remained at its lowest level within a decade, with the modernization program behind schedule. Tin and tungsten output also showed little if any improvement. Nothing was done on the Monywa copper deposit. A Soviet technical assistance team arrived in July to rehabilitate the Mawchi tin-tungsten mine and a West German team was assigned to help develop tin mines in the Heinda district. Antimony mining was resumed. Near yearend, a special technical aid agreement was being negotiated with the West German Government regarding exploitation of mineral resources in Burma in general.

The West Germans were also active in oil and fertilizers. An agreement was signed to conduct seismic surveys for oil in the Gulf of Martaban. The Germans, who are to assist in onshore exploration as well, were negotiating for a production-sharing contract. The Japanese tried to negotiate a similar contract for the Arakan coast, which they have surveyed on a preliminary basis, with no success as yet. Meanwhile, the Burmese made some headway themselves in exploration and exploitation. The Mann oilfield near Minbu was discovered and brought into production. New oil rigs

were purchased. However, the overall Burmese effort was small, because of limitations in domestic capital and technical capability. On a related front, one fertilizer plant had been completed by the Japanese and another (virtually the same size) was being constructed by the West Germans, both to utilize local natural gas to make urea.

The mineral industry of Burma has become very much a government business. About 5 percent of the national budget in 1969, or \$109 million,<sup>2</sup> was allocated to the Ministry of Mines, which also runs the petroleum industry. Various government corporations are assigned to manage the different mining sectors. In fiscal 1969-70,<sup>3</sup> the budget for national development showed the following anticipated capital expenditures: People's Oil Industry (POI), \$11.8 million; People's Bawdwin Industry (PBI), \$2.1 million; and Mineral Development Corporation (MDC), \$1.7 million. In February 1970, the Myanma Oil Corporation (MOC) took over the duties of POI and the Myanma Bawdin Corporation (MBC) took over the duties of PBI and other organizations. The power of MDC had been reduced, although it still supervises tin, tungsten, coal, and certain nonmetallics. Even the precious stone industries have been nationalized.

## PRODUCTION

According to official Burmese national budget estimates, "mineral" output totaled \$37.8 million in fiscal year 1968-69 and the target for 1969-70 was \$41.3 million. Crude oil and limestone are included, but not the value added derived from mineral and metal processing. Thus, products like salt, cement, refined oil, and processed metals are excluded either in total or in

part. Reported output values for major minerals were, as follows, for 1968-69 (tar-

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<sup>2</sup> Where necessary, values have been converted from Burma Kyats (BKs) to U.S. dollars at the rate of BKs4.76 = US\$1.00. In the open market, the kyat is worth much less; actually, one dollar can buy 15 kyats or more.

<sup>3</sup> Burma's fiscal year runs from October to the following September.

gets for 1969-70 are in parentheses): Crude oil, \$16.6 million (\$18.2 million); nonferrous output of the Bawdwin enterprise, \$7.2 million (\$8.5 million); and tin and tungsten concentrates, \$2.4 million

(\$2.8 million). In fiscal year 1968-69, salt output was reported at \$3.3 million, cement output as \$5.0 million, refined petroleum output at \$48.8 million, and iron and steel products output at \$12 million.

**Table 1.—Burma: Production of mineral commodities**  
(Metric tons unless otherwise specified)

Commodity	1968 <sup>r</sup>	1969 <sup>r</sup>	1970 <sup>p</sup>
<b>METALS</b>			
Antimonial lead (18 to 20 percent Sb).....	290	302	239
Copper matte, gross weight.....	160	167	166
Iron and steel:			
Steel ingots and castings <sup>e</sup> .....	21,000	21,000	21,000
Steel semimanufactures <sup>e</sup> .....	28,000	25,000	25,000
Lead:			
Concentrate (50 to 60 percent Pb).....	17,984	15,810	14,700
Metal.....	9,370	9,720	9,510
Nickel speiss (20 to 30 percent Ni).....	115	119	84
Silver.....thousand troy ounces.....	790	902	572
Tin concentrate (68 to 72 percent Sn) <sup>e</sup> .....long tons.....	370	300	230
Tin-tungsten concentrate (35 percent Sn and 30 percent WO <sub>3</sub> ) <sup>e</sup> .....do.....	500	440	630
Tungsten concentrate (55 to 65 percent WO <sub>3</sub> ) <sup>e</sup> .....do.....	160	110	90
Zinc concentrate (52 to 55 percent Zn).....	8,550	9,060	7,530
<b>NONMETALS</b>			
Barite.....thousand tons.....	<sup>e</sup> 9,000	9,703	13,463
Cement, hydraulic.....thousand tons.....	155	183	157
Gypsum.....thousand tons.....	<sup>e</sup> 3,000	3,500	5,334
Limestone, crushed and broken.....do.....	530	572	604
Salt.....do.....	136	176	159
<b>MINERAL FUELS AND RELATED MATERIALS</b>			
Petroleum:			
Crude oil.....thousand 42-gallon barrels.....	5,634	6,433	6,050
Refinery products:			
Gasoline.....do.....	1,515	1,486	1,801
Kerosine and jet fuel.....do.....	1,450	2,057	2,373
Distillate fuel oils.....do.....	1,818	1,705	2,002
Residual fuel oil.....do.....	1,313	1,014	1,115
Other.....do.....	122	192	400

<sup>e</sup> Estimate.   <sup>p</sup> Preliminary.   <sup>r</sup> Revised.

## TRADE

Burma's overall foreign trade declined sharply, from \$290 million in fiscal year 1968-69 to about \$235 million in 1969-70. Total exports at approximately \$110 million showed little change, whereas total imports declined \$50 million to \$125 million. Measured in a span of a few years, mineral exports roughly equaled the combined production of the Bawdwin enterprise, the tin-tungsten industry, and parts of the precious stones industries. These items generally added up to \$10 to \$13 million annually, although actual mineral exports varied considerably from year to year. In fiscal 1968-69, Burma exported \$6.14 million in base metals and ores and \$3.66 million in silver; in fiscal 1969-70, base metal exports were slightly down and

silver exports, sharply reduced to less than half the total for the previous year.

Burma's imports of mineral and related products dropped from roughly \$36 million in 1967-68 to \$31 million in 1968-69, and possibly only to \$20 million in 1969-70. The largest item was base metals and manufactures which held somewhat steady at \$17.5 to \$19.5 million each year. Fertilizer imports showed the greatest change, with imports declining from \$12 million in 1967-68, to \$6 million in 1968-69, and not much more than \$1 million in 1969-70. Construction of new fertilizer plants brought about the sharp decline. During these 3 years, refined oil imports dropped from \$3.5 million to \$1 million. Lesser mineral imports included coal and, secondarily, cement.

## COMMODITY REVIEW

## METALS

**Antimony.**—In recent years, until 1970, the only antimony produced in Burma had been a few hundred tons of antimonial lead annually, analyzing 18 to 20 percent antimony, by the lead smelter in Namtu. Early in 1970, small-scale extraction of antimony ore and concentrate was resumed, owing to extremely high prices and government assistance by MDC. In fact, an intensive search for antimony led to the discovery of various deposits. By yearend, however, antimony prices had dropped from the high of \$4 per pound early in 1970 to US \$0.70. This rapid change of events undoubtedly will affect future operations.

Unevaluated antimony finds reported in the press include Matsan in Kyaikmaraw township, Moulmein district; Mongshu township, Southern Shan State; headwater of the Taung Daung stream between Thanbyuzayat and Mudon Townships, Moulmein district; Konsut and Peinchit in the Loikaw district, Kayah State; near the villages of Peinneagon and Mwehaukkon; and near the Yadana Theingi mine in the Kalagwe area of the Nawngkhio district.

**Iron and Steel.**—The Ywama steel plant, with an electric furnace and rolling mills, remained the country's only steel producer. Scrap iron for feeding the furnace came from domestic sources, but a shortage seemed imminent. The steel plant rated at 40,000 tons of products annually was worked at about half capacity. Bars and rods were the main products, followed by wire nails, galvanized iron, and barrel sheets. Plans have been made to build additional facilities for wire netting, roller extension, tubes, and sheets, although funds were not in sight. Burma also has plans to build an integrated steel industry, a project which is even more uncertain.

**Lead, Zinc, Copper, Silver, and Nickel.**—The Government-owned Bawdwin enterprise in Northern Shan State near the Burma Road, originally under the Burma Corporation, then the PBI, and now the MBC, continued to be Burma's sole significant producer of nonferrous metals. Bawdwin has been producing refined lead, zinc concentrate, and byproducts for decades. The zinc concentrate has been sold as

such, mostly to Japan, whereas lead and other materials have been sent to nearby Namtu for smelting before marketing abroad, primarily to India as in the case of refined lead. As of yearend 1970, this mining complex, with more than 7,000 workers, was capable of producing each year approximately the following: Refined lead, 15,000 tons; zinc concentrate, 10,000 tons; silver 1 million ounces; antimonial lead, 300 tons; copper matte, 200 tons; and nickel speiss, 130 tons.

The decline of the historically famous Bawdwin mine is mainly attributed to depletion of high-grade reserves that have analyzed one-third combined base metal content in the ore. Reserves at yearend had dwindled to roughly 6 million tons, assaying only 11 percent lead, 5.5 percent zinc, 0.3 percent copper, and 7 to 8 ounces of silver per ton. The average grade of ore mined in 1969-70 was even lower—about 9 percent lead and 5 percent zinc. A change-over to work low-grade ores in the mine has been behind schedule because of shortage of funds and equipment. The plan is to raise production considerably under a modernization program now in progress. Meanwhile, the mine has been struggling along. However, the old smelter with surplus capacity reportedly produced only 9,510 metric tons of refined lead in fiscal 1969-70. A new lead oxide plant being built at Namtu had not been completed by yearend.

The small Bawsaing mine in the Taunggyi district, also under MBC, which controls all nonferrous base metal operations in the country, was being expanded to produce about 1,000 tons each of sulfide lead ore, carbonate lead ore, and lead slag annually. What little so far produced has been sent to Namtu for smelting.

The new Yadana Theingi mine in the Nawngkhio district, Northern Shan State, was being built up to produce over 40,000 tons of silver-lead-zinc ore annually. The plan is to construct a powerplant, a mill, and a 32-mile road from the mine to Ohn-mathi on the Mandalay-Lashio highway. In addition to many lead-zinc veins, ore bodies of copper and antimony have also been reported in the vicinity.

Little work was done during the year on the Monywa copper deposit located 110

kilometers west of Mandalay. Reserves of this deposit may be on the order of 100 million tons of 0.5 to 1.0 percent copper ore.

**Tin and Tungsten.**—MDC continued to control most of the country's tin and tungsten mines, and government policy calls for the eventual takeover of the remaining private mines as soon as their licenses expire. Concentrates were produced separately or in mixed form. Combined annual output of the two related minerals has been less than 1,000 tons of concentrates during the last 5 years, a far cry from pre-World War II levels. Although statistics are conflicting, Burma has been producing, in terms of metal content, approximately 300 to 500 tons of tin and 100 to 200 tons of tungsten yearly. Most production has come from the Tavoy and Mergui districts in the Tenasserim Division near the Thai border. The Government helps the small miners with implements. It also buys concentrates at relatively low prices, an action which has brought about smuggling into Thailand. Large scale dredging operations have virtually ceased.

In an effort to spur production, a 4-year technical assistance agreement was signed between MDC and the Soviets to rehabilitate the once-famous Mawchi tin-tungsten lode mine. The mine was reopened on March 27 and a Soviet team of five experts arrived in July 1970. The initial goal is to produce about 100 tons of concentrates monthly—roughly twice the monthly levels late in 1970. The agreement specifically calls for the Soviets to furnish 1.5 million rubles (\$1.65 million) in loans at an interest rate of 2.5 percent to be repaid within 12 years after concentrate production reaches 1,200 tons annually. At its peak in 1939, the mine produced 5,800 tons of mixed concentrates. The high-grade reserves have since been depleted.

Another agreement was signed near year-end with the West Germans, who will develop tin mines in the Heinda district. A \$2.7 million long-term, low-interest loan will be provided.

#### NONMETALS

**Cement.**—Burma's only cement plant at Thayetmyo is also a government enterprise. The plant has two wet process rotary kilns and has been producing about 180,000 tons annually.

The Industrial Development Corporation, operators of the Thayetmyo plant, ordered a second plant from Japan near year-end. Kawasaki Heavy Industries is to supply a 800-ton-per-day cement plant valued at about \$8.5 million, to be installed in the Kyangin area in the upper reaches of the Irrawaddy River in 1972.

**Fertilizer Materials.**—Difficulties in rice production influenced the Government to encourage the use of chemical fertilizers in Burma. During the 5 years preceding 1970, annual fertilizer consumption rose to approximately 150,000 tons, all imported. In 1970 the first of two similar fertilizer plants was completed, signaling the eventual stoppage of large-scale imports of nitrogen fertilizers. Complex or mixed fertilizers, however, would still be imported.

Both plants are located near the Chauk oilfields in central Burma in order to utilize the natural gas there. The yearly capacities of each plant, costing approximately \$14 million each, will be 40,000 tons of ammonia and an associated 65,000 tons of urea. The first plant, located at Pagan 20 kilometers north of Chauk, was built by the Japanese firm Hitachi Zosen. The second plant, near Sale at Kyunchaung 30 kilometers south of Chauk, is being built by a consortium of West German firms and is scheduled for completion late in 1971. The West German Government is contributing \$4 million, with the rest financed by the contractors in the way of long-term loans.

**Gem Stones.**—Uncut Burmese jade continued to be of importance in world jewelry circles. Annual output usually varies from 52,300 to 93,300 kilograms of uncut jadeite. Since many mines are in insurgent territory near the border, additional jade presumably was produced and smuggled out of the country. Burma also produces ruby, sapphire, spinel, other "precious stones," and cultured pearls. The pearl industry was nationalized in 1964, when the Japanese part of a joint venture was dissolved. Jade and precious stone producers were first required to sell to MDC. By 1970, both these industries had become totally nationalized.

During the seventh annual emporium held in Rangoon in February 1971, sales totaled \$2.6 million, including \$1.96 million for jade, \$480,000 for pearls, and \$154,000 for precious stones. Pearl sales

have lost ground steadily ever since the Japanese left. Recorded output of precious stones also declined sharply since nationalization.

**Salt.**—Burma produces the salt it needs, which amounted to about 175,000 tons annually during 1969–70. Early in 1970 the Burma Salt Industries, the sole operator harvesting salt from brine pits located along the Indian Ocean coast, started a modernization program. The company has placed a \$1 million order with Allis-Chalmers Manufacturing Co. for tractor scrapers, crawler dozers, and graders to build pits, dikes, and channels, which will displace elephants and bullocks formerly employed.

**Other Nonmetallics.**—An Industrial Raw Materials Committee helps MDC supervise various small nonmetallic industries that include fire clay from Pegu Yomas east of Minhla and from Kyaukpadaung; fluorspar from Kalaw; soapstone from Katha; graphite from Wapyudaung; manganese dioxide from Kyaukpadaung; bentonite from Shwebo; gypsum from Chauk; dolomite from Kalaw and feldspar from Thazi and Taungtha for the Syrium glass factory; quartz from Choungzon in Amherst district; and barite from Kyaukse and elsewhere. Barite and bentonite extraction were being stepped up because of growing demand by MOC. The industrial clay near Minhla may turn out to be rather important.

#### MINERAL FUELS

**Coal.**—The Kalewa coalfield in the northwest, sole producer in Burma, turned out only about 15,000 tons of low-rank coal annually during 1969–70. The Government hopes that output can be raised somewhat. Burma's imports of coal are also small.

**Petroleum.**<sup>4</sup>—The year 1970 was a turning point for the oil industry of Burma, which, although small, showed significant progress. The West Germans were awarded an offshore survey contract. The new Mann oilfield onshore north of Minbu helped push Burma's daily crude output to 19,000 barrels at yearend. The Syrium refinery near Rangoon and the smaller Chauk refinery upstate, with a combined throughput capacity of about 31,000 barrels per day, were able to handle more crude than what was produced. Imports of

refined products were equivalent to about half the domestic output in 1970. The Government, however, hopes to achieve self-sufficiency shortly. With the building of the two fertilizer plants previously mentioned, natural gas, hitherto flared, will have a commercial outlet of 5 million cubic feet per day for each plant. The Burmese hope eventually to develop a petrochemical industry.

Two aid agreements were signed between the Federal Republic of Germany and Burma in September 1970. These call for a \$6 million loan (2.5 percent interest and 30 years) for both onshore and offshore exploration and exploitation and for a \$2.1 million grant for experts and equipment. The above agreements probably represent only the first installment, which in total may reach \$23 million. A joint exploitation agreement between the two countries was being discussed at yearend. Negotiations have also been taking place with the Japanese to exploit offshore oil. Despite lack of capital, the Burmese seem to prefer contractual assistance rather than investment. For this and other reasons, U.S. companies have not been able to get into Burma as yet.

Offshore, as part of the aid program, the West German firm Prakla (Gesellschaft fuer Praktische Lagerstaettenforschung GmbH) of Hannover will conduct a 4,500-mile seismic survey for MOC in the Gulf of Martaban. Oil was discovered on Bilugyun Island off Moulmein in the Gulf of Martaban. The Japanese conducted seismic work off the Arakan coast. Negotiations between the Japanese Petroleum Corporation and MOC were at a stalemate, because the Japanese wanted a percentage-share arrangement whereas MOC insisted on a fixed return.

Onshore, the Mann field on the west bank of the Irrawaddy was discovered in March and shows good promise. The Prome field performed well, but Myanaung had not lived up to expectations and the Shwepyitha field proved a failure. At Chauk and Yenangyaung, Burma's two old oilfields, secondary methods were being employed. Onshore exploration covered about 6,760 square miles in fiscal year 1969–70, down from 9,220 square miles in 1968–69. MOC had 11 drilling rigs at year-

<sup>4</sup> U.S. Embassy, Rangoon, Burma. State Department Airgram A-257 (Annual Petroleum Report), Dec. 15, 1970, pp. 1–7.

end, with six more out of eight scheduled to arrive from the United States in 1971. The U.S. rigs and West German aid represent encouraging signs. The Upper Chindwin area, the Chin Hills, the Arakan Division, and Prome-Myanaung area were scheduled to receive the most attention in

onshore exploration. Upper Chindwin looks extremely promising, but security conditions are bad. Uncertainties in Burma have made distribution most difficult, with most of the crude to refineries being shipped by water and trucks rather than by pipeline.