

The Mineral Industry of Burma

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From the viewpoint of economics and industry, 1968 was another disappointing year for Burma. Production was low, prices soared, and exports continued their downward trend causing a worsening of the balance of payments position. The Government assumed control of more of the nation's industry, the level of insurgency remained high, and managerial and technical talent continued to emigrate. During the year, the Government took over 169 additional industrial concerns, including 16 in "metals" and nine in "engineering."

Burma no longer produces quantitatively any mineral of world consequence. Production from the historically famous Bawdwin mine near Lashio and the Chinese border dropped to the lowest level in a decade, partly because of conversion of operations to extract more low-grade ores. Tin and tungsten production was down slightly; some of these mines in Tavoy and Mergui may be closed. However, oil production increased, with discovery of new fields and completion of additional wells. In fact, the country claimed self-sufficiency for petroleum at yearend 1968. Cement output also increased.

According to official Burma national budget estimates, total "mining" output in fiscal 1967-68 was \$28.9 million.³ This figure includes crude oil and limestone, but not salt and value added from mineral and metal processing. Burma's gross national product (GNP) for 1967-68 was reported at \$2.06 billion at current prices. Targets for mineral output and GNP covering fiscal 1968-69 were \$37.7 million and \$2.24 billion, respectively. In recent years, targets have seldom been fulfilled, and value figures have been exaggerated because of inflation and free market rates.

Only about 54,000 workers out of a labor force of 10 million and a population of some 26.4 million were said to be engaged in mining during 1968. Installed electric

power capacity was only 196,300 kilowatts at yearend 1968; far from sufficient to supporting extensive mineral, and industrial development.

Under the 4-year national economic plan ending 1969-70, special attention was to be given to mineral development. Financing was to come predominantly from domestic sources, since foreign aid is limited and foreign investment almost nonexistent. Outlays for mineral development by the Government of Burma have been modest, with expenditures approximating receipts. The national budget showed the following anticipated expenditures for fiscal 1967-68: People's Oil Industry, \$71.4 million; People's Bawdwin Industry (PBI), \$7.8 million; Mineral Development Corporation (MDC), \$3.7 million; Ywama Steel Mill, \$5.9 million; and Thayet Cement Factory, \$3.3 million.

The Ministry of Mines formed a Geology, Petroleum, and Mining Advisory Council in 1967, to function initially for 2 years. Headed by the Secretary of the Ministry of Mines, its primary objectives are to advise the Minister of Mines on technical matters, submit long- and short-term plans for prospecting and extraction of oil, minerals, and other resources, in accordance with available manpower, capital, and equipment.

The MDC reported about \$200 million worth of ore deposits in 1966-67, including 14 million tons of copper ore (0.5-1.0 percent Cu) in the Monywa district and unspecified tonnages of copper ore in Bhama and Mandalay and in Heho, South-

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³ Burma's fiscal year is October to following September. Burma's currency is the Kyat. The official exchange rate has been 4.76 Kyats to US\$1 (all figures in this chapter have been converted on this basis), whereas the free market rate during 1968 was 15 to 20 Kyats to US\$1.

ern Shan States. Lead was reportedly found in Mamyo, Kyaukse, and Wa State, and zinc in Southern Shan States. In 1968, a

nonferrous deposit deemed as significant was discovered in the Northern Shan States.

PRODUCTION

The bulk of Burma's mineral output comes from state enterprises, with the Government outproducing private industry by about 5 to 1. In 1968, the Government took an even firmer grip on mineral production. Only some small tin-tungsten and nonmetal mines were in private hands. A significant quantity of production was believed smuggled out of the country, and hence was not recorded.

Mineral output value reported by the Burmese as \$28.9 million in fiscal 1967-68

probably does not include some private and unrecorded output. The following breakdown was given, in percentages: crude oil, 39.7; nonferrous output of the Bawdwin enterprise, 23.5; stone, 18.4; limestone, 7.3; and tin-tungsten, 6.3. Also for fiscal 1967-68, salt output was reported at \$2.43 million and cement output at \$4.22 million (as compared with output of limestone, the main raw material to make cement, at \$2.14 million).

Table 1.—Burma: Production of mineral commodities

(Metric tons unless otherwise specified)

Commodity	1964	1965	1966	1967	1968 ¹
METALS					
Antimonial lead (18 to 20 percent Sb)-----	530	560	* 500	* 400	300
Copper matte (40 percent Cu)-----	348	320	236	¹ 180	100
Gold, refined *-----troy ounces--	200	200	200	200	200
Iron and steel:					
Iron ore-----	5,000	5,000	10,000	10,000	NA
Steel ingot *-----	15,000	18,000	21,000	21,000	NA
Rolled steel *-----	12,000	15,000	20,000	20,000	NA
Lead:					
Concentrate (50 to 60 percent Pb)-----	31,002	32,253	18,476	13,332	NA
Refined metal (99.99 percent Pb)-----	18,053	* 16,000	* 14,000	* 13,000	8,500
Nickel speiss (20 to 30 percent Ni)-----	378	245	354	¹ 130	100
Silver, refined-----thousand troy ounces--	1,867	1,638	* 1,063	917	780
Tin concentrate (68 to 72 percent Sn)					
long tons--	830	664	355	442	500
Tin-tungsten concentrate (35 percent Sn and					
30 percent WO ₃)-----long tons--	957	606	367	448	NA
Tungsten concentrate (55 to 65 percent WO ₃)--	86	27	45	95	100
Zinc concentrate (54 to 56 percent Zn)-----	14,666	14,255	* 11,635	8,466	7,500
NONMETALS					
Barite-----	NA	1,760	* 8,000	¹ 9,400	10,080
Cement-----thousand tons--	131	135	141	132	170
Gypsum-----	9,150	450	* 2,000	* 2,000	3,600
Limestone-----	107,000	116,500	* 400,000	* 400,000	516,000
Marl-----	62,100	99,800	100,000	100,000	NA
Salt-----thousand tons--	127	132	118	134	137
MINERAL FUELS					
Coal, bituminous-----thousand tons--	10	15	¹ 15	¹ 17	9
Petroleum:					
Crude-----thousand 42-gallon barrels--	4,164	4,065	4,255	4,392	5,630
Refinery products:					
Gasoline-----do-----	1,216	1,300	1,467	1,453	NA
Kerosine-----do-----	923	1,050	1,478	1,472	NA
Other-----do-----	1,356	1,450	3,021	3,402	NA
Total -----do-----	3,495	3,800	5,966	6,327	NA

* Estimate. ¹ Preliminary. ² Revised. NA Not available.

¹ Fiscal year October through September. Figures are for first 9 months of year noted and 3 months of previous year.

TRADE

Overall exports have declined every year since fiscal 1963-64. Exports in 1967-68 were only about \$110 million, nearly a fifth lower than the previous year. Meanwhile, imports soared to about \$220 million, a 57-percent increase over those of the previous year. Minerals and metals contributed in recent years approximately 3 to 5 percent of all exports and 5 to 10 percent of all imports.

During calendar 1967, Burma's exports of metals and ores were reported at \$4.8 million and 19,600 tons, roughly a 50-percent decline from calendar 1966 value. Most exports represent the output of the

Bawdwin enterprise. Burma has not been a net exporter of oil since the end of World War II. Values of selected imports of mineral and metal products are shown in the following tabulation.

	Value (million dollars)	
	1966	1967
Base metals and manufactures of base metals.....	13.1	10.3
Cement.....	0.14	0.68
Chemical elements and compounds.....	3.0	2.1
Coal and coke.....	1.2	2.2
Fertilizers, manufactured.....	1.2	3.1
Refined mineral oils.....	4.5	1.9

COMMODITY REVIEW

METALS

Iron and Steel.—The nine-man Iron and Steel Board set up in 1966 considered an integrated steelworks as feasible for Burma. The existing rolling mill at Ywama was said to be producing annually only about 1,000 tons each of iron chain, square rails, and galvanized iron sheets; 8,000 tons of various types of bars; 1,300 tons of barrel sheets; and 2,400 tons of corrugated galvanized iron sheets. Total value of this annual output is approximately \$5 million, compared with \$10 to \$20 million worth of iron and steel products imported annually in recent years. Japan alone supplied over 10,000 tons of steel products to Burma in 1967.

Another iron ore survey lasting 6 months was made in 1968, in the districts of Taunggyi, Loikaw, and Mamyo, and the islands of Ko Khyun and Ma Puteh. Taunggyi's reserves were ascertained at 63 million tons, a little more than previous evaluations. The country still did not produce iron ore, except small amounts of ochre for paints.

Lead, Zinc, Copper, Silver, and Nickel.—The PBI, with a mine at Bawdwin and a smelter at nearby Namtu, was again virtually the sole producer of these metals. For the year ending September 1967, this company extracted about 13,400 metric tons of refined lead, 9,980 tons of zinc concentrate, 1.02 million ounces of silver, 407 tons of antimonial lead, 184 tons of copper matte, and 128 tons of nickel speiss, from

about 155,000 tons of ore. Ore reserves at the beginning of 1968 totaled about 6 million tons analyzing 11.2 percent lead, 5.6 percent zinc, 0.3 percent copper, and 7.8 ounces of silver. Modernization of mines was aimed at a yearly output of 350,000 tons of low-grade ore by fiscal 1969-70.

Capacity of the lead refinery was raised one-fourth in 1968, and a new concentrator and two zinc refineries were planned. Construction of these facilities and conversion of the mine to work low-grade ores have disrupted production. Unconfirmed reports show the following outputs for PBI during fiscal 1967-68: Refined lead, 8,500 tons; zinc concentrate, 7,500 tons; silver 780,000 ounces; antimonial lead, about 300 tons; and copper matte and nickel speiss, each about 100 tons. After making these changes, PBI aims to produce annually 12,000 tons of refined lead, 11,000 tons of zinc concentrate (and eventually a corresponding amount of zinc metal), and 1 million ounces of silver.

Reportedly, PBI and MDC jointly discovered a significant nonferrous deposit in a 5-square-mile area at Nawngghkio in Northern Shan States, which may yield 840,000 tons of lead, 260,000 tons of zinc, 20,000 tons of copper, and 34 million ounces of silver. MDC was trying to interest the Japanese Overseas Mineral Resources Development Co. Ltd. to help develop the Monywa copper deposits, with no tangible results as yet.

Tin and Tungsten.—Tin and tungsten are produced both separately and mixed,

their genetic origin being related. Combined output of the two minerals in fiscal 1967-68—800 to 900 tons worth about \$1.8 million—was not much different from that in 1966-67. However, the value of tin declined slightly whereas that of tungsten went up, possibly on account of high tungsten prices.

The once-famous Mawchi tin-tungsten mine was operating at a fraction of historic peak output, and most other mines found it difficult to make ends meet.

NONMETALS

Cement.—Burma's only cement plant, located at Thayetmyo, is also a Government enterprise. With two wet process rotary kilns, it had been producing 130,000 to 142,000 tons annually valued at \$3 to \$3.5 million. As a result of an expansion program to meet growing demand, Burma's cement output in fiscal 1967-68 increased to 170,000 tons and the target for 1968-69 was set at 240,000 tons.

Fertilizer Materials.—Consumption of fertilizers in fiscal 1967-68 was said to be about 160,000 tons, a very large increase over that of the previous year. Most of this had to be imported, and many million dollars worth of foreign exchange were expended. Supply of farmyard manures became so inadequate that inorganic fertilizers had to be used to prevent depletion of soil fertility. It has been said that Burma could consume 1.2 million tons of ammonium sulfate equivalent annually, including 550,000 tons of urea, 450,000 tons of superphosphate, and 160,000 tons of nitrate of potash. So far, only small fractions of available agricultural land use chemical fertilizers.

Salt.—Demand for salt has been increasing. Hitherto, salt has been produced only from brines, with output usually fluctuating between 100,000 and 150,000 tons annually. During 1968, the State Pilot Factory in Moulmein successfully tested the production of high-grade sea water salt by solar evaporation. This may have some bearing on Burma's target for producing 166,000 tons of salt during fiscal 1968-69.

Other.—Burma may have several million tons of barite reserves. One of the better known deposits is Pyittawye in Kyaukse district. The country has been producing barite at an annual rate of some 10,000 tons.

Beryl has been found in Southern Shan States, bentonite in Shweb District, gypsum in Myingyan district, graphite near Mogot, and fluorspar near Bawhnngton in Southern Shan States. Several hundred tons each of clays, talc, soapstone, manganese ore, and fluorspar are said to be produced annually.

MINERAL FUELS

Coal.—The Kalewa coalfield in northwestern Burma has been producing nominal quantities of low-rank coal, ranging from perhaps 8,000 to 17,000 tons annually in recent years. An expansion program appeared to be underway, with the target for fiscal 1968-69 set at 48,000 tons and an eventual goal of 400,000 tons yearly in the early 1970's. Hitherto, the Burmese have not been successful in developing this field because of the type of coal and transportation difficulties.

Petroleum.—Burma's oil output, although vital domestically, is small by world standards. Production of crude oil in fiscal 1967-68 was 28 percent more than in fiscal 1966-67. The target of 7,170,000 barrels in fiscal 1968-69, if achieved, would be another increase of 27 percent over that of fiscal 1967-68. Burma had imported 19.9 percent of its crude requirements in 1967, and 9.2 percent in 1968. The hope was to cease importation of crude oil by 1969. All crude was refined at two domestic refineries with a combined daily capacity of 26,300 barrels. Another refinery is planned.

The People's Oil Industry (POI) has contracted with the Japan Petroleum Development Corp. to conduct seismic survey along 2,000 miles of the Arakan Coast beginning in February 1969. The Government-owned POI program for fiscal 1967-68 envisages 300,000 feet of exploratory drilling in the delta region—Prome, Thayetmyo, Myanaung, and Henzada—and 100,000 feet of production drilling in Chauk and Yenangyaung. In mid-1967 there were 238 oil wells at the Chauk field, 439 at Yenangyaung, 23 at Myanaung, and eight at Prome. The new Shwepyitha oilfield came on stream, with eight wells operating at yearend 1968.

According to the Government of Burma, expectations for POI were not realized in fiscal 1966-67, and the industry operated at a net deficit of about \$5.9 million. A surplus of approximately \$6.8 million was anticipated for fiscal 1967-68.