

# The Mineral Industry of Burma

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**B**URMA, long believed to be a rich mineral province, has been only a minor producer in recent decades, even by Far East standards. Its 1963 mineral output value of roughly US\$45 million was far smaller than that of Thailand, Taiwan, and South Korea, countries not considered prominent in mining. The mineral industry is not of great consequence to Burma's predominantly agricultural economy; the value of minerals in 1963 was 3.5 percent of the gross national product. However, under British rule before World War II, mineral products were extracted at several times the present level and constituted a significant item in the country's export trade.

Burma's mineral industry has been concentrated in a few enterprises and mining districts. The leading mineral product, petroleum, came under control of the government enterprise People's Oil Industry, which took over the Burma Oil Company in 1963. A specific development during the year was the completion of a new oil refinery at Syriam near Rangoon. The Burma Corp. (1951), Ltd., producing lead, zinc, silver, and other metals at levels less than one-fourth of the historic peaks, was on the verge of becoming nationalized by yearend. The Government's Petroleum and Mineral Development Corporation (PMDC) planned in 1963 to reopen the Mawchi tin-tungsten mine, idle for many years except for small-scale tributary operations. The small Ywama steel mill in Insein near Rangoon continued to have problems with scrap shortages and high operating costs. The Thayetmyo cement plant increased production substantially without plant expansion, in order to take up the slack caused by import reductions. Plans were made to develop and nationalize the jade industry.

## GOVERNMENT POLICIES AND PROGRAMS

March 1963 marked the first anniversary of the present government, which made clear its policy of neutralism in international affairs, minimum involvement with foreigners in industrial development, and nationalization of important enterprises. By the end of 1963, almost all of the leading mineral enterprises had become government operations. Foreign loans and grants and technical surveys from any source, including United Nations assistance and Japanese reparations, were welcome. However, foreign investment was neither encouraged

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nor forthcoming, despite the shortage of domestic capital. A few international mineral and industrial consultants were employed, indicating the desire to utilize foreign know-how. The Government of Burma, while attempting to build up some industries, left little doubt that industrialization is not considered the basic tool in improving living standards for the country's 23 million inhabitants.

## PRODUCTION <sup>2</sup>

The estimated US\$45 million worth of minerals produced in Burma during 1963 comprised some \$25 million of petroleum and natural gas products, \$6 to \$7 million of nonferrous base metals and byproducts, and \$2 to \$3 million each of tin-tungsten concentrates, iron and steel products, cement, and salt. The overall mineral output level rose only slightly during the last 5 years, with some items increasing and others declining. Thus, no significant progress has taken place in mineral exploitation.

Comparing production in 1963 with that of 1959, petroleum rose slightly because a little more crude oil came down the Mandalay River by barge without interference. Lead-zinc-silver output declined substantially midway in the 5-year period because of depletion of the very high grade ores from the Bawdwin mine; however, an upward trend began in the last 2 years. Tin output was nearly the same as that of 1962, whereas tungsten decreased owing to depressed world prices. Steel showed nominal advances, and salt hovered around a somewhat stable level. Cement attained a new output high in 1963, when capacity was more fully utilized.

Petroleum has been produced for domestic consumption only, with crude oil refined into the kinds of products needed by the economy. Steel, cement, and salt also have been produced for local use. On the other hand, virtually all the nonferrous metals and ores have been extracted for the export market, and lead and silver have been exported in the refined metal form.

<sup>2</sup> The Revolutionary Government of the Union of Burma, Central Statistical and Economics Department (Rangoon, Burma). Selected Monthly Economic Indicators. November 1963, pp. 1-25.

TABLE 1.—Production of metals and minerals

(Metric tons unless otherwise specified)

Commodity	1959	1960	1961	1962	1963
<b>Metals:</b>					
Antimonial lead (18 to 20 percent antimony) <sup>1</sup> ---	519	539	413	459	573
Antimony ore (40 to 50 percent antimony)-----	342	212	151	68	(?)
Copper matte (40 percent copper) <sup>1</sup> -----	384	365	279	370	431
Gold, refined-----troy ounces--	212	304	194	(?)	(?)
<b>Iron and steel:</b>					
Iron ore-----	3,751	15,922	\$ 15,000	9,162	(?)
Steel ingot <sup>3</sup> -----	11,000	5,000	11,000	13,000	15,000
Rolled steel <sup>3</sup> -----	8,000	4,000	8,000	10,000	12,000
<b>Lead:</b>					
Concentrate lead (50 to 60 percent lead) <sup>1</sup> ---	34,518	32,107	29,007	33,449	\$ 36,000
Refined metal (99.99 percent lead) <sup>1</sup> -----	19,474	16,792	15,763	17,385	17,738
Manganese ore-----	550	294	178	193	(?)
Nickel speiss (20 to 22 percent nickel) <sup>1</sup> -----	433	332	650	536	462
Silver, refined <sup>1</sup> -----thousand troy ounces--	1,728	1,501	1,325	1,498	1,511
Tin concentrate (68 to 72 percent tin)-----	1,069	1,060	1,047	924	615
Tin-tungsten concentrate (35 percent tin and 30 percent tungsten trioxide)-----	1,326	1,122	1,222	1,161	\$ 1,279
Tungsten concentrate (55 to 65 percent tungsten trioxide)-----	451	354	378	215	\$ 22
Zinc concentrate (54 to 56 percent zinc) <sup>1</sup> -----	19,372	18,028	13,122	15,119	14,924
<b>Nonmetals: <sup>4</sup></b>					
Barite-----	1,016	1,626	2,039	4,048	(?)
Cement-----	36,202	44,901	39,570	53,282	124,130
Gypsum-----	1,956	1,052	853	2,084	(?)
Limestone-----	35,403	40,000	36,065	65,239	(?)
Marl-----	16,135	24,016	23,171	26,293	(?)
Salt-----	112,630	148,181	126,544	\$ 155,697	\$ 160,700
<b>Mineral fuels:</b>					
Coal-----	1,391	114	1,611	2,423	(?)
Natural gas-----million cubic feet--	178	261	333	440	(?)
<b>Petroleum:</b>					
Crude oil-----thousand 42-gallon barrels--	3,967	4,078	4,194	4,366	4,761
<b>Refinery products: <sup>6</sup></b>					
Gasoline-----do-----	1,260	1,250	1,312	1,292	1,238
Kerosine-----do-----	818	687	718	702	854
Other-----do-----	768	882	1,260	1,229	1,280
<b>Total-----do-----</b>	<b>2,846</b>	<b>2,819</b>	<b>3,290</b>	<b>3,223</b>	<b>3,372</b>

<sup>1</sup> Output of Burma Corp. (1951), Ltd. All figures tantamount to national production; however, other companies sporadically produce small quantities of lead, zinc, and silver.

<sup>2</sup> Data not available.

<sup>3</sup> Estimate.

<sup>4</sup> Burma also produces a variety of semiprecious and precious stones, including amber, jade, ruby, sapphire, and spinel.

<sup>5</sup> Final figure; supersedes figure given in commodity chapter, volume 1.

<sup>6</sup> 1959-61 figures are for fiscal years, October to September of subsequent year. For 1962 and 1963, residual fuel is apparently not included and "Other" is comprised mainly of distillate fuel.

## TRADE <sup>3</sup>

Although minerals were once important in earning foreign exchange for Burma and probably could be again, the benefit derived has been limited in recent years. Total mineral and metal exports approximated only US\$10 million annually in 1962-63, equivalent to 3 percent of all exports, compared with 60 percent for rice. Burma produced a surplus of petroleum before World War II; it is now short of oil and exports only petroleum wax.

Imports of mineral and related products have steadily risen; the \$40 to \$50 million credited to this category in 1963 was nearly a fifth of all imports. By far the principal subcategory in the mineral field is metals and manufactures. The small steel industry of Burma was not even able to furnish one-tenth of the national requirements and

<sup>3</sup> Work cited in footnote 2.

**TABLE 2.—Exports of selected metals and minerals**  
(Metric tons unless otherwise specified)

Commodity	1962	1963	Principal destinations, 1962
<b>Metals:</b>			
Antimony ore.....	240	22	(1).
Copper matte.....	405	239	Japan, West Germany.
Lead:			
Ore (galena).....	457	457	All to Japan.
Metal:			
Antimonial lead.....	336	494	All to India.
Refined.....	19,999	16,301	Mainly to India.
Nickel speiss.....		423	Japan.
Silver bullion.....thousand troy ounces	1,401	1,251	Mainly to United Kingdom.
Tin and tungsten:			
Tin ore and concentrate <sup>2</sup> .....	1,916	* 1,288	Mainly to Malaysia; also to United Kingdom.
Tungsten ore and concentrate.....	417	* 376	Mainly to Japan.
Mixed tin-tungsten concentrates.....	256	387	Japan; United Kingdom; Netherlands.
Tin ingots.....	26	(1)	(1).
Zinc:			
Ore.....	190	(1)	(1).
Ingots.....	(1)	50	(1).
Nonmetals: Salt.....	* 10,863	(1)	Mainly to mainland China.
Mineral fuels: Petroleum wax.....	10,896	11,202	Mainly to United Kingdom.

<sup>1</sup> Data not available.

<sup>2</sup> Includes several tons of bismuth-bearing concentrates.

\* Incomplete. Exports from ports of Tavoy and Mergui, near the main tin-tungsten area, are not available.

<sup>4</sup> Year beginning Oct. 1, 1961, and ending Sept. 30, 1962.

Sources: Rangoon customs list, and Tavoy Chamber of Mines (tin and tungsten only).

**TABLE 3.—Imports of selected metals and minerals**  
(Metric tons unless otherwise specified)

Commodity	October 1961 to September 1962	Principal sources
<b>Metals:</b>		
Aluminum semimanufactures.....	2,800	Mainland China 1,200; United Kingdom 400; Hong Kong 300.
Copper semimanufactures.....	650	United Kingdom 240; U.S.S.R. 140; Japan 110.
Iron and steel semimanufactures:		
Iron ingots.....	2,628	Australia 1,999.
Joists.....	5,799	U.S.S.R. 2,214; Belgium 1,705; Japan 878.
Bars and rods.....	28,598	Japan 9,911; U.S.S.R. 8,563; mainland China 2,227.
Uncoated plates and sheets.....	14,315	U.S.S.R. 7,166; Japan 4,576.
Galvanized and corrugated sheets.....	30,050	Japan 13,638; Australia 12,960.
Tinplate.....	51,383	Japan 50,144.
Wire.....	4,143	Mainland China 1,427; Japan 1,199; U.S.S.R. 952.
Tube and fittings.....	10,737	United Kingdom 6,849; Japan 1,569.
Large pipes.....	4,372	Japan 2,661; Belgium 986.
Zinc semimanufactures.....	800	Australia 320; Northern Rhodesia 220.
<b>Nonmetals:</b>		
Asbestos.....	347	Republic of South Africa 269.
Cement.....	166,121	Mainland China 50,283; United Arab Republic 16,920; Japan 14,245.
Fuller's earth.....	954	India 700.
Phosphate fertilizer.....	6,870	Japan 6,794.
Sulfur.....	1,938	United States 1,402.
<b>Mineral fuels:</b>		
Coal.....	268,577	Republic of South Africa 235,138.
Coal coke.....	8,065	All to Republic of South Africa.
Petroleum:		
Gasoline, thousand 42-gallon barrels.....	131	Iran 56; U.S.S.R. 44.
Kerosine.....do.....	167	U.S.S.R. 166.
Medium-flash diesel oil.....do.....	60	Iran 59.
High-flash diesel oil.....do.....	88	U.S.S.R. 73; Iran 14.
Lubricants.....	104	United Kingdom 81; Belgium 5; United States 5.
Asphalt.....thousand 42-gallon barrels.....	2,297	Iran 1,143; Republic of South Africa 940.

Source: Official trade returns of Burma.

very few nonferrous metal manufactures were produced domestically. In 1962-63, annual imports of refined petroleum and coal each amounted to about \$4 to \$5 million, approximately, or 600,000 barrels of oil and 300,000 tons of coal. Imported refined oil represented about one-fifth of the 1963 supply; crude requirements for the second refinery may have to be met in large part by imports. Burma has the Kalewa subbituminous coalfield among others, but only nominal amounts of coal are produced and reliance on imports has been almost complete. About US\$2 million of cement was imported in 1962; half this amount was imported in 1963.

## COMMODITY REVIEW

### METALS

**Copper, Lead, Zinc, Silver.**—For the Burma Corp. (1951)<sup>4</sup> the country's only important nonferrous base-metal enterprise, 1963 was a pivotal year. Production increased about 10 percent. In October, the company announced that reserves were 3 million metric tons, containing 11.2 ounces of silver per short ton, 15.1 percent lead, 9.2 percent zinc, and 0.85 percent copper ore; this was about 8 percent higher in combined metal content than the 1962 reserve. Improved metal prices were partly responsible for profits of 2.73 million kyats (officially, US\$1 equals 4.72 kyats) during the 15 months ending September 1963, in contrast to losses of 3.27 million kyats reported for the financial year ending June 1962. However, the foreign partner (British and United States) of this joint venture did not derive much benefit because of high taxes and cumbersome regulations. In 1963, PMDC, the Government of Burma partner, was appointed sole agent for the sale of zinc.

A basic program to revitalize operations was under study by the corporation with US\$667,000 worth of United Nations Special Fund technical assistance. Evaluation of reserves indicated there were large quantities of lower grade ores that could be mined profitably. Construction of a zinc smelter was also considered. Upon conclusion of exploration during 1963, a United Nations expert was sent to Bawdwin to investigate mining methods; this latter work was still in progress at yearend.

**Iron and Steel.**<sup>5</sup>—Attention was focused on the dwindling local scrap supply for the Ywama electric steel plant built with West German equipment by the firm DEMAG (Deutsche Electrometallurgie Aktiengesellschaft). Utilization of imported high-price scrap was not considered feasible for the time being.

In 1963, the Ywama plant produced only about 8,000 tons of bars and rods (plus 4,000 tons of nails derived from them), approximately 4,000 tons of black sheet, and nominal quantities of wire products. Management was planning to expand sheet capacity and possibly add corrugating facilities.

<sup>4</sup> See company reports covering 1963.

<sup>5</sup> Far Eastern Economic Review (Hong Kong). Steel for Asia. V. 42, No. 13, Dec. 26, 1963, pp. 680-681.

Burma's iron and steel requirements had to be met primarily by imports. Actual consumption of major items in 1963 is estimated as follows: 60,000 to 70,000 tons of sheets and plates, mostly galvanized iron and tinplate; 15,000 to 25,000 tons of bars and rods; 10,000 to 20,000 tons each of tubes, pipes, and structural steel, and nearly 10,000 tons of nails.

Construction of an integrated iron and steel plant to satisfy existing demand has been under serious consideration for several years. At the invitation of the Government of Burma, Krupp of West Germany had undertaken a survey of the iron and coal potential and submitted its report in mid-1963. Since Burma has iron ore but no coking coal, the latest thinking was to construct a Strategic-Udy plant to use iron ore from Taunggyi, waterpower from Bahrchaung, and coal from Kalewa. However, this proposal was still most speculative in 1963.

**Tin and Tungsten.**—PMDC, with help of the United Nations expert, announced a development plan for the Mawchi tin-tungsten mine in 1963, involving geological investigation and rehabilitation and expansion of the mill. With PMDC scheduled to allot 1.5 million kyats from October 1963 to September 1964, it was hoped that production of mixed concentrates could be raised to 50 to 60 tons monthly during the first 3 years and 100 tons thereafter.

### MINERAL FUELS

**Petroleum.**—Burma's oil industry became fully nationalized in 1963; the People's Oil Industry (POI) was designated as the managing corporation. The British Burma Oil Co. was fully compensated by the end of 1963, ahead of schedule. Exploration by foreign concerns was indefinitely deferred. Instead, plans were made to buy additional drilling rigs. The exploration program for 1963-64 would cost 35 million kyats (about US\$7.3 million, at US\$1 equals 4.72 kyats), approximately 3.8 million kyats more than actual expenditures in 1962-63. POI announced that it had made a 40-million-kyat profit in the first 9 months of 1963, compared with a 8.5-million-kyat loss in 1962. Apparently, faster extraction of known reserves and reduced salaries and wages to workmen contributed to this reported profit.

The second oil refinery at Syriam was formally opened on November 29, 1963. Rated at about 14,500 barrels per day, this unit is 2.5 times the size of the first Syriam refinery and has more than twice the capacity of the Chauk refinery. Domestic crude production was far short of the new throughput capacity, so that imports became necessary. Foreign crude was scheduled to come mainly from Indonesia, with the Indonesian Government and Caltex providing most of the oil. Thus, Burma, a crude oil exporter of some significance before World War II, became a net importer.