

The Mineral Industry of Burma

By Timothy Adams ¹

Burma's mineral industry again stagnated, mainly because of the lack of modern equipment and insurgent activity. Exports of base metals and ores were approximately the same as in 1973. Burma will continue to export as much of its mineral output as possible to earn foreign exchange. With technical and financial assistance from U.S. and other bilateral sources, Burma moved to renovate existing mines and explore for new mineral resources.

An important agreement was signed with the Federal Republic of Germany to modernize the Bawdwin-lead-zinc mines. Capital allocations for the project were \$11 million for open pit improvements, \$19 million for the flotation mill, and \$4 million for support facilities which include a 5,000-kilowatt hydroelectric plant. However, a West German mining technician was kidnapped near the Bawdwin mine in March. As a result, the Ministry of Mines

recalled all foreign mineral experts under its jurisdiction to Rangoon and foreign assistance for Burma's mineral industry came to a virtual standstill.

The granting of concessions for offshore oil exploration to foreign oil companies marked a major change in mineral policy. Based on Indonesian experience, 13 of 25 offshore blocks were opened for development and were subjected to intensive seismic exploration and drilling activities. Also indicative of change was the completed survey of the Myanmar copper deposits by a Japanese team. The Government of Burma was reported as seriously considering proposals from private foreign firms to develop the project. This marked a significant departure from previous policy regarding private foreign investment in the Burma mineral industry. This change may open other opportunities, albeit slowly, in this field in the future.

PRODUCTION

Value of mineral production in Burma increased approximately 12% in 1974, the only sector of the Burmese economy to surpass targeted growth rates. Production of major minerals, including coal but excluding petroleum, increased a marginal 5%. Considering the low level to which mineral production declined in 1973, the small increase in 1974 was insignificant. However, it did represent a temporary reversal of the declining trend in Burma's

total mineral production. Generally, production of industrial minerals in 1974 remained close to past levels with yearly fluctuations in output caused largely by demand patterns of Government-operated industries.²

¹ Physical scientist, Division of Nonmetallic Minerals.

² U.S. Embassy, Rangoon, Burma. State Department Airgram A-057, May 22, 1975.

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

Commodity ¹	1972	1973	1974 ²
METALS			
Antimony, mine output, metal content	131	143	166
Copper:			
Mine output, metal content ^e	80	74	71
Matte, gross weight	179	165	159
Iron and steel:			
Crude steel ^e	r 15,000	20,000	20,000
Semimanufactures ^e	r 25,000	30,000	30,000
Lead:			
Mine output, metal content ^e	r 10,200	10,100	9,300
Smelter:			
Refined lead	8,431	9,814	9,008
Antimonial lead (18% to 20% antimony)	331	279	359
Manganese ore, gross weight	279	279	NA
Nickel:			
Mine output, metal content	26	21	22
Speiss, gross weight	104	83	87
Silver, mine output	587	718	301
Tin, mine output:			
Metal content of tin concentrate	319	245	265
Metal content of tin-tungsten concentrate	265	356	248
Total	584	601	513
Tungsten, mine output:			
Metal content of tungsten ores	266	266	345
Metal content of tin-tungsten concentrate	184	248	173
Total	450	514	518
Zinc, mine output, metal content	r 3,967	3,874	3,001
NONMETALS			
Barite	r 20,574	15,241	15,241
Cement, hydraulic	214	193	172
Clays:			
Ball clay	r 15,401	10,343	e 4,000
Bentonite	r 620	841	e 500
Fire clay	r 2,337	2,665	e 2,000
Industrial white clay	r 2,472	2,642	e 2,100
Feldspar	r 914	311	660
Fluorspar	r 183	e 200	e 200
Graphite	r 91	183	305
Gypsum	14,895	15,647	e 16,000
Precious and semiprecious stones:			
Jadeite	2,750	6,973	8,808
Unspecified	NA	52,528	NA
Salt	r 157	173	125
Sand:			
Glass sand, brown	r 2,093	6,300	NA
Glass sand, white	4,491		
Stone:			
Dolomite	914	1,207	406
Limestone, crushed and broken	r 600	600	530
Quartz	r 134	55	360
Talc and related materials, soapstone	e 220	128	e 150
MINERAL FUELS AND RELATED MATERIALS			
Coal	21,456	14,450	16,811
Gas, natural:			
Gross production	11,300	12,000	e 11,000
Marketed production	3,900	5,400	e 4,900
Petroleum:			
Crude	7,466	7,514	7,581
Refinery products:			
Gasoline	1,480	1,394	1,498
Jet fuel	234	249	223
Kerosine	1,623	1,677	1,687
Distillate fuel oil	2,180	1,969	1,693
Residual fuel oil	1,500	1,549	1,021
Other	679	442	NA
Refinery fuel and losses	790	955	NA
Total	8,486	8,226	NA

^e Estimate. ² Preliminary. ^r Revised. NA Not available.

¹ In addition to the commodities listed, Burma also produces pottery clay, common sand, gravel, other varieties of crude construction stone, and other varieties of gem stones, but available information is inadequate to make reliable estimates of output levels.

² Includes fire clay powder.

TRADE

Burma's overall foreign trade decreased from about \$240 million in 1972-73 to an estimated \$215 million in 1973-74. Although production increased in 1974, export volume of base minerals and ores declined about 16% from 1973 figures. silver exports at \$0.6 million. In 1972-73, base metal exports were estimated at \$6.6 million and silver exports at \$1.2 million. In 1973-74, base metal exports were estimated at \$4.2 million and silver exports at \$0.6 million.

Burma's imports of mineral and related products dropped somewhat from the esti-

mated \$21.4 million in 1972-73. The largest item has been base metals and manufactures. Coal and coke imports continued high.

Mineral industry reports were not obtainable from the Government on a timely basis. Hence, much of the information was estimated from available statistics published by the Central Statistical Organization, Rangoon, and other sources such as Mining Annual Review.

The latest specific commodity data on mineral exports and imports are shown in tables 2 and 3 for the years 1971-72.

Table 2.—Burma: Exports and reexports of mineral commodities
(Metric tons unless otherwise specified)

Commodity	1971	1972	Principal destinations, 1972
METALS			
Antimony ore and concentrate -----	563	404	West Germany 153; Belgium-Luxembourg 152; Yugoslavia 99.
Copper matte -----	239	184	All to Belgium-Luxembourg.
Lead metal, unwrought: -----			
Refined -----	7,423	8,583	India 8,563.
Antimonial -----	427	228	All to India.
Nickel matte and speiss -----	2,207	166	All to West Germany.
Silver, unwrought -----			
thousand troy ounces --	461	905	United Kingdom 601; Japan 103; Netherlands 101; Italy 100.
Tin ore and concentrate - long tons --	1,604	999	Spain 541; Netherlands 273.
Tungsten: -----			
Straight tungsten concentrates -----	260	492	West Germany 420.
Mixed tin-tungsten concentrates --	340	258	Netherlands 186; United Kingdom 72.
Zinc ore and concentrate -----	4,757	3,191	All to Japan.
NONMETALS			
Cement -----		40	NA.
Gem stones other than diamond: -----			
Jade: -----			
Uncut ----- thousand carats --	174	98	Hong Kong 91.
Cut but not set ----- do -----	94	1,525	Hong Kong 1,500.
Rubies: -----			
Uncut ----- do -----	22		
Cut but not set ----- do -----	2	3	Switzerland 1; Japan 1.
Sapphires: -----			
Uncut ----- do -----	38		
Cut but not set ----- do -----	5	2	Spain 1.
Precious and semiprecious stones, n.e.s.: -----			
Uncut ----- do -----		(¹)	All to Switzerland.
Cut but not set ----- do -----	1	6	People's Republic of China 4.
Salt -----	16,153	24,826	Singapore 24,448.
Other nonmetals, n.e.s. -----	(¹)	1	Mainly to Japan.
MINERAL FUELS AND RELATED MATERIALS			
Coal, anthracite and bituminous -----		6	NA.
Petroleum refinery products: -----			
Gasoline ----- 42-gallon barrels --	1	4	NA.
Kerosine ----- do -----	1	9	NA.
Distillate fuel oil ----- do -----	15,881	8,599	NA.
Residual fuel oil ----- do -----	42,978	54,999	NA.
Lubricants ----- do -----	62	38	NA.
Other ----- do -----	401,303	449,561	Japan 307,916; Malaysia 44,633; Singapore 36,658.

^r Revised. NA Not available.

¹ Less than ½ unit.

Table 3.—Burma: Imports of mineral commodities¹

Commodity	1971	1972	Principal sources, 1972
METALS			
Aluminum:			
Oxide and hydroxide -----	10	11	United States 10.
Metal including alloys:			
Unwrought -----	613	362	United Kingdom 245; Romania 116.
Semimanufactures -----	1,594	173	West Germany 149.
Arsenic trioxide, pentoxide and acids -----	5	49	All from West Germany.
Chromium oxides and hydroxides -----	4	3	Do.
Copper:			
Copper sulfate -----	(²)	52	Netherlands 50.
Metal including alloys:			
Unwrought -----	101	72	United Kingdom 67.
Semimanufactures -----	366	304	Belgium-Luxembourg 149; Japan 104.
Iron and steel metal including alloys:			
Pig iron, including cast iron -----	2,073	1,202	West Germany 1,200.
Sponge iron, powder and shot -----	247	NA	
Ferroalloys -----	92	4	All from Hungary.
Steel, primary forms -----	14,217	14,682	Republic of Korea 7,098; North Korea 4,101; Japan 3,482.
Semimanufactures -----	81,727	62,405	Japan 18,622; India 14,852; Belgium-Luxembourg 9,669.
Lead metal including alloys, all forms -----	49	38	Japan 34.
Manganese:			
Ore and concentrate -----	4	NA	
Oxides -----	222	173	All from Japan.
Mercury ----- 76-pound flasks -----	899	108,582	West Germany 108,153.
Nickel metal including alloys, all forms -----	30	20	United Kingdom 9; Belgium-Luxembourg 6.
Platinum-group metals including alloys, all forms ----- troy ounces -----	10	--	
Silver metal including alloys, all forms ----- do -----	542	670	United Kingdom 650.
Tin:			
Oxides ----- long tons -----	1	1	All from United Kingdom.
Metal including alloys, unwrought and semimanufactures ----- do -----	37	1	All from Japan.
Titanium oxides -----	85	71	Belgium-Luxembourg 29; United Kingdom 22; France 20.
Tungsten metal including alloys, all forms -----	(²)	(²)	All from United States.
Zinc:			
Oxides -----	43	34	Netherlands 13; United Kingdom 12; United States 5.
Metal including alloys, all forms -----	170	350	Japan 312.
Other:			
Ores and concentrates, n.e.s. -----	NA	2	All from Sweden.
Oxides, hydroxides, peroxides of Base metals including alloys, metals n.e.s. -----	22	55	West Germany 42; Switzerland 11.
all forms -----	--	(²)	Mainly from Japan.
NONMETALS			
Abrasives, natural, n.e.s. ----- value thousands -----	\$1	\$1	Do.
Asbestos -----	278	1,143	Territory of South-West Africa 926; Canada 213.
Boric acid -----	7	24	India 13; Portugal 5.
Bromine -----	1	(²)	All from France.
Cement -----	2,688	820	West Germany 785.
Chalk -----	23	25	All from United Kingdom.
Clays and clay products:			
Crude clays, n.e.s.:			
Kaolin (china clay) -----	24	774	Japan 646; United Kingdom 123.
Other -----	424	96	Japan 54; United Kingdom 24; Netherlands 17.
Products:			
Refractory ----- value thousands -----	\$215	\$605	Japan \$430; West Germany \$72.
Nonrefractory ----- do -----	\$9	\$59	People's Republic of China \$37; United Kingdom \$21.
Diamond:			
Gem, not set or strung ----- carats -----	70		
Industrial ----- value, thousands -----	\$2	(²)	All from Denmark.
Diatomite and other infusorial earth ----- do -----	\$5	\$5	Mainly from United States.
Fertilizer materials:			
Manufactured:			
Nitrogenous -----	7	55	All from West Germany.

See footnotes at end of table.

Table 3.—Burma: Imports of mineral commodities¹—Continued
(Metric tons unless otherwise specified)

Commodity	1971	1972	Principal sources, 1972
NONMETALS—Continued			
Fertilizer materials—Continued			
Manufactured—Continued			
Phosphatic -----	51	30,115	All from Tunisia.
Potassic -----	1	--	
Other, including mixed -----	1	--	
Ammonia -----	105	31	Netherlands 16; United Kingdom 8; West Germany 5.
Graphite, natural -----	117	6	West Germany 5.
Gypsum ----- value, thousands -----	--	\$2	All from United Kingdom.
Iodine -----	1	2	Do.
Mica, all forms -----	(²)	1	Mainly from India.
Precious and semiprecious stones, except diamond:			
Natural ----- carats -----	--	234	NA.
Manufactured ----- do -----	4,550,286	188	India 90; Pakistan 83.
Salt -----	^r 46	--	
Sodium and potassium compounds, n.e.s., -----			
Caustic soda -----	5,798	8,667	West Germany 3,671; Netherlands 2,695; United Kingdom 1,000.
Caustic potash, sodium and potassic peroxides -----	25	9	France 5; United Kingdom 3.
Stone, sand and gravel: -----			
Quartz and quartzite -----	(²)	11	All from Netherlands.
Sand, excluding metal-bearing -----	--	28	United Kingdom 20.
Sulfur: -----			
Elemental -----	406	1,264	West Germany 1,204.
Sulfuric acid -----	16	6	United Kingdom 3; West Germany 2.
Other nonmetals, n.e.s.: -----			
Crude -----	104	252	India 120; United Kingdom 100.
Building materials of asphalt, asbestos and fiber cement, and unfired nonmetals, n.e.s. -----	35	2	Mainly from West Germany.
MINERAL FUELS AND RELATED MATERIALS			
Carbon black -----	50	142	Japan 100; Romania 17.
Coal and briquets: -----			
Anthracite and bituminous -----	210,602	126,755	India 98,110; People's Republic of China 28,645.
Lignite and lignite products -----	112	--	
Coke and semicoke -----	740	508	All from West Germany.
Hydrogen, helium, inert gases -----	1	14	Japan 11.
Petroleum: -----			
Crude -----			
thousand 42-gallon barrels -----	2,009	1,304	Brunei 1,118; Malaysia 181.
Refinery products: -----			
Gasoline, motor and aviation do -----	2	19	Mainly from Iran.
Kerosine and jet fuel 42-gallon barrels -----	392	105,924	Singapore 58,829; Iran 46,832.
Residual fuel oil ----- do -----	50,273	56,691	Bahrain 56,612.
Lubricants -----			
thousand 42-gallon barrels -----	^r 120	100	Japan 99.
Mineral jelly and wax 42-gallon barrels -----	^r 1,771	563	West Germany 354.
Other: -----			
Nonlubricating oils, n.e.s. thousand 42-gallon barrels -----	8,823	8,705	Iran 8,611.
Petroleum asphalt and pitch ----- do -----	109	191	Japan 155; Singapore 36.
Bitumen and other residues ----- do -----	(²)	(²)	All from West Germany.
Bituminous mixtures, n.e.s. ----- do -----	(²)	(²)	Mainly from West Germany.
Mineral tar and other coal, petroleum-, or gas-derived crude chemicals -----	373	36	All from United Kingdom.

^r Revised. NA Not available.

¹ Imports for consumption only; does not include imports into bond.

² Less than ½ unit.

COMMODITY REVIEW

METALS

Copper.—Myanma Mineral Development Corp. (MDC) reported 26 million tons of copper ore at Sabetaung and 55 million tons at Kyesintaung. Diamond drilling con-

tinued in both areas to determine the extent of the porphyry copper mineralization.³ The exploration program was con-

³ World Mining. V. 27, No. 12, November 1974, p. 82.

ducted by Japanese personnel of the Metallic Minerals Exploration Agency of Japan. A pilot plant with a capacity of 30,000 tons per year of ore is to be constructed as a preliminary to joint Japanese-Burman development of the property. A feasibility study was begun for a refinery with a capacity of 20,000 tons per year of electrolytic copper by 1978.⁴

Iron and Steel.—The small Ywama steel plant, which has an electric furnace and rolling mills, remained the country's only steel producer. The plant, rated at 40,000 tons, continued to operate at approximately 50% capacity. Funds for construction of planned additional facilities continued to be unavailable.

Lead, Zinc, Silver and Nickel.—The government-owned Bawdwin enterprise in Northern Shan, operated by Bawdwin Mines Corp. (BMC), continued to be Burma's sole significant producer of non-ferrous metals. The zinc concentrate produced was sold as such, mostly to Japan, whereas lead and other materials were sent to Namtu for smelting before marketing abroad.

The average grade of ore at Bawdwin apparently continued to decline. Output of ore from the mine increased, and a slight increase in the quantity of lead was reported. The old Namtu smelter with surplus capacity produced 9,300 tons of lead, 301,000 troy ounces of silver, and 3,001 tons of zinc concentrate.⁵ A garnierite deposit was discovered in Chin State by the Directorate of Geological Survey and Exploration. Potential ore reserves were estimated at approximately 110 million tons at 1% nickel.⁶

Tin and Tungsten.—MDC continued to control most of the country's tin and tungsten mines. Concentrates were produced separately or in mixed form, and the combined annual output of the two related minerals was less than the average 2,200 tons of concentrates reported during the past 5 years. Although statistics were conflicting, Burma produced, in terms of metal content, approximately 400 to 760 long tons of tin and 300 to 500 tons of tungsten yearly. Most production came from the Tavoy and Mergui Districts in the Tenasserim district near the Thai border. The Mawski tin-tungsten mine probably accounted for about half of the total production. A contract was let to determine the feasibility of placer mining

approximately 10,000 tons of tin-tungsten ore in the Heinze River Basin.⁷ Third-stage rehabilitation of the Mawchi tungsten mine continued. Output of tungsten at Mawchi was planned to reach 1,800 tons per year metal content.⁸

NONMETALS

Cement.—Three cement plants operated at Thayetmyo. Although all three produced at about 1,000 tons per day since the beginning of 1974, Burma continued to experience cement shortages in many areas. The kilns presently use furnace oil as fuel, but a large natural gas deposit was found on the east side of the Irrawaddy River, about 22 miles south of Thayetmyo. The Government plans to pipe the gas to Thayetmyo but must first find the financing and equipment to build the pipeline.⁹ Production for 1974 was 172,000 tons. Despite the openings of two new contract mills, lack of fuel held down production in 1974. Domestic supply lagged far behind demand.

Burma plans to establish a cement mill with 240,000 tons annual capacity at Kyoukse, about 20 miles south of Mandalay, with completion scheduled for 1978. If all planned expansions are completed, capacity will reach 860,000 tons per year and will provide Burma with a regular exportable surplus. Limestone will be supplied from a 450-million-ton deposit at Kyoukse, and gypsum will be brought by rail from Hsipow. The Tagundaing hydroelectric plant will supply power for the mill.¹⁰

Fertilizer Materials.—Burma had two urea plants located near the Chauk oilfields in central Burma which utilize the local natural gas deposits. Total output of urea in 1974 was 112,000 tons, or about 85% of capacity. Power constraints hindered greater output, but a new gas turbine generator should alleviate this problem. About 20,000 tons was exported in 1974 to take advantage of favorable prices.¹¹

Gem Stones.—Uncut Burmese jade con-

⁴ Metals Sourcebook. V. 11, No. 19, Oct. 14, 1974, p. 2.

⁵ Page 82 of work cited in footnote 3.

⁶ Page 82 of work cited in footnote 3.

⁷ Mining Journal. No. 170, Mar. 14, 1975, p. 3946.

⁸ Mining Journal. Mining Annual Review, June 1974, p. 411.

⁹ U. S. Embassy, Rangoon, Burma. State Department Airgram A-038, Mar. 14, 1975, p. 4.

¹⁰ Work cited in footnote 2.

¹¹ U.S. Embassy, Rangoon, Burma. State Department Telegram Rangoon 01325, May 17, 1974.

tinued to be of importance in world jewelry circles. Many mines are in insurgent territory near the border and much jade produced was presumably smuggled out of the country. Burma also produced ruby, sapphire, spinel, other precious stones, and cultured pearls.

Total sales at the Tenth Gem Emporium, held in February 1974, were valued at \$4.4 million. Pearl sales accounted for \$1.0 million, jade for \$3.2 million, and gems for \$0.2 million. The Geological Survey and Exploration Corp. announced the discovery in north Burma of a new jade vein extending from Hukaway Valley to Putao and beyond. The deposits were described as being of high quality.¹²

Salt.—Burma produced about 125,000 tons of salt in 1974. The decreased production reflected the slowing of the modernization program begun in 1971. Production in excess of domestic requirements was exported, mostly to Singapore.

Stone—Marble.—Construction of a marble slab factory on the Mogok-Madaya highway at a cost of \$0.5 million neared completion. The Taunggok marble mountain is expected to yield 30 million tons, and another mountain between the Salween and Kun Chaung Rivers is expected to yield another 30 million tons. Tenders to purchase marble have been received from several countries. Japan took 50,000 cubic meters in 1973–74.¹³

MINERAL FUELS

Coal.—The Kalewa coalfield in the northwest, sole producer in Burma, produced 16,811 tons in 1974, up from 14,450 tons in 1973. Burma's imports of coal were 126,755 tons in 1973.

Petroleum.—The decision to invite foreign participation in offshore oil exploration, on a profit-sharing basis, attracted widespread attention in the petroleum industry. Contracts were signed for offshore petroleum exploration in 13 of 25 blocks, with 4 private companies or consortia—1. Martaban Cities Service Inc., Robina Oil Co., Inc. of Singapore, Sun Oil Co.; 2. Arakan Oil Development Co., Japan Petroleum Development Corp., Kyodo Corp.; 3.

Cie. Française des Pétroles, AGIP S.p.A., Leminox Corp.; 4. Esso Exploration & Production (Burma) Inc. By yearend 1974, the four groups established skeleton staffs in Rangoon and subcontracted for additional surveys.¹⁴ Seven wells were drilled by June, and five seismic vessels were surveying offshore areas on a large scale. Onshore oil exploration was dominated by the Myanma Oil Co. (MOC), which began a drilling program involving 4 to 6 wells. MOC also sent out seismic and field geology teams to survey the central and south Irrawaddy Basin. The Burmese Government showed interest in developing the infrastructure for prolonged petroleum exploration by setting up a modern supply base in Rangoon. Bids were also solicited for the construction of special rigs for MOC's onshore operations. West Germany was approached for technical and financial assistance to construct a 500-mile pipeline to connect the oilfields with Rangoon.¹⁵ Production of crude oil from Burma's onshore fields remained at about the same level as in 1973, 7.6 million barrels were reported, with half attributed to the Mann field. In July a potentially significant oil strike was announced at Letpando. The Government announced that the new field insured Burma's self-sufficiency in oil by 1976. Natural gas production decreased slightly.

Output of refined products was essentially the same as in 1973. No progress was reported on the longstanding plans to expand the capacity of the refinery at Syriam.

Preliminary estimates for 1974 indicated Burma's imports of petroleum products increased in volume by over 100% when compared with 1973. Much of the increase was due to imports of crude petroleum which had been sharply reduced in 1973. However, imports of refined products continued at approximately 200,000 tons in an effort to alleviate local shortages.¹⁶

¹² Page 412 of work cited in footnote 8.

¹³ Short Wave Broadcast. FE/W789/A/19, Aug. 21, 1974.

¹⁴ U.S. Embassy, Rangoon, Burma. State Department Airgram A-018, Feb. 7, 1975.

¹⁵ Hokwon Ping, and Jim Matthews. *Far Eastern Economic Review*. Keeping up the Pace. V. 88, No. 25, June 20, 1975, pp. 50–52.

¹⁶ Work cited in footnote 14.

