

The Mineral Industry of Burma

By Donald C. Wininger¹

Burma's mineral industry showed moderate improvement during 1972. Production from the Bawdwin nonferrous metal mine near Lashio recorded a slight increase over 1971 output; however, production of refined lead and silver from this mine declined owing to the continuing decline in the grade of the ore. Production of tin and tungsten recorded a substantial increase in 1972. However, output from the Mawchi tin-tungsten mine declined during the year. The U.N. Development Program has provided \$2 million to Burma to help reopen other tin and tungsten mines in southern Burma.

Offshore exploratory drilling was begun during the year but was interrupted in

September by a blowout in which the drilling rig was destroyed. External government-to-government assistance continued to be provided to the Burmese petroleum sector by Japan and West Germany, and by the Export-Import Bank (Eximbank).

The mineral industry of Burma has become very much a government business. In fiscal 1971-72 (October through the following September), 11.5% of the Government capital expenditure was designated for the mining sector as follows: Myanma Oil Corp. (MOC), \$17.9 million;² Myanma Bawdwin Corp. (MBC), \$1.9 million; and Mineral Development Corp. (MDC), \$5.7 million.

PRODUCTION

"Mineral" output totaled \$43.6 million in fiscal year 1970-71 and \$46.9 million in 1971-72, according to official Burmese national budget estimates.³ 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.

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² Where necessary, values have been converted from Burma Kyats (BKs) to U.S. dollars at the rate of BKs 5.3487=\$1.00. In the open market, the kyat is worth much less; actually, \$1.00 can buy .15 kyats or more.

³ Ministry of Planning and Finance. Report to the People by the Government of the Union of Burma on the Financial, Economic and Social Conditions for 1972-73.

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

Commodity ¹	1970	1971	1972 ²
METALS			
Antimony, mine output, metal content.....	65	128	131
Copper:			
Mine output, metal content.....	70	80	80
Matte, gross weight.....	167	175	179
Iron and steel:			
Crude steel.....	21,000	21,000	20,000
Semimanufactures.....	25,000	25,000	30,000
Lead:			
Mine output, metal content.....	8,000	9,000	10,500
Smelter:			
Refined lead.....	7,761	8,687	9,930
Antimonial lead (18% to 20% antimony).....	239	309	331
Manganese ore, gross weight.....	110	112	279
Nickel:			
Mine output, metal content.....	21	24	26
Speiss, gross weight.....	84	94	104
Silver, mine putput..... thousand troy ounces.....	620	685	1,155

See footnotes at end of table.

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

Commodity ¹	1970	1971	1972 ²
METALS—Continued			
Tin, mine output:			
Metal content of tin ores.....long tons..	174	345	450
Metal content of tin-tungsten ores.....do.....	254	327	282
Total.....do.....	428	672	732
Tungsten, mine output:			
Metal content of tungsten ores.....	44	154	213
Metal content of tin-tungsten ores.....	177	228	197
Total.....	221	382	410
Zinc, mine output, metal content.....	3,953	4,020	5,390
NONMETALS			
Barite.....thousand tons..	13,463	22,963	25,970
Cement, hydraulic.....	156	197	185
Clays:			
Ball clay.....	27,638	213,506	14,428
Bentonite.....	21,027	2347	1,305
Fire clay.....	21,490	21,411	2,477
Industrial white clay.....	2537	21,431	3,505
Pottery clay.....	635	2,256	NA
Feldspar.....	812	2713	799
Fluorspar.....	2165	201	225
Graphite.....	78	152	217
Gypsum.....	5,334	12,193	14,895
Precious and semiprecious stones:			
Jadeite.....kilograms..	2,083	2,444	2,750
Rubies and sapphires.....carats..	10,881	18,000	NA
Salt.....thousand tons..	193	161	210
Sand:			
Glass sand, brown.....	NA	24,822	2,093
Glass sand, white.....	NA	22,279	4,491
Stone:			
Dolomite ²	786	654	914
Limestone, crushed and broken.....thousand tons..	604	609	596
Quartz.....	2106	2274	221
Talc and related materials, soapstone.....	213	215	220
MINERAL FUELS AND RELATED MATERIALS			
Coal.....million cubic feet..	15,259	19,711	21,456
Gas, natural, gross production.....	2,500	1,628	4,200
Petroleum:			
Crude.....thousand 42-gallon barrels..	6,388	6,652	7,466
Refinery products:			
Gasoline, aviation.....do.....	24	--	--
Gasoline, other.....do.....	1,476	1,414	1,481
Jet fuel.....do.....	167	243	234
Kerosine.....do.....	1,810	2,246	1,624
Distillate fuel oil.....do.....	1,667	2,226	2,182
Residual fuel oil.....do.....	929	1,609	1,501
Other.....do.....	366	709	679
Refinery fuel and losses.....do.....	328	193	NA
Total.....do.....	6,767	8,640	NA

^{*} Estimate. ² Preliminary. ³ Revised. NA Not available.

¹ In addition to the commodities listed Burma also produces common sand, gravel, other varieties of crude construction stone, and other varieties of gem stones, but available information is not adequate to make reliable estimates of output levels.

² Data are for years ending June 30 of that stated.

³ Includes fire clay powder.

TRADE

Burma's overall foreign trade declined from \$299 million (revised from \$216 million shown in the Minerals Yearbook, V, III, 1971) in fiscal year 1970-71 to about \$238 million in 1971-72. Although total exports at \$113 million showed only a slight decline, from \$124 million in 1970-71, total imports declined \$49 million to \$126 mil-

lion according to preliminary estimates. In fiscal 1970-71, Burma exported \$5.55 million in base metals and ores and \$1.28 million in silver. In 1971-72, base metal exports were unchanged, but silver exports were down by nearly 50% from the previous year.

Burma's imports of mineral and related products dropped from \$31 million in 1970-71 to \$18 million in 1971-72. The largest item was base metals and manufactures, which reached \$24 million in

1970-71 but declined to possibly only \$18 million in 1971-72. Coal and coke imports showed the greatest change, declining from about \$4 million in 1970-71 to less than \$1 million in 1971-72.

Table 2.—Burma: Exports and reexports of mineral commodities

(Metric tons unless otherwise specified)

Commodity	1970	1971	Principal destinations, 1971
METALS			
Antimony ore and concentrate.....	--	562	Belgium-Luxembourg 250; Japan 159; West Germany 152.
Copper matte.....	220	239	All to Belgium-Luxembourg.
Lead metal, unwrought:			
Refined.....	2,688	7,423	India 5,282; People's Republic of China 2,000; Japan 100.
Antimonial.....	--	427	India 221; United States 206.
Nickel matte and speiss.....	166	2,207	All to West Germany.
Silver, unwrought..... thousand troy ounces..	1,057	451	All to Netherlands.
Tin ore and concentrate ¹ long tons..	456	1,604	Japan 1,008; Spain 307; Netherlands 139.
Tungsten:			
Straight tungsten concentrate.....	275	260	India 150; Japan 110.
Mixed tin-tungsten concentrates.....	51	340	West Germany 127; United Kingdom 98; Spain 60.
Zinc ore and concentrate.....	5,530	4,757	All to Japan.
NONMETALS			
Gem stones other than diamond:			
Jade:			
Uncut..... thousand carats..	80	174	All to Hong Kong.
Cut but not set..... do.....	23	94	Hong Kong 69; Chile 15; Japan 10.
Rubies:			
Uncut..... do.....	1,238	22	All to Hong Kong.
Cut but not set..... do.....	2	2	Mainly to Hong Kong.
Sapphires:			
Uncut..... do.....	521	38	Hong Kong 33; Switzerland 5.
Cut but not set..... do.....	9	5	Mainly to Switzerland.
Precious and semiprecious stones, n.e.s.:			
Uncut..... do.....	99	--	
Cut but not set..... do.....	2	1	Mainly to France.
Salt.....	--	16,153	Malaysia 11,882; Singapore 4,271.
MINERAL FUELS AND RELATED MATERIALS			
Petroleum refinery products:			
Gasoline..... 42-gallon barrels..	--	1	NA.
Kerosine..... do.....	(9)	1	NA.
Distillate fuel oil..... do.....	18,436	15,881	NA.
Residual fuel oil..... do.....	11,316	42,978	NA.
Lubricants..... do.....	33	62	NA.
Other..... do.....	99,227	117,603	Japan 28,389; United Kingdom 23,434; Singapore 18,789.

NA Not available.

¹ See also tungsten for mixed tin-tungsten concentrates.

² Less than 1/2 unit.

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

Commodity	1970	1971	Principal sources, 1971
METALS			
Aluminum:			
Oxide and hydroxide.....	5	10	Japan 9.
Metal including alloys:			
Unwrought.....	634	613	Poland 611.
Semimanufactures.....	1,561	1,594	U.S.S.R. 514; West Germany 411; Japan 400.
Arsenic trioxide, pentoxide, and acids.....	27	5	West Germany 4; United Kingdom 1.
Chromium oxides, hydroxide.....	--	4	East Germany 2; West Germany 1.
Copper:			
Copper sulfate.....	67	(?)	All from West Germany.
Metal, including alloys:			
Unwrought.....	263	100	United Kingdom 99.
Semimanufactures.....	335	366	U.S.S.R. 128; United Kingdom 91; Belgium-Luxembourg 52.
Iron and steel, metal, including alloys:			
Pig iron, including cast iron.....	2,571	2,073	Norway 1,176; West Germany 767; United Kingdom 122.
Sponge iron, powder and shot.....	3	247	Japan 205; United Kingdom 41.
Ferroalloys.....	20	92	West Germany 70; United Kingdom 22.
Steel, primary forms.....	13,484	14,216	France 14,181; Belgium-Luxembourg 19.
Semimanufactures.....	61,493	81,727	United Kingdom 31,170; Japan 23,936; Belgium-Luxembourg 12,712.
Lead:			
Oxides.....	1	--	
Metal, including alloys, unwrought and semimanufactures.....	18	49	Japan 32; West Germany 13; United Kingdom 2.
Manganese:			
Oxides.....	681	222	Japan 154; Netherlands 66; United Kingdom 2.
Ores and concentrates.....	--	4	All from United Kingdom.
Mercury.....76-pound flasks.....	2,290	899	West Germany 676; United Kingdom 169; Japan 53.
Nickel metal, including alloys, all forms.....	3	30	United States 28.
Platinum-group metals, including alloys, all forms.....	29	10	All from United Kingdom.
Silver metal, including alloys, all forms do.....	1,873	542	Do.
Tin:			
Oxides.....long tons.....	(?)	1	Do.
Metal, including alloys, unwrought and semimanufactures.....do.....	6	37	Belgium-Luxembourg 22; West Germany 8; United Kingdom 7.
Titanium oxides.....	204	84	Mainly from West Germany.
Tungsten metal, including alloys.....	--	(?)	All from United Kingdom.
Zinc:			
Oxides.....	42	43	Japan 31; United States 5; Netherlands 4.
Metal, including alloys, all forms.....	602	170	Japan 139; Belgium-Luxembourg 17; United Kingdom 11.
Other:			
Ores and concentrates, n.e.s.....	24	--	
Oxides, hydroxides and peroxides of metals, n.e.s.....	43	22	United Kingdom 19; West Germany 2.
Base metals, including alloys.....	(?)	--	
NONMETALS			
Asbestos.....	1,465	278	South-West Africa 224; Republic of South Africa 47; Japan 7.
Boric acid.....	37	7	India 4; United Kingdom 3.
Bromine.....	1	1	Mainly from United Kingdom.
Cement.....	1,019	2,688	West Germany 1,293; Japan 971; United Kingdom 340.
Chalk.....	24	23	India 16; East Germany 7.
Clays and clay products:			
Crude clays, n.e.s.:.....			
Kaolin (china clay).....	44	24	Japan 11; Netherlands 8; United Kingdom 5.
Other.....	103	424	United Kingdom 331; Japan 52; India 30.
Products:			
Refractory.....value, thousands.....	\$116	\$215	Japan \$133; West Germany \$58; United Kingdom \$17.
Nonrefractory.....do.....	\$26	\$9	Japan \$5; People's Republic of China \$3; India \$1.
Diamond:			
Gem, not set or strung.....carats.....	--	70	All from United Kingdom.
Industrial.....value, thousands.....	--	\$2	Do.
Diatomite and other infusorial earths do.....	--	\$5	All from United States.

See footnotes at end of table.

Table 3.—Burma: Imports of mineral commodities 1—Continued

(Metric tons unless otherwise specified)

Commodity	1970	1971	Principal sources, 1971
NONMETALS—Continued			
Fertilizer materials:			
Manufactured:			
Nitrogenous	1,250	7	Belgium-Luxembourg 6; Spain 1.
Phosphatic	1,016	51	All from United Kingdom.
Potassic	20	1	All from Netherlands.
Mixed	2,212	1	All from United Kingdom.
Ammonia	56	105	Netherlands 40; West Germany 34; Belgium-Luxembourg 19.
Graphite, natural	96	117	United Kingdom 73; Japan 18; West Germany 17.
Iodine	6	1	Mainly from Singapore.
Mica, all forms	1	(?)	Mainly from Japan.
Precious and semiprecious stones, except diamond:			
Jade	902	--	
Manufactured	427	4,550	All from Belgium-Luxembourg.
Salt	3	2	All from United Kingdom.
Sodium and potassium compounds, n.e.s.:			
Caustic soda	3,012	5,793	United Kingdom 1,830; Netherlands 1,171; West Germany 1,116.
Caustic potash, sodic and potassic peroxides	23	25	West Germany 8; France 6; Sweden 5.
Stone, sand and gravel:			
Gravel and crushed rock	2	--	
Quartz and quartzite	59	(?)	All from West Germany.
Sulfur:			
Elemental	1,331	406	Mainly from West Germany.
Sulfuric acid	12	16	Japan 14; West Germany 2.
Other nonmetals, n.e.s.:			
Crude, other	213	104	India 80; West Germany 20; Japan 2.
Oxides, hydroxides of magnesium	(?)	--	
Building materials of asphalt, asbestos and fiber cement, and unfired nonmetals, n.e.s.	507	35	United Kingdom 30; Japan 5.
MINERALS FUELS AND RELATED MATERIALS			
Carbon black	250	50	Japan 44; West Germany 6.
Coal and briquets:			
Anthracite and bituminous	206,829	210,602	All from India.
Lignite and lignite briquets	82	112	All from United States.
Coke and semicoke	--	740	All from West Germany.
Hydrogen, helium, and inert gases	5	1	Mainly from Japan.
Petroleum:			
Crude	1,473	2,009	Brunei 1,153; Malaysia 856.
Refinery products:			
Gasoline, aviation	5	2	Mainly from Iran.
Kerosine and jet fuel	1	392	United Kingdom 266; West Germany 126.
Residual fuel oil	10	50,273	All from British Arabian States.
Lubricants			
thousand 42-gallon barrels	126	116	Singapore 62; Japan 22; United Kingdom 21.
Mineral jelly and wax			
42-gallon barrels	527	1,755	Netherlands 1,107; Japan 354; Hungary 118.
Other:			
Nonlubricating oils, n.e.s.	7	8,823	Mainly from Iran.
Petroleum asphalt and pitch	53,713	109,209	Malaysia 97,564; Japan 8,506.
Bituminous mixtures, n.e.s.	48	43	West Germany 29; East Germany 9; United Kingdom 4.
Mineral tar and other coal-, petroleum-, or gas-derived crude chemicals	9	373	All from United Kingdom.

* Revised.

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

2 Less than 1/2 unit.

COMMODITY REVIEW

METALS

Antimony.—Small-scale extraction of antimony ore and concentrate continued. A decline in antimony prices from the high

level of early 1970 apparently did not have too adverse an effect on operations since actual production has continued to rise.

Copper.—Full-scale geophysical prospecting at the Monywa copper mine is sched-

uled to begin in January 1973, by the Metallic Minerals Exploration Agency of Japan. Preliminary prospecting, so far, indicates reserves of approximately 26 million tons averaging 1.3% to 1.5% copper.⁴ About 179 tons of copper matte was produced in 1972, as a byproduct of refined lead from the Bawdwin mine.

Iron and Steel.—The Ywama steel plant remained the country's only steel producer. Domestic scrap iron was used as feed for the furnace. Rated at 40,000 tons of products annually, the steel plant has been running at about half capacity. Bars and rods were the main products, followed by wire nails, galvanized iron, and barrel sheets. No further developments have been reported on the plans to build additional facilities for wire netting, roller extension, tubes, and sheets at Ywama or on the plans to build an integrated steel plant.

Lead, Zinc, Copper, Silver, and Nickel.—The Government-owned Bawdwin enterprise in Northern Shan State, operated by the MBC, continued to be Burma's sole significant producer of nonferrous metals. Zinc concentrate produced 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, was capable of producing annually 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 average grade of ore at Bawdwin apparently continued to decline. Output of concentrates from the mine increased; however, the quantity of lead and silver recovered declined. The old Namtu smelter with surplus capacity reportedly produced 9,930 tons of refined lead in 1972, indicating about a 14% increase from the previous year due to increased shipments of concentrates received from the newer mines.

In the Taunggyi District, the small Bawsaing mine 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. The little so far produced has been sent to Namtu for smelting.

At the Yadana Tehingi mine in the Nawngkhio District, Northern Shan State, expansion to produce over 40,000 tons of silver-lead-zinc ore annually continued. A powerplant, a mill, and a 32-mile road from the mine to Ohnmathi on the Mandalay-Lashio highway have been constructed.

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. Tin and tungsten concentrates were produced separately or in mixed form, and their combined annual output has been about 1,100 tons of concentrates during the last 2 years, far below pre-World War II levels. Although statistics are conflicting, Burma has been producing, in terms of metal content, approximately 400 to 750 tons of tin and 200 to 400 tons of tungsten yearly. Most production has come from the Tavoy and Mergu Districts in the Tenasserim Division near the Thai border. Additional concentrates are purchased by the Government from small miners at relatively low prices.

Under the 4-year technical assistance agreement between MDC and the Soviet Union to rehabilitate the Mawshi tin-tungsten lode mine, a Soviet team of five experts continued to evaluate reserves which were calculated at 831,000 tons of recoverable reserves grading 0.97% Sn and 0.52% WO₃.⁵ The initial goal of the program is to produce about 100 tons of concentrates monthly—roughly twice the monthly levels late in 1970. A decline in tin and tungsten concentrate production was reported during 1972, indicating that the rehabilitation program may still be having problems.

NONMETALS

Cement.—Burma has two cement plants operated by the Industrial Development Corp. One plant, located at Thayetmyo, has two wet-process rotary kilns capable of producing about 180,000 tons per year. The second plant, supplied by Kawasaki Heavy Industries of Japan, is located in the Kyangin area in the upper reaches of

⁴ Japan Metal Journal. Dec. 11, 1972, p. 5.

⁵ Job, Arthur Leslie. Burma's Mines and Mineral Potential. World Mining, v. 26, No. 1, January 1973, pp. 34-38.

the Irrawaddy River and has a capacity of about 800 tons per day.

Fertilizer Materials.—Prior to 1970, Burma's annual fertilizer requirements were all imported. In 1970 the first of two similar fertilizer plants was completed. The second plant was completed in early 1972, bringing an end to the large-scale imports of nitrogen fertilizers. Complex or mixed fertilizers, however, will 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, are 40,000 tons of ammonia and an associated 65,000 tons of urea.

Gem Stones.—Uncut Burmese jade continued to be of importance in world jewelry circles. Annual output had ranged from 52,300 to 93,300 kilograms of uncut jadeite. But since nationalization, reported output has amounted to only about 2,000 to 3,000 kilograms annually. Burma also produces ruby, sapphire, spinel, other "precious stones," and cultured pearls. The jade, precious stone, and pearl industries are totally nationalized.

Salt.—Burma Salt Industries, the sole operator harvesting salt from brine pits located along the Indian Ocean coast, produced about 210,000 tons during 1972. This output was sufficient to meet domestic requirements.

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 Syriam glass factory; quartz from Choungzon in Amherst District; and barite from Kyaukse and elsewhere. Barite and bentonite extraction has increased because of growing demand by MOC.

MINERAL FUELS

Coal.—The Kalewa coalfield in the northwest, sole producer in Burma, produced 21,456 tons of low-grade coal during

1972, compared with only 19,711 tons during 1971. Burma's imports of coal are about 200,000 tons of coal annually.

Petroleum.⁶—The major development of 1972 was the beginning of offshore exploratory drilling, interrupted in September by a blowout in which the drilling rig was destroyed. The three holes drilled produced natural gas, but at yearend it remained uncertain whether the third hole also contained oil. Onshore exploration also continued, but there were no major new finds. Financial assistance continued to be provided to the Burmese petroleum sector by the Governments of Japan and West Germany and by the Eximbank.

Onshore, crude production continued to rise, but was wholly attributable to the new Mann field near Minbu, which nearly quadrupled its output. The old fields at Chauk and Yenangyaung and the newer small fields at Myanaung and Prome continued to decline.

Output of refined products at MOC's two refineries at Syriam and Chauk fell significantly during the year, causing local shortages and distribution problems in many parts of Burma. Apparently the decline reflects operating problems as well as increasing reliance on crude from the Mann field. Mann crude has an exceptionally high wax content, and produces a different mix of refined products than crude from the other fields. Production of kerosine, a basic household necessity to many Burmese, was particularly affected during the year.

Although onshore crude oil production continued to rise, it remained too low to meet domestic demand, and Burma continued to import small quantities of crude oil. During the year refinery output fell and demand exceeded refining capacity, leading to shortages and a decision to import certain refined products until an extension to the Syriam refinery can be completed.

Burma's first offshore exploratory well was spudded January 15 in the Gulf of Martaban 80 miles south of Rangoon. It was completed in early April at a depth of 13,926 feet and showed traces of hydrocar-

⁶ U.S. Embassy, Rangoon, Burma. State Department Airgram, A-016 (Annual Petroleum Report—Burma), Feb. 2, 1973, pp. 1-9.

bon gas but no petroleum. A second well, closer inshore, was begun May 8 and completed in July, at a depth of 13,036 feet, with results similar to the first well. The third well, about 30 miles southeast of Cape Negrais, was begun August 24 and blew out on September 8 after striking high-pressure gas at the 7,700-foot level. A possible oil slick was observed at the site, but there was no confirmation that petroleum was present in the test well. An active program of offshore seismic and geophysical surveys continued during 1972,

and additional exploratory drilling was planned for 1973.

Onshore exploratory drilling during the year was focused in the Rangoon area. Two wells struck natural gas in less-than-commercial quantities but reportedly confirmed the view that oil can be found in the structures near Rangoon. The drilling south of Thayetmyo so far has been unsuccessful. However, a test well in an area about 20 miles south of Prome, on the east bank of the Irrawaddy, reportedly has produced oil in commercial quantities.