

The Mineral Industry of Burma

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Burma's most significant mineral production included lead, zinc, tin, tungsten, barite, jadeite, and petroleum. By far the most valuable product was petroleum, its dollar worth being several times the combined value of all of the nonfuel minerals produced during the year. The petroleum production had the added advantage of making Burma one of the few Southeast Asian countries that was self-sufficient in energy needs. Burma's current mineral output is small by world standards, although it was a major producer of lead before World War II. It is still considered to have a good potential for expansion. Detailed geologic exploration is needed in several areas believed favorable for mineral occurrences.

The unstable security situation, however, has been a detrimental factor for a number of years. Detailed ground surveys and drilling needed for deposit evaluations have been delayed or canceled in some remote areas.

About 68,000 persons, or 0.5% of the active labor force, were employed in mining activities during 1979. During 1980, the mining sector probably accounted for about 2% of the net output of goods and services. Burma's mineral industry was managed primarily by four government-owned corporations. The No. 1 Mining Corp. controlled the lead, zinc, and silver output, which came mostly from the historic Bawdwin mining operations. The No. 1 Mining Corp. will also run the Monywa copper enterprise. The No. 2 Mining Corp. ran all the major tin and tungsten operations and the Heinze dredging project. The No. 3 Mining Corp. mainly was in charge of the Kalewa and Namma coal mines, the Moulmein and Loikaw antimony mines, and the planned

direct-reduction steel plant. Industrial minerals such as barite, limestone, and gypsum were managed by the No. 4 Mining Corp.

The Burmese press reported that the fiscal year 1980-81 State budget showed that of a total planned investment of \$832 million, \$95 million, or 11.0% was allocated to the mining sector. In addition, \$270 million was to go to the industrial sector, some of which would involve mineral-related projects. The \$56 million earmarked for the electric power sector would also indirectly benefit some of the mineral sectors.

According to government statistics, the economic growth for fiscal year 1979-80 was good, with gross domestic product (GDP) growing by 5.6% in constant 1970 prices. At current prices, it grew at 11.2% to approximately \$5.3 billion. Prices were rising somewhat, but the inflation rate for the year was expected to remain below 10%.

This was the fourth consecutive year in which the country achieved an increase in its rate of growth. Another important indicator, the ratio of fixed capital investment to GDP, reached 15.6% in 1979, compared with 7% in 1974. It appeared that the Burmese economy had overcome the stagnation of the late sixties and early seventies and was on the path to steady, sustained growth. Observers attributed the turnaround primarily to the policy changes since 1975-76, which have included the commercialization of State-run corporations, the introduction of a new bonus system for workers, and an effective tax reform.²

All sectors of the economy contributed to the growth in the GDP in fiscal year 1979-80. Agriculture accounted for 51% of the GDP and showed a real growth of 4.8%. The highest growth was in the construction

industry, which recorded a 24.1% increase. The mining sector also had an impressive growth rate of 17.6%.

In the fiscal year 1980-81 plan, the targeted real growth in GDP was set at 6.9% by the Government, a difficult but not unreasonable goal. The plan's breakdown by sector showed that the value of mining output was to increase by 17.2%, the highest of any sector. The next largest planned increase was 13.8% in the industrial sector.

In addition to the foreign assistance that it was receiving for the Bawdwin Mine and the Monywa copper project, Burma has also accepted foreign aid in several projects that benefit the entire economy and one that will benefit the overall mineral industry. The mineral-related project is to be a metallurgical research and development center at Ela in Lewe Township, 325 kilometers north of Rangoon. The Japanese International Cooperation Agency reportedly will finance the \$8.4 million project.³

The Chinese have signed a protocol with Burma on economic and technical cooperation, whereby mainland China will provide

financing amounting to 100 million yuan for eight unidentified projects. The Chinese have been helping Burma develop its electric power network for the past several years. A recently completed segment of the work was the installation of two 6,000-kilowatt generator sets and related infrastructure at the port of Moulmein at the mouth of the Salween River.

A number of other electric power projects are either underway or ready to be started. These consist of hydroelectric, gas turbine, or steam generator plants at several locations. A number of international agencies and several countries are reported to be helping both technically and financially.

Mostly as a result of foreign assistance, Burma's installed capacity for electric power generation has increased from about 250,000 kilowatts in 1970 to 435,800 kilowatts in 1980.⁴ Total power generated in 1979 was just over 1 billion kilowatt-hours, of which 70% was hydroelectric, 21% was by natural-gas-fueled gas turbine, and the remainder by diesel and steam power.

PRODUCTION

By value, the principal mineral commodities produced in Burma were petroleum, lead, silver, tin, tungsten, and zinc. Crude oil production was the most valuable mineral output in 1980, as well as in 1979, primarily resulting from the increases in world petroleum prices and secondly from a moderate increase in output.⁵ Under the Third 4-year plan (fiscal year 1978-79 through fiscal year 1981-82), the main objectives for the minerals sector were to increase production and to develop industrial self-sufficiency. During the first year of the current economic plan, a major metallogenic geologic survey and exploration project

was completed delineating the country's existing resources and new mineral occurrences. Additionally, Burma's mining industry, which was invested under the control of four governmental corporations, succeeded in obtaining foreign assistance either through financing or technology and equipment. Since 1978, output by lead-zinc operations and associated byproduct silver were showing annual increases. Similarly, the tin-tungsten sector also reported annual increases in output. However, the output in minerals production was partly attributed to better control and reduced activities in smuggling.

Table 1.—Burma: Production of mineral commodities¹

(Metric tons unless otherwise specified)

Commodity ²	1976	1977	1978	1979 ^b	1980 ^c
METALS					
Antimony, mine output:					
Gross weight	1,140	1,331	1,477	1,690	1,094
Sb content ^e	^f 460	^f 530	^f 590	^f 680	440
Copper:					
Mine output, metal content	92	45	56	67	^g 56
Matte, gross weight	205	99	125	148	123
Iron and steel: Crude steel ^e	40,000	40,000	40,000	NA	NA
Lead:					
Mine output, metal content ^e	^h 7,650	^h 8,250	^h 9,900	^h 12,100	11,800
Metal:					
Refined, including secondary	3,331	4,833	4,975	6,237	5,686
Antimonial lead (18% to 20% Sb)	187	120	127	185	185

See footnotes at end of table.

Table 1.—Burma: Production of mineral commodities¹—Continued

(Metric tons unless otherwise specified)

Commodity ²	1976	1977	1978	1979 ^P	1980 ^e
METALS—Continued					
Nickel:					
Mine output, metal content ^e	24	17	18	18	14
Speiss, gross weight	94	69	70	67	57
Silver, mine output	211	355	377	340	418
Tin, mine output, metal content:					
Of tin concentrate	264	114	346	573	701
Of tin-tungsten concentrate	243	248	411	660	304
Total	507	362	757	1,233	1,005
Tungsten, mine output, metal content:					
Of tungsten concentrate	109	108	189	276	323
Of tin-tungsten concentrate	167	170	282	416	209
Total	276	278	471	692	532
Zinc, mine output, metal content	2,211	1,334	2,645	3,028	3,596
NONMETALS					
Barite ³	15,681	16,096	35,320	39,486	39,689
Cement, hydraulic	233,130	269,000	254,000	390,606	*375,000
Clays: ³					
Ball clay	5,762	4,674	4,573	4,294	4,390
Bentonite	955	975	1,377	1,446	1,347
Fire clay ⁴	2,792	4,627	4,878	4,413	3,417
Industrial white clay	4,393	3,449	2,000	6,876	4,626
Feldspar ³	1,709	1,422	2,000	2,004	1,689
Graphite ³	161	96	280	268	199
Gypsum ³	45,296	33,511	35,431	38,265	37,132
Pigments, mineral, natural: Iron oxide	616	230	461	369	228
Precious and semiprecious stones: Jadeite ³	31,387	6,532	12,454	7,707	7,953
Salt	126	230	304	258	268
Stone: ³					
Dolomite	1,016	431	1,616	1,882	2,450
Limestone, crushed and broken	645	1,159	1,437	1,259	1,151
Quartz	116	73	—	122	143
Talc and related materials: Soapstone ³	238	201	391	394	333
MINERAL FUELS AND RELATED MATERIALS					
Coal	20,931	23,926	33,113	36,064	26,919
Gas, natural:					
Gross	13,300	16,000	17,000	18,000	*17,500
Marketed ³	8,481	8,784	12,638	13,500	*13,500
Petroleum:					
Crude	8,183	9,178	9,995	10,822	*10,510
Refinery products: ⁵					
Gasoline	1,646	1,864	1,864	2,008	*2,080
Jet fuel	216	248	*280	*300	*300
Kerosine	1,117	909	744	548	*450
Distillate fuel oil	2,045	2,351	2,500	2,626	*2,570
Residual fuel oil	1,012	1,279	1,532	1,396	*1,540
Lubricants	140	133	140	*140	*140
Other	177	179	*223	*220	*220
Total	6,353	6,963	7,283	7,238	*7,300

^eEstimated. ^PPreliminary. ^rRevised. NA Not available.¹Table includes data available through June 30, 1981.²In addition to the commodities listed, pottery clay, common sand, glass sand, other varieties of crude construction stone, and other varieties of gem stones are produced, but available information is inadequate to make reliable estimates of output levels.³Data are for fiscal years beginning Apr. 1 of that stated.⁴Includes fire clay powder.⁵Data exclude products used as fuel in refineries.

TRADE

Detailed trade figures were not available for 1979 or 1980. The mining industry normally ranks third in value of exports after agriculture and forest products. In view of the increased production in the mining sector during fiscal year 1979-80, it is likely

that mining increased its share of the total export value. Burma generally exports nearly all of its metallic mineral output, which is insignificant by world standards. Principal exports of Burma's mineral commodities include base metals and ores, sil-

ver, and cement.⁶ Mineral fuels were consumed domestically, except for a small amount of petroleum exported. Crude oil export was necessitated not by a lack of internal demand, but rather by a lack of storage and refining capacity. Refined products have actually been in short supply during the last few years. A new refinery is under construction at Mann Oilfield to nearly double domestic refining capacity, and when it is completed in 1982 or 1983, it will utilize all of the excess crude oil available from the presently operating oilfields.

The overall export targets for the recent years were set at \$273 million in fiscal year 1978-79, \$380 million in fiscal year 1979-80,

and \$491 million for 1980-81. It was believed that actual export trade fell somewhat below the goal for fiscal year 1979-80.

In addition to the normal trade channels, there was reportedly a brisk trade of uncut precious and semiprecious gem stones, tin and tungsten concentrate, and nonmineral raw materials. This smuggling black market, or illicit trade, as it has been variously described, is apparently unofficially condoned by the Government. The smuggled material is bartered for scarce consumer goods which are in short supply in Burma. This trading or smuggling was estimated in the press to total a large proportion of the official foreign trade.⁷

COMMODITY REVIEW

METALS

Copper.—Construction was reported to have begun on the Monywa copper project. Design and technology for the concentrator and mines was being supplied by RTB Bor of Yugoslavia. The Yugoslavians will build and assist the Burmese in the early stages, but Burmese officials will be in charge of management and operation. Concentrate will be exported. Ore will come from the Kyesintaung and Sabetaung deposits, just west of the Chindwin River, opposite the railhead town of Monywa.

In March 1980, Burma and Finland signed an agreement concerning a feasibility study for the construction of a copper smelter and refinery. The Finnish firm of Outokumpu will conduct the study.⁸

Iron and Steel.—It was believed that the country's first direct-reduction steel plant was under construction at Anisakan in Maymyo Township. The turnkey contract for a Kinglor Motor process plant was signed in July 1979. The plant will be the first of its type outside of Italy. The process uses noncoking coal as a reductant and natural gas as the major fuel. Planned capacity was 20,000 tons per year of metal. A 15- to 17-ton electric arc furnace will smelt the iron into steel.

Lead, Zinc, and Silver.—Two feasibility studies financed by the Federal Republic of Germany were underway during 1980 at the Bawdwin Mine in Namtu. The first was to examine the possibility of producing zinc oxide from the lead smelter slag. The zinc-rich slag and tailings have been accumulating for over 65 years. The second study was to examine the possibility of leaching silver from the tailings of the lead-zinc flotation

plant. The studies were scheduled for completion by yearend 1980.

Production of refined lead has increased annually since 1975, reaching close to 6,000 tons in fiscal year 1979-80. However, annual output of zinc concentrate during the same period has been erratic, but averaged around 4,700 tons per year, compared to a reported production of 6,400 tons in fiscal year 1979-80. Refined silver output increased proportionately as a byproduct function of lead refining. Increased output by the lead-zinc industry probably reflects the acquisition of new equipment and rehabilitation of plant facilities completed around yearend 1979.

Tin and Tungsten.—Tungsten resources are associated with tin occurrences in Burma. Both tin concentrates and tungsten concentrates are produced, as well as mixed tin and tungsten concentrates, which presently constitute the final form in which they are exported. Currently, the ratio of tin, tungsten, and mixed tin-tungsten output is 2 to 1 to 4, respectively.

Exploitation of the tin-tungsten deposits along the Tenasserim Coast in southern Burma was to begin at yearend 1980 with delivery of a new dredge. The dredge departed from Singapore, where it was built, in October and was scheduled to begin working as soon as possible.

A further study of the Tenasserim Div. tin resources was to be conducted under Asian Development Bank financing. The study is to develop a feasibility plan for exploiting some of the known onshore deposits.

In February 1980, Burma announced plans to construct a small tin smelter in

Syriam under an economic and technical cooperation agreement signed with North Korea. Although Burma reported output of 1,233 tons of tin in concentrate in 1979, it was believed that much more was actually produced and the excess smuggled out of the country. It is possible that when the smelter is built, it will furnish a more readily accessible market for the concentrate and hence cut down on at least some of the widespread smuggling.

NONMETALS

Burma's nonmetallic mineral production was generally oriented toward domestic consumption. Nonmetallic minerals were not produced in sufficient quantity to be significant in the world market, except certain gem minerals. Barite was probably the most valuable industrial mineral marketed. The Government was trying to increase production and had a ready export market for any barite not used in its own oil and gas well-drilling program. Bentonite, various other types of clays, feldspar, graphite, gypsum, jadeite and other gem stones, iron pigments, salt, and limestone were also produced during the year. Three cement kilns were believed operating at Thayetmyo on the west bank of the Irrawaddy River. Their combined capacity was about 1,000 tons per day. A new cement plant is now operating at Kyangin. An increase in cement production was planned for 1980 to support increased construction activity. Brick production increased over 20% during the first 6 months of 1980.

MINERAL FUELS

Petroleum.—During recent years, Burma has maintained a firm policy of not importing petroleum. This has led to shortages that have dampened plans for industrial and mineral development. However, annual crude production has increased steadily since fiscal year 1975-76, and according to government statistics, it continued the trend with a 6% increase during the first third of 1980. The Burmese set a production goal of 14 million barrels of crude oil for fiscal year 1981.

Crude production surpassed the country's ability to refine it in 1979, and the small surplus was exported to furnish much need-

ed foreign exchange. Three steps were undertaken to eliminate the refined product shortages, two completed in 1980. The first was the addition of a 6,000-barrel-per-day crude topping unit at the Syriam refinery near Rangoon, completed in August; the second was a 2,000-barrel-per-day refinery at Malun, 20 miles south of the Mann Oilfield, completed in October; the third, and most important step, was a new 25,000-barrel-per-day refinery which was being built near the Mann Oilfield with a loan from the Japanese Government. The refinery should meet almost all of Burma's petroleum product needs for several years to come if completed as planned in late 1981 or early 1982.⁹

The Burmese Government, through its own exploration crews and several contracts with foreign survey experts, has been conducting an active search for further oil and gas reserves. Twenty-nine drilling rigs were involved in the onshore exploration, and indications of hydrocarbons reportedly were found in many of 72 test wells drilled in the first half of 1980. Considerable evaluation work will be needed to determine the commercial viability of these tests.

Natural Gas.—Flaring of associated natural gas was essentially stopped in 1975. Gas is now used for electric power generation, fertilizer manufacture, and powering industrial plants, or is reinjected to pressurize the oilfields. Gas production jumped over 600% in the last decade.

Gas strikes were reported at Kyaiklat in the Irrawaddy Delta and in the Indaw area of the upper Chindwin Valley. The Indaw strike reportedly contained substantial reserves, but unfavorable terrain conditions would make development very difficult.

¹Physical scientist, Branch of Foreign Data.

²U.S. Dept. of State, American Embassy, Rangoon, Burma. Foreign Economic Trends and Their Implications for the United States, No. 80-025, April 1980.

³Rangoon Home Service (radio broadcast) 1330 hours G.m.t., Dec. 7, 1979.

⁴Selected Monthly Economic Indicators, Central Statistical Organization, Rangoon, Burma. Statistical Paper No. 3, May-June 1980, p. 29.

⁵_____. P. 34.

⁶_____. P. 11.

⁷Thriving Market for Illicit Foreign Trade. Kuala Lumpur Business Times in English. Nov. 17, 1980, p. 19.

⁸Hong Kong AFP in English (radio broadcast) 1740 hours G.m.t., Mar. 11, 1980.

⁹Petroleum News. V. 11, No. 8, November 1980, p. 24.

