THE MINERAL INDUSTRY OF

BURMA

By John C. Wu

In 1995, Burma[1] produced metallic minerals, industrial minerals, and mineral fuels. Its metallic minerals production included copper, gold, lead, manganese, nickel, silver, tin, tungsten, and zinc. Its industrial minerals production included barite, clays, dolomite, feldspar, gypsum, limestone, salt, and precious and semiprecious stones. Its mineral fuels production included coal, natural gas, and crude petroleum. *(See table 1.)*

The Ministry of Mines was responsible for establishing Burma's mining legislation and implementing its mineral policy. The Ministry of Mines also controlled three State-owned mining enterprises and a State-owned gems enterprise. Under the Ministry, the Department of Planning and Work Inspection established mining legislation governing mining rights, mine safety, environmental protection, and conducted mine inspections. The Department of Geological Survey and Mineral Exploration was in charge of the geological mapping and minerals survey and exploration. The Ministry of Energy was responsible for petroleum and natural gas exploration and development.

The mineral industry comprised three State-owned metals mining enterprises, a State-owned gems enterprise, a State-owned oil and gas enterprise, several Government and private joint-venture companies, and many small-scale private and local enterprises. According to the Ministry of National Planning and Economic Development, the total work force in the mining sector was about 105,000, accounting for 0.61% of Burma's labor force in 1995. The total output of the mining sector, in 1986 constant producers' prices, was estimated at $141 million,[2] or about 1.3% of Burma's gross domestic product, which was estimated at $10.8 billion in 1995.

After the Government opened 16 blocks of land to foreign investors for exploration and development of copper, gold, platinum-group metals, and associated minerals in central and upper Burma in November 1994, 26 companies from Australia, Canada, China, Indonesia, Malaysia, Singapore, South Africa, and the United States participated in competitive bidding.[3] By August 1995, 12 blocks of land and 2 promising gold deposits were awarded to companies from Australia, Canada, Singapore, and the United States. As a result, direct foreign investment in the mining sector increased to $189.5 million for 20 approved projects in July 1995 from $163.5 million for 11 approved projects in June 1994.[4] In October 1995, the Government offered 11 more blocks of land to attract local and foreign investors to explore for nonferrous and precious metals in central and lower Burma. Three blocks were for gold, one for copper, five for lead and zinc, one for nickel, and one for platinum-group metals. Each block of land was about 1,400 square kilometers.

Mine production of copper by the State-owned No. 1 Mining Enterprise was from an open pit mine at the Sabetaung deposit in Salingyi Township, about 11 kilometers (km) west of Monywa. Ivanhoe Myanmar Holdings Ltd. (IMH), a joint venture of Ivanhoe Capital of Canada and the Government, continued its exploration of copper to extend ore reserves at the Kyisingdaung and Letpadaung Taung deposits in the Monywa area.

In September 1995, IMH and No. 1 Mining Enterprise jointly opened a pilot plant in Salingyi Township to produce refined copper using solvent extraction-electrowinning technology. In February 1995, the Government signed agreements with IMH and First Dynasty Mines Ltd. (FDM) of Canada for exploration of copper, gold, and associated minerals. IMH was awarded blocks 3, 4, 5, 6, 6A, and 7; and FDM was awarded blocks 2, 10, and 11, all in upper Burma.

Mine production of lead, silver, and zinc by the State-owned No. 1 Mining Enterprise was mainly from an open pit and an underground operation at the Bawdwin Mine in Shan State of northern Burma. Metal production of lead, silver, and byproducts, such as antimonial lead, copper matte, and nickel speiss, was from a lead-silver smelter at Namtu, near the Bawdwin Mine. No. 1 Mining Enterprise planned to explore and develop the Lonchain (Laungkeng) zinc deposit in the southern Shan State, near the Thai border in the next few years. A group of Thai companies recently discovered a rich zinc deposit at Wali on the Burma-Thailand border, near Kawkaraik in Kayin State. The deposit extends from Burma into Thailand. Across the Thai border, mine production had begun at a rate of between 300 metric tons per day (t/d) and 500 t/d of zinc ore in 1995. However, exploration for estimating ore reserves in the Wali area was not done because the area was controlled by insurgents in the past 40 years.[5]

Mine production of gold by the State-owned No. 2 Mining Enterprise was from the Phayaung Taung gold mine in Patheiygi Township, near Mandalay and from the Kyaukpahtoe Mine, a new joint-venture operation of the

State-owned No. 2 Mining Enterprise and a local entrepreneur. For gold production, the Government signed a production-sharing contract with Pacific Arch Exploration NL of Australia (PAE) in February 1995 for exploration and development of an alluvial gold deposit near the village of Mansi, about 450 km north of Mandalay. In May 1995, the Government signed a second production-sharing contract with Sum Cheong Resources Pte. Ltd. (SCR) of Singapore for gold production at the Phayaung Taung gold mine in block 15. SCR planned to invest $1.1 million for further exploration at the mine site in 1996. For gold exploration, the Government signed agreements with PAE in February 1995 and with East Asia Gold Corp. (EAG) of the United States and International Panorama Resources (IPR) Ltd. of Canada in August. PAE was awarded blocks 8 and 13; EAG, block 14; and IPR, block 9.[6]

Production of tin and tungsten by the State-owned No. 2 Mining Enterprise was from the Mawchi Mine in Kayah State, the Heinda (open pit mine) in Tavoy Township, the Theindaw area of Tenasserim (Tanintharyi) Division, and from an unnamed area in Namhkam Township, northern Shan State, a joint-venture project of the No. 2 Mining Enterprise and Shweli Mining Corp. of China. At the Theindaw Mine, considerable amounts of gem-quality diamond were recovered as byproduct of tin concentrate. There was no primary diamond mine in Burma.

Burma also produced a variety of industrial minerals in small quantities and significant amounts of precious and semiprecious stones. Production of barite, bentonite, clays, dolomite, feldspar, gypsum, limestone, and salt was for the domestic market. Production of diamond, jade, rubies, and sapphires was for export.

The State-owned Myanma Ceramic Industries operated three cement plants. Cement plant No. 1, at Thayet in Magway Division, had an operating capacity of 125,000 metric tons per year (t/yr). Cement plant No. 2, in Kyangin Township of Ayeyarwaddy Division, had an operating capacity of about 250,000 t/yr. Cement plant No. 3, at Hpa-an Township of Kayin State, had an operating capacity of 192,000 t/yr. Because of the growing demand for cement, production of cement reached a record high level in 1995. Increased construction activity caused some cement shortages in the Rangoon and Mandalay areas. As a result, Burma's cement imports rose considerably in 1995.

The State-owned Myanma Gems Enterprise operated gem mines at the Mogok Stone Tract for rubies and sapphires and at the Jade Mines area for jade. Since 1993, both the State-owned enterprise and private companies have participated in ruby and jade mining at the Mongshu Stone Tract in eastern Burma; at the Pyinlon (Nawarat) Stone Tract in northern Burma near the Chinese border; and at Nathmaw and Manshibon in northwestern Burma, where high-quality jade was found. At the Mongshu gemstone tract, high-quality rubies and lower quality rubies containing iron were found recently. Myanma Gems Enterprise held its 32d gems, jade, and pearl emporium in March 1995 and had a total sales of $7.2 million, of which $5.4 million was from sales of jade.[7] The emporia had been held twice a year at the Myanma Gems Emporium Hall in Kaba-Aye Pagoda Road, Yangon. Gems and jewelry exports contributed about 4% to the country's total export earnings.

Production of coal was by the State-owned No. 3 Mining Enterprise at Namma in Shan State and at Kalewa in Sagain Division. Namma's coal was of lignite grade and Kalewa's coal, subbituminous grade. Coal was consumed mostly by the domestic iron and steel industry.

Production of crude petroleum and natural gas was by the State-owned Myanma Oil and Gas Enterprise, which operated 17 onshore oilfield and gasfields. Production of natural gas from the Aphyauk Gasfield, near Taikkyi Township in the lower delta of Ayeyarwady Division, rose to 2.12 million cubic meters per day (Mm^3/d) in 1995 from 1.1 Mm^3/d in 1994. Natural gas produced from 10 wells at the Aphyauk Gasfield was piped to Yangon and Pyay for power generation at Thaketa, near Yangon; and at Shwedaung, near Pyay; and for industrial use at the Sittaung Paper Mill in Yangon. Natural gas production from the Aphyauk Gasfield would be raised further to 2.8 Mm^3/d when a 224-km pipeline network is completed in 1996. The new pipeline will supply natural gas to two powerplants at Ywama and Myanaung, a cement plant at Kyangin, and a methanol plant at Seiktha.

To utilize offshore natural gas resources for the domestic market and for export to Thailand, Myanmar Total Exploration, a joint venture of Total Oil Co. of France (36.75%), Unocal Oil Co. of the United States (33.25%), and Petroleum Authority of Thailand (30%) was developing the Yadana Gasfield, which contains 192 billion cubic meters (m^3) of gas reserves and is about 320 km southwest of Yangon. Texaco Exploration Myanmar, a joint venture of Texaco Oil Co. of the United States (50%), Premier Consolidated of the United Kingdom (30%), and Nippon Oil Corp. of Japan (20%), was developing the Yetagun Gasfield which contains 48 billion m^3 of gas reserves and is about 450 km southeast of Yangon.[8]

In August 1995, the Government signed a major agreement with Mitsui & Co. of Japan to building a pipeline to deliver natural gas from offshore Yadana Gasfield to a powerplant and a fertilizer plant in a coastal industrial complex near Yangon. The $700 million natural gas development project included construction of a 250-km pipeline network, a 200-megawatts gas turbine powerplant, and a 570,000-t/yr urea fertilizer plant. Completion of the project would be linked to the commercial operation of Yadana Gasfield in August 1998.[9]

For oil and gas exploration, the Government signed three new production-sharing contracts separately with Texaco Exploration Myanmar, with Empire Oil Co. (Pacific) Ltd. of Australia, and with Atlantic Richfield Co. of the United States in 1995.

[1]Burma also is known as Myanma. Burma is the conventional short form of Union of Burma. Pyidaungzu Myanma Naingngandaw is translated by the US Government as Union of Myanma and by the Burmese as Union of Myanmar.

[2]Where necessary, values have been converted from Burmese Kyats (K) to U.S. dollars at the rate of K5.7=US$1.00 in 1995.

[3]Engineering and Mining Journal. "On the Road to Burma." V. 196, No. 10, Oct. 1995, p. 14.

[4]Ministry of National Planning and Economic Development (Yangon). Economic Development of Myanmar, June 1994, p. 32.

The Asian Wall Street Journal Weekly (Hong Kong). "Western Firms Remain Hesitant About Investing In Burma." V. 17, No. 36, Sept. 4, 1995, p. 8.

[5]U.S. Embassy, Rangoon, Burma. State Dep. Telegram 001160, Mar. 15, 1995, p. 1.

[6]Myanmar Business (Manila). "Feasibility Studies for Developing Gold and Copper Resources." V. 2, No. 11, Oct. 4, 1995, p. 4.

[7]———. "Gems & Jewelry." V. 2, No. 6, June 7, 1995, pp. 5-6.

[8]———. "Oil and Gas Notes." V. 2, No. 10, Oct. 1995, pp. 2-3. Petroleum Economist (London). V. 62, No. 3, p. 43; V. 62, No. 4, p. 35.

[9]The Nikkei Weekly (Tokyo). "Mitsui in Myanmar Gas Venture." V. 33, No. 1687, Sept. 4, 1995, p. 21.

Major Sources of Information

The Ministry of Mines 90 Kanbe Road, Yankin
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Major Publications

The Ministry of National Planning and Economic Development, Central Statistical Organization: Statistical Abstract, annually.

TABLE 1
BURMA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/		1991	1992	1993	1994	1995 p/
METALS						
Chromium: Chromite, gross weight e/		1,000	6,200	1,000	1,000	--
Copper:						
Mine output, Cu content		4,592	3,731	3,581	5,025 r/	3,700 e/
Matte, gross weight		73	45	42	37 r/	30 e/
Gold, mine output, Au content e/	kilograms	51	48	63	70	90
Iron and steel:						
Pig iron		568	1,409	1,500 e/	940 r/	1,500 e/
Steel, crude e/		25,000	15,000	25,000	25,000	25,000
Lead						
Mine output, Pb content e/		2,750	2,800	2,200	2,300	2,400
Metal:						
Refined		2,177	2,122	1,561	1,797 r/	1,753
Antimonial lead (93% Pb)		108	71	38	40	50 e/
Manganese mine output, Mn content e/		78	49	43	60 r/	50
Nickel:						
Mine output, Ni content e/		15	9	67	50 r/	50
Speiss (matte), gross weight		59	35	259	74 r/	100 e/
Silver, mine output, Ag content	kilograms	5,256	4,790	2,395	5,629 r/	3,500 e/
Tin, mine output, Sn content:						
Of tin concentrate		130	214	314	416 r/	372
Of tin-tungsten concentrate		308	435	375	398 r/	375
Total		438	649	689	814 r/	747
Metal: refined		157	189	170	200	190 e/
Tungsten, mine output, W content:						
Of tungsten concentrate		6	35	70	89 r/	93
Of tin-tungsten concentrate		350	496	454	455 r/	438
Total		356	531	524	548 r/	531
Zinc, mine output, Zn content		996	1,078	850	1,316 r/	719
INDUSTRIAL MINERALS						
Barite		11,339	13,589	15,628	21,969 r/	34,601
Cement, hydraulic		442,695 r/	464,495 r/	400,031 r/	469,582 r/	516,931
Clays:						
Ball clay		200	230	255	--	--
Bentonite		684	693	200	795 r/	500 e/
Fire clay and fire clay powder		1,357	1,500	2,154	2,413 r/	2,300 e/
Feldspar		3,737	1,618	6,289	6,976 r/	7,000 e/
Graphite		36	--	--	--	--
Gypsum		33,556	30,933	27,835	38,136 r/	34,659
Nitrogen: N content of fertilizer		111,000	130,000	130,000 e/	130,000 e/	130,000 e/
Precious and semiprecious stones:						
Jade	kilograms	149,790	162,964	223,980	316,543 r/	702,751
Diamond	carats	111	252	169	48 r/	10
Rubies, sapphires, spinel	do.	224,672	243,109	254,753	185,418 r/	175,000 e/
Salt e/ 3/	thousand tons	260	260	260	260	260
Stone:						
Dolomite		2,856	2,100	1,248	4,115 r/	3,432
Limestone, crushed and broken	thousand tons	1,910	2,083	2,134	2,300 e/	2,500 e/
MINERAL FUELS AND RELATED MATERIALS						
Coal, lignite		36,337	33,573	31,654	35,856 r/	32,191
Gas, natural:						
Gross e/	million cubic meters	936	913	1,054	1,308	1,476
Marketed	do.	916	894	1,031	1,280	1,446
Petroleum:						
Crude	thousand 42-gallon barrels	4,887	5,497	5,205	5,188 r/	4,393
Refinery products 4/	do.	4,250	4,395	4,516	4,627 r/	5,313

e/ Estimated. r/ Revised. p/ Preliminary.

1/ Table includes data available through May 28, 1996.

2/ In addition to the commodities listed, pottery clay, silica sand, construction aggregate, and varieties of gemstones are produced, but available information is inadequate to make reliable estimates of output levels.

3/ Brine salt production (in metric tons) reported by the Government was : 1991--46,835; 1992--46,509; 1993--58,915; 1994--58,612; and 1995--81,156.

4/ Includes gasoline, jet fuel, kerosene, diesel, distillate fuel oil, and residual fuel oil.

Source: Ministry of Mines and Central Statistical Organization (Yangon), Statistical Abstract 1994, pp. 63-66.