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2006 Minerals Yearbook

BURMA

U.S. Department of the Interior
U.S. Geological Survey

April 2009

The Mineral Industry of Burma

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In 2006, the mineral industry of Burma produced a variety of commodities, including cement, coal, copper, lead, limestone, natural gas, petroleum, precious stones, tin, tungsten, and zinc.

In August 2005, the mining and minerals ministers of all the members of the Association of Southeast Asian Nations (ASEAN) approved the ASEAN Minerals Cooperation Action Plan (AMCAP) 2005-2010. The agreement consisted of a cooperation plan to promote each ASEAN member country's mining sector and to strengthen cooperation among countries. The countries that belong to ASEAN are Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. The agreement encourages the development of the mineral sector as a way to promote economic growth and social progress, enhance trade and investment, and encourage the use of environmentally friendly and socially responsible mineral development practices in the ASEAN region. In August 2006, ASEAN held the Thirty-eighth Economic Ministers Meeting in Malaysia, at which member countries were encouraged to advance the development of the ASEAN Economic Community by working to increase their economic integration and, ultimately, to create a single integrated market. Country ministers also agreed to expand their relations with nonmember trading partners and to take steps to facilitate trade and cut transaction costs to encourage increased trade with ASEAN countries (Association of Southeast Asian Nations, 2005, 2006).

Minerals in the National Economy

Burma's total trade value for 2006 was $6.97 billion,[1] of which exports represented $4.43 billion, and imports, $2.54 billion, or the equivalent of 63.5% and 36.5% of total trade, respectively. In 2006, exports of base metals and ores totaled approximately $123 million, or 2.8% of total exports; gas exports were valued at about $1.5 billion, or 33.8% of total exports. The principal commodities imported by Burma in 2006 were cement, which was valued at $21.2 million, or less than 1% of the country's total imports; coal and coke, which were valued at $3.2 million, or 0.1% of total imports; and base metals and manufactures, which were valued at $185.8 million, or 7.3% of total imports. In 2006, Burma's main export partner was Thailand, and Burma's total exports to Thailand were valued at $1.8 billion, or 41% of total exports. India and China, were the second and third ranked export partners, respectively, with exports valued at $678 million (15.3% of total exports) and $405.6 million (9.2% of total exports), respectively (Selected Monthly Economic Indicators, 2007a-d).

Production

During 2006, Burma's mining sector experienced a significant decline in mineral production when compared with output in 2005; copper production decreased by about 41% to 20,400 metric tons (t) from 34,500 t in 2005; refined lead production also decreased by about 41%, to 537 t from 907 t for the same timeframe; silver production decreased to 684 kg from 2,302 kilograms (kg) in 2005, which was equivalent to a reduction of 70.3% and was the greatest decrease in production compared with other commodities produced in the country. Zinc mine output decreased to 46 t from 78 t, which corresponded to a 41% drop from 2005 to 2006. Gemstone production also decreased when compared with 2005 production; rubies production in 2006 was 1.685 million carats compared with 2.710 million carats in 2005, which corresponded to a drop in production of 37.8%; sapphires production plunged by almost 15% to 422,806 carats in 2006 from 495,192 carats in 2005; and spinel production also followed the decreasing trend, with output of 908,555 carats in 2006 compared with 2.015 million carats in 2005, which was a decrease of about 55% (table 1).

Production of some commodities, mainly coal and tungsten increased in 2006. Coal production increased to 331,445 t from 229,647 t in 2005, or by about 44%; tungsten in concentrate production doubled in 2006 to 4 t (table 1).

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Copper.—Copper production in Burma suffered a setback during 2006 after consecutive annual increases in production from 2002 to 2005 (table 1). Burma's main copper asset, the Monywa Copper Project, which is located in west-central Burma approximately 110 kilometers (km) west of Mandalay, 15 km west of Monywa, and 832 km north of Yangon, comprises the following deposits: Kyisintaung, Letpadaung, Sebetaung, and Sebetaung South. The first phase of the Monywa Copper Project was developed as the S&K Mine, which covered a 30.59-square-kilometer (km²) area and encompassed the Kyisintaung, the Sabetaung, and the Sabetaung South deposits.

The Monywa Copper Project was a 50-50 joint venture between Ivanhoe Myanmar Holdings Ltd. (IMHL) (a wholly owned subsidiary of Ivanhoe Mines Ltd. of Canada) and state-owned Mining Enterprise No. 1 (ME1). The Canadian company operated in Burma through Myanmar Ivanhoe Copper Co. Ltd. (Monywa JVCo), which was a company incorporated in Burma. Monywa JVCo had a copper sales agreement with Marubeni Co., which had an exclusive right to market the copper throughout the world. The sales agreement expired on December 31, 2005, but the companies negotiated an extension of the agreement to December 31, 2006. In 2006, copper cathode production at the S&K Mine reached 19,544 t. During

[1]Where necessary, values have been converted from Myanmar kyat (K) to U.S. dollars (US$) at the rate of K5.81=US$1.00.

2005 and 2006, Ivanhoe expressed an interest in a potential sale of its 50% interest in the S&K Mine. In February 2007, Ivanhoe transferred its assets in Burma to an independent third party trust awaiting the sale. Ivanhoe and the trust were aware that, because of international sanctions placed on the Government of Burma, they might have difficulty selling the assets (Ivanhoe Mines Ltd., 2007).

Mineral Fuels

Natural Gas.—The amount of natural gas marketed in Burma during 2006 was 12,501 million cubic meters, which was an increase of about 7.3% compared with that of 2005 (table 1).

In early 2005, a consortium of foreign oil companies with interest in Burma's gasfields announced the discovery of additional natural gas deposits in the Shwe field, which is located offshore within Block A1 along the western Rakhine coast. Block A1 was owned by a consortium of Korean companies [Daewoo International Corp. (operator), 60%, and Korea Gas, 10%] and Indian companies [Oil and Natural Gas Co. (ONGC) Videsh Ltd. (OVL), 20%, and Gas Authority of India Ltd., 10%]. In August 2006, OVL and the consortium partners, which also owned Block A2, announced that the gas resource potential of the Shwe gasfield was estimated to be between 3.4 trillion cubic feet (TCF) and 5.4 TCF (96 billion and 152 billion cubic meters); that of the Shwe Phyu gasfield was estimated to be between 0.5 and 1.2 TCF (14 billion and 33.9 billion cubic meters); and that of the Mya gasfield was estimated to be between 1.8 and 3.4 TCF (50.9 billion and 96 billion cubic meters). Recoverable reserves at Shwe were estimated to be between 2.9 and 4.7 TCF (82 billion and 133 billion cubic meters); at Shwe Phyu, between 0.4 and 0.9 TCF (11 billion and 25 billion cubic meters); and at Mya, between 1.5 and 3.0 TCF (42 billion and 84.9 billion cubic meters). The assessment and the certification of the results were carried out by the independent Singapore agency Gaffney, Cline & Associates (ONGC Videsh, 2006).

Burma's producing natural gas fields included the Yadana, which covers an area of 26,140 km², and the Yetagun, which covers an area of 24,130 km²; both are located in the Gulf of Martaban. The main operator at the Yadana gasfield was France-based Total Exploration and Production Myanmar (Total E&P Myanmar) (31.24%). The other partners included Chevron Corp. (28.26%), Thailand-based PTT Exploration and Production Public Co. Ltd. (PTTEP) (25.5%), and Myanma Oil and Gas Enterprise (MOGE) (15%). Production in this gasfield reached 19.3 million cubic meters per day in 2006. The Yadana gasfield product was transported via 346 km of offshore pipeline and 63 km of onshore pipeline to the District of Tenasserim, which shares a border with Thailand. The gas from Yadana was sufficient to meet 15% to 20% of Thailand's demand (Total E&P Myanmar, 2007a, b). The main operator in the Yetagun gasfield was Petronas Carigali Myanmar Inc. (40.91%). Other partners included MOGE (20.45%) and PTTEP and Nippon Oil Exploration (Myanmar) Ltd. (19.32% each) (Nippon Oil Exploration Ltd., 2006).

The three other gasfields that were in operation in Burma were the Myanmar M3 & M4 project, the Myanmar M7 & M9 project, and the Myanmar M11 project; PTTEP was the operator for all three. In 2006, the Myanmar M3 & M4 project and the Myanmar M11 project were in the exploration stage and were being evaluated for geologic, geophysical, and seismic data. During 2006, PTTEP drilled eight wells (four exploratory and four appraisal) in the Myanmar M7 & M9 project. The exploration well Zatila-1, which is located in Block M9, resulted in traces of oil (PTT Exploration and Production Public Co. Ltd., 2007a, b).

Outlook

During 2006, the mineral industry of Burma underwent a significant setback in production, which would be noticeable in early 2007. The copper industry was to be particularly affected given Ivanhoe's decision to sell its Monywa Copper Project assets, which were transferred to an independent third party while awaiting the sale.

Natural gas exploration activities in Burma are expected to continue to increase during 2007, mainly as a result of the many exploration projects that were started and the discoveries that were made in 2005 and 2006.

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TABLE 1

BURMA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2002	2003	2004	2005	2006
METALS						
Chromium, chromite, gross weight		318 [r]	341 [r]	364 [r]	409 [r]	400 [e]
Copper:						
Mine output, Cu content		27,500	27,870	31,756	34,500	20,400
Matte, gross weight[3]		26	79	80 [e]	80 [e]	80 [e]
Metal, refined		27,500	27,870	31,756	34,500	20,400
Gold, mine output, Au content	kilograms	92	90	90 [e]	90 [e]	100 [e]
Iron and steel:[e, 3]						
Pig iron		1,500	1,500	1,500	1,500	1,500
Direct-reduced iron		40,000	40,000	40,000	40,000	40,000
Steel, crude		25,000	25,000	25,000	25,000	25,000
Lead:						
Mine output, Pb content[4]		2,000	2,000	2,000	2,000	2,000
Metal:						
Refined		425 [3]	888	289	907	537
Antimonial lead (93% Pb)[3]		2	21	-- [e]	-- [e]	NA
Manganese, mine output, Mn content[e]		50	50	50	50	50
Nickel:[e]						
Mine output, Ni content		10	10	10	10	10
Speiss (matte), gross weight		7 [3]	12 [3]	10 [e]	10 [e]	10 [e]
Silver, mine output, Ag content[4]	kilograms	778 [3]	778	1,120	2,302	684
Tin, mine output, Sn content:[4]						
Of tin concentrate		302 [3]	434	330	402	566
Of tin-tungsten concentrate		154 [3]	172	196	306	357
Total		456	606	526	708	923
Metal, refined[e]		30	30	30	30	30
Tungsten, mine output, W content:[4]						
Of tungsten concentrate		1 [3]	3	1	2	4
Of tin-tungsten concentrate		83 [3]	93	106	166	193
Total		84	96	107	168	197
Zinc, mine output, Zn content[4]		138 [3]	127	196	78	46
INDUSTRIAL MINERALS						
Barite		15,050 [3]	4,850	2,224	2,058	2,930
Cement, hydraulic		470,858 [3]	571,505	518,999	543,072	570,031
Clays:[3]						
Bentonite		1,104	856	800 [e]	800 [e]	800 [e]
Fire clay and fire clay powder		332	130	100 [e]	100 [e]	100 [e]
Feldspar[e]		10,000	10,000	10,000	10,000	10,000
Gypsum		90,002 [3]	66,069	71,155	67,522	68,651
Nitrogen, N content of ammonia		21,000	62,500	34,800 [e]	30,000 [e]	30,000 [e]
Precious and semiprecious stones:						
Jade	kilograms	10,878,789 [3]	10,692,780	12,407,576	19,445,758	20,646,832
Diamond[e]	carats	5	5	5	5	5
Rubies	do.	1,428,464 [3]	1,858,889	2,919,147	2,710,002	1,685,481
Sapphires	do.	2,913,431 [3]	2,297,352	2,241,803	495,192	422,806
Spinel	do.	237,729 [3]	222,304	1,037,963	2,014,623	908,555
Salt[e, 5]	thousand metric tons	35	35	35	35	35
Stone:						
Dolomite		3,806 [3]	4,572	4,184	3,980	4,460
Limestone, crushed and broken[e]	thousand metric tons	3,200	3,500	3,300	3,400	3,500
MINERAL FUELS AND RELATED MATERIALS						
Coal, lignite		115,175 [3]	109,214	237,949	229,647	331,445
Gas, natural:						
Gross[e]	million cubic meters	9,400	9,400	9,400	9,400	9,400
Marketed	do.	9,353 [3]	9,799	10,277	11,648	12,501

See footnotes at end of table.

TABLE 1--Continued
BURMA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2002	2003	2004	2005	2006
MINERAL FUELS AND RELATED MATERIALS--Continued						
Petroleum:						
Crude	thousand 42-gallon barrels	6,387 [3]	7,204	7,160	8,133	7,675
Refinery products[6]	do.	6,028 [3]	5,835	5,133	4,638	4,867

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. NA Not available. -- Zero.
[1]Table includes data available through November 16, 2007.
[2]In addition to the commodities listed, construction aggregates, sand and gravel, and silica sand are produced, but available information is inadequate to make reliable estimates of output.
[3]Data are for fiscal year ending March 31 of the following year.
[4]Data are for the production by the state-owned mining enterprises under the Ministry of Mines.
[5]Brine salt production, in metric tons, reported by the Government was for 2002—59,825; 2003—73,112; 2004—58,395; 2005—116,768, and 2006—84,208.
[6]Includes diesel, distillate fuel oil, gasoline, jet fuel, kerosene, and residual fuel oil.

Sources: International Fertilizer Industry Association, Ammonia Statistics 2004; Ministry of Mines and Central Statistical Organization (Yangon), Statistical Yearbook 2004; Selected Monthly Economic Indicators, December 2005 and January 2007; World Bureau of Metal Statistics, March 2007.

TABLE 2
BURMA: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement		Union of Myanmar Economic Holdings Ltd.	Sinmin cement plant	146,000
Coal		No. 3 Mining Enterprise	Kalewa coal mine in Sagaing Division, near Kalewa	13,000
Copper		Ivanhoe Myanmar Holdings Ltd., 50%, and Mining Enterprise No. 1, 50%	Monywa Copper Project, the Sebetaung-Kyisintaung Mine and the Monywa refinery solvent extraction/ electrowinning (SX-EW) plant located near Monywa	39,000
Fertilizer, N content		Myanma Petrochemical Enterprise, 100% state-owned	No. 1 fertilizer plant at Sales, 190 kilometers southwest of Mandalay	94,900
Do.		do.	No. 2 fertilizer plant at Kyun Chaung, central Burma	75,555
Do.		do.	No. 3 fertilizer plant at Kyaw Zwar, central Burma	219,000
Natural gas	million cubic meters	Total E&P Myanmar, 31.24%; Chevron Corp., 28.26%; PTT Exploration and Production Public Co. Ltd. (PTTEP), 25.5%; Myanma Oil and Gas Enterprise (MOGE), 15%	Yadana gasfield in Moattama, Gulf of Martaban	7,227
Do.	do.	Petronas Carigali Myanmar Inc., 40.91%; Myanma Oil and Gas Enterprise (MOGE), 20.45%; PTT Exploration and Production Public Co. Ltd. (PTTEP), 19.32%; Nippon Oil Exploration (Myanmar) Ltd., 19.32%	Yetagun gasfield in Tanintharyi, Gulf of Martaban	4,635
Do.	do.	Myanmar Petroleum Resources Ltd. and Myanma Oil and Gas Enterprise (MOGE)	Mann oilfield, south of Yangon	37
Petroleum:				
Crude	thousand 42-gallon barrels	do.	do.	876
Refined	do.	Myanma Petrochemical Enterprise, 100% state-owned	No. 1 refinery at Thanlyin, near Yangon	9,490
Do.	do.	do.	No. 2 refinery at Chauk, central Burma	2,190
Do.	do.	do.	No. 3 refinery at Thanbayakan, central Burma	9,125
Steel		Myanmar POSCO Steel Co. Ltd., 70%	POSCO steel plant in Yangon	30,000