

# THE MINERAL INDUSTRY OF

# INDONESIA

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After three decades of successful economic growth that began in mid-1997, Indonesia experienced severe drought, low world oil prices, regional financial crisis, and domestic political instability. Its strategic location, large labor force drawn from a population of more than 200 million, relatively low wages compared with other Asian countries, abundant natural resources, financial and trade sector deregulation efforts, and the at-the-time stable political climate had created a favorable investment place for domestic and foreign companies. Once dependent on petroleum, natural gas, and commodities such as coffee, tea, and timber, its economy has slowly developed into nonpetroleum, labor-intensive value-added products, such as garments, footwear, plywood, and basic machinery.

In 1999, the economic condition in Indonesia was better than that of 1998. The exchange rate had stabilized, nominal interest rates had declined, and inflation had been brought under control. Besides oil and gas, the value of direct investment in other sectors continued to decline; the rate of decline, however, started to slow, and signs of recovery were evident. The Capital Investment Coordinating Board, which is the central processing point for investment applications other than oil and gas, finance, and banking, reported that foreign capital investment approvals in 1999 were \$10.6 billion compared with \$13.6 billion in 1998 and \$33.8 billion in 1997 (U.S. Embassy, Jakarta, Indonesia, March 20, 2000, Recent economic reports—1999 Indonesian investment statistics, accessed April 26, 2000, at URL <http://www.usembassyjakarta.org/econ/imiinv1999.html>). In 1999, chemicals, metal products, and energy remained the leading sectors that received foreign investment applications. Saudi Arabia was the top investing country and was followed, in decreasing order, by Australia, Taiwan, Singapore, Japan, and the United Kingdom.

## Government Policies and Programs

Concerns about political uncertainties continued to deter foreign investment. One such concern involved such disputes between local government and foreign investors as the tax claim against U.S.-based Newmont Mining Corp.'s Minahasa operation in Sulawesi (U.S. Embassy, Jakarta, Indonesia, [undated], Recent economic reports—Economic highs and lows, January 2000, accessed February 23, 2000, at URL <http://www.usembassyjakarta.org/econ/econhighlow2K.html>). In 1999, the Indonesian Parliament passed the Regional Autonomy Law No. 22/99 and the Fiscal Decentralization Law No. 25/99 giving the provincial and local governments a greater share of the natural resource wealth within their

borders. The legislation included revenue-sharing formulas for oil, gas, and other natural resources. These formulas specified that a fixed share of natural resource revenues would be sent to district and to provincial governments. Areas that were not rich in natural resources would be awarded at least 25% of the revenues collected by the central Government under these laws. No district or province would experience a decline in revenues from the central Government. A new Hazardous Waste Law No. 18/99 was passed by the Parliament that made every current (1999) operating mine in Indonesia theoretically illegal. The Partial Revisions Law No. PP 85/99, which regulated the disposal of hazardous mine wastes, was introduced as an amendment to Law No. 18/99 (Mining Journal, 2000a).

The Regional Autonomy Law No. 22/99 and the Fiscal Decentralization Law No. 25/99 required mining companies to create more standards for community development and environmental protection for areas around their mining operation. Under the new law, international mining companies were required to pay more attention to growing nationalism, village rights to ancestral properties, and local customs and expectations. In the past, mining companies depended on their Contract of Work (COW) with the central Government as their guide and legal framework to operate in Indonesia. When local social matters at mine sites conflicted with COW's, companies reported to the Ministry of Energy and Mineral Resources (DME) for resolution. Law No. 22/99 would bring COW's within the domain of the provincial and local governments rather than that of the central Government. The Indonesian Government believed that the decentralization would allow local governments to act with respect to local problems in the mining sector. Law No. 25/99 required mining companies to pay royalties to provincial and local governments where its mining operations were located. The new procedures confused and overburdened many mining companies. The DME was preparing a ministerial decree to implement the law in late 2000. It would establish procedures for provinces to issue mining permits for investment, exploration, and production in areas lying within two or more districts and offshore within 19 kilometers (km) of their coasts. Local governments would have the right to sign their own COW's with mining companies (Mining Journal, 1999, 2000c).

## Productions

Since the economic crisis began in 1997, illegal mining increased dramatically. The DME estimated that about 57,000 people earned their living from illegal mining compared with about 30,000 people employed in legal mining operations

before that time. Illegal mining activities, primarily for coal and gold, were highest in West Java, West Sumatra, North Sulawesi, and Kalimantan. State mining companies, such as PT Aneka Tambang (Antam), faced the same problems as the foreign companies. Illegal miners occupied Australia-based Aurora Gold Ltd.'s 480-square-kilometer (km<sup>2</sup>) Mount Muro concession in Central Kalimantan and threatened the company's normal operation in mine sites. In South Kalimantan, Australia based Broken Hill Proprietary Ltd.'s coal mine was invaded by well-organized and well-equipped illegal miners who extracted more than 1 million metric tons (Mt) of coal from its property. Coal and gold were the choices for illegal miners because they were easy to handle and sell (Far Eastern Economic Review, 1999; Asian Journal of Mining, 2000a). Owing to the use of mercury and cyanide to extract metals from ores, illegal mining has resulted in environmental damage and pollution to the surrounding areas. Mining companies that owned those concessions were obligated to clean up the damages (Asian Journal of Mining, 1999d).

The Indonesian Government issued a new regulation that would allow foreign companies to explore for minerals on the islands of Bali and Java. Foreign investors were required to post \$13,400 to receive the right to perform general reconnaissance and exploration work in a maximum area of 25,000 hectares (ha); this area would be reduced to a maximum of 6,250 ha at the production stage. Regulations and rules for operating in Bali and Java would be more restricted than other islands in Indonesia. Companies that were active in exploration on these islands were state-owned or local companies that had joint ventures with foreign companies. The local companies would hold the contract, and the foreign partners would provide finance and technical expertise to develop the project (Engineering & Mining Journal, 1999b).

The Government intended to increase royalties on coal from 2% to 7%, copper from 2% to 4%, gold from 1.0% and 1.5% to 3.75%, and nickel from 4% to 5%. The increase would only affect the eighth generation COW's, which were still in draft form. The Indonesian Mining Association pointed out that the proposed royalties were higher than those of neighboring countries such as Australia and the Philippines. Most mining companies operated in remote areas that required investment in basic infrastructure such as electricity and roads. Exploration activity in Indonesia peaked in 1996. Since 1997, however, the salting of the Busang gold deposit and lower metal prices have had a substantial negative impact on exploration activities. In 1999, six companies terminated seventh generation COW's, and another 20 postponed their activity at least for a year (U.S. Embassy, Jakarta, Indonesia, [undated], Recent economic reports—IMI: Indonesian mining sector update for May, accessed July 7, 2000, at URL <http://www.usembassyjakarta.org/econ/Miningupdate05.html>). Junior exploration companies, without funding and stock market support, have largely stopped any exploration activities in Indonesia. The proposed royalties would undermine the country's competitiveness on foreign investment in mining (Mining Journal, 2000c).

## Trade

Indonesia was still in a recession and foreign trade reflected that condition. In 1999, values of imports and exports were \$23.92 billion and \$48.49 billion, respectively, and represented a decline of \$3.42 billion and \$360 million, respectively, from those of 1998 (Asian Wall Street Journal, 2000b). In the past 2 years, the decline in value of the Indonesian rupiah against the U.S. dollar provided an attractive situation for Indonesian exports; political uncertainty, however, affected imports negatively.

Under the terms of the Association of Southeast Asian Nations Free Trade Agreement, Indonesia, which was a member, was required to move the automobile sector from the temporary trade exclusion list to the trade inclusion list by January 1, 2000. The Indonesian Government reduced tariff rates on imports of completely built automobiles and of knocked down kits imported for domestic assembly and removed the restrictions on the number of companies that were allowed to import automobiles. The import duties on raw materials for automobile component manufacture was reduced to 5% from between 10% and 20%. Items affected by the change included cold-rolled and coated steel sheet, mild steel wire rod, aluminum alloy bars, and copper wire (Metal Bulletin, 2000).

## Commodity Review

### Metals

Even though the water level in Lake Toba in Sumatra was higher in 1999 than in 1998, PT Indonesia Asahan Aluminum's smelter operated at about 55% of its output capacity as a result of the continuing power shortage. The hydropowerplants drew water from the lake for power generation. The water level must be more than 905 meters above sea level for the smelter to operate at full capacity (Metal Bulletin, 1999b).

Indonesia's demand for aluminum was stronger in 1999 compared with that of 1998. The country's secondary aluminum producer, PT HP Metals, increased its aluminum alloy output to 5,000 metric tons per month (t/mo) in 1999 compared with 1,000 t/mo in 1998. The company exported 98% of its output to China, India, Japan, and Southeast Asian countries. PT HP Metals was established by Taiwan's King Modern Metal Co. The company also had a 14,400-metric-ton-per-year (t/yr) zinc alloy plant; because demand for zinc alloy was poor, however, the plant only operated at about 50% capacity (Metal Bulletin, 1999a).

A feasibility study was undertaken at the state-owned Antam's bauxite project in Kalimantan. The Tayan bauxite deposit extended for more than 36,410 ha and was expected to replace the Kijang bauxite operation in Bintan. Resources were estimated to be 110 Mt at a grade of 46% Al<sub>2</sub>O<sub>3</sub>. The project included a 300,000-t/yr alumina refinery that produced refractory-grade alumina for the East Asian market. Antam

held a 51% interest; the balance was held by Japanese partners with an off-take agreement. Production was planned to begin in 2003 (Asian Journal of Mining, 1999l).

PT Freeport Indonesia Co. (PT-FI), 81.28% owned by Freeport McMoRan Copper & Gold Inc. of the United States, agreed to raise its royalty payments to the Indonesian Government in return for the authority to double the production capacity of its copper ore to 300,000 metric tons per day (t/d) at its copper-gold Grasberg Mine, West Papua, previously known as Irian Jaya. For copper, the royalty would increase to 100%, and for gold and silver, it would go up to 200% based on production above 200,000 t/d. A fourth concentrator mill was commissioned to increase Grasberg's ore throughput capacity to 240,000 t/d. The mill was part of a \$960 million expansion plan that included a \$350 million coal-fired powerplant. The expansion gave Rio Tinto Ltd. an opportunity to participate in mine development. Rio Tinto secured the right to acquire a 40% interest in approved future expansion of the mill facilities by providing \$750 million for such expansion. In 1999, PT-FI milled an average 220,700 t/d. The average ore contained 1.12% of Cu, 1.37 grams per metric ton (g/t) Au, and 2.78 g/t Ag. The recovery rates were 84.6% for Cu, 83.7% for Au, and 63.4% for Ag (Asian Journal of Mining, 1999j; Engineering & Mining Journal, 2000b; Northern Miner, 2000). In 1999, Montgomery Watson, Inc., an environmental consulting and auditing firm, audited PT-FI's environmental management systems, including tailings management. Although the auditors found that PT-FI had fulfilled its environmental commitments and requirements, they recommended that PT-FI install a comprehensive ground-water and biological monitoring system to estimate the impact of the downstream tailings deposition area to mollusk communities and to develop effective and innovative technology for the treatment of acidic rock drainage (Engineering & Mining Journal, 2000a).

The Batu Hijau copper and gold mine in Sumbawa Island, West Nusa Tenggara was put into operation in late 1999. PT Newmont Nusa Tenggara was established by Newmont Gold Mining Co. of the United States (45%), Sumitomo Corp. of Japan (35%), and PT Pukuafu Indah (20%) to develop and operate the \$1.9 billion project permitted under a fourth generation COW signed in 1986. The mine had reserves of 4.77 Mt of copper and 330 metric tons (t) of gold. The facility had the capacity to process 120,000 t/d of ore to produce 700,000 t/yr of concentrates that contained 272,000 t of copper and 13.4 t of gold. About 400,000 t of copper concentrates would be exported to Japan. LG-Nikko Copper Inc. of the Republic of Korea signed a long-term contract to buy an average of 150,000 t/yr of copper concentrates from Batu Hijau (Asian Journal of Mining, 1999g; U.S. Embassy, Jakarta, Indonesia, [undated], Recent economic reports—Indonesian mining sector update for August, accessed November 17, 1999, at URL <http://www.usembassyjakarta.org/econ/miningaug.html>).

On September 16, 1999, the Regency of Minahasa sued PT Newmont Minahasa Raya (PT Newmont), a joint venture between Newmont Mining Corp. of the United States (80%) and PT Tanjung Serapung (20%), in the North Sulawesi court for failure to pay in arrears taxes of about \$8 million because of

excessive excavation at the mine and to close the mine. The mine had produced more than 10 t of gold. PT Newmont claimed that under the COW signed with the Indonesian Government in 1986, the overburden was not included in the contract and the Ministry of Mines and Energy (MME) supported Newmont's position. On January 22, 2000, the Tondano District Court granted the regional government's request to shut down the mine. On March 6, the Manado High Court affirmed the district court's decision to shut down the mine by April 16. The MME and the Ministry of Home Affairs informed the court that the MME was the only authority that could close down mining operations in Indonesia. On April 13, Indonesia's Supreme Court suspended the closure. The MME established a joint study team in an attempt to resolve the regional dispute. On April 19, the Minahasa Regency agreed to withdraw its lawsuit against PT Newmont in return for an agreement by the company to pay \$500,000 in arrears taxes on overburden used in the construction of a road for the regency and \$2.5 million to be used in a local project that had been under discussion. The company planned to close down its gold production activities in 2003 or 2004 which was 5 or 6 years earlier than scheduled if no new reserves were found at its mining sites (Asian Wall Street Journal, 2000c, d; Mining Journal, 2000d, e).

Muro Offshore Pty. Ltd., a wholly owned subsidiary of Aurora Gold Ltd., purchased the 10% equity held by PT Gunung Moro Perkasa under a conditional contract agreement in 1996. Aurora had secured 100% ownership of the Mount Muro Mine in Central Kalimantan. Mount Muro rallied through a difficult year in 1998, which had been caused by a severe drought, and was faced with local unrest in 1999. Illegal mining increased throughout the year and land owners demanded that claims relating to ground access and control be reopened. Beginning July 1999, mining operations at the Bantian-Batu Tembak and Pemata-Batu Badinging-Hulubai complexes were suspended. Operations at the Kerikl pit were suspended in September when a group of locals blockaded the haul road for 3 weeks. New mineral resources were identified at Langantihan and Dua Lagi (Asian Journal of Mining, 1999a, b; Far Eastern Economic Review, 1999).

The Gosowong gold/silver project, a joint venture between Newcrest Mining Ltd. (82.5%) and Antam (17.5%), produced its first gold in July 1999 under a sixth generation COW. The mine is located on the west coast of Halmahera Island in Maluku. Full output capacity of 4.4 t/yr of gold and 4.8 t/yr of silver from the 200,000-t/yr Merrill-Crowe treatment plant was projected within 5 years. Local unrest disrupted production in August 1999. Civil unrest in North Malulu forced Newcrest to cut back on exploration in Indonesia and focus only at Gosowong (Asian Journal of Mining, 1999f).

Placer Dome Inc. signed an agreement with Thirtle Mining Inc. and Golden Valley Mines NL to form a joint venture for the Tumpangpitu gold/silver prospect in Bukit Hijau of Java. Under the terms of the joint venture, a new company would be set up to hold a COW on the Tumpangpitu project. Placer Dome would have a 51% interest in the new company. The balance would be held by Golden Valley (24%) and the Indonesian partner PT Hakman Platina Metalindo (25%).

Placer Dome could earn a further 14% for the responsibility of financing the joint venture and mine production decision (Asian Journal of Mining, 2000f).

PT Kelian Equatorial Mining (KEM), of which Rio Tinto PLC held a 90% interest and PT Harita Jayaraya had the remaining 10%, intended to continue its gold mining operation in East Kalimantan until 2004 when ore was expected to be exhausted. KEM operated the Kelian Mine under a third generation COW signed in 1985. Gold production began at a level of 14 t/yr in 1992. KEM's mining area covered 1,285 ha, which overlapped properties owned by local residents and the Government. The company faced many landowner claims on its mining properties. In 1998, the provincial government of East Kalimantan formed a verification team to assess the claims; locals, however, set up roadblocks on the supply road to the gold mine to prevent delivery of the fuel and supplies needed for mining activities. The company hoped that the negotiations with the local community on land disputes would be settled soon, otherwise the company would cease its gold mining operation (Asian Journal of Mining, 2000c).

In April 1999, Antam completed the relining and modernization of the Pomalaa Ferronickel Smelter I on the island of Sulawesi. The renovated smelter had the same output capacity of FeNi II, 5,500 t/yr of nickel each. The Pomalaa operations processed ore from several sources that included Gebe, Gee, and Pomalaa. The Pomalaa operation began in 1938 after exploration in 1917. Gebe and Gee were discovered on Gebe Island, Maluku, in 1975, and production began in 1979. Mining in Gebe and Gee was scheduled to continue until about 2010. The company announced that it planned to invest \$250 million to build an additional 13,000-t/yr capacity nickel smelter at the ferronickel plant (FeNi III) at Pomalaa along with a 60-megawatt (MW) diesel powerplant, thus raising total output capacity to 24,000 t/yr of nickel matte. The new plant was planned to be completed in 2001. Antam signed a 12-year agreement with Krupp-Thyssen of Germany to supply 8,000 t/yr of nickel in ferronickel and a 10-year agreement with Pohang Iron & Steel Co. of the Republic of Korea for 5,000 t/yr (Asian Journal of Mining, 1999i; U.S. Embassy, Jakarta, Indonesia, [undated], Recent economic reports—Indonesian mining sector update for August, accessed November 17, 1999, at URL <http://www.usembassyjakarta.org/econ/miningaug.html>).

PT Gag Nickel, owned by BHP Asia Pacific Nickel Pty. Ltd. (75%) and Antam, (25%), planned to develop the nickel and cobalt deposit over an area of 77 km<sup>2</sup> at Gag Island. The joint venture project was scheduled to come on-stream in 2003 to produce 30,000 t/yr of nickel and 2,700 t/yr of cobalt. The total investment, which included a smelter, was estimated to be \$900 million. Although engineering for the plant was completed, an environmental impact study was continuing (Asian Journal of Mining, 2000d).

PT Weda Bay Nickel, a joint venture between Weda Bay Mineral Inc. of Canada (90%) and Antam (10%), had identified an indicated resource of 60 Mt of ore grading 1.51% of nickel and 0.09% of cobalt in Halmahera Island. The

company intended to identify sufficient laterite resources to support a pressure acid leach plant to process up to 3 million metric tons per year (Mt/yr) of ore for at least 30 years. The company had secured \$18 million to fund the work (Asian Journal of Mining, 2000g; Metal Bulletin, 1999c).

PT International Nickel Indonesia, owned by Inco Ltd. of Canada (59%), Sumitomo Metal Mining Co. Ltd. of Japan (20%), and public shareholders (21%), completed a \$500 million expansion of its nickel mining and processing facilities in 1999. The output of nickel matte was increased by 50% to 68,000 t/yr. The expansion included a second hydroelectric power generator adding 93 MW to the existing 165-MW generating capacity, a fourth smelter line (including ore dryer, reduction kiln, electric smelter, and matte converter), and modifications to existing smelter, facilities to maximize capacity. All nickel matte produced from the Soroako facilities was sold to Inco and Sumitomo Corp. under long-term contracts and shipped to Japan for refining. Under its COW, which would expire in 2025, the company was required to supply the expanded output to domestic customers and to develop its nearby Bahodopi and Pomalaa nickel laterite deposits, each of which was capable of producing 16,000 t/yr of nickel. In 1999, continuing low rainfall hampered the hydroelectric generating capacity that affected the nickel matte output (Asian Journal of Mining, 1999k; Mining Journal, 2000f; U.S. Embassy, Jakarta, Indonesia, [undated], Recent economic reports—Indonesian mining sector update for August, accessed November 17, 1999, at URL <http://www.usembassyjakarta.org/econ/mining aug.html>).

The Indonesian tin producer PT Tambang Timah (PT Timah) reduced its output to avoid impacting the market's balance and to resolve land-use disputes with local communities. PT Koba Tin, a joint venture of Ilubka Resources under Renison Goldfields Consolidated Ltd. of Australia (75%) and PT Timah, however, increased its tin concentrates output by 4.2%. In 1999, the total tin concentrate production was reduced by 11.5% from that of 1998. The decline in tin concentrate output resulted in an 8% drop in tin metal production and a drop in the volume of tin exports. About 95% of tin metal output was exported to the European Union, Japan, Taiwan, and the United States (Asian Journal of Mining, 2000e; U.S. Embassy, Jakarta, Indonesia, [undated], Recent Economic Reports—IMI: Indonesian mining sector update for May, accessed July 7, 2000, at URL <http://www.usembassyjakarta.org/econ/Miningupdate05.html>).

Diadem Resources Ltd. completed the settlement and purchase arrangements with Bresea Resources Ltd. for three separate exploration properties on Belitung Island, Kelapa Kampit (lead/silver/zinc), Lilangan (gold), and Thikus (base metals). With the purchase of Bresea's 60% interest, Diadem negotiated with several mining companies to form a joint venture for developing all three properties. In the Kelapa Kampit deposit, a report indicated that the area contained an estimated indicated resource of 13.38 Mt grading 6.59% zinc, 4.02% lead, and 59.86 g/t silver and an inferred resource of 12.23 Mt grading 6.52% zinc, 4% lead, and 59.75 g/t silver (Asian Journal of Mining, 1999c).

## ***Industrial Minerals***

Owing to the economic crisis and the downturn of the construction sector, cement production had been cutback severely in the past 2 years; however, owing to the start up of several cement plants, PT Semen Bosowa, PT Indokodeco, and PT Bintang Mandiri, the total cement output capacity increased to 46.42 Mt by yearend 1998. Because of the weakening of the rupiah against foreign currencies, cement producers, especially those that were privately-owned, ran into serious financial problems and posted massive losses from the exchange rate losses. Local cement producers were actively restructuring to stay afloat and the Government planned to privatize its own enterprises to gain revenues. Foreign investors, such as Cemex of Mexico and Heidelberger Zement AG of Germany, were looking for opportunities to gain majority ownership in Indonesia's cement companies. Until late 1997, domestic cement prices were under strict Government control via a system of retail price control in different regions. A free market system was introduced, and cement producers were allowed to bid for supply contracts outside their traditional marketing region. In 1999, domestic cement consumption was expected to decline by 5% to about 18.4 Mt, and exports were expected to increase to 9 Mt. Three cement producers, PT Indocement Tunggal Prakarsa, PT Semen Cibinong, and PT Semen Gresik, accounted for 99% of the cement export market (U.S. Embassy, Jakarta, Indonesia, [undated], Recent economic reports—Economic highs and lows, accessed December 29, 1999, at URL <http://www.usembassyjakarta.org/econ/high-low-econ.html>).

## ***Mineral Fuels***

The Indonesian coal sector relied on its exports to maintain the steady output growth throughout the difficulties of the past 2 years. Total coal exports were 41.7 Mt in 1997 and increased to 46.9 Mt in 1998. When the Asian financial crisis was nearly over, Indonesia was able to export more coal to its neighboring countries. About 67% its total coal output was exported, in decreasing order, to Japan, Taiwan, the Republic of Korea, and Thailand. Domestic demand for coal remained weak. The Government had set coal production targets of 85 Mt in 2002 and 95 Mt in 2005. Indonesian coal producers might face competition from China and Colombia on their coal exports in the future. Owing to oversupply in its domestic market, the Chinese Government had launched a series of strategic plans to increase coal exports from 32.29 Mt in 1998 to 50 Mt in 2000 (Asian Journal of Mining, 1999e; U.S. Embassy, Jakarta, Indonesia, March 26, 1999, Energy news, IMI: Mining sector update—Low world commodity prices affect earnings, accessed April 26, 2000, at URL <http://www.usembassyjakarta.org/econ/miningupd-32699.html>).

The MME planned to provide incentives, which included lower royalties, for coal mining enterprises to develop low-quality coal in remote areas. Under the terms of existing contracts, coal mining enterprises were obliged to send 13.5% of their coal output as royalties to the Government. Under the new scheme, the payable amount of royalties by companies to

the Government would depend on the quality of the coal and remoteness of the area. Also, royalty levels would change with the change in coal prices. In 1999, total investment by coal investors declined by 30% to \$199.5 million. Of 131 first and second generation coal COW's, only 115 were active. Five contractors suspended their operations owing to economic difficulties. Because of security problems or lack of coal resources in their concessions, 12 coal contractors decided to stop operations. One had its contract revoked by the Government. In May 1999, the MME awarded 12 new third generation coal COW's to exploit coal resources in the provinces of Central, East, and South Kalimantan and South Sumatra. Of the 12 third generation coal COW's, 11 were signed by yearend 1999 (Asian Journal of Mining, 2000b).

The Government had reversed its policy to allow coal mining at the Bukit Soeharto conservation area in East Kalimantan. In early 1999, the Government issued licenses to Indonesian companies to help quell coal seam fires in the Bukit Soeharto conservation area. With the help of the U.S. Office of Surface Mining, Reclamation, and Enforcement, the Government found another method to put out burning coal (Asian Journal of Mining, 1999h).

The Government planned to privatize the state-owned PT Tambang Batubara Bukit Asam (PTBA) in 2000. PTBA had decided to expand its coal output from 12 Mt/yr in 1999 to 16 Mt/yr in 2003 and 19 Mt/yr in 2006 from its open cut Tanjung Enim mine site in South Sumatra. The company signed an agreement with the state rail operator to expand rail-haulage capacity from the mine sites to its port at Tarahan. Existing mining operations were concentrated in two locations in Sumatra, Tanjung Enim in the south and Ombilin in the west. Total coal reserves in a 20-km radius around Tanjung Enim were estimated to be 5 billion metric tons. The coal was characterized as relatively low in ash and sulfur content. At Ombilin, the company operated two open cut and one underground mine with a total reserve of 109 Mt. Coal from Ombilin had a calorific value in the range of 6,900 to 7,000 kilocalories per kilogram. PTBA exported about 30% of its total coal output to power and steel companies in Japan, Malaysia, Taiwan, and Thailand (Engineering & Mining Journal, 1999a).

PT Kaltim Prima Coal (KPC), a 50-50 joint venture between Rio Tinto Ltd. and BP Amoco Corp., reached an agreement with the Indonesian Government on the company's divestment program. The parent companies agreed to sell 30% of their share in KPC for \$175 million to any interested Indonesian party through a public offering on the Jakarta Stock Exchange or through private placement. KPC operated a coal mine 120 km north of Samarinda, East Kalimantan. Coal output grew to 15 Mt/yr in 1999 from 7 Mt/yr in 1992, when the mine began production. The company exported 98% of the mine's high-quality, low-sulfur steam coal. PTFI was its main domestic client. The mine had a design output capacity of 28 Mt/yr of coal. In early 1999, PT Timah announced its intention to buy KPC shares but did not reach a price agreement (Asian Journal of Mining, 1999m; Mining Magazine, 2000).

In 1999, Indonesia's oil production averaged 1.5 million barrels per day, which was a decline of 3.6% from that of 1998.

The decrease in condensate production reflected the maturity of natural gas fields, especially those of Mobil Oil Indonesia Inc., and Caltex Pacific Indonesia. Because no large oilfield had been discovered in the past several years, low production levels were expected to continue in 2000. Oilfield development was concentrated on smaller fields in the more mature provinces of Java, Kalimantan, and Sumatra. In 1999, oil companies that operated in Indonesia spent \$4.3 billion in exploration and development in the oil and gas sector, which was \$1 billion less than the spending plan, and planned to spend about \$4.8 billion in 2000. Oil and gas exports accounted for 20.3% of total Indonesian export revenue in 1999. Receipts from oil and gas exports rose to \$9.9 billion (U.S. Embassy, Jakarta, Indonesia, February 3, 2000, Energy news—Indonesian oil update for February, accessed April 26, 2000, at URL <http://www.usembassyjakarta.org/econ/oil-updatefeb00.html>).

On September 25, 1999, the Indonesian parliament rejected the draft oil and gas law after the state-owned oil and gas company Pertamina and the MME failed to reach an agreement on the timetable for privatization of Pertamina. The MME held the position that Pertamina's role as guardian of national interests should be retained but that aspects of its operations should be reformed. Legislators, however, expressed concerns that Pertamina would not be able to compete with foreign oil companies under the proposed timetable. The draft law also proposed that the MME take over the function of awarding and supervising production-sharing contracts with foreign oil companies, a function that was carried out by Pertamina. In the draft law, the monopoly power held by Pertamina on the processing and distribution of oil products would be abolished. Indonesia also seriously examined a new domestic natural gas policy, which included a domestic gas pricing regime, in an effort to encourage domestic consumption of natural gas (U.S. Embassy, Jakarta, Indonesia, [undated], Energy news—Indonesian oil update for September, accessed November 17, 1999, at URL <http://www.usembassyjakarta.org/econ/oil-Sept99.html>).

With the assistance of a United Nations-sponsored referendum, the majority of people in East Timor decided in favor of independence from Indonesia in August 1999. In 1989, the Governments of Indonesia and Australia executed a treaty for the Timor Gap Zone of Cooperation, which went into force in 1991. The Timor Gap Zone area is located south of the deep-water Timor Trough and covers an area of 35,000 km<sup>2</sup> of the Timor Sea between northern Australia and the island of Timor. The treaty divided the zone into three separate areas: Indonesia administers Area C, Australia administers Area B, and Australia and Indonesia jointly administer Area A, which was the largest of the three areas. A bilateral ministerial council, assisted by a joint authority, controls exploration and production of petroleum and gas resources and production-sharing contracts in Area A. Revenue from commercial uses of the resources in this area was equally shared by Australia and Indonesia. Each production-sharing contract was for 6 years could be terminated after 3 years or extended for 4 more years. In the past 4 years, there had been 15 oil and gas discoveries (U.S. Embassy, Jakarta, Indonesia, October 5, 1999, Energy news—IMI: Update on Timor Gap energy resources, accessed

December 29, 1999, at URL <http://www.usembassyjakarta.org/econ/timorgap.html>).

In 1999, Phillips Corp. received approval from the Timor Gap Joint Authority to develop Bayu-Undan Gas Field and the Elang and the Kakatua Oil Fields. The recoverable oil reserves in the Elang and the Kakatua Fields in ZOC-A 91-12 were estimated to be from 15 million to 18 million barrels (Mbbbl) of light, low-sulfur oil. The Bayu-Undan Gas Field contained estimated recoverable reserves of 400 Mbbbl of condensate and liquefied petroleum gas, and 96 billion cubic meters (Gm<sup>3</sup>) of natural gas. Production was scheduled to begin in late 2003 (U.S. Embassy, Jakarta, Indonesia, October 5, 1999, Energy news—IMI: Update on Timor Gap energy resources, accessed December 29, 1999, at URL <http://www.usembassyjakarta.org/econ/timorgap.html>).

On September 27, 1999, Pertamina awarded four 30-year contracts in an area of 2,274 km<sup>2</sup> for the development of oil and gas in Indonesia to Apex (Yapen) of Japan, PT Petromer (Bengara) Energi of the United States, Lasmo (Krueng Mane) Ltd. of the United Kingdom, and Shell BV of the Netherlands. Apex was at the Yapen Offshore Block in Irian Jaya; Petromer at the Bengara Offshore Block in West Papua; Lasmo at the Krueng Mane Offshore Block in North Sumatra; and Shell at the Ambalat Offshore Block in East Kalimantan.

In 1999, natural gas production grew 3% to 87 Gm<sup>3</sup>. Mobil, which was Indonesia's largest gas producer, reduced its production by more than 14% from its Arun gasfield in North Sumatra. Pertamina also reduced its natural gas output by 4%. Total Indonesia's Peciko and Tunu North gasfields in East Kalimantan came on-stream in late 1999. Natural gas output from Total would increase to 42.5 Gm<sup>3</sup> in 2000. Indonesia supplied about 40% of northern Asia's liquefied natural gas. Japan, the Republic of Korea, and Taiwan were Indonesia's liquefied natural gas customers; China and India, however, would become potential buyers in the near future (U.S. Embassy, Jakarta, Indonesia, July 10, 2000, Energy news—IMI: Indonesian oil update for July, accessed July 11, 2000, at URL [http://www.usembassyjakarta.org/econ/iminews\\_jul.html](http://www.usembassyjakarta.org/econ/iminews_jul.html)).

The Indonesian Government had set the Tangguh liquefied natural gas project as its top priority for development in the next several years. The Tangguh project was divided into three production sharing contract blocks in West Papua. It had proven natural gas reserves of 408 Gm<sup>3</sup> with additional probable reserves of 110 Gm<sup>3</sup>. Atlantic Richfield Co. (Arco) and Kanematsu Corp. jointly developed the Wiriaga Block. The Berau Block was owned by Arco, Kanematsu, Nippon Oil Corp., and Occidental Petroleum. BG Exploration and Production and Cairns Ltd. held the exploration rights for the Muturi Block. Commercial natural gas production for 2005 (Asian Wall Street Journal, 2000a).

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TABLE 1  
INDONESIA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1995	1996	1997	1998	1999
<b>METALS</b>					
<b>Aluminum:</b>					
Bauxite, gross weight thousand tons	899	842	809	1,055	1,116
Metal, primary e/	220,000	225,000	216,150 2/	133,000	100,000
Chromite sand, dry basis e/	10,000	13,300	2,156 2/	4,700 r/	6,400
<b>Copper:</b>					
Mine, Cu content	443,618	507,484	529,121	780,780 r/	739,685
Metal	--	--	--	--	126,700
Gold, mine output, Au content 3/ kilograms	64,031	83,564	86,927	124,018 r/	130,000 e/
<b>Iron and steel:</b>					
Iron sand, dry basis	366,111	425,101	516,403	560,524	562,912
<b>Metal:</b>					
<b>Ferroalloys:</b>					
Ferronickel	53,675	48,260	49,990	42,260	46,030
Ferromanganese e/	14,000	14,000	15,000	13,000	12,000
Steel, crude e/ thousand tons	3,500	4,100	3,800	2,700 r/	2,800
Manganese, ore	634	34	889	600 e/	550
<b>Nickel:</b>					
Mine output, Ni content 4/	88,183	87,911 r/	71,127 r/	74,063 r/	89,100
Matte, Ni content	46,067	39,500	32,012	35,697	45,901
Ferronickel, Ni content	10,735	9,653	9,999	8,452	9,205
Silver, mine output, Ag content kilograms	275,568	255,403	219,392	348,987	291,857
<b>Tin:</b>					
Mine output, Sn content	46,058	52,304	55,175	53,959	47,754
Metal	38,628	39,000 e/	52,658	53,401	49,105
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic e/ thousand tons	23,129	25,000	26,000	22,000 r/	22,500
<b>Clays:</b>					
Bentonite	26,057	26,000 e/	653,823	840	5,213
Fireclay e/ thousand tons	2,000	2,000	2,000	1,800	1,850
Kaolin powder	14,373	15,000 e/	1,956	8,567 r/	21,389
<b>Diamond: e/</b>					
Industrial stones thousand carats	22	22	23	22	23
Gem do.	7	7	7	6	7
Total do.	29	29	30	28	30
Feldspar	49,415	50,000 e/	24,399	40,434 r/	23,236
Gypsum	1,327	1,400 e/	--	405 r/	5,707
Iodine	77	75 e/	83	65 r/	74
Nitrogen, N content of ammonia e/ thousand tons	2,850	2,875	3,600 r/	3,500 r/	3,450
Phosphate rock	7,500 e/	7,500 e/	533	752	617
Salt, all types e/ thousand tons	670	670	680	660	650
<b>Stone:</b>					
Dolomite	4,056	4,000	13,411	20,115 r/	2,907
Granite thousand tons	5,386	4,827	6,138	4,801	4,107
Limestone do.	13,143	15,000 e/	6,329	6,575	15,540 5/
Marble cubic meters	10,446	8,000 e/ r/	2,592 r/	142,147 r/	702
Quartz sand and silica stone	278,925	300,000 e/	636,468	144,953 r/	140,428 5/
Sulfur, elemental e/	3,500	3,500	3,500	3,400	3,450
Zeolite	70 e/	75 e/	-- r/	-- r/	569
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
<b>Coal:</b>					
Anthracite	35,000 e/	50,000 e/	85,165	57,741	72,795
Bituminous thousand tons	39,936	50,332	55,982	61,146	72,618
<b>Gas, natural:</b>					
Gross million cubic meters	82,100 e/	83,500	89,630	84,333	86,863
Marketed e/ do.	48,100	48,200	50,900	48,700	49,500
Petroleum, crude including condensate thousand 42-gallon barrels	580,000 e/	575,000	539,752	568,159 r/	547,610

e/ Estimated. r/ Revised. -- Zero.

1/ Table includes data available through August 15, 2000.

2/ Reported figure.

3/ Includes Au content of copper ore and output by Government-controlled foreign contractors' operations. Gold output by operators of so-called people's mines and illegal small-scale mines is not available, but may be as much as 20 metric tons per year.

4/ Includes a small amount of cobalt that is not recovered separately.

5/ Cubic meter.



TABLE 2  
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY IN 1999

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Locations of main facilities	Annual capacity	
<b>Aluminum:</b>				
Bauxite	PT Aneka Tambang (Government, 100%)	Kijang, Bintan Island, Riau	1,300	
Metal	PT Indonesia Asahan Aluminum (Nippon Asahan Aluminum Co. Ltd. of Japan, 59%; Government, 41%)	Kual Tanjung, North Sumatra	225	
Cement	PT Indocement	Citeureup, West Java	8,000	
Do.	PT Semen Cibinong	Narogong, East Java	1,400	
Do.	PT Semen Gresik	Gresik, East Java	1,500	
Do.	PT Semen Padang	Indarung, West Java	2,200	
Coal	PT Adaro Indonesia (New Hope Corp, 50%; PT Asminco Bara Utama, 40%; Mission Energy, 10%)	Paringin and Tutupan, South Kalimantan	20,000	
Do.	PT Bukit Baiduri Enterprise (PT Gajah Tunggal Gal Mulia, 90%, others, 10%)	Samarinda, East Kalimantan	3,000	
Do.	PT Kaltim Prima Coal Co. (BP Coal Indonesia Ltd., 50%; Rio Tinto Ltd., 50%)	do.	16,000	
Do.	PT Arutmin Indonesia (BHP Ltd., 80%; Bakrie Group, 20%)	Banjamasin, South Kalimantan	5,000	
<b>Copper</b>				
Concentrate	PT Freeport Indonesia Co. (Freeport-McMoRan Copper & Gold Inc. of the United States, 81.28%; Government, 9.36%; others, 9.36%)	Ertsberg and Grasberg, Irian Jaya	550	
Do.	PT Newmont Nusa Tenggara (Newmont Gold Mining Co. of the United States, 45%; Sumitomo Corp., 35%; PT Pukuafu Indah, 20%)	Sumbawa Island	700	
Metal	PT Smelting Co. (Mitsubishi Materials Corp., 60.5%; PT Freeport Indonesia Co., 25%; others, 14.5%)	Gresik, East Java	200	
Gold	metric tons	Aurora Gold Ltd. (100%)	Balikpapan, Central Kalimantan	60
Do.	PT Freeport Indonesia Co. (Freeport-McMoRan Copper & Gold Inc. of the United States, 81.28%; Government, 9.36%; others, 9.36%)	Ertsberg and Grasberg, Irian Jaya	55	
Do.	PT Kelian Equatorial Mining (Rio Tinto Ltd, 90%; PT Harita Jaya Raya of Indonesia, 10%)	Sangatta, East Kalimantan	15	
Do.	PT Newmont Minahasa Raya (Newmont Mining Corp., 80%; PT Tanjung Serapung, 20%)	Manado, North Sulawesi	15	
Do.	PT Prima Lirang Mining (Billiton BV of the Netherlands, 90%; PT Prima Maluku Indah of Indonesia, 10%)	Lerokis, Wetar Island	3	
<b>Petroleum, crude</b>				
thousand barrels per day	Atlantic Richfield Indonesia, Inc. (subsidiary of Arco of the United States)	Arjuna and Arimbi, offshore, West Java	170	
Do.	Maxus Southeast Asia Ltd. (subsidiary of Maxus Energy of the United States)	Cinta and Rama, offshore, Southeast Sumatra	95	
Do.	Pertamina (Government, 100%)	Jatibarang, West Java, and Bunyu, offshore East Kalimantan	80	
Do.	PT Caltex Pacific Indonesia (Texaco Inc., 50%; Chevron 50%, both of the United States)	Minas, Duri, and Bangko, central Sumatra	700	
Do.	Total Indonesia (subsidiary of Compagnie Francaise des Petroles of France)	Handi and Bakapai onshore and offshore East Kalimantan	180	
<b>Gas:</b>				
Natural	Mobil Oil Indonesia, Inc. (subsidiary of Mobil Corp. of the United States)	Arun, Aceh in North Sumatra	1,700	
million cubic feet per day	Do.	Roy M. Huffington (subsidiary of HUFFCO of the United States)	Badak, East Kalimantan	1,000
Liquefied	PT Arun LNG Co. Ltd. (Government, 55%; Mobil Oil, 30%; the Japan Indonesia LNG Co., 15%)	Balang Lancang, Aceh in North Sumatra	10,000	
Do.	PT Badak LNG Co. Ltd. (Government, 55%; HUFFCO Group, 30%; the Japan Indonesia LNG Co., 15%)	Bontang, East Kalimantan	7,900	
<b>Nickel:</b>				
In ore	PT Aneka Tambang (Government, 100%)	Pomalaa, South Sulawesi and on Gebe Island,	34	
In matte	PT International Nickel Indonesia (Inco Ltd. of Canada, 59%; Sumitomo Metal Mining Co. Ltd. of Japan, 20%; others, 21%)	Soroako, North Sulawesi	45	
<b>Nitrogen</b>				
Do.	PT Aseah-Aech Fertilizer (Government, 60%; other members of Association of Southeast Asian Nations, 40%)	Lhokseumawe, North Sumatra	506	
Do.	PT Pupuk Iskandar Muda (Government, 100%)	do.	506	
Do.	PT Pupuk Kalimantan Timur (Government, 100%)	Bontang, East Kalimantan	1,012	
Do.	PT Pupuk Sriwijawa (Government, 100%)	Palembang, South Sumatra	1,438	

TABLE 2--Continued  
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY IN 1999

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Locations of main facilities	Annual capacity
Steel, crude	PT Krakatau Steel (Government, 100%)	Cilegon, West Java	2,400
<b>Tin:</b>			
In ore	PT Koba Tin (Westralian Sands Ltd., 75%; PT Tambang Timah TBK, 25%)	Koba, Bangka Island	11
Do.	PT Tambang Timah TBK	Onshore and offshore islands of Bangka, Belitung, and Singkep	60
Metal, refined	Mentok Tin Smelter (PT Tambang Timah TBK)	Mentok, Bangka Island, South Sumatra	68
Do.	Koba Tin Smelter (PT Koba Tin)	Koba, Banka Island, South Sumatra	13.5