

THE MINERAL INDUSTRY OF INDONESIA

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Despite the bombing outside the Australian Embassy in September and the tragic tsunami in December, the expansion of Indonesia's economy was stronger than expected. In 2004, Indonesia's real gross domestic product (GDP) grew by 5.1% compared with that of 2003; this growth rate was higher than the Government's target of 4.8%. The inflation rate increased by 6.2%, which was the lowest in 4 years.

The December tsunami claimed at least 200,000 lives in the Indonesian Province of Aceh; the Province had accounted for 2.2% of the total GDP in 2003. The agriculture sector contributed about 30% of the Province's revenue, and 40% came from the production of oil and gas. Oil and gas production facilities were not damaged in the tsunami disaster. In 2004, increased productivity and higher prices resulted in a 4% increase in the agriculture sector. The estimated economic impact of the disaster was calculated to be \$4.5 billion at replacement cost and was expected to reduce national GDP growth by 0.1% to 0.4% in 2005.

Spurred by investment in property, the construction sector grew by 8.2%. The growth rate of transport and communications increased by 12.7%. Owing to the increased demand for cement and transportation equipment, the manufacturing sector grew by 6.2%. Despite higher global prices for minerals and oil, mining output fell by 4.6% because of the decline investment and poor security at some mines. Although labor-intensive agriculture continued to have a dominant role in the country's economy, revenues from the mineral sector provided about 25% of the Government's budget. The mining sector engaged about 0.5% of the labor force and contributed about 3% of the GDP (Asian Development Bank, 2005, p. 3-7; Bank Indonesia, 2005; World Bank, 2005a, b).

In 2004, foreign investment approvals by the Capital Investments Coordinating Board fell by 26.8% to \$10.3 billion. Although foreign companies invested less in their existing plants, the value of foreign-invested project approvals increased slightly to \$5.4 billion. In the second half of 2004, the economic index showed that the growth had shifted from consumption to investment. During that period, investment grew by 19%, while private consumption grew by only 4.4% and Government consumption decreased by 2.5%. The growth still remained well below the precrisis level of 1997. The Government predicted that the Indonesian economy would grow by 5.4% in 2005 and that the growth rate would reach 7% in 2009 (Capital Investment Coordinating Board, 2005a¹, b¹).

Government Policies and Programs

Indonesia's principal mineral resources are coal, copper, gold, nickel, oil, and tin. Mining provides significant local employment, directly at the mine site and indirectly through

the supply of goods and services from Indonesian sources. A significant part of Indonesia remains unexplored; some of these land areas have the most prospects for mineral development. The mining sector could have the potential to become a much larger contributor to the country's economy and to regional development. In recent years, mining investment has slowed because of external factors, such as declines in world mineral and metal prices, and also owing to a decline in Indonesia's competitiveness in the world. Investors and lenders were concerned about fair and competitive taxation. The agreements between investors and the Central Government would be honored, and future taxes would be stable and predictable. The Government was aware of the need to attract investment and has taken various steps to improve the investment climate. To improve investment climate requires institutional reforms (Petrominer, 2005e; World Bank, 2005c).

The economic stability maintained throughout 2004 had provided a more-solid foundation for stronger economic performance in 2005 and the years to come. The House of Representatives passed law No. 25/2004 on the National Planning System and required the newly elected Government (October 2004) to develop a 5-year development plan after 3 months in power. The Government's regulation No. 7/2005 provided the guidance for the development in the next 5 years. The Government will provide adequate infrastructure, try to revitalize local economies, focus on agriculture and manufacturing, strengthen small- and medium-sized enterprises, and ensure legal certainty for businesses. The Government planned to maintain fiscal and monetary stability and to reform the tax system. The target for economic growth was 7.6% in 2009, and per capita income could increase to \$1,731 in 2009 from \$968 in 2004. The investment contribution target was set at 30% of the GDP in 2009, which was an increase from 16.7% in 2004 (Jakarta Post, The, 2005d¹).

Since the implementation of laws No. 22/1999 (regional autonomy law) and No. 25/1999 (fiscal decentralization law) in 2001, the operation and distribution of gas, mining, and oil revenue (such as land rent, royalties, and taxes) had been misunderstood. Foreign direct investment is very important to the Indonesian economy because it not only creates new jobs, but also provides financing for the development of projects, especially for infrastructure, that are crucial to ensure sustainable development. The regional autonomy law had not provided significant changes to social welfare and democracy but discouraged trade and investment. The survey conducted by the Indonesian Chamber of Commerce and Industry found 881 bylaws issued by 225 cities and regencies. Of those, 297 were identified as discouraging investment. Some of the bylaws have created tariff barriers for certain goods and required producers to pay extra taxes to ship natural-resource-based products into or out of the regency. Some regencies and municipalities imposed additional taxes on employers for hiring workers from outside those areas. In 2004, the Central Government amended

¹References that include a section mark (§) are found in the Internet References Cited section.

the regional autonomy law with law No. 32/2004 and fiscal decentralization law with law No. 33/2004 (financial balance between the Central Government and local governments). In addition to handling defense and foreign, monetary, and religious affairs, the Central Government assumed the authority to develop, control, and implement general policies in all sectors. The Central Government also centralized the recruitment of civil servants and the appointment of local officials (Jakarta Post, The, 2004b§, 2005e§).

After more than 4 years of discussion, the draft of the new mining law that will replace the general mining law No. 11/1967 has not been completed. Replacement of law No. 11/1967 was considered to be necessary because the old law was not compatible with current conditions in the mining sector, which had changed considerably during the past several years. The new draft bill will be called the Mineral and Coal Mining Law. The fundamental changes in the new draft bill are as follows: the term contract of work (CoW) will be replaced by a mining license, and the mining authority will be replaced by a people's mining license. The draft bill will strengthen such environmental concerns as mining safety, waste disposal, and postmining land reclamation. The draft bill will be submitted to the State Secretariat for approval before it is submitted to the House of Representatives for consideration in 2005 (Petrominer, 2005d).

Law No. 41/1999 banned opencast mining in protected forest areas; according to the law, however, the House of Representatives could grant a special permit to allow mining in protected forest areas. The House of Representatives and the Ministry of Energy and Mineral Resources jointly established a team to evaluate how the forest law affected mining companies. The team recommended that 22 mining companies be allowed to mine in protected forest areas. The recommendation was based on the companies' stage of mining, their disbursed investment value, and the impact of their operations on the environment. The Government issued the Government Ordinance in Lieu of Law (Perpu) No. 1/2004 in November 2003; the President signed the Perpu in 2004 to allow 13 companies to resume their operations in protected forests. (A Perpu is similar to a law, but issuance of a Perpu does not require House approval.) These companies were PT Antam Tbk (Bulit N. Maluku and Bahobulu Southeast Sulawesi), PT Freeport Indonesia Co. (Freeport) (Mimika and Puncak Jayawijaya in Papua), PT Gag Nickel, PT International Nickel Indonesia Tbk (PT Inco), PT Indominco Mandiri, PT Interex Sacra Raya, PT Karimun Granite, PT Natarang Mining, PT Nusa Halmahera Minerals, PT Sorik Mas Mining, PT Telsart Tambang Kencana, and PT Weda Bay Nickel. These companies have proven reserves that were considered to be economic to mine. In July, the House of Representatives endorsed the Perpu on Law No. 19/2004. A coalition of 11 nongovernmental organizations filed a complaint in the Constitutional Court on the ground of incompatible with the 1945 constitution (Petrominer, 2005c; Miningindo.com, 2004e§).

In November, the Constitutional Court annulled law No. 20/2002 regarding electricity on the grounds that it allowed for competition and the separation and distribution in the electricity sector, which was incompatible with the 1945 constitution and

reinstated law No. 15/1985. The Court also ruled, however, that all power sale contracts signed during the time of the 2002 electricity law would remain valid. The court decision has created uncertainty about the reform of the power sector. The Government issued regulation No. 3/2005 to implement law No. 15/1985 and planned to revise it based upon the Constitutional Court's concerns, and would submit the revision to Parliament (Petrominer, 2005d, e). In December, the Constitutional Court also invalidated as unconstitutional several parts of law No. 22/2001 (oil and gas law) aimed at opening the industry to competition (Petrominer, 2005a).

Law No. 18/2000 [value-added-tax (VAT) law], which took effect on January 1, 2001, classified coal, gold, and silver as nontaxable commodities. Any taxable expenditures that were incurred to produce these commodities were nonrefundable and could increase production costs by 10% for many companies. The Ministry of Finance (MOF) issued regulation No. 144/2000 on law No. 18/2000. In March, the Supreme Court ruled that the regulation regarding coal contradicted the VAT law. The MOF planned to revise law No. 144/2000 in 2005 (Miningindo, 2005a§).

Trade

Indonesia liberalized its trade regime and took a number of important steps to reduce protectionism. In the early 1990s, the Government initiated a series of annual deregulation measures that were designed to lower tariff rates gradually. As of January 2004, the Government released a new tariff reduction package that categorized tariffs into international non-Association of Southeast Asian Nations (ASEAN) tariffs and ASEAN tariffs. Most non-ASEAN products have tariffs of 0%, 5%, or 10%, except for such sensitive items as automotive goods and alcohol. Tariffs on products originating from ASEAN countries were 0%, 2.5%, and 5%. In the Uruguay Round of market access negotiations, Indonesia committed to bind 94.6% of its tariff schedule; most tariffs were bound at 40%. Products for which tariff bindings exceeded 40% or that remained unbound included automobiles, iron and steel, and some chemical products. In June, the Ministry of Trade banned the importation of salt during the harvest season from July to December. Under the regulations, salt-importing companies must be registered and source 50% of their raw materials locally. Owing to shortage of raw materials, the MOF reduced tariff rate of hot- and cold-rolled coils and steel plate to 0% (Ministry of Finance, 2004).

In 2004, Indonesia's exports increased by 11.5% to \$69.7 billion, and imports increased by 39.6% to \$46.2 billion. Oil and gas exports accounted for 22.4% (\$15.6 billion) of the export total. Indonesia increased its oil and gas imports to \$11.6 billion, or 25.2% of the import total. Mining products accounted for 6.5% of the export total. In terms of value, coal, copper, and nickel concentrates were the leading exported mineral commodities. Japan was the leading destination for Indonesian non-oil-and-gas products followed by the United States, Singapore, and China. Because China's Government restricted coal exports, Indonesia's coal exports increased to 105.6 million metric tons (Mt) in 2004 from 89.0 Mt in 2003; Japan, Hong Kong, India, the Republic of Korea, Malaysia,

and Taiwan were major markets for Indonesian coal. Indonesia imports on non-oil-and-gas products were from China, Japan, Singapore, and the United States. The value of aluminum exports increased by 5.3% to \$1.2 billion, but the value of copper exports decreased by 33% to \$2.0 billion as a result of the October 2003 landslide at the Grasberg Mine, and coal prices in the Asian market increased to \$33 per metric ton from \$27 per ton in the fourth quarter of 2003. Machinery and mechanical equipment was the leading non-oil-and-gas import category and accounted for 12.9% of the total value of imports. The value of iron and steel imports decreased by 8.6% to \$2.0 billion because the Government restricted the importation of steel products (Central Bureau of Statistics, 2005).

Commodity Review

Metals

Aluminum.—PT Indonesia Asahan Aluminium (Inalum), which was the only aluminum smelter in Southeast Asia, planned to increase its output in the fiscal year between April 2004 and March 2005 to 234,000 metric tons (t). In the past several years, low water levels at Lake Toba in northern Sumatra, which was the main source of water for Inalum's hydroelectric powerplant, restricted power supply to the smelter. Owing to the shortage of electricity, the production of aluminum was well below its designed output capacity of 225,000 t. The smelter was owned by the 12-company Japanese consortium Nippon Asahan Aluminium Co. Ltd. (59%); the Government held the other 41%. Inalum exported 60% of its output to Japan; the rest went to the domestic market. Alumina was imported from Australia (Business Day, 2005§).

PT Aneka Tambang Tbk (PT Antam) completed all mandated studies for the Tayan chemical-grade alumina project in Tayan, West Kalimantan Province. The total investment of the project was estimated to be \$220 million. PT Antam planned to fund 35% of the total from company equity. Japan Bank for International Cooperation will provide \$143 million export credit. Initially, Japan's Alumina Chemical Co. expressed interest in joining the project but later withdraw its name from consideration. PT Antam planned to sign a joint-venture agreement with Malaysia Mining Corporation Bhd of Malaysia and Japan's Showa Denko Co. and Marubeni Corporation. The refinery was designed to produce 300,000 t of chemical-grade alumina from 800,000 t to 1.13 Mt of bauxite (Petrominer, 2004b).

Copper.—On October 9, 2003, a landslide at the southern part of Freeport's Grasberg Mine left eight people dead. Consequently, operations at the Grasberg Mine were suspended. On December 12, there was another landslide at the same location. The company decided to suspend all mining operations until the second quarter of 2004. Mining operations in 2004 were limited to work in the company's Deep Ore Zone underground mine and extraction of low-grade ore from the open pit. In 2004, average ore output was 185,000 metric tons per day (t/d), which was lower than the normal output of 230,000 t/d. In 2004, copper ore grades averaged 0.87% compared with 1.09% for 2003, and the recovery rate in 2004

was lower than that of 2003. The average grades of silver and gold were 3.85 grams per metric ton (g/t) and 0.88 g/t, respectively.

Freeport accelerated the removal of waste material and mined low-grade ore to restore safe access to higher grade ore areas and returned to normal milling rate in the second half of 2004. The company expected that the output of copper in concentrates would be higher with access to higher grade ore in 2005. Freeport continued to focus on the exploration of the Deep Mill Level Zone where a 146-Mt ore body with average grades of 1.22% copper and 0.95 g/t gold could be recovered. Freeport intended to resume exploration activities outside the existing producing area of the Grasberg mining district in 2005. The company planned to conduct feasibility studies on the development of the Big Gossan ore body, which contained 33 Mt of high-grade proven and probable ore reserves (Freeport-McMoRan Copper and Gold Inc., 2005).

Freeport McMoRan Copper and Gold Inc. of the United States informed the Indonesian Government that the company planned to merge Freeport and PT Indocopper Investama. Freeport McMoRan and Indocopper held 81.28% and 9.36%, respectively, of Freeport shares; the remaining shares were owned by the Indonesian Government. The merger was intended to reduce administrative and operational costs. After the merger, Freeport McMoRan will hold 90.64% of the Freeport shares, and the Indonesian Government, the remainder. During a special meeting in 2003, shareholders approved the merger. Under the CoW, the merger must be approved by the Indonesian Government. The Government wanted the company to divest its shares to local investors before the merger under the CoW. The Papua Provincial Government informed the Central Government that it planned to acquire 9.35% shares (about \$700 million) of Freeport. The Ministries of Finance and Energy and Mineral Resources reviewed the request; the decision was to be announced in 2005 (Miningindo.com, 2004f§). Freeport planned to raise production capacity to 300,000 t/d of ore, which had been approved by the Government in 1997, from the current average production capacity of 230,000 t/d. Because of environmental concerns, the Commission VII of the Indonesian National Parliament urged Freeport reduce its production capacity. Freeport had no such intention (Miningindo.com, 2005b§).

PT Batutua Khanisma Permal (BKP) was waiting for the Maluku Tenggara Barat District government to issue a mining license to explore copper and barite in Kali Kuning and Lerokis on Wetar Island, Maluku Tenggara Barat District, Maluku. The Ministry of Energy and Mineral Resources terminated PT Prima Lirang Mining's gold operation activities in that area in October 2004. BKP wanted to study the arsenic content in copper rocks (Miningindo.com, 2004g§).

In 2004, owing to higher copper ore grades, production of copper from Indonesia's second-ranked copper- and gold-producing mine, Batu Hijau, which is located on Sumbawa Island, West Nusa Tenggara Province, increased by 13% to 325,881 t. Because of higher grades, gold output also increased. The mining and processing costs were lower but offset by increased treatment and refining charges and administrative costs. Because of higher metal prices, the net income of PT

Newmont Nusa Tenggara (NNT) increased in 2004 compared with that of 2003. The company applied to the Ministry of Environment for a 3-year extension of its submarine sea-tailing permit, which will expire in May 2005. Newmont Nusa Tenggara signed the fourth-generation CoW in December 1986. After 10 years of exploration, mining construction began in 1997 and was completed at the end of 1999. In December 2003, the ore reserve at the mine was 1 billion metric tons at grades of 0.525% copper and 0.37 g/t gold. The mining operation was expected to end in 2025. Exploration and drilling at satellite copper and gold prospects within the CoW zone, such as Elang, continued in 2004 (Newmont Mining Corporation, 2005; Miningindo.com, 2005c§).

Gold and Silver.—PT Newmont Minahasa Raya (NMR) suspended its operation in Minahasa, North Sulawesi Province, in August. Gold mining began in 1996 and because of depleted resources, mining operation ceased in October 2001. Since then, operation activity has been limited to process ore stocks. In 2004, villagers of Minahasa Regency complained that NMR polluted Buyat Bay. Water and fish were allegedly contaminated by NMR's tailings that were disposed of in Buyat Bay. This was being blamed for causing villagers to get sick. After long and exhaustive tests, the Government's technical team concluded that the arsenic and mercury contents at Buyat Bay were higher than standard levels and that the arsenic content in the drinking water and fish was a health risk to the people of Buyat Bay. The Indonesian Mining Association and NMR insisted that according to laboratory results from Japan's Minamata Institute and the World Health Organization, metal contents were within the safety standards. NMR and the residents at Buyat Bay signed an out-of-court compensation settlement in December (Petrominer, 2004c, d; Jakarta Post, The, 2004a§; Miningindo, 2004c§). The Ministry of Environment continued to pursue legal action against NMR in 2005 (Jakarta Post, The, 2005h§).

PT Newmont Horas Nauli (NHN) continued its exploration in Batang Toru, South Tapanuli, North Sumatra Province. The area was initially explored by PT Danau Toba Mining (Normandy) in 1997 under No. B.143/Pres/3/1997. In 2002, NHN acquired the CoW from Normandy, and the Government approved it. The work areas are located in the regencies of Central Tapanuli, North Tapanuli, South Tapanuli, and Mandailing Natal and were collectively known as the Martabe Prospect. After 8 years of exploration, NHN discovered that the Ramba Joring and Tor Sipalpal areas contained at least 65 t of gold and 400 t of silver resources. The company planned to start mine construction in 2008 (Petrominer, 2005g).

The Ministry of Energy and Mineral Resources reversed the Ministry of Industry and Trade decision to impose a ban on silver exports. The purpose of the ban was to stimulate the domestic jewelry sector. Since the ban, silver producers' warehouses were stockpiled, and the domestic market could not absorb the amount of silver produced. Indonesia produced more than 250 t of silver but consumed only about 30 t in 2003. PT Kelian Equatorial Mining (KEM) and PT Nusa Halmahera Mineral were allowed to export their silver stocks (Department of Trade, 2004a, b).

Rio Tinto Ltd. decided to close down its gold and silver mining operation in Sangatta, East Kalimantan Province in

February 2005. The mine had begun operation in 1992 and produced an average of 14 t/yr of gold and 10 t/yr of silver. KEM (Rio Tinto's subsidiary) will continue monitoring the mine closing program, which included reclamation, rehabilitation, and sustainable environment management. The area was expected to turn into a protected forest by 2013. KEM will provide training programs in agriculture and entrepreneurship for company employees and local people. The company will also assist local people in conducting mining activities around the mine site, which is considered to be uneconomical because gold content in the area is 1 to 1.5 grams per 2.3 t of ore (Miningindo, 2004d§).

In October, Avocet Mining PLC of United Kingdom began its gold mine, in North Lanut, North Sulawesi Province. Production was expected to be more than 155 kilograms per year for 5 years. The company planned to continue exploration work on the CoW area where the North Lanut mine is located (Avocet Mining PLC, 2004).

In March, fire broke out at the illegal miner tunnels adjacent to PT Antam's gold mine operation at Pongkor. There was no damage to the mine, but 1 PT Antam employee and 11 illegal miners died. Mining activities came to a halt for several weeks. PT Antam's gold output decreased by 11% to 3,715 kilograms (kg), which was lower than the company target of 4,175 kg. Silver output decreased by 3% (Miningindo.com, 2004b§).

Iron and Steel.—Indonesia produced less than 3 million metric tons per year (Mt/yr) of steel and consumed about 4 Mt/yr. Indonesia's only integrated steel producer, state-owned PT Krakatau Steel, planned to increase its steel output to 5 Mt/yr by 2008 to meet increasing domestic demand for hot-rolled coil, plate, and wire. Krakatau had the capacity to produce 1.9 Mt/yr of slab and 500,000 t/yr of billet from its direct-reduced iron and electric arc furnace processes. The company imported its iron ore pellet mainly from, in order of amount imported, Brazil, Chile, and Bahrain and considered sourcing pellets from Australia in its expansion plan. Krakatau signed an iron ore supply agreement with PT Antam in 2004. PT Antam's iron ore exported about 65% of its iron sand output to China, but the company decided to process its iron sand and to sell its concentrates to the domestic market in the future. Krakatau sold 75% of its steel output to local customers. Owing to increased domestic demand, Krakatau announced that it would export only 10% of its steel output in 2004 (Miningindo.com, 2004a§).

Lead and Zinc.—PT Dairi Prima Mineral (a 80-20 equity held by Herald Resources of Australia and PT Antam, respectively) completed its feasibility study on the Dairi project, which is located in the Dairi Regency, North Sumatra Province. The study was based upon mining of the high-grade Hanjing Hitam deposit, which is one of several resources in the area. The development plan was to construct a mine to produce 220,000 t/yr of concentrates that contained 120,000 t of zinc and 72,000 t of lead and was expected to take 15 months to build. The project was held under a seventh generation CoW. The Hanjing Hitam deposit had 6.6 Mt of ore at grades of 14.6% zinc, 8.8% lead, and 11 g/t silver (Herald Resources, 2005§).

Nickel.—Owing to increased demand, the supply of nickel continued to tighten in 2004 as China and the Republic of Korea expanded their stainless steel output capacities; as a result, the price of nickel in the world market rose by 54% at yearend.

Despite an increase in production costs, the net income of PT Antam and PT Inco increased sharply in 2004. In September 2004, PT Antam shut down its FeNi II smelter for a routine overhaul to upgrade the smelter's cooling system with the same new copper cooling system to be used in the FeNi III smelter; it was expected to resume operation in the second quarter of 2005. Production of nickel contained in ferronickel decreased by 11%. Nickel was mined at PT Antam's sites—Pomalaa, Southeast Sulawesi Province, and Gebe, Gee, and Tanjung Buli in North Maluku Province. Owing to depleted resources, Gebe was closed on November 29, 2004. The Mornopo Mine in North Maluku Province was expected to be put into operation in 2005 to replace Gebe. PT Antam planned to maintain a total output of about 3.5 Mt of saprolite and 1.2 Mt of limonite from its mines. The construction of the FeNi III smelter and the expansion of the Pomalaa ferronickel capacity to 26,000 t/yr from 11,000 t/yr were underway, and operations were expected to begin in the first quarter of 2006. The FeNi III smelter will use nickel ore feed from PT Antam's nickel deposits in Buli, North Maluku Province and from PT Inco's East Pomalaa deposit (PT Antam Tbk, 2005, p. 23).

As a result of lower rainfall in the fourth quarter and limited hydropower-generating capacity, PT Inco's output of nickel in matte was short of the company's target in 2004, although it reached the full output capacity. In December, the company operated only three of four furnaces. Owing to high fuel prices, production costs increased by 19% compared with those of 2003. PT Inco planned to invest a \$250 million to increase its nickel-in-matte output capacity by 25% to 91,000 t/yr in Soroako, South Sulawesi Province, by 2009. The company intended to use \$150 million to build a new dam at Karebbe on the Larona River to raise power-generating capacity by 33%, or 90 megawatts per year. PT Inco also planned to develop two nickel deposits, Bahodopi in Central Sulawesi Province and Pomalaa in Southeast Sulawesi Province. The company submitted its expansion plan for Government approval (PT International Nickel Indonesia Tbk, 2005).

Tin.—Indonesia was the second ranked tin-producing country in the world behind China. The Indonesian tin sector was dominated by two companies—PT Koba Tin and PT Tambang Timah Tbk (PT Timah). Low tin concentrates output from PT Timah was caused by the lack of dredge maintenance during 2002 and 2003 and the illegal miners who operated on the company's inland properties. Illegal miners sold their output to local tin smelters. Tin concentrates output from PT Timah decreased by 15% to 37,212 t in 2004, and refined tin output declined by 24% to 34,764 t. PT Timah exported about 95% of its output. The production cost per metric ton of refined tin increased by 74% because the higher purchase price of inland tin concentrates was offset by higher metal prices in the world market. In an effort to increase company value, PT Timah diversified its business into coal and silica sand production; tin, however, remained its core business. The company planned to allocate \$2.2 million in offshore tin exploration in 2005 (PT Tambang Timah Tbk, 2005).

Under the regional autonomy law, the Bangka Belitung Regency government was allowed to issue operating licenses to locals to smelt tin and licenses to local companies to export

tin. In 2004, 11 small tin smelters were in operation on Bangka Island and had a total output capacity of 41,200 t/yr of refined metal. The total output of refined tin in Indonesia could be higher than the reported Government figure. Apparently, the Government recorded output only from Koba Tin, which produced about 23,000 t in 2004, and PT Timah. These small smelters could not sell their products directly on the international market because they did not have brand names. The products, however, were exported to Singapore and Singapore-based traders resold the tin to major smelters in Malaysia and Thailand (Petrominer, 2004a).

Industrial Minerals

Cement.—The Indonesian cement sector was dominated by the following producers, in order of size: the PT Semen Gresik Group, which included PT Semen Padang and PT Semen Tonasa; PT Semen Cibinong; PT Indocement Tunggul Prakarsa; and PT Semen Andalas Indonesia. These producers accounted for 93% of the country's cement production. According to the Indonesia Cement Association, domestic demand for cement was 29.77 Mt in 2004, which was the same as the consumption level of 1997. The Indonesian population was concentrated mainly in Java. Of the domestic cement consumption, almost 62% was from Java; 21%, from Sumatra; 6%, from Sulawesi; 5%, from Kalimantan; and 6%, from other areas (Jakarta Post, The, 2005f\$).

As Indonesia's economy slowly recovered, development activities, such as housing construction, improved. The Government estimated that investment in infrastructure, which included roads and ports, would be more than \$150 billion. The demand for cement was expected to increase to 32.15 Mt in 2005 and 46.37 Mt in 2010. At yearend 2004, Indonesia had an installed capacity of 46 Mt/yr. To anticipate future demand for cement, 17 companies submitted proposals to build cement plants in Indonesia; the Government, however, might approve only those for PT Mega Bukit Barisan in North Sumatra Province, PT Balocci Makmur and PT Lebak Harapan Makmur in South Sulawesi Province, and PT Semen Batam in Riau Province (Coordinating Ministry for Economic Affairs, 2005; Jakarta Post, The, 2005g\$).

The PT Semen Gresik Group planned to construct a 2.5-Mt/yr cement plant in the Sukabumi district of West Java Province or the Pacitan area in the south of East Java Province. PT Semen Padang had an installed capacity of 5.24 Mt/yr and used about 85%. The cost of the new plant was estimated to be \$400 million, and construction would take 3 to 4 years to complete. About 30% of the investment would come from the company's cash reserves, and 70% would be from bank loans. The company also planned to invest about \$40 million to increase output capacity by 1 Mt/yr in its East Java Province plant (Jakarta Post, The, 2005g\$).

In 1998, through its subsidiary CEMEX Asia Holdings, Cementos Mexicanos, S.A. de C.V. (CEMEX) of Mexico signed a condition sale and purchase agreement with the Indonesia Government to buy 14% of Semen Gresik shares and had the right to buy additional shares until it became majority shareholder. CEMEX purchased an additional 11.5% shares in

Semen Gresik through stock exchange. The Government held 51% shares, and the public held the remainder. The deadline for the Government to implement the option was October 1, 2001. The local government and PT Semen Padang (a subsidiary of Semen Gresik) opposed the sale. The local government passed a decree that expropriated Semen Padang from Semen Gresik. The Government planned to buy back the Semen Gresik shares from CEMEX, but CEMEX did not want to sell. In December, CEMEX filed a dispute agreement with the International Center for the Settlement of Investment Disputes for the Indonesian Government to pay damages for not upholding its contractual obligations (Jakarta Post, The, 2005a§).

Mineral Fuels

Coal.—As a result of rising coal demand and high coal prices, Indonesian coal output increased by 15% to 132.3 Mt in 2004 compared with that of 2003. Owing to increased demand for coal in Asia, coal output was expected to increase to 150 Mt in 2005. As the coal price rose on the international markets and China's Government restricted coal exports, Indonesia's coal producers increased their coal exports by more than 9% to 93.8 Mt in 2004. Regional exports within Asia accounted for 75% of the total. Japan and Taiwan remained the leading destinations, followed by the Republic of Korea, Hong Kong, and Malaysia. Domestic coal demand increased to 36.1 Mt in 2004. Powerplants, which were the leading consumers, accounted for 63% of the total demand, and cement plants consumed about 15% of the total. During the next couple of years, several coal-fired powerplants in Central Java and West Java Provinces were scheduled to begin operations. The Government planned to reduce the consumption of oil to 30% in 2025. The amount of coal and gas used in powerplants will increase to 60%; 10% will be from other sources. Coal demand in Indonesia was expected to increase to 47.7 Mt in 2010 and to reach 72 Mt in 2020. The Government was considering the imposition of higher export tariffs on coal and gas or providing incentives for domestic suppliers to sell their output on the domestic market (U.S. Embassy Jakarta Indonesia, 2005a; Jakarta Post, The, 2005c§).

Natural Gas and Petroleum.—In 2004, Indonesia produced an average of 1.095 million barrels per day (Mbbbl/d); this was a decline of the average of 1.146 Mbbbl/d produced in 2003 and was also lower than the Government's target of 1.25 Mbbbl/d. It was the 11th consecutive year that oil output declined. PT Caltex Pacific Indonesia, China National Offshore Oil Co., Medco Energi International TBK's PT Exspan Nusantara, PT Pertamina, and PetroChina Co. Ltd. were the leading oil producers. Aging oilfields, lower exploration investment, and regulation and policy uncertainties were the main reasons for the decline of oil production. Major international oil companies have reduced their drilling expenditures during the past several years. The Government set the oil production target at 1.125 Mbbbl/d for 2005, which was lower than the quota of 1.4 Mbbbl/d set by the Organization of the Petroleum Exporting Countries (U.S. Embassy Jakarta, Indonesia, 2005b).

In 2004, total exports of Indonesia's crude oil was down to about 30,000 barrels per day (bbl/d), or about one-third that of 2003. In an attempt to increase oil production, the Government

planned to provide incentives to investors to operate in marginal and aging oilfields. There were 66 marginal fields that produced between 5,000 and 10,000 bbl/d. The Government also considered increasing the operators' share of revenue in such fields from the usual proportions of 85% of shares for the Government and 15% for the operator. The Government planned to increase the oil production target to 1.3 Mbbbl/d in 2008. The additional output of crude and condensate could come from the Cepu and Jeruk Oilfields in East Java Province. Because of the dispute between state-owned Pertamina and Exxon Mobil Corp. of the United States, the drilling at the Cepu Oilfield was halted because of the dispute. ExxonMobil, which held the concession rights to operate in the area, tried to extend its contract, which expires in 2010, but Pertamina refused (Jakarta Post, The, 2005b§; Miningindo, 2005d§).

Indonesia's natural gas output decreased to 82.74 billion cubic meters in 2004, and the output of liquefied natural gas (LNG) dropped to 25.5 Mt. Indonesia's two production centers were located at Arun in Aceh Province and Bontang in East Kalimantan Province. ExxonMobil supplied natural gas from its onshore and offshore fields for LNG at Arun, which had production capacity of 12.8 Mt/yr. The supply of natural gas for the Bontang LNG plant came from Total S.A. of France, VICO Indonesia (a British-Italian joint venture), and Unocal Corp. of the United States. The eight-train facility had a total capacity of 21.63 Mt/yr. A third LNG production center at Tangguh in western Papua Province, which is operated by a BP Corp.-led consortium, will come online in 2008, but under the contracts, Indonesia will supply 6.3 Mt/yr of LNG to China and the United States in 2007. Of Indonesia total LNG exports, 71% went to Japan; 20%, to the Republic of Korea; and 9%, to Taiwan, (U.S. Embassy Jakarta, Indonesia, 2005c).

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TABLE 1
INDONESIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2000	2001	2002	2003	2004	
METALS						
Aluminum:						
Bauxite, wet basis, gross weight	thousand metric tons	1,151	1,237	1,283	1,263	1,331
Metal, primary ^c		160,000	180,000	160,000	200,000 ^r	230,000
Chromite sand, dry basis ^c		1,000	1,000	1,000	1,000	1,000
Copper:						
Mine, Cu content		1,012,054	1,048,694	1,171,726	1,005,837	840,318
Metal						
Smelter, primary		173,800	217,500	211,200	247,400	211,600
Refinery, primary		158,400	212,500	192,400	223,300	210,500
Gold, mine output, Au content ²	kilograms	123,994	162,605	142,238	141,019	92,936
Iron and steel:						
Iron sand, dry basis		489,126	469,132	378,376	245,409	89,664
Metal:						
Ferroalloys:						
Ferronickel		47,749	47,769	42,306	43,894	39,538
Ferromanganese ^c		12,000	12,000	12,000	12,000	12,000
Pig iron, direct reduced iron	thousand metric tons	1,820	1,480	1,500	1,230	1,470
Steel, crude ^c	do.	2,850	2,780	2,460	2,040	2,800
Nickel:						
Mine output, Ni content ³		98,200	102,000	123,000	143,000	133,000
Matte, Ni content		59,200	63,471	59,500	70,200	68,576
Ferronickel, Ni content		10,111	10,302	8,807	8,933	7,945
Silver, mine output, Ag content	kilograms	255,578	269,825	293,520	285,206	262,935
Tin:						
Mine output, Sn content		55,624	61,863	88,142	71,694	65,772
Metal		47,129	53,796	67,455	66,284	49,872
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	27,789	31,100	34,640 ^r	35,500	36,000 ^e
Clays: ^c						
Bentonite		5,000	5,000	5,000	5,000	5,000
Fire clay	thousand metric tons	1,900	1,900	1,900	1,900	1,900
Kaolin powder		15,000	15,000	15,000	15,000	15,000
Diamond: ^c						
Industrial stones	thousand carats	23	23	23	23	23
Gem-quality stones	do.	7	7	7	7	7
Total	do.	30	30	30	30	30
Feldspar ^c		24,000	24,000	24,000	24,000	24,000
Gypsum ^c		6,000	6,000	6,000	6,000	6,000
Iodine ^c		75	75	75	75	75
Nitrogen, N content of ammonia	thousand metric tons	3,617	3,665	4,200	4,250	4,120
Phosphate rock ^c		630	600	600	600	600
Salt, all types ^c	thousand metric tons	650	680	680	680	680
Stone:						
Dolomite ^c		3,500	3,000	3,100	3,100	3,100
Granite	thousand metric tons	5,941	3,975	4,966	3,939	3,637
Limestone ^c	cubic meters	16,000 ⁴	16,000	16,500	16,000	16,000
Marble ^c	do.	1,000	1,000	1,000	1,000	1,000
Quartz sand and silica stone ^c	do.	145,000	145,000	145,000	150,000	150,000
Sulfur, elemental ^c		63,500 ^r	68,500 ^r	73,500 ^r	78,500 ^r	83,500
Zeolite ^c		400	400	400	400	400

See footnotes at end of table.

TABLE 1—Continued
INDONESIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2000	2001	2002	2003	2004
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite	25,000	40,807	42,690	50,000 ^c	50,000 ^c
Bituminous	77,015	92,500	103,329	114,000 ^c	132,000 ^c
Gas, natural:					
Gross	82,334	79,470	85,959	89,324	83,740
Marketed ^c	45,100	44,000	51,000	54,000	52,000
Petroleum, crude, including condensate	516,070	489,460	432,000	413,000	362,000

^cEstimated; estimated data are rounded to no more than three significant digits. ¹Revised.

¹Table includes data available through August 12, 2005.

²Includes gold 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.

³Includes a small amount of cobalt that was not recovered separately.

⁴Reported figure.

TABLE 2
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Locations of main facilities	Annual capacity ^c
Aluminum:			
Bauxite	PT Aneka Tambang Tbk (Government, 65%)	Kijang, Bintan Island, Riau	1,300
Metal	PT Indonesia Asahan Aluminium (Nippon Asahan Aluminium Co. Ltd., 59%, and Government, 41%)	Kual Tanjung, North Sumatra	250
Cement			
	PT Indocement Tungal Prakarsa	Cirebon and Citeureup, West Java; Tarjun, South Kalimantan	15,600
Do.	PT Semen Andalas Indonesia	Aceh Besar	1,400
Do.	PT Semen Baturaja (Persero)	Baturaja-Ogan Komering Ulu, South Sumatra	1,250
Do.	PT Semen Bosowa Maros	Kabupaten Maros, Sulawesi Selatan	1,800
Do.	PT Semen Cibinong	Narogong, East Java	9,700
Do.	PT Semen Gresik (Persero)	Gresik and Tubar, East Java	7,500
Do.	PT Semen Padang (Persero)	West Sumatra	5,240
Do.	PT Semen Tonasa (Persero)	Pangkep, Sulawesi Selatan	3,450
Coal			
	PT Adaro Indonesia (New Hope Corp, 50%; PT Asminco Bara Utama, 40%; Mission Energy, 10%)	Paringin and Tutupan, South Kalimantan	22,000
Do.	PT Arutmin Indonesia (PT Bumi Resources Tbk, 80%, and Bakrie Group, 20%)	Mulia, Senakin, and Satui, South Kalimantan	11,000
Do.	PT Berau Coal (PT United Tractor, 60%; PT Armadian, 30%; Nissho Iwai, 10%)	Berau, East Kalimantan	13,000
Do.	PT Kaltim Prima Coal Co. (PT Rio Tinto Indonesia and BP Amoco, plc, 49%; Government of East Kutai Regency, 31%; PT Tambang Batubara Bukit Asam, 20%)	Samarinda, East Kalimantan	18,000
Do.	PT Kideco Jaya Agung (Samtan Co. Ltd., 100%)	Pasir, East Kalimantan	12,000
Do.	PT Tambang Batubara Bukit Asam (state-owned)	Tanjung Enim and Ombilin, South Sumatra	19,000
Copper:			
Concentrate	PT Freeport Indonesia Co. (Freeport-McMoRan Copper and Gold Inc., 81.28%; Government, 9.36%; others, 9.36%)	Ertsberg and Grasberg, Papua	800
Do.	PT Newmont Nusa Tenggara (Newmont Gold Mining Co., 45%; Sumitomo Corp., 35%; PT Pukuafu Indah, 20%)	Sumbawa Island, West Nusa Tenggara	300
Metal	PT Smelting Co. (Mitsubishi Materials Corp., 60.5%; PT Freeport Indonesia Co., 25%; others, 14.5%)	Gresik, East Java	210

See footnote at end of table.

TABLE 2—Continued
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2004

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Locations of main facilities	Annual capacity ^c
Gas:				
Natural	million cubic feet per day	ExxonMobil Oil Indonesia	Arun and Aceh, North Sumatra	1,700
Do.	do.	Roy M. Huffington (subsidiary of HUFFCO Group)	Badak, East Kalimantan	1,000
Do.	do.	Total Indonesia	Offshore East Kalimantan	2,100
Liquefied	do.	PT Arun LNG Co. Ltd. (Government, 55%; Mobil Oil Corp., 30%; Japan Indonesia LNG Co., 15%)	Balang Lancang and Aceh, North Sumatra	10,000
Do.	do.	PT Badak LNG Co. Ltd. (Government, 55%; HUFFCO Group, 30%; Japan Indonesia LNG Co., 15%)	Bontang, East Kalimantan	7,900
Gold	metric tons	Aurora Gold Ltd. (100%)	Balikpapan, Central Kalimantan	60
Do.	do.	PT Aneka Tambang Tbk (Government, 65%)	Bogor, West Java	3
Do.	do.	PT Freeport Indonesia Co. (Freeport-McMoRan Copper and Gold Inc., 81.28%; Government, 9.36%; others, 9.36%)	Ertzberg and Grasberg, Papua	110
Do.	do.	PT Newmont Nusa Tenggara (Newmont Gold Mining Co., 45%; Sumitomo Corp., 35%; PT Pukuafu Indah, 20%)	Sumbawa Island, West Nusa Tenggara	16
Do.	do.	PT Nusa Halmahera (PT Aneka Tambang Tbk, 17.5%, and PT Newcrest Mining Ltd. 82.5%)	Halmahera Island, Maluku	24
Do.	do.	PT Prima Lirang Mining (Billiton BV, 90%, and PT Prima Maluku Maluku Indah, 10%)	Lerokis, Wetar Island	3
Nickel:				
In ore		PT Aneka Tambang Tbk (Government, 65%)	Pomalaa, South Sulawesi, and on Gebe Island	80
Do.		PT International Nickel Indonesia Tbk (Inco Ltd., 59%; Sumitomo Metal Mining Co. Ltd., 20%; others, 21%)	Soroako, South Sulawesi	70
In matte		PT Aneka Tambang Tbk (Government, 65%)	Pomalaa, South Sulawesi	24
Do.		PT International Nickel Indonesia Tbk (Inco Ltd., 59%; Sumitomo Metal Mining Co. Ltd., 20%; others, 21%)	Soroako, South Sulawesi	68
Nitrogen		PT Aseah-Aech Fertilizer (Government, 60%, and other members of the 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	1,010
Do.		PT Pupuk Sriwijawa (Government, 100%)	Palembang, South Sumatra	1,440
Petroleum, crude	thousand 42-gallon barrels per day	Atlantic Richfield Indonesia, Inc. (subsidiary of Arco Co.)	Arjuna and Arimbi, offshore West Java	170
Do.	do.	Maxus Southeast Asia Ltd. (subsidiary of Maxus Energy Corp.)	Cinta and Rama, offshore Southeast Sumatra	95
Do.	do.	Pertamina (Government, 100%)	Jatibarang, West Java, and Bunyu, offshore East Kalimantan	80
Do.	do.	PT Caltex Pacific Indonesia (Texaco Inc., 50%, and Chevron Corp., 50%)	Minas, Duri, and Bangko, central Sumatra	700
Do.	do.	Total Indonesia (subsidiary of Compagnie Francaise des Petroles)	Handi and Bakapai onshore and offshore East Kalimantan	180
Steel, crude		PT Ispat Indo	Sidoarjo, Surabaya	700
Do.		PT Krakatau Steel (Government, 100%)	Cilegon, West Java	2,400
Do.		PT Komatsu Indonesia Tbk	Jakarta	8
Do.		PT Wahana Garuda Lestari	Pulogadung, Jakarta	410
Tin:				
In ore		PT Koba Tin (Malaysia Smelting Corp., 75%, and PT Tambang Timah Tbk, 25%)	Koba, Bangka Island	25
Do.		PT Tambang Timah Tbk (Government, 65%)	Onshore and offshore islands of Bangka, Belitung, and Singkep	60
Metal		Mentok Tin Smelter (PT Tambang Timah Tbk)	Mentok, Bangka Island, South Sumatra	68
Do.		Koba Tin Smelter (PT Koba Tin)	Koba, Bangka Island, South Sumatra	25

^cEstimated; estimated data are rounded to no more than three significant digits.