

THE MINERAL INDUSTRY OF

INDONESIA

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The oil and gas sector contributed 18% of the national income, 10% less than the contribution in 1993, because of declining oil prices. Higher oil imports caused the sector's net contribution to the balance-of-payments current account to drop to the lowest level in 5 years. With the growth and development of agricultural, chemical, building and construction sectors, demand for industrial minerals kept rising. Combined with slow exploration and exploitation of these mineral commodities, the country was a net importer of industrial minerals. However, the coal industry continued its rapid growth, making Indonesia a leading steam-coal exporter in Southeast Asia. Numerous coal projects had reached completion in 1994 and expansions of some coal mines were being planned.

Foreign investment applications soared to a record \$22 billion² in 1994. The Government signed contracts of work with 5 foreign and 19 domestic firms to explore for gold and coal in Irian Jaya, Kalimantan, Sulawesi, and Sumatra. The foreign investors involved were from Australia, Canada, Hong Kong, and the United States. The lifting in 1994 of a 7-year moratorium on granting contracts was expected to trigger a period of potentially strong growth for the mineral industry.

Government Policies and Programs

Under investment deregulation, new foreign investors may start with and retain at least 95% control of any enterprise. Foreign investors only need to provide initial equity in an amount required by the needs of their businesses. New investors who opt for 100% ownership must award some domestic participation 15 years after their companies begin commercial production, but such divestitures could be as little as 1%. Foreign investment projects with 100%-ownership may be established in any part of the country. Existing joint ventures may adjust their divestiture status.

The Government was considering removing or cutting income taxes, providing easier credit and fringe benefits for foreign and domestic companies, and lowering taxes related to infrastructure construction in the frontier eastern region. Projects approved in that region included mining of coal, copper, gold, and nickel; production of cement, plywood, timber, pulp, and paper; agricultural plantations; and fishing.

The Government required companies that explore and develop natural resources to carry out environmental audits annually. The audit would be conducted by private

consultancies and the results would be released to the public.

A memorandum of understanding was signed by the Indonesian Ministry of Mines and Energy and the Australian Department of Primary Industries and Energy for cooperation in geoscientific research. Pertamina, the national oil company, and the Australian Geological Survey Organization were to conduct cooperative scientific and technical surveys for petroleum exploration in Indonesia.

Production

The oil and gas sector continued its trend of increased production. The Government approved measures to grant offshore contractors a 35% share of oil and gas production, leaving 65% for state-owned Pertamina. It also allowed for a change in pricing after the first 5 years of production.

P.T. Freeport Indonesia is the sole producer of copper in the country. During 1994, the company's average mill rate was 72,500 metric tons per day (mt/d) which yielded 322,200 metric tons (mt) of copper, an 8% increase over the previous year's output. (*See table 1.*)

Trade

Indonesia exported almost all of its mine production of copper concentrate and nickel matte. About 90% of its tin output also was exported. Exports of coal and liquefied natural gas (LNG) were substantial in terms of tonnage and earnings. Indonesia was expected to receive an estimated \$695 million from coal exports.

The country imported about 99,000 mt of copper cathode, a 10% increase from that of 1993, owing to strong demand for copper rods and wire fueled by Indonesia's vast appetite for electricity. Petroleum products, chemical products, and base metals also were imported.

Structure of the Mineral Industry

The Government planned further deregulation to increase efficiency in the mining sector and to privatize state-owned corporations and power stations. P.T. Tambang Timah, the state tin mining corporation, was set to be listed on the Jakarta stock exchange in 1995. However, some state-owned companies, such as oil, natural gas, and utilities, were not going public since they provide social services to the increasing population.

In terms of labor force, the oil and gas sector had the largest number of workers, followed by the industrial minerals and tin industries. Shortages of skilled labor and managerial personnel were reported for some operations in remote areas and for foreign-owned companies. (See table 2.)

Commodity Review

Metals

Aluminum.—P.T. Indonesia Asahan Aluminum's smelter at Kuala Tanjung in north Sumatra produced 220,000 mt of aluminum, slightly less than its 225,000-metric-tons-per-year (mt/a) capacity. About 60% of output was allocated for the markets in Europe, Hong Kong, Japan, and Singapore; the remaining 40% was sold locally. The company was owned 41.1% by the Government and 58.9% by Nippon Asahan Aluminum of Japan. The smelting operation needed a \$130 million bailout because of continued losses and the Japanese shareholder finalized a plan to provide \$77 million. The Indonesian Government was to fund \$53 million. The rescue plan also included Japan Export and Import Bank's lowering the interest rate to 4.1% and private banks' reducing to 4.4% on the total loans of \$1.9 billion.

Copper.—P.T. Freeport Indonesia, an operating unit of Freeport-McMoRan Copper and Gold Inc. of the United States, proceeded with the proposed expansion at its Grasberg operation in Irian Jaya to 115,000 mt/d of ore throughput. The expansion was to cost an additional \$140 million and increase production to 499,000 mt/a of copper and 46,700 kilograms per year (kg/a) of gold by 1996. Proven and probable reserves were estimated at 1,126 million metric tons (Mmt) grading 1.30% copper, 1.42 grams per metric ton (g/mt) gold, and 4.06 g/mt silver as of December 31, 1994.³

Early in 1994, about 10,000 mt of the Grasberg copper concentrate averaging 33% copper was transshipped via the port of New Orleans and most of it was railed 2,090 kilometers (km) to Copper Range Co.'s smelter at White Pine, Michigan. The remainder was delivered to a smelter in Arizona. The Grasberg concentrate was processed principally in smelters in Japan and other countries in the Asian Pacific region.

Freeport-McMoRan Copper and Gold Inc. bought the remaining 35% interest in the Huelva copper smelter of Rio Tinto Minera of Spain, reaching a 100% ownership. It planned to boost the plant's capacity from 150,000 mt/a to 180,000 mt/a by mid-1995 and finally to 270,000 mt/a by early 1996 at a cost of \$215 million. A project financing offer of \$270 million from Barclays Bank PLC was accepted. The smelter was expected to consume 875,000 mt/a of copper concentrate after expansion and P.T. Freeport Indonesia planned to supply 50% of its requirements. The Huelva smelter received 150,000 mt of concentrate from the same company in 1994. The refinery also was being expanded to increase the production of cathode copper from

135,000 to 215,000 mt/a. Freeport-McMoRan Copper and Gold Inc. intended to close down the Cerro Colorado Mine in Spain in 1996 owing to the exhaustion of economic reserves.

A \$650 million project to build Indonesia's first copper smelter with a capacity of 150,000 mt/a at Gresik, east Java, was expected to be completed in 1998. The smelter also has a sulfuric acid production capacity of 1,300 mt/d. P.T. Freeport Indonesia would provide 50% of the annual concentrate needed by the smelter. Metallgesellschaft AG of Germany left the project owing to financial difficulties, and P.T. Freeport Indonesia and Rio Tinto Minera assumed the lead role in developing the smelter. The other partner of the project is a minority shareholder, Nippon Mining and Metals Co. of Japan. Construction of the smelter would begin in the third quarter of 1995.

In another development, P.T. Copper Smelter Indonesia was formed by Citra Pertiwi Centra of Indonesia, Brierley Investments and Southpac Corp. of New Zealand, and Universal Securities of Monaco and was seeking to undertake the project. Inti Karya Persada Teknik would be the main contractor, along with Outokumpu Oy of Finland, and plans were being considered to increase the smelter's capacity to 200,000 mt/a depending upon demand.

P.T. IRJA Eastern Minerals Corp., a 80%-owned subsidiary of Freeport-McMoRan Copper and Gold Inc., signed a 30-year contract with two 10-year extensions with the Government to explore and develop copper, gold, silver, and other mineral deposits in Irian Jaya. It covers three tracts of land adjacent to the work area under contract with P.T. Freeport Indonesia.

A joint-venture company formed by MIM Holdings Ltd. of Australia, Tycan Australia Pty Ltd., and P.T. Indotrijaya Industries, began producing high-quality copper magnet wire at a plant east of Jakarta. Output was progressively increased to 3,000 mt/a by yearend 1994.

Gold.—P.T. Aneka Tambang, the state general mining company, planned to increase its gold production to 2,000 kilograms (kg) mostly from the Gunung Pongkor Mine commissioned in 1993, west of Bogor in west Java. Reserves at the mine were estimated at 6 Mmt of ore with 17.1 g/mt gold and 154.3 g/mt silver.⁴

Aurora Gold Ltd. of Australia secured \$45 million in project financing to help develop the Mount Muro gold and silver project in Kalimantan, which was to cost \$80 million including working capital. Proven and probable reserves were estimated at 31,100 kg of gold and 715,400 kg of silver.⁵ Commissioning of the ore treatment plant was due in mid-1994 and full-scale production was expected in October at 4,200 kg/a of gold and 87,100 kg/a of silver. Aurora Gold Ltd. held 90% interest in the project and P.T. Gunung Moro Perkasa the rest.

Meekatharra Minerals Ltd. of Australia agreed to farm into two prospective epithermal gold deposits (Natarang and Arai Liki) in south Sumatra, 85%-owned by Aurora Gold Ltd. The remaining 15% is held by private Indonesian interests.

Meekatharra Minerals planned to spend \$550,000 by June 1994, with the right to spend an additional \$1 million on Natarang and \$450,000 on Arai Liki to earn a 40.8% interest. The Arai Liki deposit proved less attractive. The North Vein at Way Linggo was one of three priority targets in these two areas. A feasibility study was expected to begin to determine the mining method; preliminary metallurgical tests indicated a gold recovery rate of 92% to 96% and a silver recovery rate exceeding 96%. A final mine feasibility study in early 1995 would target the initial production of 1,240 to 1,870 kg/a of gold. Teck Corp. of Canada and Meekatharra Minerals intended to form a joint venture to explore for prospective areas for porphyry copper-gold and epithermal gold-silver deposits.

Newmont Mining Corp.'s 80%-owned, \$131 million Minahasa project on Sulawesi was scheduled to commence production in early 1996. The proposed output of 4,350 kg/a of gold was planned. The project was to mine three near-surface deposits using an open pit method. The mine would be operated by P.T. Newmont Minahasa Raya, which is 20% owned by P.T. Tanjung Serapung. A small deep-water port, a power generating plant, a water supply facility, and a village for 433 workers were included in infrastructure capital budgeting. The Batu Hijau gold/copper deposit on the island of Sumbawa, also 80% owned by Newmont Mining, has huge mineral resources and potentially could become Southeast Asia's second most important mining project after Grasberg.⁶ Fluor Daniel Inc. of the United States was awarded a contract for the first-phase optimization study and Chase Manhattan Bank, NA was to provide financial advisory services for the project.

Bre-X Minerals of Canada reported gold prospects in Kalimantan and Sumatra. It planned to continue the 1,000-meter exploration drilling program in its 80%-owned Busang prospect in east Kalimantan and identified additional targets southwest and southeast of Busang. A diamond drilling program continued at the Taware prospect and the Kupa Salipati prospect on the Sangihe Island.

Carrie Pacific Holdings Ltd. of Australia, which held an 80% interest, continued its channel sampling of the Ringas Mountain area of the Saran project in western Kalimantan. Three areas of gold mineralization prospects had been outlined: Ringas, Ngalung, and Saran North. The Ringas prospect was most promising and was being tested by trenching and diamond drilling. At the company's Melawi River alluvial gold project (also an 80% interest), trial production runs were scheduled to start in June 1994. Full production of the first plant with a capacity of 420,000 cubic meters per year (m³/a) was scheduled for September 1994. The treatment plant would produce 125 kg/a of gold. Up to four plants were planned.

P.T. Masmindo Eka Sakti, a joint venture company, indicated that Lone Star Exploration NL of Australia secured an option to acquire a 80% interest in the joint venture. Masmindo Eka Sakti was developing the Awak Mas gold mining project in south Sulawesi.

Minsaco Resources Pty. Ltd. acquired a controlling interest

in Felstone Investments Pty. Ltd. from Consolidated Rutile Ltd., all of Australia, for a gold exploration project in Irian Jaya. Felstone investments had a 56% interest in Enarotali Gold Project Ltd., which, in turn, had a 90% stake in P.T. Nabire Bakti Mining. The project explored by Nabire Bakti covers an area containing porphyry copper-gold mineralization.

Battle Mountain Gold Co. of the United States initiated reconnaissance exploration work on its Mutiara contract of work areas in Irian Jaya. The company holds joint-venture concessions with P.T. Mutiara Iriana Minerals on four blocks totaling 15,000 square kilometers (km²).

Iron and Steel.—P.T. Krakatau Steel sustained damage to the roof of its 500,000-mt/a billet plant at Cilegon on Java in April 1994. Repair work was completed in 2 months and no production equipment was affected.

P.T. BHP Steel Indonesia was to build a \$52 million coil coating plant and painting line at Cilegon, Java. BHP Steel of Australia owned a 51% interest in the company and P.T. Cipta Adyabahan Baja, P.T. Purna Sentana Baja, and P.T. Krakatau held the rest. The paint line would have a capacity of 50,000 mt/a and was scheduled for completion by October 1994. The 100,000-mt/a metallic coating plant was expected to be commissioned in February 1995.

P.T. Jakarta Cakratunggal Steel Mills increased production of bars from 143,000 mt in 1993 to 250,000 mt after the startup of a new 420,000-mt/a melt shop at Pulogadung, near Jakarta. The melt shop has two 180,000-mt/a rolling mills. Both the melt shop and rolling mills were to reach their full capacity by July 1995. About one-half of the total output would be sold domestically. The company is part of P.T. Jakarta Prima Steel Industries.

Nickel.—P.T. Aneka Tambang produced 5,800 mt of nickel in ferronickel in 1994. The ferronickel smelter was being expanded to 11,000 mt/a at Pomalaa, in southeast Sulawesi, and was expected to be completed in 1994. Nickel ore output rose to 2.3 Mmt. The company was mining nickel ore at Pomalaa and on Gebe Island, Maluku.

P.T. Inco increased its nickel production capacity to 45,000 mt/a. A planned \$500 million expansion would further increase production by 50% to 68,000 mt/a. Most of the output was to go to Japan. The project would involve construction of a fourth smelting line and additional hydroelectric generating capacity. The company continued to work with the Government and reached an agreement to extend to 2025 its 1968 contract of work, originally set to expire in 2008. P.T. Inco is 58.2% owned by Inco Ltd. of Canada and 20% owned by Sumitomo Metal Mining Corp. of Japan. The company owns and operates a nickel smelter at Soroako on Sulawesi.

Tin.—P.T. Tambang Timah planned to go public by early 1995. Up to 20% of the shares were to be sold and the funds generated would be used to upgrade the dredges and for a

training program to improve the skills of its labor force. The state tin company produced around 34,000 mt of tin that accounted for 80% of Indonesia's tin output and exported 30,500 mt in 1994. It sought to increase the tin production quota for 1995 to 36,000 mt. At current production levels, the company's commercial tin reserves would last more than 25 years.⁷ The company was looking at China and India as growth markets for its tin-plating operation.

P.T. Koba Tin planned to increase tin concentrate production beginning in 1996. A new dredge was to be put into operation to increase capacity from 7,500 to 10,000 mt/a. Koba Tin produced 7,900 mt of tin in 1994, a 3% increase compared with that of 1993.

Industrial Minerals

Cement.—P.T. Balikpapan Daya Semen (15%) and Prerovske Strojirny A.S. Prerov (85%), a Czech company, were to build a \$16 million cement plant in Balikpapan on Kalimantan. The cement plant was expected to start operation by mid-1996 with a production capacity of 300,000 mt/a. Indonesia imported 1.4 Mmt of cement in 1994 to offset a serious shortage while domestic demand remained strong.

Diamond.—Ashton Mining of Australia secured an option to earn a 51% interest in the Sungai Alalak alluvial diamond project in southeastern Kalimantan. The other partners in the project were P.T. Aneka Tambang and Malaysia Mining Corp. A drilling program began in 1994. The joint venture also would commence work to evaluate the Cempaka and Danau Seran alluvial diamond prospects in south Kalimantan by early 1995.

Ocean Resources of Australia announced an exploration program to identify gravel-filled ancient channels in the Sunda shelf area of southeastern Kalimantan by using bucket line dredging. The company had completed an exploration program using radar imagery to locate offshore diamond-bearing channels. Its Indonesian partner with a 40% interest, P.T. Indo Teras Intan, applied to convert the existing mining concessions to a contract of work. Ocean Resources also held a 60% interest in the Martapura onshore project and its partner is P.T. Indo Rope Berlianusa.

Triad Minerals of Australia was granted a contract of work to explore an area of 40,000 km² off the southern Kalimantan coast for alluvial diamonds, gold, and silver. The company had a 70% stake in the area; other partners were Diapro Ltd. of Australia, 10%, and P.T. Freindo Mining Exploration, 20%.

Phosphate Rock.—A phosphate rock deposit at Sidumulun, western Java, was being mined by Kanematsu of Japan and P.T. Elang of Indonesia at a rate of 500,000 mt/a. The phosphate rock produced had an average grade of 33% phosphorus oxide. The Sidumulun deposit covers an area of 150 to 160 hectares.

Mineral Fuels

Coal.—The country produced 35 Mmt of coal, of which 22 Mmt was mined by private contractors. About 17 Mmt was consumed domestically, one-half being burned in powerplants. The rest was exported to the Asian market. P.T. Bukit Asam, the state coal mining company, issued 21 new contracts for coal exploration and development, predominantly in Kalimantan and Sumatra. Coal deposits, mostly bituminous and lignite, are mainly in Irian Jaya, Java, Kalimantan, Sumatra, and Sulawesi. Bengkulu, Cerenti, and Aceh in Sumatra alone account for almost 70% of the country's known coal reserves.

P.T. Bukit Asam was studying the feasibility of developing a steam coal deposit south of its Air Laya Mine in southern Sumatra into a 1-Mmt/a coal mine. The quality of coal indicated a low ash content of 4% to 6% and a sulfur content of less than 1%.

P.T. Adaro Indonesia signed a long-term contract to supply 400,000 mt/a of low-sulfur coal to Tampa Electric Co. of the United States. The company, 50% owned by New Hope Corp. of Australia, 20% by the Spanish Government, and 15% each by P.T. Asminco and P.T. Tirtamas, mines coal in south Kalimantan. It aimed to produce 15 Mmt/a of "Envirocoal" by the year 2000. One problem with the coal quality is its high moisture content, which lowers its price on world markets.

Construction work began on a bulk handling port on Pulan Laut Island, off Kalimantan, which was to take 12 years and cost between \$500 million and \$1 billion. The first two stages, costing \$159 million, would build a loading terminal to export coal from the P.T. Adaro Indonesia Mine. The first stage would enable the port to handle 10 Mmt/a of coal and be completed by 1996. The second stage would double the capacity and come on-stream by 1998. P.T. Indonesia Bulk Terminal, 50% owned by New Hope Corp. of Australia and the remainder held by Indonesian interests, was the builder and operator of the port project.

P.T. Sitrade Nusaglobus, in a joint venture with Ban Pu Coal of Thailand, was to develop a 2-Mmt/a mine in Sumatra to produce quality thermal coal. Exploration continued under an 8-year license.

Liquefied Natural Gas (LNG).—Following increases in production capacity associated with the completion of a sixth processing train, the Bontang plant in eastern Kalimantan became the largest LNG facility in the world. About 240 cargoes of LNG were loaded from Bontang in 1994. The Sanga Sanga gasfield, operated by Lasmo PLC of the United Kingdom, supplied 60% of its natural gas to Bontang, which, in turn, supplied 50% of Indonesian LNG export. The Arun, Aceh, and Bontang plants together currently have a capacity of 25 Mmt/a. The country's current production of natural gas was 200 million cubic meters per day (m³/d) and domestic demand rose to 1 billion cubic meters per year (m³/a).

Negotiations with potential buyers and sales agreements

could support construction of two more LNG trains in the future. Pertamina signed two contracts for future sales of LNG to a consortium of Japanese power, gas, and steel companies. The contracts guarantee a supply of 8.4 Mmt of LNG from 2000-09 and an additional 3.6 Mmt from 2003-08. A July 1994 memorandum of agreement between Pertamina and Korea Gas Corp. called for delivery of 1.2 Mmt/a of LNG from 1995-99 and further delivery of 0.7 to 1.0 Mmt/a between 1998-2017.

Pertamina and Exxon Corp. of the United States signed an agreement covering the \$40 billion Natuna natural gas project in November 1994. The Natuna Sea has potential gas reserves of about 4.5 trillion m³.⁸ The project was believed to be capable of supplying 10 to 20 Mmt/a of LNG. Preparation would take 2 years and development 8 years; the first shipment of LNG should be in 2004.

A seismic survey of the Muturi block in Irian Jaya, held by British Gas Ltd., began in 1994. British Gas operations covered an area of 6,750 km² under a 4-year contract signed with Pertamina. Further seismic surveying and drilling preparations were scheduled for 1995, followed by actual drilling for 1996.

Pertamina approved a transfer to Energy Equity Corp. of Australia of a 100% interest from BP Petroleum Development Indonesia and Chevron Sulawesi of a southern parcel of the onshore Sulawesi production-sharing contract. Energy Equity planned to supply gas to a proposed 135-megawatt (MW) gas-fired powerplant at Sengkang and possible pipeline supply of gas to the town of Parepare and to P.T. Inco's nickel plant at Soroako, all in Sulawesi.

Stirling Resources of Australia bought a 16% interest in the Camar oil- and gasfield from Enterprise Ltd. of the United Kingdom. Gas produced would be sent via a pipeline to Surabaya. Production at the Camar Field stopped after gas was flared at the rate of 170,000 m³/d and oil was produced at an average of 2,800 barrels per day (bbl/d) from three offshore wells.

An Australian-U.S. oil and gas joint venture, known as Mount Isa Mines Petroleum Exploration Ltd., discovered natural gas and condensate in the Bentu block off the coast of Sumatra. Hadson Bentu Ltd., the field operator, and Bridge Oil Indonesia Bentu Inc. also were involved in the discovery. Hadson Bentu is owned by MIM Bentu Pty., a joint venture of MIM Holdings Ltd. of Australia and Bridge Oil Indonesia Bentu Inc.

Petroleum.—Pertamina invited foreign and domestic companies to explore for oil and gas in 12 blocks under production sharing contracts and 28 others under technical assistance contracts. Pertamina was permitted to borrow \$1 billion from foreign banks to finance its refinery development program. About \$600 million would be provided by U.S. Export-Import Bank and Citibank to boost the processing capacity of two refineries at Cilacap, Java, from 300,000 bbl/d to 350,000 bbl/d. The remaining \$400 million would be used to upgrade two refineries at Bontang, east Kalimantan, and build small refineries at Sorong, Irian Jaya.

Pertamina shut down its 120,000-bbl/d refinery at Dumai, Sumatra, for 28 days for scheduled maintenance. Its 125,000-bbl/d Balongan refinery was running at 80% capacity.

P.T. Citra Patenindo Nusa Pratama was to raise crude oil production at its Abab, Raja, and Dewa fields in south Sumatra from its current 2,000 bbl/d to 4,800 bbl/d by 1995 and to 8,000 bbl/d by 1996. The company took over P.T. Stanvac Indonesia, a joint-venture company between Exxon Corp. and Mobil Corp. of the United States in 1993 in a joint operating deal with Pertamina. Pertamina encouraged local companies to reactivate old oil wells under an enhanced oil recovery program and was willing to share costs 50/50 with them.

Chevron Corp. of the United States sold its 17.5% interest in oil and gas exploration and production properties in the South Natuna Sea Block B contract area to Inpex Natuna, a wholly-owned subsidiary of Japan's Indonesia Petroleum. U.S.-based Conoco and Texaco now have 40% and 25% stakes, respectively, in the production properties and Inpex Natuna holds 35%. The properties include the Belida Oilfield, which has a production potential of 100,000 bbl/d of oil.

Inpex Aceh Ltd., a Japanese subsidiary, was to transfer 50% of its exclusive rights in the North Aceh oil and gas block offshore northern Sumatra to Mobil North Aceh, a Mobil subsidiary. The block is adjacent to the giant Arun Gasfield and its associated LNG facilities. Inpex Aceh acted as operator in the block's drilling program earlier and continued to be the block's operator.

Indonesian Nippon Oil Cooperation Co. of Japan agreed to lend Pertamina \$32 million to help it develop the Cilamaya Utara Oilfield in west Java, due on-stream in 1996. Pertamina was to repay the loan in crude oil from its other fields.

China National Offshore Oil Corp. acquired a 32.5% stake in the Malacca Strait from Atlantic Richfield Co. of the United States. Other partners were Oryx Energy Co. and Kondur of the United States, Lasmo PLC of the United Kingdom, and Nippon Oil Co. of Japan. The area included 13 operating oilfields; 3 had indicated oil and gas reserves, and 10 were described as promising.

Reserves

Indonesia is one of the leading mineral resource-rich countries in Southeast Asia. Its major mineral commodities are bauxite, coal, copper, natural gas, nickel, petroleum, and tin. Bauxite reserves are significant and concentrated on Bintan Island and west Kalimantan. Copper reserves are in the Ertsberg and Grasberg areas of Irian Jaya. Nickel reserves are large and mainly in south Sulawesi, on Gebe Island, and on Gag Island. Tin reserves also are abundant and found onshore and offshore Bangka Island and around nearby islands of Belitung, Karimum, Kundur, and Singkep. Coal is found in west and south Sumatra and east Kalimantan. Natural gas and crude oil are the most abundant

and occur onshore and offshore Sumatra, offshore north Java, and onshore and offshore east Kalimantan.

Infrastructure

The country was seeking \$50 billion in foreign investments for infrastructure development in its 5-year development plan for 1994-99. The plan was to add 5 million telecommunication lines with an investment of \$6 billion, increase power generating capacity by 14,000 MW for \$25 billion, construct 10,000 km of roads costing \$13 billion, and develop clean water supply facilities serving 22 million people for \$7.8 billion.

Perusahaan Umum Listrik Negara (PLN), the state power company, and an international consortium signed a 30-year pricing agreement for the construction of a \$2.5 billion coal-fired powerplant at Paiton, east of Surabaya. The consortium and respective stakes are Mission Energy BV of the Netherlands (32.5%), General Electric Power Funding Corp. of the United States (32.5%), Mitsui & Co. of Japan (20%), and P.T. Batu Hitam Perkasa (15%). The consortium planned to put up \$650 million in equity for the project and expected the U.S. Export-Import Bank and the Japan Export-Import Bank to provide \$1.4 billion. The rest of funding was to come from multilateral agencies and capital markets. In addition, the Overseas Private Investment Corp. of the United States approved \$200 million in political risk insurance for the project. The project was to build two 660-MW generators in a 4-year construction period. Batu Hitam Perkas, Adaro Indonesia, and Indonesia Bulk Terminal would be involved in supplying the plant with coal.

PLN also negotiated a \$25.6 million loan for its Outer Islands power project. Part of the loan would be used for consulting services in demand-side management and environmental management. PLN has four coal-fired powerplants with a capacity of 1,600 MW each. Another three 600-MW units were under construction. PLN planned to increase its powerplant capacity to 9,500 MW in a 5-year plan that began in 1994.

P.T. Bukaka Teknik Utama and two Malaysian companies planned to build a \$1.66 billion coal-fired powerplant near P.T. Bukit Asam's coal mine in south Sumatra. The plant was to have four units with a total capacity of 1,300 MW and export some of its electricity to Malaysia.

Consolidated Electric Power Asia Ltd. of Hong Kong was to build and operate two 660-MW, \$2 billion coal-fueled generators at Tanjung Jati in central Java by 1998. The company was to provide 20% of the investment equity and the rest was expected to come from the U.S. and Japanese banks.

California Energy Co. of the United States and Indonesia's Panutan Group planned to build a 110-MW geothermal powerplant in Bali at a cost of \$220 million. The project would require the Government's approval of the price at which power would be sold to PLN. California Energy would explore for geothermal energy in western Java. Three other U.S.-Indonesian joint ventures were awarded contracts to

explore and develop geothermal fields and build powerplants. Overall, the country generated 305 MW of electricity using geothermal energy.

The Government approved three power generation projects on Java: a \$372 million, 505-MW plant at Tambak Lorak in central Java by General Electric Co. of the United States and Sumitomo Corp. of Japan; a \$733 million, 982-MW plant at Muara Tawar in west Java by Asea Brown Boveri of Switzerland and Marubeni Corp. of Japan; and a \$571 million, 855-MW plant at Grati, east Java by Mitsubishi Corp. of Japan and Siemens AG of Germany.

On Sulawesi, Energy Electric Co. of the United States was likely to be awarded a contract for a 50-MW, \$50 million coal-fired plant in northern Sulawesi. A 135-MW, \$100 million gas-powered plant was expected to be awarded to locally based P.T. Triharsa Sarana. In addition, Enron Corp. of the United States was expecting a contract for a \$150 million, 130-MW facility in eastern Kalimantan.

Outlook

One of the keys to Indonesia's economic growth is energy, both as an export earner and for industrial and domestic use. However, the country is facing declining oil production and increasingly counting on its large reserves of natural gas. The rising oil demand and eroding export sales could make Indonesia a net oil importer. On the other hand, Indonesia is already the largest exporter of LNG. Domestic gas consumption is being accelerated to reduce oil demand and preserve the environment.

The Indonesian coal industry estimates that between 1994 and 2004, about 23 Mmt of increased coal output will be required from existing contractors and more than 17 Mmt from new producers to meet domestic demand and export growth. As the country's oil reserves dwindle, coal also will become an export earner and fulfill energy requirements with the development of more coal-fired powerplants. These powerplants will need 29.9 Mmt of steam coal by 2001, increasing to 39.8 Mmt by 2004.

¹Text prepared May 1995.

²Where necessary, values have been converted from Indonesian rupiahs (Rp) to U.S. dollars at the rate of Rp2,117=US\$1.00 for 1994.

³Company 1994 Annual Report, Jan. 31, 1995, p. 4.

⁴Mining Journal, Mar. 11, 1994, p. 178.

⁵Southeast Asia Mining Letter, Jan. 14, 1994, p. 1.

⁶Natural Resources, 1994, p. 9.

⁷Southeast Asia Mining Letter, Jan. 28, 1994, p. 4.

⁸Journal of Commerce, June 14, 1994, p. 4B.

Major Sources of Information

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Department of Mines and Energy, Jakarta:
Indonesian Mining Yearbook, annually.
Directorate General of Oil and Gas, Jakarta:
Petroleum and Natural Gas Industry of Indonesia,
monthly.

Major Publications

Central Bureau of Statistics, Jakarta:
Monthly Statistical Bulletin—Economic Indicator.

TABLE 1
INDONESIA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1990	1991	1992	1993	1994 e/	
METALS						
Aluminum:						
Bauxite, gross weight	thousand tons	1,210	1,410	804	1,320	1,340 5/
Metal, primary		186,000	187,000	173,000	206,000	222,000 5/
Chromite sand, dry basis		8,000 e/	1,950	2,000 e/	2,500 e/	2,500
Copper, mine output, Cu content		164,000	212,000	281,000	299,000	322,000 5/
Gold, mine output, Au content 3/	kilograms	11,200	16,900	38,000	42,100	45,000
Iron and steel:						
Iron sand, dry basis		145,000	173,000	288,000	341,000	335,000 5/
Metal:						
Ferroalloys: Ferronickel		25,000	25,000 e/	26,000 e/	27,000 e/	27,000
Steel, crude		2,890,000	3,250,000	3,170,000	1,950,000	2,000,000
Manganese ore		9,420	13,300	13,000 e/	14,000 e/	14,000
Ferromanganese		--	--	--	10,000	10,000
Nickel:						
Mine output, Ni content 4/		68,300	71,700	77,600	65,800	81,100 5/
Metallurgical products:						
Matte: Ni content		24,900	27,400	39,300	37,000	45,300 5/
Ferronickel: Ni content		5,010	5,320	5,510	5,270	5,750 5/
Silver, mine output, Ag content	kilograms	67,300	80,300	99,900	90,300	107,000 5/
Tin:						
Mine output, Sn content		30,200	30,100	29,400	29,000 e/	34,000
Metal		30,400	30,400	31,900	30,400	31,100 5/
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand tons	13,800	16,200	17,300	18,900	19,000
Clays:						
Bentonite		5,910	21,500	18,000	13,700	14,000
Fireclay e/		1,800,000	1,850,000	1,900,000	1,950,000	1,950,000
Kaolin powder		160,000	140,000	231,000	42,400	50,800 5/
Diamond: e/						
Industrial stones	thousand carats	23	24	21	20	22
Gem	do.	7	8	6	7	6
Total	do.	30	32	27	27	28
Feldspar		19,800	13,700	16,700	27,800	38,200 5/
Gypsum		58	404,000	400,000 e/	1,650	2,000
Iodine	kilograms	59,800	36,400	35,000 e/	14,200	15,000
Nitrogen: N content of ammonia		2,790,000	2,710,000	2,690,000	2,890,000	2,800,000
Phosphate rock		1,600	6,380	8,000 e/	7,000 e/	7,000
Salt, all types e/	thousand tons	600	610	630	650	650
Stone:						
Dolomite		10,500	10,000 e/	11,400	4,530	4,390 5/
Granite	thousand tons	1,200 e/	1,200 e/	2,910	2,770	4,380 5/
Limestone	do.	9,510	2,570	3,800	4,000 e/	11,700 5/
Marble	square meters	1,010	378	1,990	3,000	3,000
Quartz sand and silica stone		165,000	429,000	400,000 e/	240,000	240,000
Sulfur, elemental		3,630	3,600 e/	3,600 e/	3,500 e/	3,500
Zeolite		600 e/	600 e/	70	60	70
MINERAL FUELS AND RELATED MATERIALS						
Coal	thousand tons	10,800	13,700	22,400	27,600	30,900 5/
Gas, natural:						
Gross	million cubic feet	2,160,000	2,040,000	2,580,000	2,660,000	2,940,000 5/
Marketed e/	do.	1,500,000	1,400,000	1,600,000	1,600,000	1,700,000
Petroleum:						
Crude including field condensate	thousand 42-gallon barrels	534,000	581,000	551,000	558,000	588,000 5/
Refinery products:						
Liquefied petroleum gas	do.	3,470	3,450	4,220	3,600 e/	3,800
Gasoline	do.	39,000	42,100	43,800	45,000 e/	45,000
Jet fuel	do.	5,440	6,580	6,340	6,000 e/	6,200
Naphtha	do.	18,500	14,100	12,400	20,000 e/	18,000
Paraffin wax	do.	121	183	140	190 e/	200
Kerosene	do.	45,600	47,300	49,000	50,000 e/	50,000
Distillate fuel oil	do.	72,400	76,600	82,000	77,000 e/	80,000

See footnotes at end of table.

TABLE 1-- Continued
INDONESIA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1990	1991	1992	1993	1994 e/	
MINERAL FUELS AND RELATED MATERIALS--Continued						
Petroleum--Continued:						
Refinery products--Continued:						
Lubricants	thousand 42-gallon barrels	1,640	1,460	1,720	1,600 e/	1,800
Residual fuel oil	do.	26,900	27,000	29,000	30,000 e/	30,000
Unfinished oil for processing	do.	41,800	44,300	50,800	43,000 e/	45,000
Refinery fuel and losses	do.	15,300	12,500	12,600	14,000 e/	15,000
Unspecified	do.	1,070	2,940	842	2,500 e/	2,000
Total	do.	271,000	278,000	293,000	293,000 e/	297,000

e/ Estimated.

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

2/ Table includes data available through May 18, 1995.

3/ Includes 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 18 metric tons per year.

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

5/ Reported figure.

TABLE 2
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1994

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Locations of main facilities	Annual capacity
Aluminum:			
Bauxite	P.T. Aneka Tambang (Government, 100%)	Kijang, Bintan Island	1,300
Metal	P.T. Indonesia Asahan Aluminium (Nippon Asahan Aluminum Co. of Japan, 59%; and Government, 41%)	Kual Tanjung, north Sumatra	225
Cement	P.T. Indocement	Citeureup, west Java	8,000
Do.	P.T. Semen Cibinong	Narogong, east Java	1,400
Do.	P.T. Semen Gresik	Gresik, east Java	1,500
Do.	P.T. Semen Padang	Indarung, west Java	2,200
Coal	P.T. Allied Indo Coal (Allied Indonesia Coalfields Pty. Ltd. of Australia, 60%; and P.T. Mitra Abadi Sakti of Indonesia, 20%)	Parambahan, west Sumatra	500
Do.	P.T. Tambang Batubara Bukit Asam (Government, 100%)	Bukit Asam, south Sumatra	4,000
Do.	Perum Tambang Batubara (Government, 100%)	Ombilin, west Sumatra	1,000
Copper, in concentrate	P.T. Freeport Indonesia Co. (Freeport McMoRan Copper and Gold Inc. of the United States, 80%; Government, 10%; and others, 10%)	Ertsberg and Grasberg, Irian Jaya	350
Granite	P.T. Karium Granite (subsidiary of P.T. Pandawa Sempurna of Indonesia)	Karium Island	2,000
Petroleum, crude 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.	P.T. Caltex Pacific Indonesia (Texaco Inc., 50%; and 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
Gas:			
Natural million cubic feet per day	Mobil Oil Indonesia, Inc. (subsidiary of Mobil Corp. of the United States)	Arun, Aceh in north Sumatra	1,700
Do.	Roy M. Huffington (subsidiary of HUFFCO of the United States)	Badak, east Kalimantan	1,000
Liquefied	P.T. Arun LNG Co. Ltd. (Government, 55%; Mobil Oil, 30%; and the Japan Indonesia LNG Co., 15%)	Balang Lancang, Aceh in north Sumatra	10,000
Do.	P.T. Badak LNG Co. Ltd. (Government, 55%; HUFFCO Group, 30%; and the Japan Indonesia LNG Co., 15%)	Bontang, east Kalimantan	7,900
Nickel:			
In ore	P.T. Aneka Tambang (Government, 100%)	Pomalaa, south Sulawesi and on Gebe Island, Moluccas	34
In matte	P.T. International Nickel Indonesia (Inco Ltd. of Canada, 78%; Sumitomo Metal Mining Co. Ltd. of Japan, 20%; other, 2%)	Soroako, south Sulawesi	45
Nitrogen	P.T. Aseah-Aech Fertilizer (Government, 60%; other members of Asean 40%)	Lhokseumawe, north Sumatra	506
Do.	P.T. Pupuk Iskandar Muda (Government, 100%)	do.	506
Do.	P.T. Pupuk Kalimantan Timur (Government, 100%)	Bontang, east Kalimantan	1,012
Do.	P.T. Pupuk Sriwijawa (Government, 100%)	Palembang, south Sumatra	1,438
Steel, crude	P.T. Krakatau Steel (Government, 100%)	Cilegon, west Java	2,000
Tin:			
In ore	P.T. Koba Tin (Government, 25%; Renison Goldfields Consolidated Ltd. of Australia, 75%)	Koba, Bangka Island	6
Do.	P.T. Tambang Timah (Government, 100%)	Onshore and offshore islands of Bangka, Belitung, and Singkep	32
Metal, refined	Peleburan Timah Indonesia (Government, 100%)	Mentok, Bangka Island	32

TABLE 3
INDONESIA: RESERVES OF MAJOR MINERAL COMMODITIES FOR 1994

(Thousand metric tons unless otherwise specified)

Commodity	Reserves
Bauxite	396,000 1/
Coal	3,000,000 2/
Copper	1,126,000 3/
Gas, natural	billion cubic feet 87,100
Nickel	367,000 4/
Petroleum, crude	million barrels 8,200
Tin	740 5/

1/ Includes proven reserves on Bintan Island and west Kalimantan, grading no less than 40% Al₂O₃.

2/ Includes proven and probable reserves.

3/ Represents proven and probable reserves, grading 1.30% Cu, in the Ertsberg and Grasberg areas of Irian Jaya.

4/ Represents proven and probable reserves on Gag Island, Gebe Island, in the Pomalaa and Soroako areas of south Sulawesi, grading between 1.5% to 2% Ni.

5/ Official proven reserves.

Sources: The Indonesian Department of Mines and Energy, the Indonesian Mining Association, P.T. Freeport Indonesia Co., P.T. Inco and Oil and Gas Journal.