



# 2008 Minerals Yearbook

---

## INDONESIA

---

# THE MINERAL INDUSTRY OF INDONESIA

By Chin S. Kuo

The Government of Indonesia expected the economy to grow by 6.1% in 2008, fueled by the global boom in commodity prices and the strong domestic construction sector. Indonesia is rich in mineral resources, including coal, copper, gold, nickel, and tin. Other mineral commodities that the country has in significant quantity are bauxite, oil and gas, and silver. The country's industrial production came from the cement, metal mining, and oil and gas industries. Indonesia was among the leading five producers of copper and nickel in the world and its tin output was ranked second after China. It was also ranked among the world's top 10 countries in the production of gold and natural gas. Indonesia was also one of the leading exporters of liquefied natural gas (LNG) (after Qatar) but was a net importer of oil.

## Minerals in the National Economy

Indonesia's industrial output accounted for 37% of its gross domestic product (GDP) of \$511 billion. The industrial sector grew by 4.8% in 2008. The development of minerals and oil and gas continued to play a significant role in the country's economic growth. Mining and quarrying accounted for 8.9% of the GDP; the cement industry, 0.8%; and iron and steel production, 0.5%. The mining and quarrying sector grew by only 0.5%. The oil and gas industry, which contracted slightly by 0.3%, contributed 3.9% of the GDP (Indonesian Ministry of Industry, 2009).

## Government Policies and Programs

Under a new mining and coal law that was under consideration, all existing mining and coal contracts would be upheld. In 5 years after the new law was passed, exports of raw materials would be banned and raw ore and concentrates would be required to be smelted or refined in Indonesia. A provision in the law would shorten mining contracts from the current 30 years to 20 years with an option to extend them for an additional 20 years (Mineweb.com, 2008a).

The Government issued guidelines to limit production of key minerals, including copper, gold, iron ore, nickel, and tin, to ensure domestic supplies and reduce future exports. The limit would be in place for 5 years and would be evaluated annually. The evaluation would take into consideration conservation needs, export demand, domestic supply, national production, and state revenue, as well as the mineral reserves available in each Province and producing area (Thomson Reuters Metals Insider, 2008a).

The Government planned to offer new incentives to attract developers to its declining oil and gas sector, including the elimination of the value-added tax on imported equipment, which took effect in 2008. The Government also set an oil output target of 1.034 million barrels per day in 2008 and 1.3 million barrels per day in 2009 (Petroleum Economist, 2008a).

## Production

Indonesia produced such major mineral commodities as bauxite, cement, coal, copper, natural gas, nickel, petroleum, and tin in 2008. Production of mined gold and copper decreased by 45% and 17.8%, respectively, owing to the lower grade ore mined at Grasberg. As a result, the output of refined copper also declined. Production of steel and pig iron also decreased by 10% and 9.1%, respectively, because of low capacity utilization by PT Krakatau Steel. The decrease in the output of mined nickel led to decreased production of ferronickel and nickel matte. The output of mined tin and tin metal also decreased by 19.5% and 16.6%, respectively, owing to the low commodity price. The country produced about 189 million metric tons (Mt) of bituminous coal and an average of 978,000 barrels per day (bbl/d) of oil in 2008, which was short of its targeted output of 1.034 million barrels per day. The amount of natural gas produced and marketed increased slightly by 3%. Indonesia was the leading producer and exporter of LNG in Asia (table 1).

## Structure of the Mineral Industry

The Government's investment policy was to encourage domestic and foreign companies to participate in the development and exploitation of minerals and hydrocarbons. State-owned PT Antam Tbk (Antam) produced bauxite, gold, nickel, and silver. PT Krakatau Steel, PT Pertamina, PT Tambang Batubara Bukit Asam, and PT Tambang Timah Tbk were engaged in the production of steel, oil, coal, and tin, respectively. Private-sector PT Indocement Tungal Prakarsa Tbk was the leading cement producer in the country. Partially foreign-owned PT Freeport Indonesia and PT Newmont Nusa Tenggara were involved in the mining of copper and gold. PT International Nickel Indonesia Tbk produced nickel ore and matte, and PT Koba Tin produced tin ore and tin metal (table 2).

## Mineral Trade

In 2008, Indonesia's total exports were valued at \$137 billion and the major export partners were China, India, Japan, the Republic of Korea, Malaysia, Singapore, and the United States. Mining and quarrying contributed 10.8% to the value of total exports. Total imports were valued at \$129 billion and the major import partners were China, Japan, and Singapore. Iron and steel accounted for 8.4% of the value of total imports. The export value of oil and gas decreased to \$29.1 billion owing to falling prices. The value of oil and gas imports amounted to \$30.6 billion (Indonesian Ministry of Industry, 2009).

The export volume of refined tin was 9,914 metric tons (t) in January 2008, which was greater than the 5,716 t exported in January 2007 mainly because 14 independent smelters on Bangka and Belitung received licenses to export beginning in 2008. The Government issued tin export licenses to PT Bangka

Kudai Tin and PT Bangka Timah Utama Sejahtera. However, more smelters planned to export less and the total planned export volume for the year was expected to be only 85,000 t, of which PT Tambang Timah would export 60,000 t; PT Koba Tin, 15,000 t; and small smelters, 10,000 t (ITRI Ltd., 2008).

## Commodity Review

### Metals

**Aluminum.**—National Aluminium Co. Ltd. of India planned to build a \$3.2 billion aluminum smelter and powerplant in the Province of South Sumatra. In its first phase, the smelter would have a production capacity of 250,000 metric tons per year (t/yr) and the coal-fired powerplant would have 750 megawatts (MW) of capacity. In the second phase, the smelter's capacity would be doubled to 500,000 t/yr and the powerplant's capacity would be increased by 500 MW. The project would require 1 million metric tons per year (Mt/yr) of alumina from sources in India. Coal supplies would come from the Tanjung Enim coal mine, which was operated by state-owned PT Tambang Batubara Bukit Asam. The smelter was expected to start operation by the end of 2010. Indonesia's only aluminum smelter was run by state-owned PT Indonesia Asahan Aluminium in the Province of North Sumatra (Mineweb.com, 2008b).

**Copper and Gold.**—To reduce the environmental effects, the Government cut PT Freeport Indonesia's production by 80,000 metric tons per day (t/d) to 220,000 t/d of ore at Papua's Grasberg copper and gold mine. Freeport-McMoRan Copper and Gold Inc. of the United States held an 81.28% stake in Freeport Indonesia; the Government held a 9.36% interest, and Indocopper Investama held a 9.36% interest (Platts.com, 2008).

PT Smelting Co. planned to expand the capacity at its copper smelter at Gresik in the Province of East Java to 300,000 t/yr from its current capacity of 270,000 t/yr in September 2009. In May 2008, the smelter was shut down for routine maintenance for 27 days to replace the refractory bricks in its furnace. Cathode copper production for the year was about 260,000 t owing to the smelter closure. The smelter was owned by Mitsubishi Materials Corp. of Japan (60.5%), Freeport Indonesia (25%), Mitsubishi Corp. of Japan (9.5%), and Nippon Mining and Metals Co. Ltd. of Japan (5%). The smelter processed about 1 Mt/yr of copper concentrate, of which 80% was supplied by Freeport Indonesia and 20%, by PT Newmont Nusa Tenggara (Thomson Reuters Metals Insider, 2008b).

PT Indosmelt planned to set up a copper smelter with a production capacity of 100,000 t/yr of copper cathode at Maros in South Sulawesi Province. The investment was estimated to be \$500 million. The smelter planned to process 250,000 t/yr of copper concentrate secured from Freeport Indonesia or from imports. Ausmelt technology would be used to treat the copper concentrate. Construction of the smelter would start in 2010 and production was expected in 2013. Meanwhile, PT Nusantara Smelting Corp. planned to build a copper smelter that would produce 200,000 t/yr of copper cathode at Bontang on Kalimantan Island (Mining Weekly, 2008).

Oropa Resources Ltd.'s Sihayo 1 North deposit in the Pungkut gold project in the Province of North Sumatra was estimated to

have a resource of 12.1 Mt at a grade of 2.4 grams per metric ton (g/t) gold or 28,300 kilograms (kg) of contained gold at a cutoff grade of 1 g/t gold. The company owned 75% of the project and planned an infill drilling program and a bankable feasibility study. A scoping study of the project also included the Hutabargot Julu and the Sambung deposits. Antam held the remaining 25% interest in the project. The company also drilled for gold mineralization in the Old Camp Area east of Sihayo 1 North (Asia Miner, The, 2008i).

Finders Resources Ltd. planned to produce between 20,000 and 25,000 t/yr of copper cathode at its Wetar copper project (formerly owned by BHP Billiton plc of the United Kingdom) in 2009. Heap leaching with solvent extraction and electrowinning was selected as the process with the highest copper recoveries and the lowest capital and operating costs. In mid-2008, the development of a semicommercial-scale test heap (100,000 t) and pilot plant at a capital cost of \$6.25 million was underway to produce 5 t/d of copper cathode. The pilot plant production was delayed owing to delays in the supply of several key components. The total resource was estimated to be 9.8 Mt at a grade of 2.5% copper. Finders' Ojolali silver-gold project in South Sumatra Province would be developed as an open pit carbon-in-leach or carbon-in-pulp operation with 1,560 kilograms per year (kg/yr) of gold at the Jambi oxide (more than 85%) deposit. The Jambi deposit's resource estimate was increased by 33% to 4,290 kg of contained gold at a cutoff grade of 0.5 g/t gold. About 75% of the estimated resource was classified as indicated (Finders Resources Ltd., 2008).

Newmont Mining Corp. of the United States filed for arbitration in a dispute concerning the Government's demand that the company sell part of its Batu Hijau Mine on Sumbawa Island to local investors or lose its operating contract. The Government also planned to go to arbitration. The Government decision triggered a requirement for Newmont's local unit PT Newmont Nusa Tenggara to file for arbitration. A cancellation of Newmont's contract to mine copper and gold might undermine overseas investors' confidence in the metals-rich country (Mining Engineering, 2008).

East Asia Minerals Corp. of Canada encountered surface high-grade epithermal gold at its Abong and Collins projects in Aceh Province. High-grade gold was identified with the Bintang and the Fikri prospects at Abong. The company completed the first three planned drill holes. The drilling extended the main Bulan gold mineralization, which is located 400 meters (m) south of Bintang, to the west and led to the discovery the Kapar gold target 1.3 kilometers (km) east of Bulan. At Collins, which is located 80 km northeast of Abong, sampling of the epithermal quartz veins was completed and diamond-sawed channels returned high gold assays. The company also drilled for epithermal gold and silver mineralization at the Binebase-Bawone prospect, which was part of the Sangihe property in North Sulawesi Province (Asia Miner, The, 2008f). Southern Arc Minerals drilled one hole at the Blongas I target that showed insignificant copper-gold values and two holes at the Kekalik target that had low-grade gold intercepts, all in its Selodong porphyry copper-gold prospect on West Lombok Island (Asia Miner, The, 2008e).

An initial resource estimate for the Newet Vein at Kalimantan Gold Corporation Ltd. of Bermuda's Jelai gold project in the Province of East Kalimantan showed an indicated resource of 256,000 t at grades of 3.44 g/t gold and 3.2 g/t silver and an inferred resource of 690,000 t at grades of 2.81 g/t gold and 3.7 g/t silver, both at a cutoff grade of 1 g/t gold. The vein was one of the five main veins identified at Jelai and was a typical low-sulfidation epithermal vein, striking generally north-south and dipping at 60 degrees to the west. The other veins being evaluated included the Lipan, the Nyabi, and the Sembawang veins (Asia Miner, The, 2008g).

Australian company Oxiana Ltd. (which became OZ Minerals Ltd. in 2008) had spent \$2.5 million drilling 16 holes to test the four highest-potential targets of Kalimantan Gold's KSK porphyry copper-gold contract of work (COW). A new report confirmed the untested potential in several areas of the COW as supported by Kalimantan Gold's earlier work and the recommendations of its consultants. Meanwhile, Oxiana started construction of its Martabe gold and silver project in the Province of North Sumatra in July 2008. The project was based on the single Purnama deposit, which had a mine life of 9 years, and two other adjacent deposits. The capital cost was estimated to be \$310 million. Mining of the Purnama deposit would be undertaken by open pit method and the plant would treat 4.5 Mt/yr of ore using carbon-in-leach technology to recover 6,220 kg/yr of gold and 62,200 kg/yr of silver. Plant completion was scheduled for December 2009. Plant expansion to 9,330 kg/yr was planned for the future. PT Thiess Contractors Indonesia was awarded a \$26 million contract for site preparation and early construction work (Asia Miner, The, 2008h).

Antam and Oxiana signed a memorandum of understanding for Antam to acquire a 25% interest in Oxiana's Martabe project for more than \$133 million. In the first deal, Antam would purchase 10% of Martabe for \$66.5 million. Antam would also be granted an option to buy another 10% for the same price and an additional 5% based on the project's market value at that time (Asia Miner, The, 2008a).

**Iron and Steel.**—Coziron Resources Ltd. of Australia and Wuhan Tongrui Industry and Trade Ltd. of China signed an agreement to develop the Agam iron sand project in the Province of West Sumatra. The project was a joint venture between Coziron Resources and PT Galian Endapan Buana. The total area of the two licensed tenements was approximately 3,960 hectares. Concentrations of heavy mineral sands, which were thought to have derived from andesitic lavas, contained between 1% and 5% magnetite, as well as rutile and zircon. Wuhan Tongrui would provide technical support as well as mining equipment, a beneficiation plant, and wharf construction for \$2.2 million. In return, Wuhan Tongrui would initially take 30,000 metric tons per month of iron sand concentrate from the project. Production was expected to begin in the first quarter of 2009 (Coziron Resources Ltd., 2008).

ArcelorMittal of Luxembourg planned to invest \$8 billion in Indonesia to ensure key supplies of iron ore and to create a partnership with Antam to prospect for iron ore, manganese, and nickel. The company relied on suppliers of iron ore, such as BHP Billiton, Rio Tinto plc of the United Kingdom, and Vale S.A. of Brazil. ArcelorMittal also planned to take a stake

in PT Krakatau Steel and to set up a new steel plant in a joint venture with PT Krakatau Steel. PT Krakatau Steel had a production capacity of 2.5 Mt/yr of steel (Yuniar, 2008).

**Nickel.**—Rio Tinto discovered a 162-Mt lateritic nickel resource at its Sulawesi nickel project. The laterite deposits are located 40 km from the east coast on Sulawesi Island and contain limonite and saprolite over ultramafic rock units. The area of laterite deposits within Rio Tinto's leases cover 84 square kilometers. A total of 46 diamond core drillings were used to arrive at an inferred resource of 111 Mt with grades of 1.41% nickel and 0.1% cobalt. Use of open cut mining with excavator and truck was determined to be suitable for the deposits. High-pressure acid leaching could be used to process the ore with 90% nickel recovery and 88% cobalt recovery. A production rate of 46,000 t/yr of nickel was envisaged beginning in 2015 (Rio Tinto plc, 2008).

BHP Billiton decided to end a study into integrated nickel development at Gag Island and Buli in Halmahera following a conditional agreement to form a joint venture with Antam. Obtaining the COW for Buli resource by October 2008 was not achieved. BHP Billiton would not pursue a standalone development at Gag Island and elected to terminate the agreement with Antam (Asia Miner, The, 2008b).

**Tin.**—PT Tambang Timah was switching from onshore mining of tin to offshore mining owing to depleting onshore resources. Supply of tin-in-concentrate from onshore mining had been in decline. The company planned to build additional dredges to increase offshore mining—seven small dredges at a total cost of \$16.3 million and one large dredge at a cost of \$21.7 million. These dredges would increase its tin ore from offshore mining to 50% in 2009 compared with 20% in 2008. With China becoming a net importer of tin in 2008, Indonesia was Asia's leading exporter of tin (Mineweb.com, 2008c).

PT Koba Tin's smelters on Bangka and Belitung Islands were shut down because the company received tin ore from illegal mining. Five company officials were named as suspects. Two miners working as the company's partners were alleged to have conducted illegal mining in a forest area. About 5,280 t of refined tin ingots was confiscated. The Government had begun cracking down on illegal tin mining and smelting in 2006. PT Koba Tin, which was the second ranked tin miner and producer in Indonesia, was owned by Malaysian Smelting Corp. Bhd (75%) and PT Tambang Timah (25%). The company planned to produce 15,000 t of refined tin in 2008 (Reuters, 2008).

### **Industrial Minerals**

**Cement.**—The Government encouraged state-owned cement companies to increase their production capacities to meet domestic demand, which was growing at a rate of 7% per year. The country's main cement market was located on Java Island, which accounted for 60% of national consumption. Current consumption throughout the country stood at 39 Mt/yr and production capacity was 47 Mt/yr. PT Semen Gresik planned to increase its production capacity by 2.5 Mt/yr in 2010. Its subsidiaries PT Semen Tonasa in the Province of South Sulawesi and PT Semen Padang in the Province of West Sumatra each planned to increase their production capacities by 2.5 Mt/yr in

2010 and 2011, respectively. PT Semen Gresik also planned to build two new cement plants with a combined capacity of 5 Mt/yr at a cost of \$670 million. Indocement Tunggal Prakarsa in the Province of South Kalimantan planned to raise its output by 2.5 Mt/yr, also in 2010 (Global Cement, 2008, p. 53).

Bosowa Corp. projected to spend \$500 million in capital expenditure to finance its construction and cement projects for the next 3 years. Its cement plants produced more than 2 Mt/yr of cement combined. A new \$300 million cement plant with a capacity of 2.5 Mt/yr would be developed on Java Island in 2009. PT Semen Gresik planned to increase its production capacity despite the increase in fuel (coal) prices. The company bought 70% of its coal from the spot market and 30% under long-term contract and was seeking additional coal supplies from major coal producers. PT Semen Gresik and its subsidiaries required 2.5 Mt/yr of coal. Indonesia's cement industry as a whole used 6 Mt/yr of coal (Global Cement, 2008, p. 54).

PT Holcim Indonesia, which was the third ranked cement producer in Indonesia, acquired PT Bintang Polindo Perkasa to strengthen its market presence on Java Island, particularly in Banten and West Java Provinces. PT Bintang Polindo Perkasa had a cement grinding plant with a production capacity of 600,000 t/yr (International Cement Review, 2008).

**Diamond.**—Gem Diamonds Ltd. would place its Cempaka alluvial diamond mine in the Province of South Kalimantan on care and maintenance status in 2009; the mine was a low margin operation. The deposits consisted of the Cempaka and the Danau Seran paleo-channels. Total indicated and inferred resources were estimated to be 87.2 Mt of gravel containing 2.6 million carats. The company was a leading supplier of high-quality rough diamond and produced white diamond and an array of colored diamond. In 2007, the company acquired BDI Mining, which held an 80% interest in the mine. Antam held the remaining 20% (Gem Diamonds Ltd., 2008).

### **Mineral Fuels**

**Coal.**—A review of the drilling and exploration program at Churchill Mining plc of Australia's East Kutai coal project indicated an increase of 50% in the coal resource estimate to 150 Mt and a coal-bearing sequence of 16.5 km along strike. An intensive drilling program covered an area of 6 km by 2 km with 6,200 m of drilling in 3 months. As of June, about 9,000 m of drilling had been completed. The coal in the area was described as subbituminous with very low sulfur content and less than 5% ash. The energy content of the thermal coal was between 4,700 and 5,600 kilocalories per kilogram (kcal/kg). Trans Tek Engineering was responsible for the scoping study of the project with emphasis on the infrastructure and transportation requirements from the mine site to the port. Churchill Mining planned to bring East Kutai into production by the end of 2009 (Asia Miner, The, 2008c).

Indonesia produced 243 Mt of total coal compared with 232 Mt in 2007. About 75% of total coal output was exported. Domestic coal demand was expected to increase to 75 Mt in 2009 from 52 Mt in 2008. If the Government's cap on coal exports remained at 150 Mt/yr, coal consumption at this pace

would exceed coal exports by 20 Mt between 2015 and 2020. The export limit was made in anticipation of the opening in 2010 of new coal-fired powerplants by PT Perusahaan Listrik Negara and the increasing use of coal instead of oil in the industrial sector. One of the new powerplants would be located at Suralaya in Cilegon in the Province of West Java; the plant would have a capacity of 652 MW (Coal Age, 2008).

Evergreen Energy Inc. of the United States and Sumitomo Corp. of Japan agreed with a major Indonesian coal company to proceed with the development of a feasibility study for a 1.36-Mt/yr K-Fuel™ coal refinery on Kalimantan Island. Kalimantan coal (lignite) worked well with the K-Fuel™ process. K-Fuel™ refined coal had 64% less moisture, 56% less mercury, and 52% more heat value (from 3,666 to 5,571 kcal/kg), which approached the performance level of bituminous coal. Indonesia had 4.5 billion metric tons of subbituminous and lignite coal reserves (Engineering and Mining Journal, 2008).

**Natural Gas.**—When British Petroleum plc's Tangguh LNG facility comes onstream, its gas was expected to meet both domestic and export requirements despite the decreasing output from the Arun and the Bontang plants. Tangguh would supply 7.4 Mt/yr of LNG. In 2007, LNG output from Arun and Bontang amounted to 21 Mt/yr. Indonesia remained one of the leading LNG exporters in the world. New gas supply would be needed to meet the increasing domestic demand (Petroleum Economist, 2008d).

Eni S.p.A. of Italy planned to build Indonesia's first floating LNG-production facility in the Bukat area in the Tarakan basin. In 2007, Eni discovered oil and gas in the Tulip Field in Bukat. Eni also discovered oil, which tested at more than 5,000 bbl/d in a nearby field in Bukat. Eni was developing the Aster Field with Anadarko Petroleum Corp. of the United States.

**Petroleum.**—Mature oilfields had made Indonesia a net importer of oil since 2004. The country imported oil from Iran, Kuwait, and Saudi Arabia. In 2007, Indonesia produced 910,000 bbl/d of oil mainly in northern Sumatra Island which was 40,000 bbl/d below its target. In 2008, it produced 978,000 bbl/d. The country decided to withdraw from its membership in the Organization of Petroleum Exporting Countries (OPEC) in January owing to its inability to meet the OPEC export quotas (British Broadcasting Co., 2008).

The Government planned to invite bids for 46 oil and gas blocks in 2008 through direct offer and regular tender. The Ministry of Energy awarded 22 offshore oil and gas blocks in October, and expected as a result to have 27 new exploration wells drilled and \$330 million invested. U.S. companies Chevron Corp. (the West Papua I and West Papua III Blocks), ConocoPhillips Co. (the Arafura Sea Block), and Marathon Oil Corp. and its partner Kaizan Co. (the Bone Bay Block) were among the winners. The Ministry also awarded concessions for nine new blocks and expected investment of \$465 million in the first 3 years. Hess Corp. of the United States won the Semai Block offshore the Province of West Papua. A consortium consisting of Inpex Corp. of Japan, PTT Public Company Ltd. of Thailand, and Murphy Oil Corp. of the United States won the nearby Semai II Block. Exxon Mobil Corp. of the United States won the Gunting Block in East Java Province (Petroleum Economist, 2008g).

ExxonMobil planned to spend \$450 million exploring two blocks—the Mandar in Polewali Mandar Regency and the Surumana in Dongala Regency—in West Sulawesi Province. The blocks could have combined reserves of 1 billion barrels of oil equivalent. Drilling would start in December 2008 (Petroleum Economist, 2008e).

Australian Worldwide Exploration (AWE) started drilling for oil at the Bulu production-sharing contract (PSC) in the Java Sea. The Lisah-1 well was drilled 90 km north of Surabaya in East Java Province in 60 m of water. The Lengo-1 well would be drilled in the northwest corner of the Bulu PSC. Participants in the Bulu PSC were AWE (42.5%), Pearl Oil (Satria) Ltd. (42.5%), PT Satria Energindo (10%), and PT Satria Wijaya Kusuma (5%) (Asia Miner, The, 2008d).

PT Chevron Pacific Indonesia started producing oil from its North Duri Field Area 12 on the island of Sumatra. Output was expected to increase to 34,000 bbl/d of oil in 2012. Initial production would increase with the application of steamflood technology in 2009. Steamflooding was an enhanced oil recovery method that injected steam into the reservoir to increase oil recovery. The North Duri Area 12 was the latest expansion of the Duri Field, which produced nearly 200,000 bbl/d of oil (Rigzone.com, 2008).

State-owned Pertamina planned to take over operation of the West Madura Field offshore the Province of East Java and to increase its stake to more than 50% when the existing contract with its foreign partners expired in 2011. Kodeco Energy Co. Ltd. of the Republic of Korea was the operator and shared its 50% stake with China National Offshore Operating Co. The field produced 6,500 bbl/d of oil and 1,270 cubic meters per day of gas. Oil production was also expected to be below 10,000 bbl/d in 2009 (Petroleum Economist, 2008f).

National Iranian Oil Co. signed an agreement with Pertamina and a Malaysian company to build a 300,000-bbl/d oil refinery in Banten Province. In the first phase of the project, Pertamina would import 150,000 bbl/d of Iranian heavy crude oil for processing and sale in Asia. The remaining crude oil would come from Libya under a 20-year sales agreement. Indonesia had seven oil refineries with a total refining capacity of 1.05 million barrels per day (Petroleum Economist, 2008b).

Trans Pacific Petrochemical Indonesia would start producing 50,000 bbl/d of gasoline by buying 80,000 bbl/d of condensate at yearend. The output would be sold to Pertamina as part of a campaign to reduce the country's oil-import bill. The company was owned by Pertamina (15%), Tuban Petro (59.5%), Siam Cement of Thailand (17%), and Itochu Corp. and Sojitz Corp. of Japan (4.25% each) (Petroleum Economist, 2008c).

## Outlook

Production of smelted copper is expected to increase owing to expanded capacity at Gresik and the introduction of two new copper smelters in the next 3 to 5 years. In addition to the existing aluminum smelter and steel plant, Indonesia is expected to set up a new smelter and a new plant, respectively, by joint ventures with foreign companies. With PT Tambang Timah switching from onshore mining of tin to offshore mining, in addition to PT Koba Tin's full production, Indonesia will

likely remain the leading exporter of tin in Asia. Cement output is expected to increase by 15 Mt/yr when several cement companies either expand their production capacities or set up new cement plants in the next 2 to 3 years. The country's LNG production capacity is expected to increase by 7.4 Mt/yr from the current 21 Mt/yr with the commissioning of British Petroleum's Tangguh LNG plant and the planning of Eni's floating LNG plant. Indonesia is expected, therefore, to continue to be one of the leading exporters of LNG in the world.

## References Cited

- Asia Miner, The, 2008a, Indonesia—Antam looks to purchase stake in Martabe: The Asia Miner. (Accessed August 6, 2008, at <http://www.asiaminer.com/magazine/latest/1-indonesia-antam-looks>.)
- Asia Miner, The, 2008b, Indonesia—BHP Billiton ends integrated nickel development study: The Asia Miner. (Accessed December 10, 2008, at <http://www.asiaminer.com/magazine/latest/indonesia-bhp-billiton-ends>.)
- Asia Miner, The, 2008c, Indonesia—Coal reserve target at East Kutai raised by 50%: The Asia Miner. (Accessed July 8, 2008, at <http://www.asiaminer.com/magazine/latest/view/1-indonesia-coal-reserve-target>.)
- Asia Miner, The, 2008d, Indonesia—Drilling starts at Bulu oil project: The Asia Miner. (Accessed February 26, 2008, at <http://www.asiaminer.com/magazine/content/view/1072/69>.)
- Asia Miner, The, 2008e, Indonesia—Drill rigs moved to other Selodong sites: The Asia Miner. (Accessed February 26, 2008, at <http://www.asiaminer.com/magazine/content/view/1070/69>.)
- Asia Miner, The, 2008f, Indonesia—High grade gold at Aceh projects: The Asia Miner. (Accessed February 26, 2008, at <http://www.asiaminer.com/magazine/content/view/1078/69>.)
- Asia Miner, The, 2008g, Indonesia—Initial estimate for Mewet vein resource: The Asia Miner. (Accessed December 10, 2008, at <http://www.asiaminer.com/latest/indonesia-initial-estimate>.)
- Asia Miner, The, 2008h, Indonesia—Martabe approvals expected shortly: The Asia Miner. (Accessed March 4, 2008, at <http://www.asiaminer.com/magazine/content/view/1093/69>.)
- Asia Miner, The, 2008i, Indonesia—Sihayo 1 North gold estimate increases 49%: The Asia Miner. (Accessed July 8, 2008, at <http://www.asiaminer.com/magazine/latest/indonesia-sihayo-1-north>.)
- British Broadcasting Co., 2008, Indonesia to withdraw from OPEC: British Broadcasting Co. (Accessed May 28, 2008, at <http://news.bbc.co.uk/2/hi/business/7423008.stm>.)
- Coal Age, 2008, Indonesia's domestic coal consumption to exceed exports: Coal Age, May, p. 6.
- Coziron Resources Ltd., 2008, Agam iron sand project: Coziron Resources Ltd. press release through the Australian Stock Exchange, June 10, 2 p.
- Engineering and Mining Journal, 2008, Evergreen advances proposed coal refinery project in Indonesia; Engineering and Mining Journal, v. 209, no. 3, March, p. 32.
- Finders Resources Ltd., 2008, Projects: Finders Resources Ltd. (Accessed December 30, 2008, at <http://www.findersresources.com/fndwetproj.php>.)
- Gem Diamonds Ltd., 2008, Gem Diamonds to place the Cempaka Mine on care and maintenance: Gem Diamonds Ltd. press release, December 15, 2 p.
- Global Cement, 2008, Southeast Asia—Cement industry developments: Global Cement, March, pp. 53-60.
- Indonesian Ministry of Industry, 2009, Fact and figures: Indonesian Ministry of Industry. (Accessed March 5, 2009, at <http://www.depperin.go.id/eng2006>.)
- International Cement Review, 2008, Holcim Indonesia buys out Bintang Polindo, International Cement Review, v. 6, June, p. 19.
- ITRI Ltd., 2008, Indonesia—More companies to ship less tin: ITRI Ltd. (Accessed February 20, 2008, at [http://www.itri.co.uk/pooled/articles/BF\\_NEWSART/view.asp?Q=B](http://www.itri.co.uk/pooled/articles/BF_NEWSART/view.asp?Q=B).)
- Mineweb.com, 2008a, All existing mining contracts will be upheld under new Indonesian mining law: Mineweb.com. (Accessed December 11, 2008, at <http://www.mineweb.com/mineweb/view/mineweb/en/page72068?oid=74933&sn=detail>.)
- Mineweb.com, 2008b, Indonesia Industry Ministry says Nalco \$3.2b smelter project making good progress: Mineweb.com. (Accessed August 26, 2008, at <http://www.mineweb.com/mineweb/view/mineweb/en/page36?oid=60702&sn=detail>.)

- Mineweb.com, 2008c, World largest tin miner sales down 21% in first half: Mineweb.com. (Accessed July 10, 2008, at <http://www.mineweb.com/mineweb/view/mineweb/en/page36?oid=56411&sn=detail>.)
- Mining Engineering, 2008, Newmont heads to arbitration over the Batu Hijau Mine in Indonesia: Mining Engineering, v. 60, no. 4, April, p. 13.
- Mining Weekly, 2008, Indonesia's Indosmelt plans \$500m copper smelter: Mining Weekly. (Accessed November 24, 2008, at [http://www.miningweekly.com/print\\_version.php?a\\_id=148162](http://www.miningweekly.com/print_version.php?a_id=148162).)
- Petroleum Economist, 2008a, News in brief: Petroleum Economist, v. 75, no. 2, February, p. 37.
- Petroleum Economist, 2008b, News in brief: Petroleum Economist, v. 75, no. 4, April, p. 37.
- Petroleum Economist, 2008c, News in brief: Petroleum Economist, v. 75, no. 7, July, p. 37.
- Petroleum Economist, 2008d, News in brief: Petroleum Economist, v. 75, no. 8, August, p. 37.
- Petroleum Economist, 2008e, News in brief: Petroleum Economist, v. 75, no. 10, October, p. 37.
- Petroleum Economist, 2008f, News in brief: Petroleum Economist, v. 75, no. 11, November, p. 37.
- Petroleum Economist, 2008g, News in brief: Petroleum Economist, v. 75, no. 12, December, p. 37.
- Platts.com, 2008, Indonesia cuts permitted production at Papua gold, copper mine: Platts.com. (Accessed April 18, 2008, at <http://www.platts.com/metals/news/8669537.xml>.)
- Reuters, 2008, Indonesia's Koba Tin smelter shut, police name suspects: Reuters. (Accessed February 1, 2008, at <http://www.reuters.com/article/marketsnews/idINJAK316032008012>.)
- Rigzone.com, 2008, Chevron fires up production at Indonesia's North Duri field: Rigzone.com. (Accessed November 28, 2008, at [http://www.rigzone.com/news/article.asp?a\\_id=70010](http://www.rigzone.com/news/article.asp?a_id=70010).)
- Rio Tinto plc, 2008, Rio Tinto announces over 160 million tones of lateritic nickel resources in Indonesia: Rio Tinto plc press release, May 28, 4 p.
- Thomson Reuters Metals Insider, 2008a, Indonesia issues guidelines limiting metals output: Thomson Reuters Metals Insider, August 22, p. 2.
- Thomson Reuters Metals Insider, 2008b, Indonesia's PT Smelting to start expansion in Sept. 2009: Thomson Reuters Metals Insider, September 8, p. 3.
- Yuniar, Yuyu, 2008, ArcelorMittal proposes Indonesian investment: The Wall Street Journal, April 26-27, p. A3.

TABLE 1  
INDONESIA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity	2004	2005	2006	2007	2008	
METALS						
Aluminum:						
Bauxite, wet basis, gross weight	thousand metric tons	1,331	1,442	1,502	1,251	1,152
Metal, primary		240,800 <sup>r</sup>	252,300	250,300	242,100 <sup>r</sup>	242,500
Chromite sand, dry basis <sup>e</sup>		1,000	1,000	1,000	1,000	1,000
Copper:						
Mine, Cu content		840,318	1,064,200	818,000	796,900	651,000
Metal:						
Smelter, primary		211,600	275,000	201,200	277,100 <sup>r</sup>	261,300
Refinery, primary		210,500	262,900	217,600	221,400	181,300
Gold, mine output, Au content <sup>2</sup>	kilograms	91,710	130,620	93,176	117,851	64,390
Iron and steel:						
Iron sand, dry basis		89,664	32,203	87,970	61,077	65,000 <sup>e</sup>
Metal:						
Ferroalloys:						
Ferronickel		39,538	36,690	72,300 <sup>r</sup>	92,500 <sup>r</sup>	95,000 <sup>e</sup>
Ferromanganese <sup>e</sup>		12,000	12,000	12,000	12,000	12,000
Silicomanganese <sup>e</sup>		7,000	4,000	5,000	6,000	7,000
Pig iron, direct-reduced iron	thousand metric tons	1,470	1,390	1,290	1,420 <sup>r</sup>	1,290
Steel, crude	do.	3,682	3,675	3,759	4,160 <sup>r</sup>	3,915
Steel, semimanufactured	do.	4,238	4,859	5,150	5,400 <sup>e</sup>	5,200 <sup>e</sup>
Nickel:						
Mine output, Ni content <sup>3</sup>		136,000	135,000	157,200	229,200	192,600
Matte, Ni content		81,120	77,471	72,782	77,928	73,356
Ferronickel, Ni content		7,945	7,003	7,572	9,498	9,003
Silver, mine output, Ag content	kilograms	261,960	320,590	261,398	268,967	226,051
Tin:						
Mine output, Sn content		65,772	78,404	80,933	66,137	53,228
Metal <sup>4</sup>		49,872	65,300	65,357	64,127	53,471
Zirconium concentrates, gross weight		500	2,600	65,000	111,000	65,000 <sup>e</sup>
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	33,230	33,917	35,000 <sup>e</sup>	36,000 <sup>e</sup>	37,000 <sup>e</sup>
Clays: <sup>e</sup>						
Bentonite		5,000	5,000	5,500	5,500	6,000
Fire clay	thousand metric tons	1,900	2,000	2,000	2,100	2,100
Kaolin powder		15,000	15,000	15,000	15,000	15,000
Diamond: <sup>e</sup>						
Industrial stones	thousand carats	23	23	23	23	28
Gem	do.	7	7	7	7	7
Total	do.	30	30	30	30	35
Feldspar <sup>e</sup>		24,000	24,000	25,000	25,000	26,000
Gypsum <sup>e</sup>		6,000	6,000	6,000	6,000	6,000
Iodine <sup>e</sup>		75	75	75	75	75
Nitrogen, N content of ammonia <sup>e</sup>	thousand metric tons	4,120 <sup>5</sup>	4,400	4,300	4,400	4,500
Phosphate rock <sup>e</sup>		600	600	600	600	600
Salt, all types <sup>e</sup>	thousand metric tons	680	680	700	700	700
Stone:						
Dolomite <sup>e</sup>		3,100	3,100	3,200	3,200	3,300
Granite <sup>e</sup>	thousand metric tons	3,340 <sup>5</sup>	4,170 <sup>5</sup>	4,200	4,300	4,400
Limestone <sup>e</sup>	cubic meters	16,000	16,500	16,000	17,000	18,000
Marble <sup>e</sup>	do.	1,000	1,000	1,000	1,000	1,000
Quartz sand and silica stone <sup>e</sup>	do.	132,000 <sup>r</sup>	132,000 <sup>r</sup>	135,000 <sup>r</sup>	135,000 <sup>r</sup>	138,000
Sulfur, elemental <sup>e</sup>		3,500 <sup>r</sup>	3,500 <sup>r</sup>	3,500 <sup>r</sup>	3,500 <sup>r</sup>	3,500
Zeolite <sup>e</sup>		400	400	400	400	400

See footnotes at end of table.



TABLE 1—Continued  
INDONESIA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity	2004	2005	2006	2007	2008
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite <sup>e</sup>	50,000	50,000	52,000	53,000	54,000
Bituminous	131,530	142,920	181,061	178,791 <sup>r</sup>	188,717
Gas, natural:					
Gross	83,740	85,830	102,300	79,410 <sup>r</sup>	81,842
Marketed <sup>e</sup>	52,000	53,000	52,000	76,664 <sup>r,5</sup>	78,985 <sup>5</sup>
Petroleum, crude including condensate	362,000	352,000	367,000	305,000 <sup>r</sup>	311,000

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>r</sup>Revised. do. Ditto.

<sup>1</sup>Table includes data available through September 14, 2009.

<sup>2</sup>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.

<sup>3</sup>Includes a small amount of cobalt that was not recovered separately.

<sup>4</sup>Output by Central Government-controlled foreign contractor operations. Tin output from small tin smelters is not available but may be as much as 40,000 metric tons per year.

<sup>5</sup>Reported figure.

TABLE 2  
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Locations of main facilities	Annual capacity <sup>c</sup>	
<b>Aluminum:</b>				
Bauxite	PT Antam 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 Tunggul Prakarsa Tbk	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 Holcim Tbk (former known as PT Semen Cibinong)	Narogong, East Java	9,700	
Do.	PT Semen Gresik (Persero) Tbk	Gresik and Tubar, East Java	8,200	
Do.	PT Semen Padang (Persero)	West Sumatra	5,440	
Do.	PT Semen Tonasa (Persero)	Pangkep, Sulawesi Selatan	3,480	
Coal	PT Adaro Indonesia (New Hope Corp, 50%; PT Asminco Bara Utama, 40%; Mission Energy, 10%)	Paringin and Tutupan, South Kalimantan	35,000	
Do.	PT Arutmin Indonesia (PT Bumi Resources Tbk, 80%, and Bakrie Group, 20%)	Mulia, Senakin, and Satui, South Kalimantan Asam-Asam, East Kalimantan	20,000	
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 Bumi Resources Tbk, 100%)	East Kutai Regency, East Kalimantan	36,000	
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	
<b>Copper:</b>				
Concentrate	PT Freeport Indonesia Co. (Freeport-McMoRan Copper & 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	
<b>Gas:</b>				
Natural	ExxonMobil Oil Indonesia	Arun and Aceh, North Sumatra	1,700	
Do.	Roy M. Huffington (subsidiary of HUFFCO Group)	Badak, East Kalimantan	1,000	
Do.	Total Indonesia	Offshore, East Kalimantan	2,100	
Liquefied	PT Arun LNG Co. Ltd. (Government, 55%; Mobil Oil Co., 30%; Japan Indonesia LNG Co., 15%)	Balang Lancang and Aceh, North Sumatra	12,500	
Do.	PT Badak LNG Co. Ltd. (Government, 55%; HUFFCO Group, 30%; Japan Indonesia LNG Co., 15%)	Bontang, East Kalimantan	22,500	
Gold	metric tons	Aurora Gold Ltd. (100%)	Balikpapan, Central Kalimantan	60
Do.	do.	PT Antam Tbk (Government, 65%)	Bogor, West Java	3
Do.	do.	PT Freeport Indonesia Co. (Freeport-McMoRan Copper & Gold Inc., 81.28%; Government, 9.36%; others, 9.36%)	Ertsberg 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 Indah, 10%)	Lerokis, Wetar Island	3
<b>Nickel:</b>				
In ore	PT Antam 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 Antam Tbk (Government, 65%)	Pomalaa, South Sulawesi	24	
Do.	PT International Nickel Indonesia (Inco Ltd., 59%; Sumitomo Metal Mining Co. Ltd., 20%; others, 21%)	Soroako, South Sulawesi	68	

See footnotes at end of table.

TABLE 2—Continued  
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Locations of main facilities	Annual capacity <sup>c</sup>
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 Kujang	Cikampek, West Java	330
Do.	PT Pupuk Sriwijawa (Government, 100%)	Palembang, South Sumatra	1,440
Petroleum, crude thousand barrels per day	Atlantic Richfield Indonesia, Inc. (subsidiary of Arco Co.)	Arjuna and Arimbi, offshore West Java	170
Do.	do. China National Offshore Oil Co.	Off of southeast Sumatra	100
Do.	do. Maxus Southeast Asia Ltd. (subsidiary of Maxus Energy)	Cinta and Rama, offshore Southeast Sumatra	95
Do.	do. P.T. 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 Indonesie (subsidiary of Compagnie Francaise des Petroles of France)	Handi and Bakapai onshore and offshore East Kalimantan	180
Petroleum, refined	do. P.T. Pertamina (Government, 100%)	6 various locations	1,047
Silver	PT Antam Tbk (Government, 65%)	Bogor, West Java	25
Do.	PT Freeport Indonesia Co. (Freeport-McMoRan Copper & Gold Inc., 81.28%; Government, 9.36%; others, 9.36%)	Ertzberg and Grasberg, Papua	220
Do.	PT Kelian Equatorial Mining (Rio Tinto Group, 90%, and PT Harita Jaya Raya, 10%)	180 kilometers west of Samarinda	10
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

<sup>c</sup>Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto.