



# 2009 Minerals Yearbook

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## INDONESIA

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# THE MINERAL INDUSTRY OF INDONESIA

By Chin S. Kuo

Indonesia is rich in mineral resources, including coal, copper, gold, natural gas, nickel, and tin. The country also has less significant quantities of bauxite, petroleum, and silver. The country's industrial production came from the cement, metal mining, and oil and gas industries. Indonesia was among the five leading 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 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 real gross domestic product (GDP) growth was 4.5% in 2009. The country's industrial output accounted for 26.4% of its GDP of \$561 billion. The industrial sector grew by 2.1% in 2009. The development of minerals and oil and gas continued to play a significant role in the country's economic growth. The value of mineral commodity production accounted for 10.5% of the GDP, and the mining and quarrying sector and the fertilizer sector grew by 4.4% and 1.5%, respectively, during the year. The cement, iron and steel, and oil and gas sectors all showed declines in growth. The oil and gas industry contributed \$19.8 billion, or 19.5% of the Government revenues, and accounted for a trade surplus of \$29.4 million in petroleum products. The Government encouraged investment in new oil and gas exploration to stem the decline in production (Indonesian Ministry of Industry, 2010).

## Government Policies and Programs

In an attempt to attract a new flow of foreign capital and investment, the Government opened up industrial sectors to foreign investment and implemented legislation aimed at making certain aspects of business more efficient and transparent. The Capital Investment Coordinating Board acts as the prime regulator of foreign investments into Indonesia. Investments in the oil and gas sector are governed by a separate regulatory regime under the Ministry of Energy and Mineral Resources; investment is made by entering into a production-sharing contract (PSC) with BP Migas, which manages the upstream oil and gas activities. Under the new income tax law that became effective on January 1, 2009, the corporate income tax rate is 28% and will be decreased to 25% in 2010. Other taxes on foreign investment include a value-added tax of 10% on goods and services, a tax of 10% to 75% levied on the manufacture and importation of luxury goods, a land and building tax of not more than 0.1% per annum of the property value, a 5% land acquisition tax, and a 5% deemed profit tax on land sales (Mondaq, 2009).

In 2009, Indonesia was unlikely to complete final regulations attached to a new mining and coal law passed

in December 2008. Ministries with vested interests in the regulations, such as the Ministries of Finance and Forestry, had not responded to the drafts proposed by the Ministry of Energy and Mineral Resources. The mining sector was unlikely to have new projects in the near future as the Government stopped issuing new mining permits until the regulations were made final. Mining investment fell below \$1 billion in 2009 because of the uncertainty in the new mining and coal law. BHP Billiton Ltd. of Australia scrapped a study to develop an integrated nickel project on Sulawesi Island and the development of a coal mine in Central Kalimantan Province. Tsingshan Mineral Co. of China scrapped a \$500 million nickel project in North Maluku Province. The new mining law also requires foreign investors to divest shares either to the Government, a state-owned enterprise, or a local private entity after the fifth year of commercial production (Mining Weekly, 2009a).

The Government planned to issue a decree to allow miners to carry out underground mining in its protected forests. The decree clarifies Indonesia's 1999 forest law that prohibited open pit mining in protected forests but did not specify whether underground mining was permitted. Thirteen mining companies were allowed to carry out open pit mining in protected forest areas by a decree issued in 2004. The new decree was seen as helping to attract mining investment while protecting the environment (Reuters, 2009d).

The Government approved an export permit for CV Justindo's new tin smelter and revoked a previously issued permit to PT Bangka Global Mandiri for failing to comply with the export regulations. The total number of smelters allowed by the Government to export tin was 30. The Government introduced new rules for tin exports following a crackdown on illegal mining on the Bangka-Belitung Islands (Thomson Reuters, 2009b).

## Production

In 2009, production of mined copper and silver decreased slightly by an estimated 4% and 5%, respectively, owing to the lower grade of the ore mined at Grasberg. The output of smelted and refined copper remained at the same level as in 2008. Based on exports of nickel-cobalt laterite and cobalt content of matte produced, output of cobalt metal decreased by an estimated 8%. Production of steel decreased by an estimated 11% owing to low capacity utilization by PT Krakatau Steel. The output of bauxite and aluminum, mined nickel and nickel matte, and mined tin and tin metal increased slightly owing to the higher commodity prices. The country produced about 190 million metric tons (Mt) of bituminous coal and an average of 948,000 barrels per day (bbl/d) of oil in 2009, 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 an estimated 4% and 1%, respectively (table 1).

## Structure of the Mineral Industry

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. International companies were active in Indonesia's metals mining and processing industries. 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 2009, Indonesia's total exports were valued at \$116.5 billion, of which oil and gas contributed 16.3% and minerals accounted for 14.3%. The export value of oil and gas decreased to \$19 billion owing to falling prices. In tonnage, the country exported 161.3 Mt of coal. The major export partners were China, India, Japan, the Republic of Korea, Malaysia, Singapore, Taiwan, and the United States. Total imports were valued at \$96.8 billion and the major import partners were China, Japan, the Republic of Korea, Malaysia, Singapore, Thailand, and the United States. Iron and steel accounted for 5.6% of the value of nonfuel imports. The value of oil and gas imports amounted to \$38.6 billion (Indonesian Ministry of Industry, 2010).

## Commodity Review

### Metals

**Bauxite and Alumina.**—United Company RUSAL of Russia was committed to a planned alumina joint-venture project with Antam, which was started in 2007 and was valued at \$1.4 billion. The total investment, including related infrastructure, could reach \$4 billion. Antam was a state-owned mining company involved in the exploration and production of bauxite, gold, iron sands, nickel, and silver as well as the smelting of ferronickel (Thomson Reuters, 2009e).

**Copper and Gold.**—Finders Resources Ltd. of Australia (the operator) shipped 61 metric tons (t) of copper cathode from its Wetar copper project on Maluku Island in March. This was the first production of copper cathode using heap leaching and solvent extraction-electrowinning technology in Indonesia. The demonstration plant produced 5 metric tons per day (t/d) of copper cathode beginning in February by processing 100,000 t of ore from the Kali Kuning deposit. Plans called for a 20,000- to 25,000-metric-ton-per-year (t/yr) copper mining and processing facility in 2010 (London Stock Exchange plc, 2009b).

Antam canceled plans to buy a 15.5% share in PT Newmont Nusa Tenggara, which was a local subsidiary of Newmont Mining Corp. of the United States, because it could not reach an agreement. Newmont Nusa Tenggara operated the Batu Hijau copper and gold mine on Sumbawa Island. Local governments

of Sumbawa Regency, West Nusa Tenggara Province, and West Sumbawa Regency, and PT Multicapital formed a consortium and agreed to buy a 10% stake for \$391 million. Multicapital was linked to coal miner PT Bumi Resources (Thomson Reuters, 2009c).

Newmont Mining expected an arbitration committee to decide on the details of the company's obligation to sell a 17% stake in its Batu Hijau copper/gold mine on Sumbawa Island to local investors in the first half of 2009. The mining concession covered 875 square kilometers (km<sup>2</sup>). Buyers included Antam, PT Tambang Batubara Bukit Asam Tbk, and PT Timah Tbk. Newmont Mining owned 45% of PT Newmont Nusa Tenggara, which owned the Batu Hijau Mine, and Nusa Tenggara Mining Corp. owned 35%. Nusa Tenggara was owned by Sumitomo Corp. of Japan. PT Pukuafu Indah owned the remaining 20% (Mining Weekly, 2009b).

Sumatra Copper and Gold plc planned to invest in its Tembang gold-silver project in South Sumatra Province. A budget of \$6 million was allocated for exploration during a 2-year period. A prefeasibility study indicated a resource amounting to 53.7 Mt at grades of 1 gram per metric ton (g/t) gold and 11 g/t silver. A mine plan of 2.5-million-metric-ton-per-year (Mt/yr) throughput would produce 4,320 kilograms per year of gold for 8 years. The old Tembang deposit was a low-sulfidation epithermal type and was operated by Laverton Gold NL in 2000. Sumatra Copper and Gold also planned to explore a recently discovered polymetallic (copper, gold, lead, silver, and zinc) deposit at Sontang in West Sumatra Province (Australia's Paydirt, 2009b).

OZ Minerals of Australia completed the sale of its Martabe gold-silver project to China Sci-Tech Holdings Ltd. for \$217.5 million, of which \$211 million was for the payment of principal and \$6.5 million was for expenditure reimbursement on the project. The company also sold assets to China Minmetals Nonferrous Metals Co., Ltd. to enable it to continue mining at the normal rate at the Prominent Hill Mine, to recommence the study of further expansion at the mine, and to reactivate exploration programs in the Prominent Hill area and elsewhere (Australia Stock Exchange, 2009).

Arc Exploration Ltd. of Australia planned to start drilling its 95%-owned Trenggalek high-grade epithermal gold project in East Java Province in January 2010. The project covered 30,044 hectares (ha) and had similar geology to the Gosowong and the Pongkor gold deposits, which are gold-bearing vein systems. The company would sign a contract valued at \$1 million with a local drilling contractor to undertake the 5,000-meter (m) diamond core drilling at Trenggalek in exchange for shares and options in Arc Exploration (Australia's Paydirt, 2009c).

Paramount Mining Corp. Ltd. of Australia acquired a 90% interest in the 1,000-ha Gunung Julang gold-silver project in West Java Province through its 85%-owned subsidiary PT Paramido, from PT Sumer Alam Cipta Nusantara. The project is located 100 kilometers (km) southwest of Jakarta in Banten Province and 20 km west of Antam's Pongkor epithermal gold-silver deposit. Paramount Mining continued to carry out surface and underground mapping, sampling, and a planned ground magnetic survey (Australia's Paydirt, 2009a).

**Ferrous alloys.**—The government of East Nusa Tenggara Province and the government of the Kupang Regency signed an agreement with a consortium consisting of JSK International Co. Ltd., PT AGB Mining, PT Berkah Kencana Sakti, and PT Pusaka Pertambangan Mina to establish a \$65.5 million ferroalloy plant. The plant would produce ferromanganese, ferronickelchrome, and silicon manganese for use in batteries, ceramics, steel, and the production of chemicals. The plant would have an installed capacity of 60,000 t/yr of products (Jakarta Post, The, 2009a).

**Iron and Steel.**—PT Earthstone Resources planned to produce 3 Mt of iron ore in 2009 after starting up operations at one of its five mines on Sumatra Island. Initial output would come from its Nalo Baru Mine in Jambi Province. Production would reach 10 Mt in 2011 when two other mines started operations. The company planned to spend between \$40 million and \$45 million in 2009 to develop the mines. Indonesia was estimated to have iron ore resources of 381 Mt (Ninems.com, 2009).

Pohang Iron and Steel Co. Ltd. (POSCO) of the Republic of Korea entered into a memorandum of agreement with state-owned PT Krakatau Steel to build an integrated steelwork in Cilegon on Java Island that would have a production capacity of 6 Mt/yr of steel products. In the first phase, the plant would have a production capacity of 3 Mt/yr of steel products. Construction was expected to begin in 2011 and to be completed in 2013 (London Stock Exchange plc, 2009a). POSCO also signed an agreement to acquire 65% of PT International Steel Indonesia at a price of \$6.7 million from a group of investors. Daewoo International Corp. still held a 20% interest and PT Selamat Sempurna held the remaining 15% (Asia Pulse, 2009).

A new 315,000-t/yr steel plant managed by PT Meratus Jaya (in which Krakatau Steel held a 61% stake; Antam, 32%; and the South Kalimantan provincial government, 7%) was expected to be completed in 2011. To finance the project, Meratus Jaya received a loan of \$49 million from PT Bank Rakyat Indonesia Tbk. The production capacity of Krakatau Steel was 2.4 Mt/yr of steel (Antara, 2009).

Krakatau Steel would sell a 20% stake in PT Pelat Timah Nusantara (Latinusa) through an initial public offering in November to raise funds of between \$30 million and \$40 million to expand Latinusa's capacity to 160,000 t/yr from 130,000 t/yr. There were plans to raise the capacity to 280,000 t/yr eventually. Latinusa was Indonesia's sole tinplate producer (Metal Bulletin, 2009).

**Nickel.**—Shanghai Tsingshan Mineral Co. Ltd. of China scrapped a \$500 million nickel pig iron project on Obi Island in North Maluku Province because the local government wanted to take back mining rights. The Chinese company held a 51% stake in the project and was in partnership with Antam, which had spent \$2.6 million on exploring the concession. The operation would have produced 30,000 t/yr of nickel in pig iron (Reuters, 2009b). Jindal Stainless Ltd. of India pulled out of a nickel smelter project and stainless steel plant in Southeast Sulawesi Province that would have cost \$700 million to construct. Construction work would have started in early 2009. Antam was to have had a 55% stake in the project (Jakarta Globe, The, 2009).

PT International Nickel Indonesia (Inco) delayed for 2 years its assessment of plans for a new nickel plant with a capacity of 20,000 t/yr to 30,000 t/yr at Pomalaa on Sulawesi Island after a study showed that the \$1.8 billion project might not be feasible. Global economic weakness slowed demand for stainless steel, leading to weaker demand for nickel and depressing prices. Inco planned to complete construction of the Karebbe dam near its mines at Sorowako in South Sulawesi Province in 2011. The dam was expected to provide an additional 90 megawatts (MW) to supplement the current 275 MW of electricity generating capacity to help boost nickel production (Reuters, 2009c).

Antam projected that ferronickel sales in 2010 would increase by about 58% to 19,000 t from 12,000 t in 2009 after the company restarted its third ferronickel smelter, which had a production capacity of 15,000 t/yr. Production was expected to be 18,500 t in 2010 with stock from 2009 to meet the sales plan. Antam was in the process of finalizing a joint-venture deal with Asian investors for its integrated nickel project in eastern Indonesia after BHP Billiton Ltd. pulled out in 2008 (Reuters, 2009f).

**Tin.**—PT Timah Tbk produced less than 48,000 t of tin in 2009 owing to weak demand and falling prices. The Government was expected to finish drafting a regulation to limit tin production to 100,000 t in 2010 from 105,000 t in 2009. Indonesia was the world's leading tin exporter and the second ranked tin producer after China, accounting for 30% of the world's refined tin (Thomson Reuters, 2009cd).

A renewed Indonesian police crackdown on illegal tin mining was cutting ore supplies and had resulted in seven small smelters on Bangka-Belitung Islands being temporarily shut down. The seven smelters had a combined capacity of 2,800 metric tons per month. Indonesian police confiscated tens of metric tons of tin ores in Bangka-Belitung Province and West Kalimantan Province (Thomson Reuters, 2009a).

### *Industrial Minerals*

**Cement.**—F.L. Smidth of Denmark signed contracts for two 8,000-t/d production lines at PT Semen Gresik's Tuban cement plant in East Java Province and Gresik-owned PT Semen Tonasa's Tonasa cement plant on Sulawesi Island, respectively. Gresik Group had a total capacity of 18 Mt/yr of cement (including the cement plant at Padang) and accounted for 40% of the country's market share. The equipment for the main part of the production lines included ATOX raw mills, ATOX coal mills, preheaters, rotary kilns, kiln burners, clinker coolers, and a silo. The equipment would be delivered during 2010 (F.L. Smidth, 2009).

A plantation company, PT Sarana Agro Gemilang, planned to invest \$60 million to form a joint venture with—and to help revive—the bankrupt state-owned cement producer PT Semen Kupang. The company provided \$3.5 million in startup capital to Semen Kupang. The joint operation would run until 2020. Production would be 250,000 t/yr of cement in the first year of operation (World Cement, 2009).

HeidelbergCement AG of Germany sold 14.1% (worth \$310 million) of its 65.1% stake in PT Indocement Tunggal Prakarsa. Indocement, which was one of Indonesia's leading



cement producers, had a production capacity of 17.1 Mt/yr. The other two major cement producers were Semen Gresik and Holcim Indonesia. Indocement's cement plants were located on Java Island, and the company would be a beneficiary from the Government infrastructure projects (Reuters, 2009a).

Semen Gresik was to relocate a planned \$339.5 million cement plant to Tuban in East Java Province because issues of land acquisition for the plant and exploration sites at Pati in Central Java Province remained unresolved. The company had plants in the Provinces of East Java, South Sulawesi, and West Sumatra. The new plant would have a production capacity of 2.5 Mt/yr. Construction of an additional new plant with a capacity of 2.5 Mt/yr at Tonasa would increase Semen Gresik's total capacity to 25 Mt/yr in 3 years. The company allocated \$670 million for the two new plants. Semen Gresik was owned by the Government (51.09%), Blue Valley Holdings (24.01%), and the investing public (24.9%) (Jakarta Post, The, 2009b).

PT Semen Batam's grinding plant at Kampung in the Province of Riau Islands started operation in late 2008 to provide 480,000 t/yr of cement to the Island of Batam. The plant had two bulk loading facilities and two packaging machines with a capacity of 2,500 t/d. The company had a production capacity of 1.2 Mt/yr. PT Semen Maros had a production capacity of 1.8 Mt/yr. Both were wholly owned by Bosowa Corp. (Bosowa Corp., 2008).

### **Mineral Fuels**

**Coal.**—Middle East Coal of the United Arab Emirates planned to start operation of coal mines in East Kalimantan Province in 2010 with initial production of 2 Mt destined for India. Shipments would be increased to 32 Mt in 2015. The company also expected to start construction of a \$1 billion rail project linking its mine at Muara Wahau to Bengalon Port in East Kalimantan Province in March 2010, with commissioning in 2012 (Reuters, 2009e). PT Petrosea signed a 5-year contract worth \$200 million to develop a coal mine in Sanga-Sanga that was owned by PT Adimitra Nusantara and which was estimated to have a reserve of 14 Mt.

Indonesia's current coal projects included the East Kutai project, which was owned by Churchill Mining plc of Australia, and the Mamahak project, which was owned by SouthGobi Energy Resources of Canada. East Kutai had a coal resource of 3,180 Mt and would supply 3 Mt/yr of coal to Cirebon Electric Power's 660-MW powerplant in the Province of West Java in 2011. The coal was medium calorific with low sulfur and low ash content. The production rate was expected to be 20 Mt/yr of coal. The Mamahak high-volatile metallurgical coking coal project planned to mine an initial 3,000 t for testing. PT Multi Mamahak Batubara, which was a wholly owned subsidiary of SouthGobi, began development of surface coal deposits in four concessions covering 22,968 ha. The demonstrated coal resources were estimated to be 12.2 Mt and the inferred resources were 5.2 Mt (International Mining, 2009).

A consortium led by Vico (the operator) signed a PSC with the Government for the exploration and development of coalbed methane (CBM) resources on the Sanga-Sanga Block in East Kalimantan Province's Kutai Basin. The CBM would

be supplied to the Bontang LNG plant, and Indonesia would become the world's first CBM-to-LNG producer. Indonesia's gas production was expected to increase to 89 billion cubic meters in 2012 and 84 billion cubic meters in 2014, and the output of CBM could offer uptrend potential. A CBM resource of 113.2 billion cubic meters was found on the block. The Barito Block in South Kalimantan Province and the Rengat Block in South Sumatra Province would be offered by the Government to companies at open auction, whereas the Langgak production area on mainland Riau would be offered to state-owned companies only (Oil & Gas Journal, 2009a).

**Natural Gas.**—Salamander Energy Ltd. of the United Kingdom completed drilling operations on the South Sebuiku-1 exploration well in the Bengara I PSC in East Kalimantan Province. Salamander Energy held a 25% stake in the Bengara I PSC. The well was drilled to a total depth of 1,533 m at subsea level and encountered multiple gas-bearing sandstones in the Tabul and Meliat formations. The discovery was located 15 km from the South Sembakung gas-condensate field in the Simenggaris PSC in which Salamander Energy had a 21.6% interest. Production from South Sembakung was expected to begin in late 2011 and gas sales would go to Pertamina Gas and Medco Gas Indonesia (Alexander's Gas & Oil Connections, 2009b).

PT Hess Indonesia found a gas reserve in the Semai V field in the Arafura Sea off Papua. The gas reserve was estimated to be as large as that of the Tangguh gasfield in the Bintuni Bay of Papua. The company planned to carry out a feasibility study to determine the proven reserves of the block and would spend \$143 million for exploration in 3 years (Rigzone.com, 2009).

ConocoPhillips Co. of the United States (40% stake) and partners (Inpex Corp., 35%, and Chevron Corp. of the United States, 25%) started production of gas from the North Belut Gasfield on South Natuna Sea Block B. Output was expected to reach 5.66 million cubic meters per day of gas and 20,000 bbl/d of liquids. The dry gas would help Indonesia meet sales obligations to Malaysia, and the LPG would be used in Indonesia (Oil & Gas Journal, 2009b).

Inpex planned to sell a stake in its Abadi LNG project to EMP of Indonesia, which would take a 10% stake of the Masela Block in the Timor Sea. The project would supply natural gas for a 4.5-Mt/yr floating LNG plant that was scheduled to come online in 2015. Inpex also was the operator of the proposed 8-Mt/yr Ichthys project in the Timor Sea that was scheduled to begin production in 2015 (Petroleum Economist, 2009b).

The 2-train, 7.6-Mt/yr Tangguh project in the Province of Papua was Indonesia's second largest LNG plant; the plant would take feed gas from six nearby fields, mostly offshore. The fields had combined proved reserves of about 408 billion cubic meters. The onshore liquefaction trains had a production capacity of 3.8 Mt/yr each. The first delivery of LNG from the project to POSCO's regasification terminal at Kwangyang was in June 2009. Output would eventually reach 7.6 Mt/yr. The shareholders were BP Indonesia (the operator) (37.16%), Mi Berau B.V. (16.3%), CNOOC Ltd. (13.9%), Nippon Oil Exploration Ltd. (12.23%), KG Berau/KG Wiriagar (10%), LNG Japan Corp. (7.35%), and Talisman (3.06%). CNOOC would take 2.6 Mt/yr of LNG under a 25-year contract;

Sempra Energy of the United States, 3.76 Mt/yr for 20 years; K-Power of the Republic of Korea, 0.6 Mt/yr for 20 years; and POSCO, 0.55 Mt/yr for 20 years (Petroleum Economist, 2009c).

**Petroleum.**—Indonesia produced 960,000 bbl/d of oil and condensate in 2009 and planned to increase production by 0.5% to 965,000 bbl/d in 2010 using additional output from the Cepu field. Output at Cepu reached 20,000 bbl/d at the end of 2009. The field was owned by Exxon Mobil Corp. of the United States and PT Pertamina (45% each) and local governments (10%); it was operated by ExxonMobil (Alexander's Gas & Oil Connections, 2009a).

Eni S.p.A. of Italy discovered hydrocarbons in the Muara Bakay Block of the Kutei Basin offshore Kalimantan Island. The company was developing gas reserves in the basin's Galan and Rapak Blocks. Eni also discovered oil and gas in the Aster and Tulip wells in the nearby Tarakan Basin (Petroleum Economist, 2009a).

BP p.l.c. of the United Kingdom agreed to the sale of its wholly owned subsidiary BP West Java Ltd. (BPWJ) to Pertamina for \$280 million. BPWJ held a 46% interest in and was the operator of the offshore North West Java PSC. BP and Pertamina completed the transaction on June 30, 2009. The concession covered an area of 8,300 km<sup>2</sup> and the facilities included 314 producing wells, 218 offshore structures, and 375 pipelines covering 1,250 km, as well as 3 onshore gas receiving facilities. The production rate was 6.2 million cubic meters per day of gas and 22,000 bbl/d of oil. BP was one of the leading foreign investors in Indonesia (BP p.l.c., 2009).

Setdco Group and its partner PT Intan Megah sought permission to build a 300,000-bbl/d oil refinery at Tanjung Sauh on Batam Island. The crude oil would come from the Middle East. Gulf Petroleum Ltd. of Qatar and PT Batam Sentralindo also planned to build a refinery in Batam. The latter company agreed to provide a 250-ha plot of land for the refinery project. A residue fluid catalytic cracking unit with a capacity of 60,000 bbl/d of gasoline, which was owned between Pertamina (20%) and Mitsui & Co. (80%) of Japan, was to be built in Pertamina's refinery at Cilacap in the Province of Central Java (Oil & Gas Journal, 2009c).

## Outlook

Although the number of new metal mines has declined in recent years, Indonesia's mineral prospects remain high. Extensive exploration is expected to result in the discovery of more mineral deposits. Production of copper is expected to increase owing to higher grades mined at Grasberg, expanded capacity at Gresik, and the production of copper cathode by heap leaching in the next 2 to 3 years. With several gold-silver projects going on in either production or exploration, Indonesia is expected to increase gold output in addition to the gold produced from Grasberg. POSCO's new steelwork and a new small steel plant are expected to increase production of steel products within the next 4 years. The Government set a lower tin production target in 2010 and renewed its crackdown on illegal tin mining; as a result, Indonesia will likely reduce its tin output but is expected to remain the leading exporter of tin in Asia. Production of coal is expected to increase owing to

the development and commissioning of new coal mines and two coal projects. The country's LNG production capacity is expected to increase by 7.6 Mt/yr with the commissioning of BP's Tangguh LNG plant and by the operation of the 4.5-Mt/yr Abadi floating LNG plant. Indonesia is expected, therefore, to continue to be one of the leading exporters of LNG in the world after Qatar.

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

(Metric tons unless otherwise specified)

Commodity	2005	2006	2007	2008	2009 <sup>e</sup>
<b>METALS</b>					
<b>Aluminum:</b>					
Bauxite, wet basis, gross weight	1,442	1,502	1,251	1,152	1,200
Metal, primary	252,300	250,300	242,100	242,500	250,000
Chromite sand, dry basis <sup>e</sup>	1,000	1,000	1,000	1,000	1,000
Cobalt, metal <sup>e</sup>	1,600	1,600	1,600	1,300	1,200
<b>Copper:</b>					
Mine, Cu content	1,064,200	818,000	796,900	632,600 <sup>f</sup>	610,000
<b>Metal:</b>					
Smelter, primary	275,000	201,200	277,100	261,300	260,000
Refinery, primary	262,900	217,600	221,400	181,300	180,000
Gold, mine output, Au content <sup>2</sup>	130,620	93,176	117,851	64,390	65,000
<b>Iron and steel:</b>					
Iron sand, dry basis	32,203	87,970	61,077	65,000 <sup>e</sup>	63,000
<b>Metal:</b>					
<b>Ferroalloys:</b>					
Ferronickel	36,690	72,300	92,500	87,800 <sup>f</sup>	86,000
Ferromanganese <sup>e</sup>	12,000	12,000	12,000	12,000	12,000
Silicomanganese <sup>e</sup>	4,000	5,000	6,000	7,000	7,000
Pig iron, direct-reduced iron	1,390	1,290	1,420	1,290	1,300
Steel, crude	3,675	3,759	4,160	3,915	3,500
Steel, semimanufactured	4,859	5,150	5,400 <sup>e</sup>	5,200 <sup>e</sup>	5,000

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity	2005	2006	2007	2008	2009 <sup>e</sup>
<b>Nickel:</b>					
Mine output, Ni content <sup>3</sup>	135,000	157,200	229,200	192,600	202,800
Matte, Ni content	77,471	72,782	77,928	73,356	74,000
Ferronickel, Ni content	7,003	7,572	9,498	9,003	9,000
Silver, mine output, Ag content kilograms	320,590	261,398	268,967	226,051	215,000
<b>Tin:</b>					
Mine output, Sn content	78,404	80,933	66,137	53,228	55,000
Metal <sup>4</sup>	65,300	65,357	64,127	53,471	54,000
Zirconium concentrates, gross weight	2,600	65,000	111,000	65,000 <sup>e</sup>	63,000
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic <sup>e</sup> thousand metric tons	33,917 <sup>5</sup>	35,000	36,000	37,000	38,000
<b>Clays:<sup>e</sup></b>					
Bentonite	5,000	5,500	5,500	6,000	6,000
Fire clay thousand metric tons	2,000	2,000	2,100	2,100	2,200
Kaolin powder	15,000	15,000	15,000	15,000	15,000
<b>Diamond:<sup>e</sup></b>					
Industrial stones thousand carats	23	23	23	28	28
Gem do.	7	7	7	7	7
Total do.	30	30	30	35	35
Feldspar <sup>e</sup>	24,000	25,000	25,000	26,000	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	4,400	4,300	4,400	4,500	4,600
Phosphate rock <sup>e</sup>	600	600	600	600	600
Salt, all types <sup>e</sup> thousand metric tons	680	700	700	700	720
<b>Stone:</b>					
Dolomite <sup>e</sup>	3,100	3,200	3,200	3,300	3,300
Granite <sup>e</sup> thousand metric tons	4,170 <sup>5</sup>	4,200	4,300	4,400	4,500
Limestone <sup>e</sup> do.	1,650 <sup>r</sup>	1,600 <sup>r</sup>	1,700 <sup>r</sup>	1,800 <sup>r</sup>	1,900
Marble <sup>e</sup> do.	1,000	1,000	1,000	1,000	1,000
Quartz sand and silica stone <sup>e</sup>	132,000	135,000	135,000	138,000	138,000
Sulfur, elemental <sup>e</sup>	3,500	3,500	3,500	3,500	3,500
Zeolite <sup>e</sup>	400	400	400	400	400
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
<b>Coal:</b>					
Anthracite <sup>e</sup>	50,000	52,000	53,000	54,000	55,000
Bituminous thousand metric tons	142,920	181,061	178,791	188,717	190,000
<b>Gas, natural:</b>					
Gross million cubic meters	85,830	102,300	79,410	81,842	85,000
Marketed <sup>e</sup> do.	53,000	52,000	76,664 <sup>5</sup>	78,985 <sup>5</sup>	80,000
Petroleum, crude including condensate thousand 42-gallon barrels	352,000	367,000	305,000	311,000	280,000

<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 13, 2010.

<sup>2</sup>Includes Au content of copper ore and output by Government-controlled foreign contractor 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 (t/yr).

<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 t/yr.

<sup>5</sup>Reported figure.



TABLE 2  
INDONESIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Locations of main facilities	Annual capacity <sup>e</sup>
<b>Aluminum:</b>			
Bauxite	PT Antam Tbk (Government, 65%)	Kijang, Bintan Island, Riau	1,300
Metal	PT Indonesia Asahan Aluminum (Nippon Asahan Aluminum Co. Ltd., 59%, and Government, 41%)	Kual Tanjung, North Sumatra	250
Cement	PT Indocement Tunggak 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	millon cubic meters per day ExxonMobil Oil Indonesia	Arun and Aceh, North Sumatra	48
Do.	do. Roy M. Huffington (subsidiary of HUFFCO Group)	Badak, East Kalimantan	28
Do.	do. Total Indonesia	Offshore, East Kalimantan	59
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 2009

(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.	Offshore 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 Total S.A. 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%)	Ertsberg 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.