

INDONESIA

By Ir. Achmad Prijono

The long-awaited and desired reform process under Mrs Megawati's presidency did not proceed according to public expectations. Although the public was given greater freedom to express its views, important corruption cases involving high-ranking officials were ignored or halted. The climax came when Akbar Tanjung, Chairman of Parliament, who was prosecuted and found guilty by the high court for allegedly misappropriating Rp40 billion of BULOG (National Logistical Agency) funds, was exonerated by the Supreme Court.

A 35% decline in foreign direct investment, the 57% drop in domestic investment during 2002 and the Hotel Marriott bombing in August 2003 did not help the situation, although more recently there has been a resurgence in business activity, in particular in the building and construction sector, which should help to invigorate the flagging economy.

Notwithstanding the cumulative sharp decline in foreign direct investment and the quite significant drop in domestic investment during 2002, Indonesia's macro economic indicators in 2003 showed a better picture than in the previous year. GDP in 2003 recorded a growth of 4.10% (3.7% in 2002), and exports amounted to US\$61 billion, 6.76% higher than in 2002. The rupiah during 2003 remained stable at a rate around Rp8,500/US\$1.00, and bank interest rates kept declining. These were instrumental in sustaining a slow improvement in the business climate and boosting the construction sector.

However, the investment outlook is still gloomy and, with billion of dollars still leaving the country every year (either through debt repayments, profit repatriation or capital flight to safety), Indonesia continues to suffer a net resource outflow.

Total investment in the mining sector continues to decline, from US\$1.15 billion in 1999, US\$422 million in 2000, US\$320 million in 2001 and US\$298 million in 2002, to just US\$64 million in 2003. Without exploration and new discoveries, Indonesia's mineral production is set decline at an accelerating rate.

2003 was characterised by preparations for parliamentary elections, which were held for members of Parliament on April 5, 2004, and (for the first ever) direct election for president and vice-president in July 2004. In total, around 24 parties participated, mostly newly-formed parties aside from the established ones like Golkar, the Indonesian Democratic Party of struggle (PDIP) chaired by Megawati, the National Awakening Party (PKB) etc. (In the event, Susilo Bambang Yudhoyono secured 61% of the votes cast, versus 39% for Mrs Megawati, and assumed office in October 2004.)

It was felt that the public in general was disillusioned with the performance of the incumbent president, in particular with regard to the reform process and people seemed intent on a leadership change.

Although mineral production levels held up reasonably well in 2003, with output of some vital commodities even showing an increase, investment in the mining sector is more or less at a standstill. The reluctance to invest is attributable to several factors including security problems, legal and regulatory uncertainty, and the impact on mining of the implementation of regional and local autonomy. To counter this stagnation and to encourage new investment, in early September 2003, the Minister of Energy and Mineral Resources, Purnomo Yusgiantoro urged the Indonesian Mining Association (IMA) to draw up a 'Road Map' that would provide guidelines and advice to potential investors. The 'Road Map' could then be incorporated in the draft of a new Mining Law.

During 2003, a significant improvement in the security situation was achieved in some regions, especially in Aceh Province, where the government finally decided to embark on a full-scale military operation; several rebel strongholds were taken and the strength of the GAM army diminished considerably.

Also during 2003, efforts were made by the IMA and the Indonesian Coal Mining Association (ICMA), fully supported by the Department of Energy and Mineral Resources, to have Forestry Law No. 41 of 1999 amended or retracted. The law inhibits open-pit mining in 'protected forests'. Similar efforts were made with regard to the value added tax (VAT) Law No.18 of 2000 and Government Regulation 144/2000, which categorises coal, gold and silver as non-taxable commodities.

According to the director of ICMA, the Supreme Court annulled Government Regulation No.144/2000 in March 2004. However, implementation of this ruling must await a decree from the Finance Minister. In respect of the most crucial of laws affecting mining, Forestry Law No.41, in early March 2004, the government agreed to issue a *perppu*. This allows 13 mining companies – of the 22 companies initially proposed – to resume their operations in 'protected forests'.

A *perppu* is equal to a law and is issued in cases of emergency in order to avoid the lengthy process of law-making which involves the House of Representatives. A *perppu* takes immediate effect and remains in force until the House approves a law to replace it. On May 12, 2004, President Megawati issued Decree No.41/2004 allowing open-pit mining in 'protected forests', as long as the mining companies had contracts prior to the introduction of Forestry Law No 41/1999.

It was indeed a great relief for the Energy and Mineral Resource Department as well as for the Indonesian Mining Association that, in July 2004, the House of Representatives agreed to ratify *perppu* No.1/2004 into a law.

The ratification by Parliament of the above Presidential Decree formed a crucial and positive break-through for the mining sector, especially for the Eastern part of Indonesia, where many investors had been deterred from developing the numerous nickel laterite deposits in the area, all of which would necessitate open-pit mining.

The 13 companies that may resume mining are: PT Freeport Indonesia, PT Karimun Granit, PT Inco, PT Indominco Mandiri, PT Antam (Buli-Mahit), PT Natarang Mining, PT Nusa Halmahera Minerals, PT Pelsart Tambang Kencana, PT Interex Sacra Raya, PT Weda Bay Nickel, PT Gag Nickel, PT Sorikmas Mining and PT Antam (Bahubulu Sultra).

Nickel

In 2003, world demand for nickel grew by 7% and this drove LME nickel prices from US\$7,210/t (US\$3.27/lb) at the start of the year to a high of US\$16,650/t (US\$7.55/lb) by year-end. Demand strength was mainly due to robust industrial growth in Asia, led by continued significant growth in China as well as in Korea, Taiwan and Japan.

PT Inco Indonesia conducts nickel mining and smelting operations centred on the Soroako area of south Sulawesi. PT Inco is owned 58.7% by Inco Ltd, 20.1% by Sumitomo Metal Mining Co Ltd of Japan, 20% by the public and the remainder by four Japanese companies.

PT Inco's production is entirely in the form of nickel matte and output in 2003 was 70,200 t. As a result of the increased Ni in matte production, Inco's sales rose to US\$509 million and the average realised nickel price was US\$3.23/lb compared with an average of US\$2.32/lb in 2002. Net earnings reached US\$104.18 million.

At the end of 2003, reserves totalled 62 Mt averaging 1.8% Ni in the proven category, and 45 Mt averaging 1.8% Ni in the probable category. This compared with 51 Mt at 1.71% Ni and 40 Mt at 1.76% Ni respectively at the end of 2002. Additional exploration drilling is now focused on the Petea area where the company expects to start production in late 2004.

The rebuilding of furnace No.3 was completed according schedule in the first quarter of 2004, and no other furnace rebuild will be necessary until 2006-07. Inco also managed to increase its hydropower supply by around 5 MW through raising the level of the dam and lowering the channels that conduct tailings away. The increase in power supply has enabled annual output of nickel in matte to be raised by 340 t (750,000 lb).

PT Aneka Tambang (Antam) operates the Pomalaa mine and ferro-nickel smelters in southeast Sulawesi, the Gebe mine on Gebe island in the north Moluccas (closed at the end of 2003) and the recently-opened Halmahera mine in the Buli Bay area of southeastern Halmahera, where mining takes place on Gee Island and on the Tanjung Buli Peninsula, to the north of the bay.

Antam is owned 65% by the Indonesian Government and 35% by the public. The company produces ferro-nickel (8,933 t contained nickel in 2003) at its No.1 and No.2 smelters at Pomalaa, and mines high-grade saprolite ore on Gebe island and Halmahera, low-grade saprolite ore (mainly from Pomalaa) and limonite ore from Gee Island, Tanjung Buli and Gebe Island.

Production and sales of nickel products rose in 2003 as a result of strong demand and higher nickel prices. Nickel in ferro-nickel totalled 8,933 t (8,804 t in 2002) and sales reached 8,868 t, with an average realised selling price of US\$4.19/lb (US\$3.05/lb); high-grade saprolite (>2.3% Ni) production was 3.31 million wet tonnes (Mwt) and sales amounted to 2.24 Mwt at an average price of US\$28.38/wt (US\$21.91/wt); and production of limonite ore was 1.09 Mwt, with sales of 1.09 Mwt at an average selling price of US\$14.96/wt (US\$8.20/wt). Total ore production (saprolite as well as limonite) and ore sales were respectively 4.4 Mwt and 3.3 Mwt. Of the total production, 625,000 wt of the saprolite ore were fed to the Pomalaa smelters. (Saprolite and limonite ores may contain between 25% and 40% of moisture (H₂O), and the ore price is based on wet not dry tonnes.)

In 2003, nickel product export sales revenues amounted to US\$161.7 million and contributed 80% of PT Antam's total export sales of US\$202.5 million (which include gold, silver and bauxite). PT Antam's operating profit increased by 81% to Rp448 billion and net earnings increased by 28% from 2002, to Rp226.55 billion.

The financing plan for the construction of the 15,000 t/y capacity FeNi III plant was restructured yet again to obtain the most cost-effective form of funding. In September 2003, Antam's wholly-owned subsidiary, Antam Finance Ltd (incorporated in Mauritius in September 2003), issued Antam's maiden US dollar bond via a seven-year non call for Eurobonds. On October 3, the long-delayed construction phase commenced. The project is to be built by an unincorporated Japanese consortium of Mitsui Co Ltd and Kawasaki Heavy Industries. As part of the financing scheme, Antam signed a US\$60 million investment credit facility provided by PT Bank Central Asia Tbk (BCA). This facility, which will help fund the US\$320 million expansion, has a repayment period of seven years, an interest rate of 7.13% and a 28-month grace period.

On November 14, 2003, Antam announced the signing of the EPC contract for its third diesel power-plant with a capacity of 6 x 17 MW, costing US\$64.5 million, to be built by Waertsila Oyj, Finland.

Apart from its mining operations in eastern Indonesia, Antam was also the original owner of 'mining rights', or the KP holder, of several other significant nickel laterite deposits. These include Gag Island and Weda Bay in which it participated as a minority share-holder in a JV with foreign investors. These potential megaprojects had been suspended for some years because of Forestry Law No.41/1999. However, with the ratification by Parliament of *perppu* No.1/2004 into law, the main stumbling block has been removed and the path cleared to relaunch these long- delayed mining projects.

During 2003, at least two Japanese nickel smelting and refining companies showed an interest in processing the limonite prospect on Halmahera Island by means of high-pressure acid leaching (HPAL) to obtain an intermediate product. Also, BHP-Billiton, owner of Queensland Nickel's Yabulu plant in Australia, expressed an interest in developing the nickel laterite prospects at Halmahera (Buli Bay and Sangaji prospects) using hydrometallurgical processes. Anticipating the renewed interest, Antam continued infill-drilling at its Buli prospects (100 m x 25 m spacing) to convert more of the resource to the measured category.

At the end of 2003, total measured and indicated resources of limonite ore in the Buli area amounted to 38.7 Mt averaging 1.46% Ni and 0.18% Co. The inferred resource at Sangaji (to the west of the Buli Bay area) amounted to 57.2 Mt at 1.4% Ni and 0.18% of Co. The measured and indicated saprolite resource amounted to 25 Mt at 2.48% Ni, and the inferred resource amounted to 38.4 Mt at 2.4% Ni. The ore resources contained in the protected forest areas covering large parts of the Sangaji area are not included in the above figures.

Antam also continued infill-drilling programmes on the Tapunopaka and Mandiodo prospects in southeast Sulawesi near-Kendari (100 m spacing). The development of these deposits is expected to benefit PT Antam in terms of lower transportation costs as both prospects are nearer to the Pomalaa processing facility than Antam's nickel mines at Halmahera.

Coal

Indonesian coal production rose by 11.1% in 2003, to 114.6 Mt, and exports increased by 18.3% to 85.68 Mt. The main players responsible for the production rise were the first-generation contractors, in possession of several prospects that had not previously been exploited. This is understandable since many of these first-generation contractors such as PT Kaltim Prima Coal, PT Arutmin and PT Berau Coal, were initially allocated vast working areas (some in the order of 1 Mha) where several prospective deposits exist, but located at separate sites with different specifications. It was planned that they should be mined consecutively, starting with the most prospective and better-quality deposits (favourably located near tide-water sites) and moving gradually to the lower quality or more remote deposits, pending favourable market conditions.

Of the total 2003 production, some 10 Mt or nearly 9% was contributed by state-owned PT Tambang Batubara Bukit Asam (PTBA). The 23 coal producers possessing first, second and third generation coal contracts produced a total of 96.3 Mt or 84% of total output. KP-holders produced 8.28 Mt, or 7% of total production. International coal prices improved during the year as a result of stronger demand and this provided an extra incentive for coal miners to increase production volumes.

The largest producers were PT Adaro (22.5 Mt), PT Kaltim Prima Coal (16.2 Mt), PT Kideco Jaya Agung (14.1 Mt), PT Arutmin (13.6 Mt), PTBA (10.03 Mt), PT Berau Coal (7.36 Mt) and PT Indominco Mandiri (6.3 Mt). All, apart

from PTBA are first-generation coal contractors. Including the smaller first-generation companies such as PT Tanito Harum (2.18 Mt) and PT Multi Harapan Utama (1.62 Mt), first-generation coal companies produced collectively 80 Mt or 70% of total Indonesian coal production in 2003.

Impressive production gains were recorded by PT Adaro (+1.68 Mt), Kideco Jaya Agung (+2.55 Mt) and PT Arutmin (+3 Mt). Sub-bituminous coal producers (very low S and ash contents, and low heating values of around 5,000 Kcal/kg) such as PT Adaro, PT Kideco Jaya Agung and PT Berau Coal, found a ready outlet for their product both on the domestic market and on the overseas market.

Among the second-generation contractors, PT Gunung Bayan Pratama Coal (3.3 Mt), PT Jorong Barutama Greston (2.9 Mt) and PT Bahari Cakrawala Sebuku (1.96 Mt) were the largest producers.

At the start of 2003, the initial divestment of 51% of KPC's shares (valued at US\$419 million) to Indonesian participants had yet to be implemented, but in an unexpected development, in mid-July 100% of the KPC shares (owned by BP and Rio Tinto, through their respective subsidiaries Sangata Holding Co and PT Kaltim Coal Ltd), were sold to PT Bumi Resources Tbk. Bumi is a local company owned by Long Haul Holdings Ltd (73.01%), Minarak Labuan Ltd (21.99%), PT Bakri Capital Indonesia (2.17%) and the public (2.88%). Bumi completed the acquisition of KPC for US\$500 million including assumed debt. This is much lower than the earlier agreed valuation by the government and KPC of US\$822 (100% basis) reached in March 2003.

The deal with Bumi has angered the government as it was not advised in advance. (The government is the rightful principal of KPC, as stipulated in the basic Coal Cooperation Contract signed in 1981.) The deal was concluded whilst a government team, set up by the office of the State Minister of State Enterprises, was finalising the divestment of the 51% KPC stake to the East Kalimantan administration (31%) and PTBA (20%). It was reported that after the acquisition by Bumi, 18.6% of KPC shares (or 60% of the 31% allocated for the East Kalimantan regional government) were transferred to the East Kutai Regency. Bumi has reportedly promised to go ahead with the sale of 51% of KPC shares as stipulated in the coal agreement with the government. However, as yet it is not clear whether the divestment of a 20% stake to PTBA and the remaining 12.4% stake to the East Kalimantan regional government has been implemented and at what price.

Thiess Indonesia, a subsidiary of Leighton Holdings Ltd, had been providing services to KPC since 1989. It announced that it would assist KPC in increasing production from the current 18 Mt/y to 23 Mt/y, and Bumi, the new owner, seems poised to raise output, including the opening of a new mine, Bengalon, located to the north of Sangatta. In 2002, Bumi acquired PT Arutmin's shares and here, too, it intends to raise production significantly.

In 2003, KPC's coal output declined by 8.4% to 16.2 Mt (17.57 Mt) owing to a three-week strike by the workforce in September. The cause of the strike was

the workers' demand for a bonus of 15% from the proceeds of the sale of KPC shares to PT Bumi Resources. The shareholders were willing to offer a "good-will" compensation of US\$6 million, and this was finally agreed upon after strong persuasion by the local government authorities. The strike cost KPC 60,000 t/d in lost production, and the central and regional governments also suffered as they are entitled to receive a 13.5% share of KPC's production.

Copper

There are two world-class copper (and gold) producers in Indonesia, PT Freeport Indonesia at Tembagapura in Papua Province and PT Newmont Nusa Tenggara in southwestern Sumbawa Island. Both benefited from higher copper and gold prices.

PT Freeport Indonesia reported that the average price received for its copper in 2003 was 15% higher than in 2002, at US\$0.82/lb and that the average gold price was 18% higher, at US\$367/oz.

However, output of copper concentrate fell by 14% to 3.24 Mt, mainly as a result of problems at the Grasberg mine, the company's main copper and gold production unit. A pit-wall failure in October 2003 cost eight lives when waste material on the south wall of the open pit flowed into the bottom of the pit.

The pit-wall failure necessitated the alteration of the mine plan sequence, accelerating mining of the south wall in order to facilitate safe access to high-grade areas in the mine. These changes reduced mine output to 155,700 t/d (from 194,800 t/d in 2002). Average mill throughput in 2003, including output from underground, averaged 203,000 t/d (235,600 t/d). At the deep ore zone (DOZ) underground mine, output averaged 40,500 t/d of ore, or nearly twice the average of 21,800 t/d in 2002. The other underground operation, in the intermediate ore zone (IOZ), only achieved 6,800 t/d, well below the 19,800 t/d in 2002, as a result of ore depletion in the third quarter.

Ore grades declined to an average of 1.09 % Cu (1.14% in 2002) but gold grades increased to an average of 1.54 g/t Au, up from 1.24 g/t in 2002. Also, the silver grade improved, from 3.60 g/t Ag to 4.03 g/t.

Freeport's mill concentrate production also declined as a result of the lower copper grade, output falling by 22.7%, from 2.83 Mt in 2002 to 2.3 Mt containing 718,203 t of copper. However, the higher grades for gold and silver resulted in production increases to 99.68 t and 183.09 t respectively.

Aided by higher metal prices, PT Freeport Indonesia recorded total revenue of some US\$1.97 billion in 2003 and a gross profit of US\$921 million.

During 2003, additions to the aggregate proven and probable reserves of the Grasberg and other Block A orebodies totalled 185.5 Mt of ore representing increases of 2.6 billion lb (1.18 Mt) of recoverable copper, 1 Moz (31.1 t) of recoverable gold and 16.8 Moz (522.48 t) of recoverable silver. Excluding Rio

Tinto's share, PT Freeport Indonesia's share of proven and probable recoverable reserves as of December 31, 2003 was 39.7 billion lbs (>18 Mt) of copper, 46.6 Moz (1,449 t) of gold and 116.8 Moz (3,632 t) of silver. Approximately 126 Mt of the ore additions relate to the Mill Level Zone orebody.

PT Freeport Indonesia has a 25% ownership share of PT Smelting, the copper smelter at Gresik in east Java, which relies entirely on concentrate provided by Freeport's Tembagapura mill. In 2003, the smelter treated 824,800 t of concentrate, 15% more than the 719,600 t treated in 2002. Cathode production increased to 223,300 t (192,400 t). PT Smelting's cost of producing copper cathode was US\$0.10/lb compared with US\$0.14/lb in 2002 when the facility was closed down for 28 days for maintenance. Operating profits for PT Smelting in 2003 amounted to US\$7.0 million.

PT Newmont Nusa Tenggara operates the open-pit Batu Hijau copper mine located on the island of Sumbawa (to the east of Lombok Island). The open-pit mine employs 15 m benches, and high- and medium-grade ore is hauled from the pit area to a primary crusher near the pit rim. Low-grade ore and waste material are hauled to stockpile- and waste-disposal areas adjacent to the pit.

Ore production in 2003 amounted to 89.2 Mt averaging 0.56% Cu, 0.32 g/t Au and 1.02 g/t Ag. Mill throughput was 45.2 Mt (123,800 t/d) averaging 0.72% Cu, 0.51 g/t Au and 1.54 g/t Ag which yielded 932,105 t of concentrate containing 30.86% Cu, 20.72 g/t Au and 66.90 g/t Ag. The metal content of concentrate was 287,634 t of copper, 19,316 t of gold and 62,353 t of silver. Concentrate is delivered via a 17.6 km pipeline to the Benete port area where it is filtered and dewatered prior to shipment. The tailings are sent via a 6 km onshore pipeline to the south coast of Sumbawa island, and via an offshore pipeline to the edge of the Senunu sub-marine canyon, 3.2 km from the shore.

Concentrate sales in 2003 amounted to 931,520 t containing respectively 287,486 t of copper, 19,308 t of gold and 62,298 t of silver. PT NTT reported total revenue and other income of US\$427.7 million in 2003 and a net income of US\$100.72 million. Cash costs per pound of copper, including byproduct credits, amounted to US\$0.25/lb, 24.2% lower than the 2002 figure of US\$0.33/lb.

Tin

As result of a strong increase in tin prices, Indonesia's tin industry showed a better financial performance in 2003 compared with recent years. The two leading producers are PT Timah Tbk and PT Koba Tin, which operate on Bangka Island. Total output last year was 71,694 t of tin-in-concentrate, down from a record high of 79,765 t in the previous year. However those high figures were mainly attributed to production by the so-called 'unconventional miners'.

In 2003, PT Timah's total tin-in-concentrate output reached 43,948 t, of which 35,394 t was produced from inland reserves (gravel-pump operations) and 8,554 t (13,531 t in 2002) was sourced from dredge operations. The 37% decline in production from PT Timah's dredging operation was a result of the company's policy of conserving its offshore reserves and the optimisation of inland production. PT Koba Tin's tin-in-concentrate production for 2003 was 27,746 t.

The decline in inland tin concentrate production was attributed to increased competition from unconventional (illegal) miners operating in PT Timah's official working areas. Competition also came from small-scale tin smelters that are proliferating on Bangka island. Such conditions not only pose a disadvantage to PT Timah, but are also detrimental to the sustainability of Indonesia's tin industry, and damaging to the environment, particularly on Bangka island.

Tin metal production from PT Timah's Mentok smelter was 45,905 t, a 5% increase on 2002 (43,528 t). At year-end, the inventory of tin-in-concentrate was 81% lower, at 1,978 t, down from 10,457 t at the end of 2002. PT Koba Tin reported a tin metal production of 20,378 t in 2003.

Tin prices jumped dramatically, from an LME cash price of US\$4,255/t in January 2003, to US\$6,495/t at the close of the year. In April 2004, the price of tin broke the US\$9,000/t barrier, with an LME cash price of US\$9,273/t achieved in mid-April. The price jump saw net profits for PT Timah rise to Rp76.4 billion, an increase of nearly 300%, although earnings were partially offset by the 8% decline of the US\$ value against the rupiah. The average tin price received by the company during 2003 was US\$4,817/t, 15% higher compared with 2002 (US\$4,195/t), and the delivered cost was US\$4,395/t. Sales were up by 6%, from 42,832 t to 45,373 t.

Gold and silver

Gold production in 2003 increased to 141.02 t (139.65 t in 2002) mainly because of higher output at the copper-gold operations of Freeport at Tembagapura and Newmont at Bukit Hijau, producing 99.68 t and 18.69 t of gold respectively. Production from the remaining operating gold mines in 2003 was limited to Antam's Pongkor-mine (near Bogor) with 4,497 t of gold and 29.85 t of silver, and the nearly depleted Gosowong gold mine on Halmahera Island which continued production during the first four months of 2003 to produce 477.2 t of gold and 1,151 t of silver.

Antam's Pongkor underground production (gold and silver) came from three primary gold veins: Ciguha, Kubang Cicau and Ciurug. A conventional cut-and-fill stoping method, using hydraulic replacement with tailings as fill was employed for the first two of these veins. A mechanised cut-and-fill method, using hydraulic jumbo drilling and load haul dump (LHD), was introduced in 2000 for the third vein, Ciurug. This method not only assists in meeting increased production targets but is also helping to lower production costs.

Both the Kelian mine of PT Kelian Equatorial Mining (KEM) in Kalimantan and Newmont's Minahasa Raya gold mine in North Sulawesi Province ceased mine production in 2003 and treated the remaining stockpiled ore. PT KEM managed to produce 14.58 t of gold and 10.78 t of silver, and PT Newmont Minahasa Raya 's plant produced 3.09 t.

PT Nusa Halmahera Minerals on Halmahera Island, faced with exhaustion of reserves at its Gosowong mine, moved its operation to the neighbouring Toguraci area and started mining the deposit after approval by the local government (in connection with Toguraci's protected forest status). Pre-stripping at Toguraci was suspended in October due to occupation of the site by illegal miners but the illegal mining activity was resolved, and pre-stripping recommenced in early December 2003; 8,000 t of material was stockpiled and the first gold production was scheduled for the first week of February 2004.

PT Antam's Logam Mulia (LM) precious metals refinery in Jakarta generated Rp554 billion in revenues, an increase of over 15% compared with 2002, and over half its products were sold domestically. Gold production reached 4,176 kg and sales were up by nearly 20% to 4,829 kg. Due to higher sales and the higher average selling price of US\$364.32/oz, revenues from gold increased by 28% to Rp485.12 billion. Silver production reached 28,570 kg but lower sales volumes reduced silver revenues by 25% to Rp53.2 billion. As the mining operations of LM's customers continue to close, refinery services dropped by 54% to Rp15 billion. Logam Mulia, which also refines Antam's gold bullion from the Pongkor gold mine, has an annual capacity of 75 t, but in 2003 it operated at only about 36% of capacity.

Bauxite and iron sand

Production of bauxite in 2003 decreased by 2% to 1.26 Mt, but sales volumes dropped by 13% to 1.1 Mt, resulting in a 20% reduction in sales revenues to Rp103 million. The average selling price was US\$10.93/t.

Antam's Kijang bauxite mine should have closed in 2003 as the Lomesa deposit is almost fully exploited. However, because of strong demand from China, Antam was able to continue production by selling lower quality, high silica bauxite ore, although at somewhat lower sales prices.

With the imminent closure of the Lomesa bauxite operation on Bintan island, Riau Province, Antam is planning to develop the Tayan bauxite deposit upstream on the Kapuas River in West Kalimantan Province as a chemical-grade alumina project. Antam holds an exploitation licence at Tayan covering an area of 36,410 ha, and this is due to expire in 2020. In-fill test pitting has continued at Tayan in order to confirm the mineral resources classification. So far, estimated total ore reserves of washed bauxite have grown to 61.5 Mt averaging 16.68% silica and 46.52% alumina. A large portion of the measured and indicated resources at Tayan was upgraded to reserves ahead of a bankable feasibility study (BFS) completed in December 2003. As a result, the estimated indicated resources of washed bauxite at Tayan were reduced to 51.5 Mt averaging 10.38% silica and 46.86% alumina. The

US\$220 million project will be funded with a 70:30 debt-to-equity ratio financing scheme. For Antam, the equity portion would amount to about US\$33 million.

One of the alternatives for the Tayan alumina project is to form a project company, together with an international strategic partner. To fund the equity portion, Antam is considering a rights issue (which is pending government approval) as the majority share holder, along with a divestment of part of the government's share in Antam from 65% down to 51%.

Antam's iron-sand concentrate production in 2003, came from the practically depleted Cilacap deposit (93,547 t) and from the more eastern located Kutoarjo deposit (151,862 t). The total output of 245,409 t was 54% less than in the previous year. There has been renewed interest from Chinese buyers who are willing to pay a higher price per tonne than the local market price.

The remaining reserves at Kutoarjo are estimated at 2.5 Mt (iron in concentrate). At Lumajang, which is presently closed, the remaining reserve is just 0.7 Mt (iron in concentrate). The average Fe content at both deposits is 46.8%. Because mining activity at Cilacap has ceased and its exploration licence expired, iron sand resources from Cilacap are not included in these reserve estimations.

With the new interest from Chinese buyers, exploration efforts for iron-sand will be stepped up.

Table following page

Mineral Production ('000 t except where stated)			
	2001	2002	2003
Petroleum and condensate (Mbbbl)	489.30	456.0	n.a
Natural Gas ('000 billion ft ³)	2.80	3.04	n.a
LNG (Mt)	24.35	23.85	n.a
LPG	2,188	2,111	n.a
Tin in concentrate	56.25	79.77	71.69
Tin metal	53.47	66.62	66.28
Coal	91,928	103,130	114,610
Bauxite	1,237	1,283	1,263
Iron sand	469.4	378.5	245.4
Nickel ore	3,619	4,406	4,396
Ferro-nickel (contained Ni)	10.3	8.8	8.9
Nickel-matte (contained Ni)	62.6	59.5	70.2
Copper concentrate	3,290	3,765	3,238
Copper in concentrate	1,048.7	1,167.4	1,005.8
Copper metal (cathodes)	212.5*	192.4*	223.3
Gold (kg)	166,090	139,650	141,019
Silver (kg)	348,332	289,450	278,986
Granite	3,975	4,965	3,939

* corrected figures