

## INDIA

*By G.R. Seshadri*

India's GDP grew only by an estimated 4.4% in the financial year to March 31, 2003 (against 5.6% in the previous year). There was an improved performance in the mining and metals sector, along with the services sector, but agricultural production was down by 7%. The production of steel as well as the major non-ferrous metals was much higher than in the previous year. Steel exports have boomed to more than 3 Mt. Nearly all industries have been trimming costs and lowering prices. Cost-cutting efforts were aided by successive reductions in interest rates, better inventory management and voluntary retirement schemes for surplus workers. However, the prolonged slowdown in private investments, a constrained financial sector due to fears of increasing non-performing assets in banks, a lacklustre capital market and a heavily-indebted government made the picture gloomy. The bright spots were a rise in foreign exchange accumulations to over US\$75 billion in February, 2003, thanks to an increase in software exports, a large inflow of external funds from Indians working abroad and a government stockpile of over 63 Mt of grain.

India's Planning Commission has projected that GDP will grow by 8% during the Tenth Five-year Plan (2002-2007), rising to 9.4% thereafter. The Planning Commission has unanimously approved the Tenth Plan document, with Prime Minister Atal Bihari Vajapayee unveiling a tough six-point reform agenda to push the annual growth to a high 8%. It is proposed to carry forward key reforms, particularly in agriculture, to generate 50 million jobs in the next five years, besides raising foreign direct investment flow to US\$7.5 billion annually and raising Rs780 billion (US\$1 = Rs48) through privatisation of state undertakings, notwithstanding stiff political resistance .

### **Oil and natural gas**

Three new oil refineries under construction will add a further capacity of 24 Mt/y this year. The public sector energy major, Oil & Natural Gas Corp. (ONGC) was trying to acquire British Gas' 30% stake in the Panna-Mukta and Tapti oilfields. This is now in a stalemate over problems of control over operatorship. The Panna-Mukta field is jointly-owned by ONGC, British Gas and Reliance Petroleum in the proportion of 40:30:30. British Gas has been keen to acquire operatorship in the oilfields but this has been disputed by the other partners. The BG group and Gas Authority of India Ltd. (GAIL) are proposing to form a strategic alliance for domestic as well as international distribution of gas. GAIL and BG are formulating co-operative plans to distribute liquefied natural gas (LNG) in India and abroad. GAIL's participation in operating BG's proposed LNG plant in Iran and importing LNG from Iran to various coastal locations in India are also being considered. BG plans to increase its current investment of around US\$500 million in India to US\$1 billion.

ONGC has discovered fresh oil and gas reserves, estimated to hold about 48 Mt of oil and oil equivalent of gas, near its gigantic Vasai gasfield (reserves: 98 billion m<sup>3</sup> of gas off the Mumbai coast. India produces about 69-70 million cubic metres (Mm<sup>3</sup>) of gas per day, while demand is 130 Mm<sup>3</sup>/d. Estimated production from the field may be 0.7 Mt/y of oil and 3.4 Mm<sup>3</sup>/d of gas. Earlier in the year, the late Mr.Dhirubhai Ambani's Reliance Industries Ltd located 40 million m<sup>3</sup> in five fields in the Krishna-Godavari river basin in south India. Eight coal-bed methane blocks were awarded for enhancing natural gas availability in the country.

### **Diamonds**

In the Central Budget presented by Finance Minister Jaswant Singh at the end of February, 2003, the customs duties on imports of gold and raw gem stones were slashed in order to encourage jewellery exports and curb gold smuggling. The duty on gold bars and coins was cut from Rs250 to Rs100/10g, and the duty on polished diamonds and gem stones was reduced from 15% to 5%. These measures are designed to help India grow as a global trading centre for diamonds and jewellery, and will enable jewellery manufacturers to import expensive, large-size diamonds and export them as finished ornaments.

India, the world's largest diamond cutting and polishing centre, is likely to export gems and jewellery worth US\$9.58 billion in 2003, up from US\$8.71 billion in 2002. Until now, India has been importing mostly small and medium-sized stones since large stones have been liable to higher duties.

Seven companies including De Beers, Geo Mysore Services (India) Ltd and National Mineral Development Corp. Ltd (NMDC) have been granted prospecting licences for exploration of diamond and other precious minerals in Andhra Pradesh. They will use state-of-the-art satellite imagery and aerial photography for identification of prospective areas.

The Indian Government also plans to step up precious-stone mining activities in Karnataka, Maharashtra, Chhattisgarh, Madhya Pradesh and Orissa where a chain of cutting and polishing centres will be set up with support from the state governments. It is part of the strategy to make the country a major trading centre in rough gems and strengthen its marketing muscle. If the efforts yield results, India, which has achieved world leadership status in cut and polished diamonds, could also become a major source of rough stones for other countries. It would be followed by the establishment of a major rough-diamond trading centre in Mumbai, in collaboration with the private sector. "While De Beers has its own network for rough diamond exploration and signed lease agreement with the Orissa Government, other players were to start negotiations with Canadian and Russian companies for technological co-operation and the direct supply of rough diamonds," said a source in the Ministry of Mines.

The use of satellite imagery and aerial photography as a supporting tool for the location of precious stones and minerals, as recommended by the Geological Survey of India (GSI), has cut delays in exploration and mining.

Also, it has offered cost advantage to the mining sector which has witnessed 2% growth in 2001-2002.

The government has extended financial assistance to domestic jewellers to set up cutting and polishing centres abroad and source rough diamonds directly from mines in Canada and Russia. Indian diamantaires currently source rough diamonds from De Beers, which controls about 80% of the diamond mines in South Africa, Botswana, Namibia, and others through long-term lease agreements.

The direct sourcing of diamonds from the Indian mines situated in diamond-bearing states will help feed and sustain the growth of diamond cutting and polishing centres along India's western coast. These centres employ one million persons and during 2001-02 they exported cut and polished diamonds worth US\$5,972 million, according to the Gem and Jewellery Export Promotion Council. The rough diamonds imported by these centres cost about US\$4.2 billion last year, the sources said. Surat in Gujarat - the backstreets of Mini Bazar and Mahidarpura to be precise – is the centre of the cutting and polishing industry. In 2001-2002, exports of cut and polished diamonds from Surat alone totalled a whopping Rs360 billion. And while India accounts for 90% of world cut and polished diamond exports by volume, it also accounts for 55% by value.

Competition is hotting up, however, with producers in South Africa and Ghana setting up their own captive finishing operations, and China emerging as a formidable rival backed by its cheap labour. In the past two years, over a dozen Surat-based diamond-processing units have relocated to China, and more are looking to that destination. But China has been focussing on a different range of diamonds. They are cut in Belgium, Israel and the Far East, and include sawn or sawable rough diamonds. India's advantage lies in the fact that it specialises in macles, cleavage and reject varieties.

## **Gold**

The World Gold Council estimates total Indian demand in the 2002 calendar year at 592 t, a 21% decline from the 727 t in 2001. Around 75% of gold consumed in India is normally provided through official imports (the balance of supply coming from the recycling of old ornaments) and is used mainly for making jewellery. The WGC estimates that last year, 490 t of gold were used for jewellery purposes, 85.5 t for net retail investment and 16 t for industrial applications.

In India, it is common for gold jewellery to be exchanged, or for new purchases to be funded by trading in other jewellery. The WGC now excludes such purchases in its demand estimates but, if they are included, India's gold demand last year fell by only 5%, to 797 t from 843 t in 2001. Lower imports during the year were due to higher international gold prices. The customs duty on imports of gold was cut from Rs250/10g to Rs100/10g in order to aid the jewellery industry and to discourage smuggling. The Minerals & Metals Trading Corp. (MMTC), the largest bullion trader, imported 110 t.

State-owned Hutti Gold Mines Co. Ltd (HGML), India's only primary gold producer (other production comes as by-product from copper refineries) proposes to produce 3.0 t of gold in the year ending March 31, 2003. Expansion and modernisation plans are proceeding and, according to HGML's chairman, Mr K. L. Negi, milling capacity was increased from 1,200 t to 1800 t/d in August 2002. The copper smelter of Indo-Gulf Corp. (Birla Copper) produced 2.09 t of gold, and output at Sterlite Industries' copper smelter was around 2.3 t.

Partly because of fears of a US invasion of Iraq, the gold price soared to Rs5850/10g in February 2003. High prices encouraged recycling of old jewellery. Nevertheless, it has been estimated that India may absorb as much as 25% of the world's annual gold output for jewellery fabrication in the future.

### **Coal**

India's coal production in the 12 months to March 31, 2003, was estimated at 350 Mt. Ranked as the third largest producer of coal in the world after China and the US, the country has resources estimated at 212,000 Mt to a depth of 1,200 m. Most of the coal produced comes from open-pit mines, which account for almost 80% of the output. Bihar has the largest reserves (69,130 Mt), followed by Orissa (50,450 Mt), Madhya Pradesh (43,430 Mt), West Bengal (25,900 Mt) and Andhra (13,600 Mt). Indian coal generally has a high ash content of between 24-50%. However, this coal is relatively low in sulphur (0.5%) and chlorine. Lignite, sub-bituminous, and bituminous coals predominate, and only small amounts of anthracite are available. Owing to the high ash content, environmental measures are being taken by many of India's states.

Resources of metallurgical grade coal are estimated at 33,900 Mt and their ash content is high. Annual output is around 40 Mt and annual imports of over 12 Mt are necessary in order to run the steel and other metallurgical industries. Thermal power plants, the major consumers of non-coking coals, require about 220 Mt/y. Imports, mostly of coking coal, amount to about 20Mt/y.

Coal production was reserved for the public sector for well over 25 years but has now been opened up to private enterprise. The state-owned umbrella organisation, Coal India Ltd (CIL), was planning to diversify into value-added products and streamline its existing product-mix through mergers and demergers of its subsidiaries. KPMG was asked to draw up a corporate plan for CIL, including measures for further expansion into downstream value-added products such as establishing coal washeries for preparing thermal-grade coal. The government has mandated the use of low-grade coal containing less than 34% ash for power stations located more than 1,000 km from the production centres.

CIL and its seven subsidiaries produce about 280 Mt/y, of which over 200 Mt is supplied to power plants through linkages. A further 20 Mt goes to linked customers in steel, cement and fertiliser sectors. Bharat Coking Coal, Eastern

Coalfields and Central Coalfields, which produce the bulk of the prime grade coal, are heavily loss-making concerns.

CIL has teamed up with global mining majors such as Joy Global of the US and Ruhrkohle AG (RAG) of Germany, to extract coal on a revenue-sharing basis. Three projects identified for revenue-sharing on a contract basis are currently operated by CIL's regional subsidiary South Eastern Coalfields (SECL). Under the scheme, revenue from sales of 50% of the rated production of the identified mines on contract will go to SECL.

The State Bank of India, an operating agency appointed for the revival of CIL's ailing Eastern Coalfields Ltd (ECL) subsidiary, has proposed the closure of 26 loss-making mines, outsourcing mining of ten coal-bearing areas and the request of a Rs1,000 million soft loan from the state governments for modernising the open-cast mines. Previously, another agency had suggested the closure of 64 coal mines and a focus on open-cast mines instead of continuing with underground operations, mainly in West Bengal. Some 30 mines will be closed because they are uneconomic.

India's reserves of lignite or brown coal are estimated at 34,600 Mt, the major producer being Neyveli Lignite Corp. in Tamilnadu. Annual output of lignite from the three producing states is as follows: Tamilnadu 18.5 Mt; Gujarat 5.9 Mt; and Rajasthan 0.2 Mt. It is proposed to increase lignite production capacity to 56 Mt by the end of the Tenth Five-year Plan, and an investment of US\$19 billion is proposed for the expansion of Neyveli's capacity. CIL envisages an investment of US\$3 billion in order to achieve a planned production level of 350 Mt/y of lignite.

### **Iron ore**

India is the world's fifth largest producer of iron ore, and in 2001 it contributed about 80Mt or 8.5% of global output against 71.5 Mt in 1999-2000. Production in the year ended March 31, 2002 is estimated at 99 Mt, and for 2002-2003, production is estimated to have reached 105 Mt.

India's iron ore resources are abundant, the exploitable deposits of haematite being placed at 9,800 Mt and magnetite at 3,400 Mt. High-grade ore resources (>65% Fe) are estimated at 1,280 Mt, while medium-grade resources (62-65%) amount to 4,200 Mt. Compared with other ore-exporting countries, the Indian iron-ore industry is highly fragmented. The major deposits of high-grade haematite occur in Madhya Pradesh (estimated reserves: 630 Mt), Orissa (320 Mt), Karnataka (220 Mt) and Bihar (85 Mt). Medium grade reserves (62-65% Fe) are found in Bihar (1,790 Mt), Orissa (1,300 Mt), Madhya Pradesh including Chhattisgarh (485 Mt), Karnataka (440 Mt) and Goa (150 Mt). Metallurgical-grade magnetite ore is found in Karnataka (1,150 Mt), Goa (100 Mt) and Andhra Pradesh (40 Mt).

The government-owned National Mineral Development Corp. (NMDC) has the largest mechanised iron-ore mines (capacity: 18 Mt/y) at Bailadila in Madhya Pradesh and Donimalai in Karnataka. Exports account for about 8 Mt/y, the buyers being Japan, South Korea and China. There was a proposal



to expand capacity to 32 Mt/y at a cost of around Rs15 billion. The NMDC has established recently a 300,000 t/y Romelt steel plant at Geedam in the Dantewada district of the newly-formed state of Chhattisgarh. This will use fines/slimes arising at the Bailadila mines.

The Chiria mine has proven reserves of 2,000 Mt but these remain untapped for want of funds. It is owned by the ailing public-sector company, Indian Iron & Steel Co. (IISCO), which is deeply in the red, and needs a joint-venture partner for its modernisation and revival. All told, there are about 202 iron-ore operations in India, of which 18 (14 government-owned and four privately-owned) all produce in excess of 1 Mt/y and account for 65% of total output.

India is a major exporter of iron ore but its market share has steadily declined, from 7.8% in 1985 to 4% in 2002. Iron-ore export shipments in the year ended March 2001 totalled about 37.3 Mt.

Last year, state-owned Minerals & Metals Corp. (MMTC) exported about 1.2 Mt of iron ore to China Iron & Steel Group Trade Corp. (formerly known as CMIEC).

Kudremukh Iron Ore Co. (KIOCL), India's third largest producer of ore, produces about 6.5 Mt/y of iron ore and pellets for export, and last year it entered into an agreement with two Chinese firms, Femery Resources and Baosteel, for the supply of iron ore. KIOCL achieved record exports worth Rs59.8 billion in the year ended March 2002. According to Mr S. Murari, chairman and managing director of the company, estimated ore reserves amount to 340 Mt. KIOCL is now proposing to exploit the primary ore beneath the weathered ore. However, because its operations are deemed to pollute the environment, KIOCL is now under orders from the Supreme Court to halt operations at its existing mines by the end of 2005, when its lease expires. It has applied for a number of mining leases in Bellary, Jharkhand and Orissa regions. Apart from exploring new areas, sourcing iron ore for its 4 Mt/y pelletising plant from elsewhere in the world is under consideration. Another option being considered is to move the plant to Western Australia as part of the Austeel iron and steel project, which may call for an investment of US\$15-20 million.

The public-sector company Manganese Ore India Ltd (MOIL), formerly British-owned C.P. Manganese Ore Ltd, is now on the privatisation list. The Indian Government, which owns 82% of the company, has invited potential buyers to bid for a 56% stake and the global consulting firm KPMG has been appointed as the adviser for the sale. The privatisation of MOIL is likely to be completed by August this year.

### **Steel**

India's exports of saleable steel rose to 3.3 Mt in 2001-02, hot-rolled (HR) coil, skelp and strip accounting for 1.4 Mt. Hot-rolled products and steel wire ropes, which constitute almost 50% of the country's steel exports, have attracted anti-dumping proceedings from the US. In the domestic market, hot-

rolled steel has fared well, and prices touched Rs22,000/t. With demand from China and Europe improving, prices are expected to move closer to the international price of Rs26,000/t. The hike in HR steel prices have percolated down to cold-rolled (CR) coils and galvanised sheets, and the price of the former might possibly rise to Rs27,000-28,000/t. The Indian HR steel industry has a capacity of around 7 Mt, and this now matches the level of overall demand as a result of a rise in exports to China and Europe.

Tata Iron & Steel Co. Ltd (Tisco) completed its expansion projects and greatly improved its profitability by launching into branded products, particularly for automobile panels. Tisco makes galvanised coated steel, the grade used by car producers abroad. Tisco proposes to invest Rs20 billion over the next two years to raise its finished steel production capacity from the current 3.8 Mt/y to 4.6 Mt/y. Most of the additional capacity will be divided equally between long cold-rolled sections and flat cold-rolled steel.

The Jamshedpur-based steel company has signed a tripartite agreement with global steel majors Nippon and Arcelor to acquire technical know-how. Indian car companies until now have imported steel from Japanese and Korean mills to make cars for the export market. Tisco has now changed its focus from producing long sections to being an automobile steel-maker. Tisco was working out a supply agreement with Jindal Strips, a stainless steel producer, to supply chrome, a basic input in making stainless steel.

Jindal Strips is the largest stainless steel company in India and is planning to close down its high-carbon ferro-chrome unit in Orissa (capacity: 40,000 t/y) because of prohibitive power costs. Jindal Steel & Power proposes to set up a 1 Mt/y sponge iron plant in Orissa at a cost of Rs13 billion. The plant will utilise locally available iron ore from the company's captive mines. The company is also planning to add coal mining to its portfolio if proposals are implemented to fuel the sponge iron plant with piped-in gasified coal.

Other ferro-chrome producers, apart from Tisco's remaining facility at Bamnimal (capacity: 50,000 t/y), are Indian Charge Chrome and Nava Bharat Alloys. China presents a large market for Tisco's products which have done well on the export front and have become a major profit-maker for the company.

The Steel Authority of India Ltd. (SAIL) is the largest steel producer in India and its steelmaking subsidiaries account for half the country's steel output. SAIL is deeply in the red, however, the losses sustained in 1998-1999 and 1999-2000 being of the order of Rs32,940 million. Losses continued in the fiscal year ended March 2001, albeit on a reduced scale. The only two companies among its four integrated steel plants, which have fared well in 2002-2003 are Bhilai and Bokaro. Losses incurred by the Rourkela and Durgapur plants, plus the burden of such perennially sick units as Alloy Steel in Durgapur, Salem, and Visvesvaraya have led SAIL to become the worst loss-maker among India's public-sector companies. In an effort to pay off the interest on loans from financial institutions and banks for modernisation and expansion, SAIL has had to sell off the residential quarters of its constituent

units. The steel giant was to pay Rs7,350 million last year as interest which would come from disposing of power plants at Durgapur and Rourkela. Towards the close of 2002, Rourkela improved its performance and reduced its losses. Visakhapatnam Steel Plant (VSP) also did well and achieved a net profit of Rs730 million in April-Sept, 2002 period, against a net loss of Rs1,250 million in the corresponding period of 2001. Production during the half-year period was 1.9 Mt of hot metal and 1.46 Mt of finished steel.

SAIL had plans to increase its total capacity to over 10 Mt/y, mainly by de-bottlenecking operations, and is now marketing new corrosion-resistant structural products manufactured by Bhilai. These substitute relatively costly chrome and nickel with phosphorus and carbon without compromising on quality.

SAIL's chronically sick subsidiary Iron & Steel Co. (IISCO) has been put up for sale. As an integrated steel plant, IISCO offered several intrinsic advantages, including a wide product-mix – structural steel, light and heavy rails, bars and rods - a captive foundry and a spun-pipe plant, and also good grade iron-ore mines.

Three steel companies, Essar Steel, Jindal Vijayanagar Steel and Ispat Industries, which are heavily indebted, obtained a reprieve last year by restructuring their loans. The relief package consisted of the conversion of debt into equity, conversion into preference shares, repayment of unsecured foreign debt at discounts, and an offer of personal guarantees by the promoters of the companies. Interest on their loans would be reduced to 14% from 16-17%, rupee loans would be paid over 15 years and 40% of rupee term loans would be converted into forex loans at 8%. South Korean steel producer, Posco Steel, was keen to take over steel assets in India and Essar, Jindal Vijayanagar and Ispat are all likely candidates for acquisition.

### **Aluminium**

The government is keen to privatise National Aluminium Co. (Nalco) and has proposed a three-year lock-in period for the transfer of shares by the strategic partner subsequent to privatisation. The government proposes to disinvest 60% of its stake through a combination of strategic sale, American Depositary Receipts (ADRs) and domestic offering. As much as 29% would be offered to the strategic partner, along with management control, and 20% would be off-loaded on US stock exchanges. Among the 15 players shortlisted for the sale, are the domestic majors Hindalco and Sterlite, plus international giants such as BHP-Billiton, Glencore, Pechiney and Russian Aluminium. The government currently owns about 87% of Nalco, the balance being owned by the public. Hindalco Industries Ltd has already acquired 4% of Nalco's shares through purchases on the open market.

Hindalco is in the midst of an expansion. Its Renukoot smelter is expected to complete a 40% capacity expansion to 342,000 t/y in September 2003 and last November it completed a 47% increase in alumina capacity to 660,000 t/y. In September 2002, its Indian Aluminium Co. (Indal) unit nearly doubled capacity at the Hirakud smelter by completing the transfer of idle equipment



from its Belgaum unit. Annual capacity at Hirakud, which is located in the eastern state of Orissa has now risen to 57,200 t from 30,000 t. Indal contributes nearly 7% of India's total aluminium production. The Belgaum smelter, which had 400 pots, was closed in 1995 because of the high cost of power supplied by the state government. Indal does not own a power plant at Belgaum but runs a 67.5 MW unit at Hirakud. A decision on whether to shift the remaining 200 pots from Belgaum will be taken later. Indal owns another aluminium smelter at Alupuram in Kerala, with an annual capacity of 14,000 t. The US\$1,000 million Utkal alumina project, in which Indal proposes to increase its shareholding from the current 20% to 55%, following Norsk Hydro ASA's withdrawal, made little progress.

Bharat Aluminium Co. (Balco), now under the control of Anil Agarwal's Sterlite Industries Ltd (following Sterlite's acquisition of 51% of Balco shares in March 2001), has signed a memorandum of understanding with Chhattisgarh Industrial Development Corp. (CSIDC) whereby it pledges to invest Rs60,000 million in a major expansion in the state. A project to raise smelter capacity at Korba four-fold to 400,000 t/y was launched in January 2003, and the company is also increasing its capacity to produce alumina from 180,000 t to 830,000 t/y. There will be associated expansions in bauxite mining, as well as the installation of a 600 MW captive power plant. Specific bauxite mines have been identified at Mainpat and Kawardha. Originally, the state government had vehemently opposed the Sterlite group's acquisition of Balco but both parties appear to have 'buried the hatchet', clearing the way for the expansion programme. Among the incentives for these projects, the duty on consumption of electricity will be waived for a period of 15 years, entry tax in respect of capital goods and raw materials will be exempted, and the stamp duty/registration fee will be waived as per Chhattisgarh's industrial policy.

Under its new management, Balco's hot metal production exceeded 100% of capacity from September last year, mining costs have been reduced and the entire requirement of bauxite is being met internally. The management proposes to expand Balco's capacity to world-scale levels and also consolidate the Sterlite group's presence in the aluminium sector. The capacity of its captive power plant is to be raised from 270 MW to 810 MW, to be funded through a mix of debt, equity and internal cash accruals. A sum of Rs20,000 million is to be raised through equity.

Balco does have problems elsewhere, however. In March this year, the state government in Orissa withdrew its consent for Balco to lease the Sashubahumali-Pasangamali bauxite mines in Kashipur, Rayagada. The government was still processing Sterlite's proposal to build a Rs35 billion, 1.0 Mt/y capacity alumina refinery at Kalahandi based on a nearby bauxite deposit offered to the group in the late 1990s.

### **Copper**

Indian copper producers are going global and two of the country's largest producers, Birla Copper and Sterlite Copper, received accreditation for their copper as being of acceptable brands for good delivery on the London Metal

Exchange. The two producers hold 90% of the 380,000 t/y Indian copper cathode market, the remaining 10% being held by Hindustan Copper Ltd.

Birla Copper is part of the Aditya Birla industrial group. Under a major restructuring it is being merged with Aditya Birla's aluminium producer, Hindalco Industries Ltd. It was formerly the copper division of another group company, Indo-Gulf Corp. This unit will continue as a separate entity under the name of Indo-Gulf Fertiliser Corp.

Birla Copper produces around 150,000 t/y of copper but capacity at its Gujarat-based smelter is being expanded to 250,000t/y. The company posted a turnover of Rs12,481.4 million in April-September, an increase of 23% over the corresponding period in 2001. A successful foray into exports, and increasing capacity utilisation leading to operational efficiencies, have been the growth drivers and have been achieved in spite of weaker copper prices. Birla's exports improved significantly during the period, especially to South East Asia and the Middle East, with shipments rising to 37,360 t, compared with 16,930 t in the corresponding period in the preceding year. The smelter operated at more than 122% of its rated capacity.

Birla Copper's merger with Hindalco has made the latter a multi-metal company and underlining this, Hindalco announced in January 2003 that it had agreed to purchase Australia-based Straits (Nifty) Pty Ltd at a price of A\$89.82 million (US\$51 million). The deal gives Birla ownership of the Nifty copper mine in the eastern Pilbara region of Western Australia and a 50% stake in the Maroochydore project for a further A\$10 million. Assets also include seven exploration properties in the Paterson Range. The Nifty acquisition is part of Birla's strategy towards partial self-sufficiency in copper concentrates, the goal being to source 25% its copper concentrate requirement from captive mines.

Nifty is currently producing about 27,500 t/y of copper cathode, through solvent extraction and electro-winning but there is potential to produce concentrate from its sulphide ore. Total reserves are estimated at 148 Mt with an average grade of 1.3% Cu. Birla Copper currently imports its concentrates from the Americas and the Nifty deal could provide it with 12-13% of its needs, and a freight advantage of US\$36-56/t.

Sterlite Industries also undertook a restructuring exercise whereby it hived off its copper business into a separate company. This company, too, was working at above rated capacity.

## **Zinc**

In March 2002, Sterlite Industries Ltd acquired from the Indian Government a 26% shareholding in Hindustan Zinc Ltd (HZL) at a cost of Rs4,450 million. When the open offer to minority shareholders for a further 20% is included, Sterlite's stake would be 45% at a total cost of Rs7,880 million. The company's chairman, Anil Agarwal, plans to double HZL's capacity from its current 169,000 t/y. For more than a year now, the company has been operating under private management and there has been a marked

improvement in performance. The output of zinc ingots was 16% more than the previous year and sales turnover 11% more.

The company's product-mix includes zinc and lead as main products, and silver, along with sulphuric acid and cadmium, as by-products. HZL is the only integrated producer of zinc and lead in the country. The company's operations are fully integrated from mining to production of metal and are also geographically well-diversified.

Most of HZL's seven mines exploit low-grade ore and are relatively high-cost operations. However, HZL has the advantage of possessing its own mining and beneficiation facilities, hence, unlike its domestic competitors, its smelters are not reliant on imported concentrates. The company completed the expansion of its lead-zinc ore beneficiation plant at the Rampura Agucha mine from 3,000 t/d to 4,500 t/d in late 1997, and capacity expansion at its Visakhapatnam smelter, from 30,000 t/y to 33,000 t/y was completed in 1998.

HZL is considering dismantling its 22,000 t/y capacity lead unit, which was shut down in June 1999. Consultants, Mecon and Lurgi, after studying the viability of the unit, said that the entire lead circuit would have to be replaced by a new one in order to maintain the lead operations at a viable level.

High power tariffs are the major drag on the company's profitability, and its Vizag zinc smelter will soon have to face another round of power tariff revisions by AP Transco. Vizag produces about 34,000 t/y of zinc, or more than 24% of HZL's total zinc production.

The company is planning to focus on new projects, including completion of its nickel technology test plant in Orissa. It is also planning a joint venture with RCF and Rajasthan State Mining Corp. to manufacture di-ammonium phosphate. HZL will supply sulphuric acid from its existing zinc smelter in Rajasthan and the greenfield smelter that is coming up to this jv company thereby ensuring steady offtake and turnover growth. It is developing the Sindesar Khurd lead-zinc-silver deposit in the Rajsamand district of Rajasthan with a capacity to produce 1,000 t/d of ore as a replacement for the depleted Rajpura-Dariba mine.

A proposal to set up a new 100,000 t/y zinc smelter at Kapasan has been submitted to the Government of India. This project is scheduled to become operational within 48 months of receipt of government approval. Work orders have been issued for the turnkey execution of the expansion project at the Debari (Rajasthan) and Vizag (Andhra Pradesh) smelters by 10,000 t/y each, to be operational by December 2000. A pilot plant to test nickel extraction technology is being set up as a joint R&D project with the Council of Scientific and Industrial Research in Bhubaneswar. Nickel will be recovered from low-grade lateritic chromite overburden dumps. A scheme for grassroots exploration of lead-zinc associated minerals in the Ajmer region of Rajasthan has been drawn up and airborne surveys are being conducted. A mining lease was obtained for the Kayar lead-zinc prospect in the Ajmer district where drilling commenced in mid-1999.

At the Jagpura gold prospect in Rajasthan, exploration work for evaluating gold reserves in the northwest and northeast blocks is complete. Work is still in progress in the southeast and southwest blocks.

### Lead

Because of its dependence on imports for the bulk of its requirements, India has reduced the customs duty on lead from 25% to 20%. The country has a total smelting capacity of 89,000 t/y consisting of 65,000 t/y for HZL and 24,000 t/y for Indian Lead Ltd (ILL). A large portion of capacity is in-operative.

HZL's smelters are in Chanderiya, Rajasthan (35,000 t/y of capacity), Visakhapatnam (22,000 t/y) and Tundoo in Bihar (8,000 t/y). The Tundoo unit has virtually closed down because production has become unviable. ILL has two units, one in Calcutta and the other at Thane, near Mumbai, each with a capacity of 12,000 t/y. Both are based on imported concentrates.

HZL's lead smelter at Visakhapatnam in Andhra Pradesh has remained closed for some time, owing to environmental problems and the prohibitive costs of installing environment-friendly equipment. Besides this, the plant is a loss-making unit. HZL is to sell its Agnigundala mine in Andhra Pradesh to a private company.

Binani Industries, which had a plan to establish a 25,000 t/y lead recycling plant (from batteries) at Wada in Maharashtra state under the name of Binani Lead, was to commence production in 2002 and this was to be followed later by a smelter of 125,000 t/y capacity. Engitec Technologies of Italy supplied the technology for the recycling plant.

India's output of lead is around 71,000 t/y, both from primary producers and scrap/residue based secondary units. The demand (mostly from battery makers) is much higher, at around 170,000 t, making large-scale imports necessary.

### Production of Principal Minerals and Metals.

	2000-2001	2001-2002	2002-2003 <sup>e</sup>
Coal (Mt)	308.6	300.0	350.0
Crude Oil (Mt)	32.5	31.7	32.0
Iron Ore (Mt)	71.0	99.0	105.0
Finished Steel (Mt)	24.8	29.3	36.5
Aluminium ('000 t)	620.0	617.0	628.0
Copper ('000 t)	237.0	317.0	372.0
Primary Zinc ('000t )	178.0	207.0	230.0
Lead ('000 t)	46.0	50.0	71.0

e: estimated