

Emerging tiger



Greg Sweeney, Modular Mining Systems Pty Ltd, Australia, discusses the rise and future potential of the Indian coal mining industry.

India has emerged as one of the hot spots for world mining opportunities. These changes are being driven by the demand created by one of the world's fastest growing economies. The IMF rated India as the 12th largest economy in the world in 2008, with an estimated GDP of US\$ 1.2 trillion. With a current GDP growth rate expected to exceed 7%/year, India's march up the GDP rankings will continue, and could indeed accelerate. Even during the recent financial crisis, India's growth was only dampened – not sent into decline. The country continues to have a healthy domestic savings ratio, a national obsession with improving education and skills, and a large Government agenda to continue to improve infrastructures.

All of these factors point to an ongoing transformation of the Indian economy, which will continue to drive rapid changes in the mining industry specifically. The last decade has witnessed a number of steps taken by the Indian central Government to

attract investment in the mining sector. The various mining acts have begun to liberalise the sector, while state Governments have been devolved additional powers.

Electricity generation capacity as an economic indicator

A key factor if India is to maintain its remarkable growth will be the increase in electricity generation capacity. If electricity generation fails to expand at a fast enough pace, there could be a restriction placed on expansion of industrial capacity, infrastructure projects, and the number of people who move out of poverty into the expanding middle class. In 2020, India's population is expected to be close to 1.4 billion, second only to China. However, according to the UN, between 1990 and 2020 India's population will have grown at double the rate of China's. As Figures 1 and 2 demonstrate, the consumption of electricity per capita is low by world standards and the

current supply of electricity may provide a future constraint on growth.

The Indian Planning Commission's "Vision 2020" paper indicates that a major challenge for India's economic growth is the realisation of massive increases in power generation and infrastructure development, as well as the acquisition of technology to raise productivity. The Government also realises that substantial foreign direct investment (FDI) would be necessary for such growth. As of the end of 2009, thermal coal power generation provided the majority of India's power, at more than 70% of total power generation. Hydro/renewables accounted for nearly 24% of total generation. Nuclear power generates only about 4% of total power produced. Government (state and federal) companies continue to dominate the power generation industry with more than 85% of power produced via Government utilities.

In 2009, India's total power generation capacity stood at

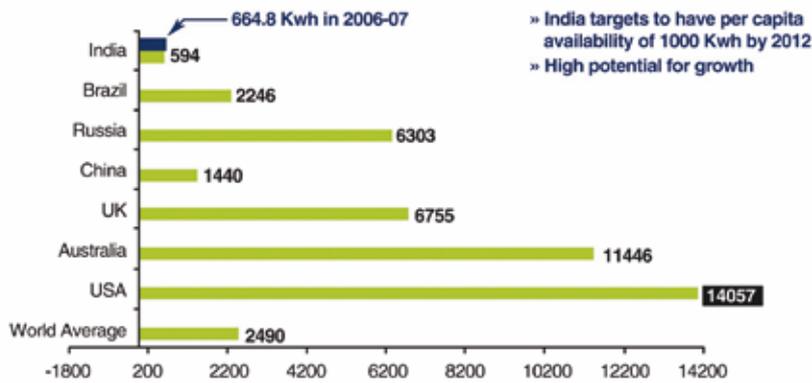


Figure 1. Per capita energy consumption (source: UNDP Human Development Report, 2006).

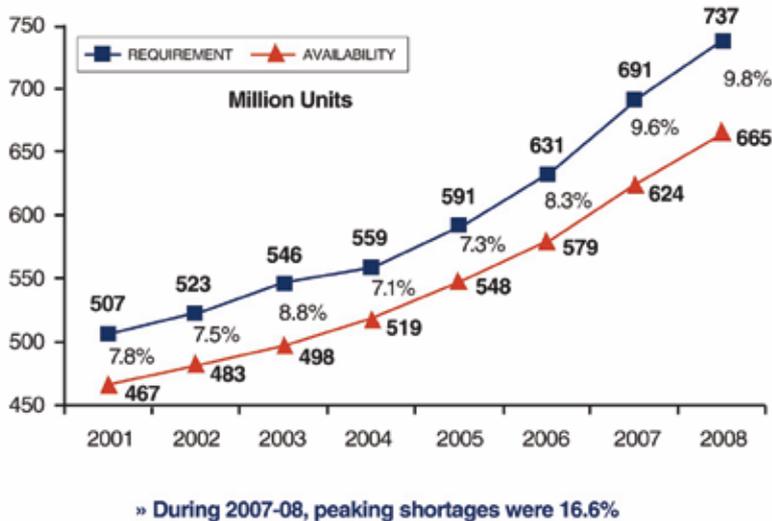


Figure 2. A deficit scenario persists.

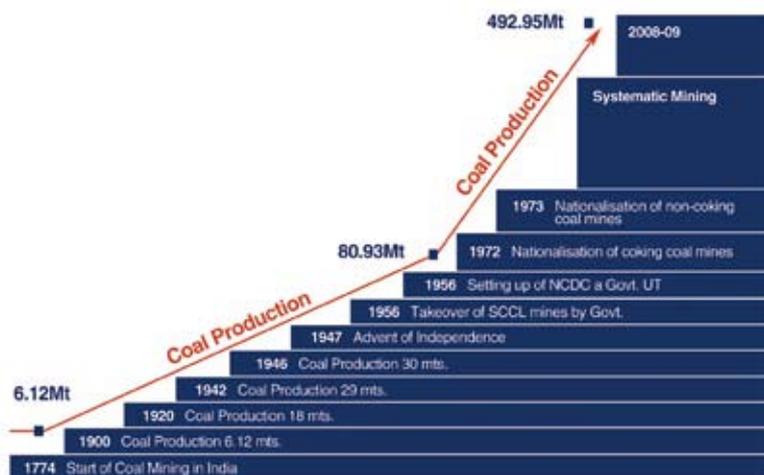


Figure 3. The growth of the Indian coal industry (source: Coal India Ltd).

approximately 147,000 MW. The Indian Government plans to add an additional capacity of nearly 80,000 MW by 2012. Some estimates are that, by 2030, India's energy demand could reach 950,000 MW. Whilst the per capita

energy consumption will remain low by western standards, large numbers of households will be electrified for the first time over this period. This additional capacity will come from various sources (such as hydro/renewables and

nuclear), but the majority of the increased capacity will come from coal. The Government is developing plans to meet this challenge of increasing capacity via Government generators such as the National Thermal Power Corp. And, as will be discussed below, there will also be capacity added by public/private partnerships for the planned ultra mega power projects (UMPPs).

Mining development critical to delivering future growth

For this increase in power generation to occur, a correspondingly large increase in coal production is required. State-owned Coal India Ltd (CIL), by far the major supplier of coal in India, plans to increase total production (coking and non-coking) from 680 million tpa in 2011/12 to 1055 million tpa in 2016/17 to satisfy expected demand.

The Government is not relying on CIL alone to ensure that the required coal for growth in power production is met. UMPPs were launched to achieve rapid electricity generation capacity and competitive tariffs through economies of scale. With the UMPP model, the Government undertakes initial development of a project, including identification of sites, obtaining environmental clearances and allocation of energy sales. The Government then transfers the project to the winner of an international competitive bidding process. A number of new projects exceeding 20 million tpa are in various stages of development (Figure 4).

The Government has also commenced a process of issuing coal leases to private industry. Examples include companies like Reliance and EMTA – groups who have been active in mining on previously allocated Government blocks. International mining houses, such as BHP Billiton, Rio Tinto and Vale, are also investing heavily in the market, with varying degrees of success. The use of contract miners has also increased significantly in recent years: many CIL subsidiaries have outsourced mining activities, such as coal mining or overburden removal, to contractors. Local and foreign contractors are now increasingly common.

Revolutionising the Indian mining industry

A large number of mines remain small scale, and many have limited mechanisation. But the majority of these mechanised mines have large numbers of small capacity fleets, often a mix of equipment types and subcontractors operating them, resulting in inefficiencies and limiting production capacity. Over the past several years, however, there has been a seismic shift within the industry. This change is largely due to pressure on the companies to produce more, but it also reflects the changes within the Indian economy and business environment. The Indian mining industry has a growing expectation of mechanised, efficient production. Management accountability, safety standards and product quality have all been increased significantly. At the same time, there is a greater emphasis placed on reducing both cost of production and unit costs.

To achieve these improvements in mining efficiency and product quality, there has been a huge increase in capital investment across the entire industry. These investments include higher capacity mining equipment, improved product processing capacity, and more efficient and higher capacity final product transport to the customer. In September 2009, CIL announced that it was planning to commission 19 new washeries over the next five years, costing more than US\$ 600 million. Investments are not restricted to coal. The UK-listed Vedanta Group is a large way through a US\$ 10 billion expansion project. This expansion will add significant capacity to its minerals operations, pushing its production of zinc, lead, silver, aluminium and copper to new levels.

As part of the Vedanta expansion, the Hindustan Zinc's Rampura Agucha mine has recently commissioned 17 Komatsu 830E AC drive dump trucks (Figure 5). These are the first AC drive trucks in India and have the largest payload, 230 t, of any Indian mine. This is just the start of the trend towards such large equipment, as production targets increase and production efficiency and cost/t become increasingly important across the industry. Many of the mines feeding the UMPPs will have production

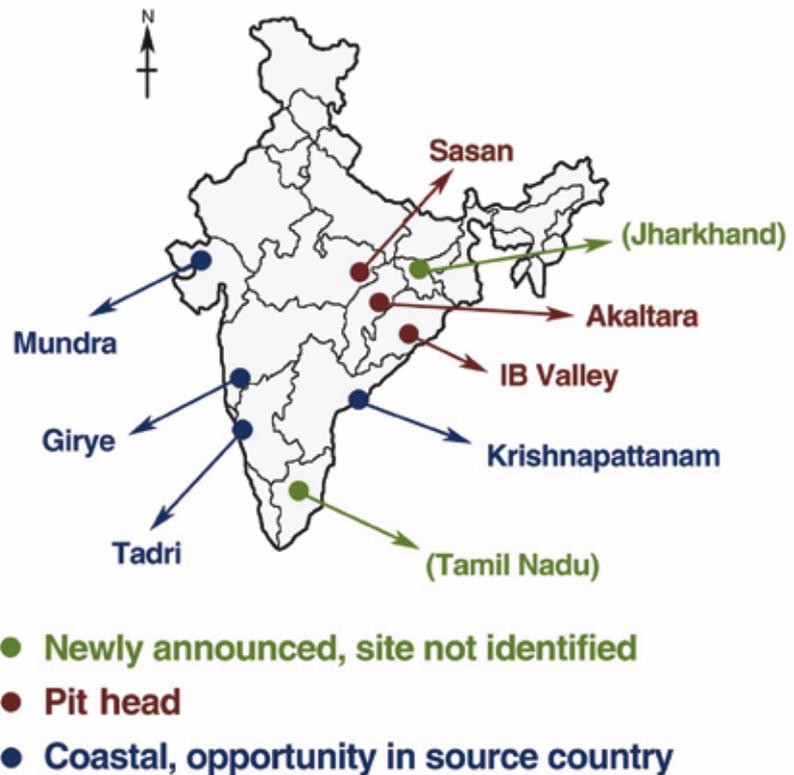


Figure 4. Some of the identified UMPP locations.

in excess of 20 million tpa, and will use equipment of this, or even higher, capacity.

Another key change in the Indian mining industry over recent years has been the broader adoption of technologies, such as the Dispatch® system. Truck dispatching systems, both domestic and foreign, have been used to varying degrees of success in India for more than a decade. Fleet optimisation products are increasingly viewed as an essential part of any world class operation. Mine management appreciates the value in using this technology to optimise the output from the mine's investment, maximise production and minimise costs. Mines also see the value in safety features, such as speed management, proximity detection and fatigue management, to foster a safe work environment and enjoy the benefits that a low incident workplace have to the bottom line.

The Indian civilization has existed for over two and a half millennia. Over the intervening years the country and its people have had its ups and downs. At times during its history, India has been a world leader for both cultural influence, as well as economic power. At other



Figure 5. Komatsu 830Es under assembly at Hindustan Zinc's Rampura Agucha mine, with Modular® GPS antenna in the foreground.

times, both internal and external forces have conspired to reduce its prosperity. In 2010, India continues to ride a very large upcycle. A key component contributing to this growth is, and will continue to be, the mining industry. Massive investments, an increase in global players and improving efficiency and product quality will continue for decades to come. 