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**FEATURE – MINING EQUIPMENT**
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# MINING GAINS

The recent policy initiatives by the Central Government are expected to boost the mining activities in the country, providing new opportunities to private and global miners, and equipment and technology providers.



Photo courtesy: Tata Hitachi

**T**he Indian mining sector has been dominated by large public sector undertakings (PSUs), contributing around 70 per cent to India's mineral output by value. In contrast, the private sector mining space is largely fragmented, characterised by many small to medium-scale miners.

Mining industry in India has been on a revival path in the wake of a slew of measures taken by the government. These include privatisation of commercial coal mining and now allowing 100 per cent FDI in coal mining. This move allows foreign players enter the market with latest

technologies and create an efficient and competitive coal market. This, coupled with the Coal India's plan to acquire more number of heavy mining machinery for its mining operations is expected to open up new opportunities for mining equipment players. Iron ore mining is also picking up with more mines opening up and the government planning new mining locations for iron ore mining.

### Coal mining: Current scenario

Coal mining in India has been dominated by PSUs such as Coal India, Singareni Collieries Company and

Neyveli Lignite Corporation. With the current coal demand is on the rise in the country, the coal mining PSUs are looking forward to scale up output in the coming years. Also the private participation in coal mining in the country is likely to go up with the government's recent announcements in coal mining for increased private participation. All these are expected to have a positive impact on the mining equipment market.

Hemant Mathur, Assistant Vice President–Sales and Marketing, Tata Hitachi Construction Machinery Co says, "We believe that the announcements done by the

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government should give some acceleration to the mining equipment market. The announcement of 'commercial mining' should enhance the upsizing of the equipment capacities also facilitate the entrance of new technologies to the Indian market."

**Partha Mookherjee, Head-Mining Equipment Business, Larsen & Toubro**, welcomes the new government initiative, "The recent announcement by the government to allow 100 per cent FDI in commercial coal mining is a welcome step. Though the guidelines for bidding are awaited, the intention is encouraging. With increased mineral production, especially coal, it is expected to reduce our imports and thereby savings on our import bill. For mining equipment market also, it is good news as it will open up new avenues for growth."

#### FDI in coal mining

The government's recent announcement of 100 per cent FDI in commercial coal mining has opened up the doors for foreign players to enter Indian coal mining sector. This is expected to bring in new technologies and solutions that would improve the efficiency of mining activities and reduce environmental impact. Mining



**"THE ANNOUNCEMENT OF 100 PER CENT FDI IN COMMERCIAL COAL MINING SHOULD FACILITATE THE INTRODUCTION OF GLOBAL OPERATING PROCEDURES TO THE INDIAN MINING WORKING ENVIRONMENT."**

- **Hemant Mathur**,  
Assistant Vice President - Sales and Marketing,  
Tata Hitachi Construction Machinery Co.

equipment companies are looking at the further developments in the market.

**Ranjit Ravindran, Head of Business-Mining, Voltas**, observes, "In the future, we are well poised for growth as we anticipate an increase in the number of domestic and international players due to the 100 per cent FDI in commercial coal mining. Furthermore, the industry is

fairly traditional; it has the equipment or machinery, but lacks trained skills. In such a scenario, there is a huge opportunity for companies that are skilled at operating the machinery. This is where we see a huge potential for ourselves. We do expect PSUs offloading the operations of their machinery to companies like us, where we take on the complete job, right from maintenance to operations."

Mathur says, "We expect that the announcement of 100 per cent FDI in commercial coal mining should facilitate the introduction of global operating procedures to the Indian mining working environment, thereby helping us better the existing way of working. This may also introduce new technologies for heavy earthmoving machines to India.

However, Mookherjee is of the view, "In order to make the mined coal commercially viable, we expect the successful bidders to adopt the latest technologies. This is welcome news to global players who are at the forefront with cutting-edge technologies and services."

According to **Jayanta Roy, Senior Vice President & Group Head-Corporate Sector Ratings, ICRA**, over the medium to long term, this is likely to result in faster ramp up of coal production, helping gradually reduce India's import dependence. Moreover, he adds, "the enabling provision for 100 per cent FDI opens the doors for global coal miners to invest in India, which can benefit the sector in the long run through increased technology adoption and mechanisation, thereby helping the industry achieve better operational efficiencies."

Roy also foresees some opportunities in introduction of advanced technologies as he adds, "Coal mining in India is largely restricted to a depth of 50-100 m below the surface and share of underground mining remains a miniscule 5 per cent of the overall production, much lower than its



Photo courtesy: Voltas

**Proper maintenance of mining equipment is of utmost importance.**

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Photo courtesy: Larsen & Toubro



**Komatsu PC1250 hydraulic excavator loading overburden in HD465 dump truck in an opencast project.**

international peers. Given the latest advancements in mining technology, entry of global mining players could help India progressively explore the feasibility in selectively carrying out underground mining operations to minimise the ecological impact as well as overcome challenges associated with land acquisition.”

### Iron ore mining: Opportunities

According to Roy, timely completion of auctions would help mitigate the risk of an impending iron ore shortage. With the enactment of the MMDRA Act 2015, mining leases which had expired after their first renewal following the May 2014 order of the Supreme Court, were automatically extended till March 31, 2020 (for merchant miners), and till March 31, 2030 (for captive miners). This has led to rising domestic iron ore production since FY2016. “However, as the deadline for the expiry of many merchant mines fast approaches, apart from Karnataka, progress of mine auctions in other key iron ore producing states have been slow,” he adds.

Ravindran elaborates on the



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Larsen & Toubro.

opportunities, “In the iron ore segment, we are currently witnessing a surge in demand for crushers. This is primarily due to the increased local steel demand and the upcoming auctions of iron ore in 2020. India offers a great opportunity to investors, as only less than 20 per cent of reserves have been mined so far. Going forward, we are optimistic of staying on this upward growth trajectory as India has large reserves of iron ore and our expertise is highly

sought-after in the industry.”

Mathur explains the upcoming trend, “After the downturn, equipment buying for iron ore mining has stabilised. Also, majors like Tata Steel who has acquired Bhushan Steel, are working on capacity additions in the sector. We observe that many of the mines which are coming up for renewals, are going in for the auction process which is a good move as this will make the allocation process more transparent. However, we have to see what the response from the operators is, once the process starts.”

According to Mookherjee, the gradual increase in per capita steel consumption in India ensures that India’s steel demand is improving at a healthy pace. “However, iron ore mining in India has faced a lot of challenges in recent times. We expect that the renewal of some mining leases in Odisha vide the auction process is an excellent opportunity for government to showcase that good intentions can be coupled with smooth execution. We are keeping our fingers crossed and hoping that the process is completed smoothly and timely, to avoid any disruption in iron ore mining.”

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## Challenges

Mining has always been associated with a lot of challenges in terms of environment, land acquisition and rehabilitation, and policy regulations. Ravindran elaborates on the challenges, "Some of the key challenges facing contractors are liquidity, operating margins, poor credit ratings, frequent policy changes by government, environmental diktats, unrest in displacement of villages and pollutions in mining area. Moreover, the mining industry is known worldwide for its highly risky and hazardous working environment. Research so far in the area of safety has revealed that the majority of incidents in hazardous industry take place because of human error, the control of which would enhance safety levels in working sites to a considerable extent."

In order to overcome these challenges, various measures are needed. Ravindran adds, "Because of the unique dangers in mining operations, workers need extensive safety training. Mandatory and optional training is widely available to professionals, rapidly raising the safety



**"IN THE IRON ORE SEGMENT, WE ARE CURRENTLY WITNESSING A SURGE IN DEMAND FOR CRUSHERS."**

- Ranjit Ravindran,  
Head of Business-Mining, Voltas.

standards of this industry. Some of these safety initiatives are compulsory training programs for miner, prevention through simulation, blasting licence, safety legislation, technology standard, personal protective equipment, exploitation infrastructure, and machinery to replace operators for the most dangerous operation processes."

Mathur comments on the challenging factors, "We understand that there has been a lot of industry feedback to the government on the

ongoing challenges in mining operations. We expect the government to have factored this while formulating new policies. Hence, the hurdles should be limited. But then we have to wait and watch."

The environment related issues is one of the major challenges for the mining operations. However, the government is working in this direction to minimise hurdles in the environment-related approvals. "Environment has been a cause of concern traditionally. We expect that the relaxation in the regulations related to environment will enhance the investor confidence in the sector, and lead to faster executions of the mining projects," says Mathur.

## Technology for efficiency

Technology plays an important role in improving the efficiency of operations, which leads to operational economy. This also improves safety and productivity of mining operations. So it is imperative for the Indian mining sector to adopt new technologies and methods to bring in efficiency and productivity in mining.

"There is a need for the Indian



Photo courtesy: Larsen & Toubro

Increased technology adoption and mechanisation help industry achieve better operational efficiencies.

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Photo courtesy: Tata Hitachi



**Technologically advanced equipment and solutions can bring in efficiency in mining operations and reduce environmental impacts.**

mining sector to be more data and technology driven. With the introduction of robots and drones as a part of the workforce, while artificial intelligence, 3D simulations and 3D printing continuing to provide cutting edge solutions to the industry, it is imperative to use this to make mining safer and more sustainable activity," says Ravindran.

According to Mathur, technology has been evolving over the years to make the equipment efficient, safe and environment-friendly with lower operating costs. He adds, "Hitachi's introduction of the AC drive systems on dumpers has made them safer and more efficient with operating costs as low as 30 per cent as compared to any mechanical drive dumpers. Excavators with AC drive motors have replaced the engine drive which results in better operating cost as well as being environment-friendly."

### Technology trends

With the demand for minerals growing, the miners in the country are looking for more productivity in their operations. However, the adoption is slow and needs to pick up. Ravindran says, "Across the field, there is a major focus on productivity improvement, cost efficiencies and safety while reducing the environmental impact of mining. At the basic level, mine planning and design is based on new

technological software packages. Despite the rampant use of technology in the mining sector, India still has a lot of scope to infiltrate technology usage in every step of mining. For instance, intermediate technology is still being used for underground mining. As compared to global standards, the size of equipment being used in India is relatively small. Additionally, technological advancement in ore extraction techniques for proliferation of production levels has caused further concern for safety in this industry."

According to Mathur, there have been a lot of discussions around the use of technology in the Indian mines, which are in consideration for introduction.

Mookherjee elaborates on the trend, "The major purchase of mining equipment in India is by public sector undertakings. They continue to procure on L1 basis which unfortunately pits a technologically advanced equipment against its obsolete counterpart. This absence of quality-based assessment and selection process disincentivises the manufacturers of mining equipment with advanced technologies and features, from participating seriously in such a large market segment. If Indian mine owners, including PSUs, want to take advantage of such latest technologies to improve their productivity and lower their cost of production, they must replace the L1-based procurement with quality-based cost systems."

### Mining Scenario

- Major portion of the total mineral reserves in India are unexplored
- In mining, share of coal remains the highest at 39 per cent by value and iron ore at 10 per cent
- 100% FDI in commercial coal mining opens the doors for global coal miners to invest in India
- Increased technology adoption and mechanisation, opportunity to mining equipment companies
- Coal contract mining market size to grow four-fold by 2030 from FY'2018
- Iron ore production on the rise from 2016 due to pick-up in mine auctions
- Govt plans policy push to attract more investments in mining

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### Digitalisation in mining

Digital technologies help in better exploration and production of minerals. According to Ravindran, digitisation of mines has helped develop smart mines. These mines are intelligent, connected, analytical, and overall help in supporting sustainable mining. He adds, "IoT and automation are likely to continue creating a major impact on the mining sector. Some of the few impacts vary from automating maintenance and machine operations, improving visibility, ensuring safety of not only people but also the equipment and in the overall shift from preventive to predictive maintenance. Today, technology based on long range wireless communication, sensors and smart gateways are helping in building smart solutions to mining activities in terms of safety and environmental safety."

According to Mathur, IoT and automation have a long way to go in the Indian mining market as these make the operations capex-expensive.

Mookherjee explains, "The philosophy behind continuous technological development is to eliminate the inefficiencies and lower the cost per tonne of material production. In this direction, Komatsu through its R&D initiatives is at the forefront of cutting-edge technology. Futuristic machines like autonomous



**"COAL MINING IN INDIA IS LARGELY RESTRICTED TO A DEPTH OF 50-100 M BELOW THE SURFACE AND SHARE OF UNDERGROUND MINING REMAINS A MINISCULE 5 PER CENT OF THE OVERALL PRODUCTION, MUCH LOWER THAN ITS INTERNATIONAL PEERS."**

- Jayanta Roy,  
Senior Vice President & Group Head-Corporate  
Sector Ratings, ICRA.

haulage system are already a reality at Komatsu. Similarly, Komatsu has invested heavily towards mines management system for effective analysis of the huge amount of data generated by the machines and convert it into useful information.

### Way forward

Mining has been challenging in India compared to other types of

operations due to the risks involved on safety, environment and policy related issues. However, mining has to pick up as demand for minerals grows and relying more on imports is not a wise options since we have abundant reserves of minerals in our country. According to Ravindran, as the PSUs perform better, the mining scenario picks up. He adds, "All PSUs such as Coal India, NTPC, SAIL and NMDC, are likely to increase production, and this is predicted to boost the buying sentiment in the mining industry."

Mathur is of the view, "India as a country has abundance of minerals available: be it fuel or non-fuel minerals. The mining sector has been contributing to the national GDP. Therefore, we feel that the future is bright for the Indian mining industry."

India is blessed with rich deposits of many key minerals, which are essential for human population, according to Mookherjee. He adds, "We are amongst the top producers in the world for coal, limestone, iron ore, etc. However, the per capita consumption for all such minerals is much below the global averages. With increase in per capita income, increasing disposable income and higher aspirations of a young population, the demand for minerals is expected to rise at a faster pace. This optimistic scenario augurs well for Indian mining sector. There may be short-term challenges, but considering a long-term view, Indian mining sector and mining equipment manufacturers have a bright future in India."

Globally, mining operations and technologies have advanced leaps and bounds. However, in India, technology has to pick up in its real sense to compare with global standards. With the steps from the government such as 100 per cent FDI in commercial coal mining and a proper execution agenda can bring in new opportunities for mining equipment sector.



- SUDHEER VATHIYATH

Photo courtesy: Voltas



Skill development and hands-on training can improve the operational efficiency.