

India, the world's third largest iron ore exporter, suffering from shortages

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Last year, JSW Steel, India's second largest private steelmaker, based in India's southern state of Karnataka, expanded its capacity to 10 million tons. However, it could not celebrate the expansion. In July and August of 2011, the Supreme Court ordered the suspension of mining and transportation of iron ore in Karnataka, and JSW Steel took a direct hit. In September, the Court asked the National Mineral Development Corporation (NMDC), a state-owned miner, to annul all long-term contracts with steelmakers in Karnataka and start selling only through e-auctions. In October, the Central Bureau of Investigation (CBI) searched JSW Steel's offices on suspicion of illegal iron ore procurement, sending JSW Steel into a panic. The operating rate of JSW Steel, which has no captive mines as do Steel Authority of India Ltd. (SAIL) and Tata Steel, dropped to 30-40%. JSW Steel took emergency measures that pushed its operating rate to 63% in October and 84% in December. However, it could not avoid net deficits of INR 6.7 billion in the second quarter (July to September) of 2011.

In East and South India, small-scale steelmakers without captive mines and sponge iron makers are on the brink of bankruptcy. The All Orissa Steel Federation (AOSF) has warned that if the problem is not solved soon, all of its 300 member companies in the steel industry will be forced to shut down in the next three to six months. This is also true for the 105 sponge iron makers in Chhattisgarh. Approximately 20 sponge iron makers have been shut down since October of 2011, and others are reducing their production by up to 60%. This is attributed to the government of Orissa ordering dozens of iron ore mines to shut down in order to combat illegal mining and prohibiting the transportation of iron ore between states.

○ ● **Reining in illegal mining, a direct blow to supply**

India is blessed with the perfect natural conditions for the development of its steel industry. First of all, it has high iron ore production. In 2010, India was the world's fourth largest iron ore producer, with 212 million tons, and the world's third largest iron ore exporter after Australia and Brazil. Although in limited amounts, India produces its own coking coal, which is used for fuels for iron making. The country also has the world's fourth highest demand for steel materials, at 60 million tons. Amidst such favorable conditions, steel production increased and India emerged as the world's fourth largest steel powerhouse. However, the severe supply shortage of iron ore in recent years is threatening the development of the steel industry. In September of 2011, mining production decreased by 7.1% year-on-year; mineral production from April to November of 2011 decreased by 2.5% year-on-year.

What caused the decrease in the domestic supply of iron ore in India? The first cause was the all-out efforts of the central and state governments to eradicate illegal mining. Corruption related to mineral exploitation has been a chronic problem for many decades. When large-scale illegal mining scandals broke out beginning in 2008, public opinion became

unfavorable, and the Indian government began to take countermeasures. The Karnataka Chief Minister and other ministers either resigned or were arrested. In the end, the Supreme Court resorted to taking special measures—prohibiting the mining and transportation of iron ore. The government of Orissa refused to renew 70 mining leases, and more than 200 applications for mining leases are currently pending. Only 116 out of a total of 600 mining leases in the state are currently in effect, while 242 mines have been suspended, and

Indian steelmakers are preparing in their own ways for iron ore shortages. While looking for ways to import iron ore, JSW Steel and Essar are trying to find ways to develop and produce iron ore overseas.

158 others have been temporarily closed. In order to prevent any potential illegal mining activities, the government of Orissa is trying to digitalize mining-related affairs, and has ordered mine operators to submit documents stating iron ore transactions. Illegal mining is a serious problem not only in Orissa and Karnataka, India's largest and second largest iron ore producing states, but also in Goa, India's fourth largest iron ore producing state. With virtually no in-state steelmakers, Goa exports most of its iron ore. One NGO claims that 43% of the iron ore produced in Goa in 2010 was illegally extracted.

In order to control rampant illegal mining practices, the CBI is probing into illegal mining, and the Supreme Court has appointed various commissions and organizations to find out the reality of the situation. Based on the reports, the Supreme Court is expected to hear the case in full.

Environmental issues were another cause of the decrease in the domestic supply of iron ore in India. So far, the Ministry of Environment has canceled the mining leases of state-owned iron ore companies in Karnataka and delayed allocation of new mining leases for environmental reasons. The

Production and export of Indian iron ore

(Unit: 1 Mil. Ton)

	1996	2000	2005	2008	2009	2010
Production	68.2	80.8	165.2	222.1	218.9	212.0
Exports	29.5	37.5	89.3	95.6	111.8	97.6
Share of exports	43.3%	46.4%	54.1%	43.0%	51.1%	46.0%

Source: *Steel Scenario Yearbook 2011*

Supreme Court banned all mining activities in the state for fear of severe environmental damage. The Supreme Court commissioned the Indian Council of Forestry Research and Education (ICFRE) to carry out an environmental impact assessment; the report released by the ICFRE recommended restricting iron ore mining in the state to 30 million tons per year. As the state's iron ore production was 48 million tons, the state is expected to take measures to reduce production. Another report concluded that the state of Goa, where tourism is the major industry, should restrict the production of iron ore to 20 million tons for the next five years in order to preserve the ecosystem and lessen negative social impact. As production in 2009 was 31 million tons, Goa is expected to take measures to reduce production.

Particularly in Chhattisgarh, Naxalite activities and resident protests are wreaking havoc on iron ore mining and transportation. The chairperson of SAIL said that Rowghat Iron Ore Project (with about 500 million tons of reserves) is being delayed in Chhattisgarh because of threats from the Naxalites. If this project fails to stay on schedule, SAIL's plan to expand the capacity of Bhilai Steel Plant, its largest steel plant, will be hampered. The operation of the 450km Kirandul-Kotavalasa (K-K) Line is often suspended due to local Naxalite activities, and iron ore slurry pipelines installed by

Essar Steel have been damaged by Naxalite attacks. The 267km pipeline connecting NMDC iron ore mines in Chhattisgarh to the pellet plant in Andhra Pradesh has been attacked as many as fifteen times since 2005, and has been out of operation since October of 2011. Recently, NMDC's production and transportation of iron ore were suspended for almost ten days. This is attributed to protests for better railway connectivity, staged by a group of youths under the ruling party of Chhattisgarh, Bharatiya Janata Party (BJP), and to the Ministry of Railways' refusal to provide rakes to NMDC for security reasons.

○ ● **Companies going overseas due to government restriction of exports**

After the operating rate of JSW Steel dropped to 30-40%, the Supreme Court took temporary measures. The Supreme Court ordered the state-owned NMDC to supply one million tons of iron ore per month to Karnataka-based steelmakers, and directed the sale of existing stocks of about 25 million tons of iron ore across many mines through e-auctions (up to 1.5 million tons per month). By the end of last December, seventeen e-auctions had taken place, selling 11.27 million tons of iron ore. JSW Steel has purchased 7.1 million tons of iron ore in e-auctions, only 40% of which has been provided due to poor distribution. In the past, JSW Steel bought iron ore from NMDC at INR 2,880 per ton on a long-term contract basis, but nowadays the reserves are auctioned for a much higher price, between INR 3,300 and 4,330 per ton. This is the main reason for JSW Steel's decrease in profits. What is worse, iron ore stocks for e-auction are expected to run out within three to four months. If the ban on mining is not lifted, steelmakers in Karnataka will have difficulty continuing their operations.

The Indian government has raised the export tax on iron ore. The Orissa Chief Minister and various commissions and organizations demanded a sharp increase in the royalties the government charges mining

companies on iron ore, and a total ban on iron ore export in order to eradicate illegal mining. Finally the central government accepted these demands. In 2011, the Indian government increased export duty on iron ore lumps from 15% to 20%, and increased export duty on iron ore fines from 5% to 20%. On December 30, 2011, it announced plans to increase all export duties on iron ore to 30%. Given that the Indian government had previously reduced export duty on iron ore lumps to 5%, and reduced export duty on iron ore fines to 0%, in order to boost iron ore exports, the recent increase in export duty shows the severity of India's iron ore shortage. Due to the increase in export duty, the export ban, and problems with distribution in some states, iron ore exports declined by nearly 30% between April and November of 2011. The recent increase in export duty is expected to drag the country's total annual exports for the fiscal year of 2011-12 below 50 million tons.

Indian steelmakers are preparing in their own ways for iron ore shortages. While looking for ways to import iron ore, JSW Steel and Essar are trying to find ways to develop and produce iron ore overseas. These attempts are attributed to the fact that in India it is very difficult to procure prospecting licenses and mining leases. Even if they are granted, companies face many challenges, such as a long approval process, additional approvals for environment and forest diversion, and strong resident resistance. Tata Steel was the first steelmaker to enter foreign countries in 2008, followed by private and state-owned steelmakers. Even SAIL, which has numerous captive mines, is rushing to secure overseas iron ore mines. The most notable plan within this trend is a plan by a consortium of seven Indian steel producers, led by SAIL, to discover 1.8 billion metric tons of iron ore reserves in Hajigak, Afghanistan. The Indian consortium won a bid for mining rights last year, and finalized an agreement in March of 2012.

○ ● **Waiting for the right time to enter the Indian market**

The issue of illegal mining became a main item on the agenda of the Indian government last year amidst the turmoil of the enactment of the Anti-corruption law. The issue is a barometer, measuring the government's dedication to eradicating corruption, and affects the results of ongoing State Assembly elections and *Lok Sabha* general elections scheduled to be held in 2014. The Indian government's efforts to increase transparency by modifying systems, including laws and regulations, will help to improve the business environment in the long term. However, the issue will not be resolved soon considering India's distinctive administrative process.

Therefore, Korean companies intending to enter the Indian market need to adjust their timing when entering the market, taking into consideration the schedule of modifications of systems within their fields. If companies enter India prematurely in order to secure market share, raw materials, or supply channels, they might end up involved in the chaos. 

Worsening power shortages in India due to coal production disruption

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India faced a severe power crisis in October and November of 2011. In the National Capital Territory of Delhi, and in the states of Maharashtra, Andhra Pradesh, and Karnataka, power failures have become more frequent and longer than ever before.

According to statistics released by India's Central Electricity Authority in January of 2012, the current coal stock at India's 89 thermal power stations is down by 35%, from 12.7 million tons a year ago to 8.3 million tons. Half of the 89 stations have stocks sufficient to sustain operations for seven days, while 26 power stations have stocks that can support operations for only four days. This is a critical situation for India, where 70% of the electricity consumed is generated by thermal power plants. In particular, Raichur Thermal Power Station in Karnataka has repeatedly suffered from fuel shortages since last year. As of January 3, Raichur Thermal Power Station had less than one day's coal stock and its operating rate was only 70%. This power plant, with a capacity of 1,720_{MW}, is responsible for supplying 35% of the state's total electricity.

○ ● **Prime Minister Manmohan Singh presiding over emergency meetings**

Showing just how serious the situation is, on January 18, Prime Minister Manmohan Singh met the heads of major private power firms, including Tata Power, Reliance Power, Jindal Power, and Essar, to hear their troubles. He pledged to make addressing power shortages a priority. He stated that he would respond promptly to short-term issues, including coal supply, and prepare action plans to solve the problem within one month. He also promised to come up with a comprehensive plan to be discussed at another meeting within three months. The meeting in January was attended by the Ministers of Power, Coal, and Environment, and the Deputy Chairperson of the Planning Commission, showing clearly how seriously India is taking the electricity crisis.

Since the economic reform of 1991, the Indian government has preferentially opened the electricity sector to private investment, but has failed to ease power shortages. The Indian government has implemented a plan to construct Ultra Mega Power Plants (UMPP's), with 4,000MW capacities, in order to achieve an economic growth rate of 9%. Project operators, mostly private conglomerates, have been selected for four out of the sixteen UMPP's in the pipeline. However, discontent is mounting throughout the industry, as the feasibility of the UMPP projects has deteriorated for many reasons: fuel supply shortages due to stagnant domestic coal production, and lower-than-expected domestic gas production; burdensome import costs due to surging international coal prices and abrupt rupee depreciation; delayed environment and forest clearances; and insufficient financing.

The Sasan UMPP in Madhya Pradesh, the first UMPP project awarded to a project operator (Reliance Power), delayed the start of its commercial operation from the end of 2011 to January of 2013. Tata Power started Mundra Project in Gujarat on the assumption that it could get coal from

Indonesia, but the project lost steam when the Indonesian government raised coal export prices in keeping with an increase in international coal prices. Prime Minister Manmohan Singh urged the companies involved to not be discouraged and to continue their projects, saying that he would do his best to solve their problems. The Indian government is actively addressing the issue, because India, which has a major fiscal deficit, cannot achieve its goal of expanding power generation without private investment.

○ ● **Abundant production, insufficient supply**

India is well-known for its abundant natural resources. India has the fourth largest coal reserves in the world after the USA, Russia, and China. India is the world's third largest coal producer after China and the USA, and the third largest coal consumer. India's coal imports rank fourth in the world, after Japan, China, and Korea, because increases in production have recently fallen far short of increases in domestic consumption. India imports coking coal, which is used for steel making, because of its insufficient reserves, but it also imports a great deal of non-coking coal for power generation, because domestic coal production has been stagnant. The Prime Minister's Office is worried about the gap between coal demand and coal production in the fiscal year 2011-12. With coal demand at 696 million tons and the target of coal production at 554 million tons, the difference of 142 million tons will have to be made up through imports.

Why does coal-rich India suffer from insufficient coal supply? Ignoring unseasonable weather and temporary strikes, the primary reason is the disrupted production of Coal India Ltd. (CIL), the world's largest coal producer, which accounts for 80% of India's coal production. In 2010, CIL produced 431 million tons of coal, far short of its production target of 460.5 million tons; in 2011-12, it is expected that CIL will be able to achieve neither its original production target of 447 million tons, nor its adjusted target of 440 million tons, due to heavy monsoon rains and delayed

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environment clearances. Coal production from April to December of 2011 declined by approximately 9 million tons year-on-year.

State-owned CIL changed the 50-year-old pricing system as of January 1, 2012, after failing to faithfully fulfill its responsibility

to supply coal, causing grumbling within India's coal industry. The Ministry of Coal claimed that CIL had changed the pricing system according to the Roadmap for Coal Sector Reform, and the effects of the price increases would not be too dramatic. However, coal-consuming industries, including power generation and cement, are arguing that coal prices will go up by 20-30% depending on coal grade, and as much as 50% in some cases. The Ministry of Power has officially requested that the Ministry of Coal postpone application of the new pricing system. In addition, CIL, which has about 360,000 employees, is negotiating with its labor union in order to renew their collective agreement. While CIL management has proposed a 10% salary increase, labor has asked for a 30% increase. Even if management and labor compromise, the price of coal is bound to rise.

Another fundamental problem is delays in environment and forest clearances. The chairperson of CIL claimed that 168 of its projects are pending at the federal and state levels. Of these, 67 projects are greenfield and the remaining are ongoing expansion schemes. Their estimated production totals 200 million tons of coal per annum. CIL's chairperson added that according to the stipulated procedure, forest clearances should be granted within 300 days, but the process is taking as long as six years in some cases.

In other words, it is fair to say that the main culprit in the power crisis is

the Ministry of Environment. Recently, the Ministry has denied approvals for forest land diversion for the development of coal blocks designated for Reliance Power's Sasan UMPP. The Ministry is trying to avert the public's ire over the nation-wide power crisis, saying that environment clearances should come before coal block allocation.

Distribution and security are also major reasons for the insufficient coal supply in India. When the threat of UMPP projects stopping became a nation-wide issue, the Ministry of Coal and the Ministry of Railways pointed the finger at each other. The Ministry of Coal blamed an insufficient supply of railway rakes, while the Ministry of Railways claimed that coal piled at a pithead made it hard to transport coal by railways. (CIL revealed that it had a huge pithead stock of 70 million tons, nearly two months of production, as of April of 2011.) In addition, the chairperson of CIL argued that delays in creating new lines covering the 50-100 kilometers between mines in Jharkhand, Orissa, and Chhattisgarh and existing lines is hampering the expansion of coal production. Transportation of coal in these areas depends on road only; therefore coal production stands at just 25-30 million tons. If all railways are connected, annual coal production is expected to increase to 400 million tons, according to CIL's chairperson. Problems such as insufficient harbor facilities to handle rising coal imports and poor distribution networks for plants are also standing in the way of a smooth supply of coal. What is worse, Maoists (Communist guerrillas) and coal mafia groups active in mountain areas with coal blocks often impede coal excavation and transportation.

Finally, a rush of applications for allocation of coal blocks and delays in development also make the power crisis worse. CIL has a monopoly on India's coal production (81%). Coal blocks is allowed, only for power generation, for six designated sectors, including private power generation, steel, cement, fertilizer, and sponge iron. By the end of 2010, 112 coal blocks were allocated for the private sector. Of these, only 28 coal blocks

India's coal production and imports

(Unit: 1 Mil. Ton)

	2000	2005	2007	2009	2010(e)	Annual growth rate
Domestic coal production	314	407	457	532	540	5.6%
Coking coal imports	11	17	22	23	40	11.9%
Non-coking coal imports	10	22	28	44	72	22.5%
Total coal imports	21	39	50	73	110	18.0%

Source: Ministry of Coal, India; World Coal Association (WCA)

(with a total production output of 34 million tons) have come into operation, for various reasons. This is far short of the annual production target of 140 million tons by March of 2012. About 100 new applications for allocation of coal blocks were in the pipeline from January to July of 2011; since 2008, about 1,000 applications for coal linkage have reportedly been pending at the Ministry of Coal.

○ ● Ongoing power supply disruption

India starts its 12th Five-Year Plan on April 1, 2012. The Ministry of Power plans to carry out 129 power generation projects (with a total capacity of 142,200_{MW}), 86 of which (with a total capacity of 91,100_{MW}) are private projects. Short supply of domestic coal and surging international coal prices are expected to upset this bold plan for power generation expansion. If the current situation continues, coal shortages are expected to increase to 170-270 million tons by 2017. Given that five-year plans after the 1990s, when there was no trouble with coal supply, achieved only half of their production targets, the prospect of the proposed expansion of power supply is all the more uncertain.

As a result of the disruption of India's domestic coal supply, not only private enterprises but also state-owned companies have rushed to acquire assets in overseas coal blocks. Companies, including Tata, Reliance, and Essar, acquired coal companies in Indonesia, while infrastructure companies, including Lanco Infratech and Adani, acquired coal companies in Australia. In 2008, five state-owned firms in the steel, power generation, and resource development sectors established International Coal Ventures Ltd. (ICVL), a joint venture to buy coal mines overseas, but it has achieved no tangible results to date.

The Indian government plans to take more multifaceted measures to stabilize power supply and demand. It will expand hydroelectric power generation, develop new and renewable energy, increase the efficiency of power grids, reexamine the electricity pricing system, and take other necessary measures. However, easing power shortages will not be easy because power demand continues to grow. Under these circumstances, Korean companies preparing to enter the Indian market will have to take into consideration various factors that will affect them directly and indirectly, including the costs of installing and operating their own power plants, installation of power supply stabilizers, and facility malfunction and wear. 