

IN DEPTH

India Energy Shortage Erodes Growth



Electricity outages force mustard seed farmer Satveer Singh to use a diesel-powered tractor to run his irrigation pump. "If I get more electricity," he said, "I could double my production."

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tancy BMR Advisors, whose clients include Indian and foreign energy firms.

Vast tracts of rural India lack electricity. Even in such business hubs as Delhi's suburb of Gurgaon, companies employ backup generators because of regular outages. Factories are forced to curtail production. And vehicles that require refrigeration go bad because of spotty service.

A shortage of coal, which accounts for more than half of the nation's energy supply, is crippling the power sector, forcing companies to delay the opening of multibillion-dollar projects. India in April announced an 80% jump in coal imports for the fiscal year ended in March, to \$17.6 billion. But many plants still run below capacity for lack of coal.

After top power companies lobbied Prime Minister Manmohan Singh, the government in April issued a presidential directive ordering Coal India Ltd., India's state-run monopoly, to increase production or imports. Officials also cut India's electricity generation target for the next five years by 25%, reflecting worries the coal shortage will continue. The government had looked to natural gas. But a production shortfall at the nation's largest known gas field—operated by Reliance Industries—has India racing to increase gas imports.

India now imports three-quarters of its oil, and the price tag has been growing. The import bill was \$141 billion in the past fiscal year, a 41% jump over a year earlier. As global oil prices have declined, India's crude-oil import costs have decreased about 15% in dollar terms since January. But the rupee has depreciated 15% over that time, canceling out the gain.

New Delhi is the second-largest importer of Iranian oil behind China, but will increasingly have to look for alternative suppliers in light of U.S. and European sanctions. India has already reduced Iranian oil imports from 16% of total crude purchases in 2008 to about 10%. The government pledged to reduce purchases an additional 1% in the current fiscal year. Washington last month exempted India along with some other countries from new sanctions.

Domestic oil fields are maturing, production is barely increasing, and companies complain regulations are stifling. Cairn India Ltd., India's largest private oil producer, said in March it might scrap a \$6 billion spending plan after the government proposed an 80% increase in taxes on its production.

"We are headed 100 miles an hour into a brick wall on energy security unless we do something radically different," said Rahul Bhat, Cairn India's chief executive.

Plans to boost nuclear energy production faltered after the Indian Parliament passed a law that foreign equipment suppliers say would burden them with liability after accidents, rather than plant operators, which is the international standard. Environmental protests after the Fukushima disaster in Japan last year also have delayed the opening of new nuclear plants.

"Are we doing enough to produce our own energy?" said Montek Singh Ahluwalia, deputy chairman of the government's Planning Commission. "The short answer is that we need to do more."

Energy imports will be costly for India's already shaky public finances, economists say, and the government will have to pass on higher costs to consumers and businesses.

That won't be easy. Residents depend on government subsidies to lower prices for electricity, auto fuels and cooking gas.

Last month, Standard & Poor's cited India's yawning 5.8% budget deficit and inability to reform fuel subsidies as reasons it was considering downgrading the country's debt from investment-grade to junk status. Fitch, another ratings firm, later joined S&P in cutting its outlook on India's sovereign debt from "stable" to "negative."

"India has a very distorted system of subsidies," said Jaipal Reddy, minister for petroleum and natural gas. "But how, in a vibrant democracy like in India, do you change the system suddenly?"

Shortages of coal, oil and natural gas will require India to import increasing amounts of high-cost fossil fuels.

The country's energy crunch can be overcome, he said. "We'll have to pay for more, that's about all. It does not weaken the long-term growth story."

Coal shortages are largely a result of Coal India's inability to produce enough. The state-controlled firm said in April that production in the fiscal year that ended in March was 435.8 million tons—1% more than the previous year but 16% short of the target set by India's Planning Commission.

At the end of March, 32 power plants had coal stocks described as "critical" by the government—less than seven days' worth—and two dozen plants were running at less

than 60% capacity.

Coal India needs to accelerate exploration, step up mining operations, improve its rail delivery system and spend some of the \$8.8 billion in cash on its books to upgrade equipment, according to a recent draft of a government audit. Coal India didn't respond to a request to comment.

In Bharli, a village about 100 kilometers west of New Delhi, pharmacist Ram Singh Lahaach said he routinely throws away tetanus and rabies vaccines that go bad in a refrigerator that gets only a few hours of electricity a day. Down the road, mustard seed farmer Satveer Singh has a water pump to irrigate his fields. But he gets only about two hours of electricity during the day and five or six at night.

Mr. Singh hooks his water pump up to a tractor that keeps it running for several more hours—with the cost of diesel fuel eating into his \$120 monthly income. "If I get more electricity," he said, "I could double my production."

A few kilometers away, a 1,320-megawatt power plant built by Hong Kong-based CLP Holdings Ltd. has sprung up, along with housing for 2,500 workers. The first of two \$60-megawatt units was ready in January but has been mostly idle for six months because of a lack of coal. CLP said at best it would likely get 60% of what it was originally promised from Coal India and would either have to import coal or run the plant well below capacity.

Rajiv Mishra, CLP's managing director in India, said in recent months he would start his day by asking how many rail wagons of coal had arrived. The second power-generating unit is ready but the firm won't start operations without reliable supplies, according

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to CLP, which has invested \$1.3 billion in the plant.

"In India we just don't solve a problem until it becomes a crisis," Mr. Mishra said. "We have done what was our responsibility, which is build one of the country's largest plants on time. But obviously full-scale operation depends on getting sufficient coal supplies."

At Coal India's mine 1,130 kilometers away in Jharkhand state, 15 men worked in a 120-meter-deep pit on a recent afternoon, digging coal with bulldozers and hauling it across dirt roads in dump trucks. The coal was loaded into rusted train wagons for its three-day journey to the CLP plant.

Workers, who wore scarves against the dusty air, said aging equipment slows their work. They also face security threats from leftist militants who want a share of the mining profits. The militants, part of a broader Maoist movement in India, issued 22 threats last year that forced the Jharkhand mine to shut down—usually for two days at a time, mine officials said.

The coal shortage is holding London-listed Vedanta Resources PLC, which is building a 2,400-megawatt power plant in the eastern state of Orissa. Coal India said it could deliver only half the supply promised in 2006, before construction started. "If we'd known this fact," said Abhinav Patel, the plant's chief operating officer, "we would never have invested in this."

After spending \$2 billion on the 1,130-hectare complex, company officials said they had no choice but to accept a reduced supply. The plant's three operating units are running at 65% of capacity.

The residential director in April requires that Coal India supply at least 80% of what it promised plants or face financial penalties. Coal India's only choice is to ramp up imports.

To expand production, the Indian government has allowed some coal mines to private firms. But at 184 private mining blocks is used through April of last year, only 28 were running. Many companies face delays in obtaining environmental permits from the government. The government has said it is the companies that are dragging their feet getting mining operations up and on.

Natural gas—which is used in public transportation, cooking fuel and the making of fertilizer—has its own trouble. India was banking on a \$5.6 billion project in the Bay of Bengal off India's east coast. Reliance Industries discovered the gas in late 2002, an apparent energy bonanza.

Output was projected to reach 2.8 billion cubic feet per day in the fiscal year that began April 1. Instead, output is now about 1.65 billion cubic feet a day and could fall to 600 million units in the next two years, the company said.

India's efforts in April to strike a long-term gas supply deal with Qatar faltered over price, about \$20 per million British thermal units, or more than triple the cost of Indian domestic gas.

Exploration for gas and oil discoveries isn't going well. Since 1998, the government has issued 57 exploration blocks to companies through competitive bidding. Only three blocks have gone into production.

Interest in India is waning among the global oil companies that dominate exploration: Eight of the 37 companies that bid in the last round of auctions were foreign companies, down from 21 in 2008.

Mr. Reddy, the oil and gas minister, said he was considering allowing firms to sell what they produce at higher prices to attract more investment. Companies complain that government price caps are too low.

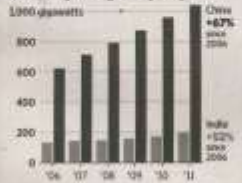
Policy makers are resigned to costly imports for now. "In all probability the import dependence in primary energy is going to increase," said Mr. Ahluwalia of the Planning Commission. "The real issue is, 'Can we pay for that energy?'"

—Andrew Browne in Beijing and Arun Chandra in Jharkhand, India, contributed to this article

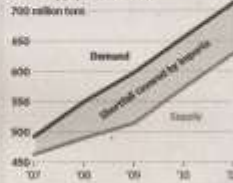
Lining Steam

Shortages of coal, oil and natural gas threaten to slow India's growth in coming years and force increasing amounts of costly energy imports, putting the country in competition for fossil fuels with China, Japan and South Korea.

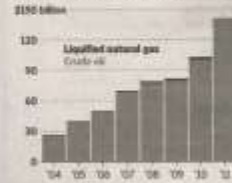
National power grid capacity



Coal supply vs. demand



Oil and natural-gas imports

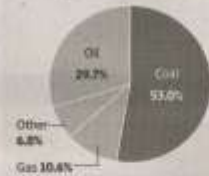


Note: India data are for fiscal years that start in the year indicated and end the following March 31. China data are for the calendar year. *Extrapolated

Sources: Indian Ministry of Power; China National Development and Reform Commission; Airline Commission; Indian Petroleum Ministry; Coal Ministry Annual Report; India Planning Commission

Powering India

Indian energy consumption by fuel type



Note: Percentages don't add to 100% due to rounding. Source: BP Statistical Review of World Energy 2011. The Wall Street Journal

Right, a CLP Group power plant is running below capacity because of a lack of coal to fuel operations. Below, a mine in Jharkhand state supplies coal to the CLP plant, but has suffered shutdowns due to threats from leftist militants.



Online

Watch a video about the impact of the energy shortage in India and see photos at WSJ.com/World

