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India's Energy Outlook

India's energy demand, fueled by economic growth projected at 6 percent per year or more, is one of the two fastest growing in the world. India's key energy policy goal in the next decade is to improve energy management. Success in this effort will buy time for expanding sources of supply, a task that requires both deft diplomacy and a more user-friendly business environment in India. For the time being, Enron's difficulties will discourage investment in India's energy infrastructure.

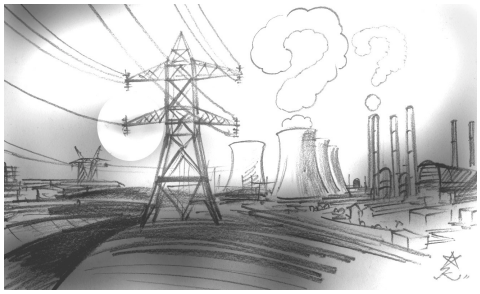
Today's Strategy: For four decades, India's state-run electrical system sought to expand power at minimum cost to the poor. As of 2000, India's electricity system extended to 87 percent of India's villages, but only to one-third of rural households. India's first wave of economic reforms added financial soundness to the list of priorities. Since 1991, India has opened up electricity generation to the private sector, with incentives for foreign investment; encouraged "unbundling" of energy transmission, distribution, and generation; and established a national regulatory commission, while encouraging the states to do the same. India's strategy for improving energy management focuses chiefly on the State Electricity Boards that supply power around the country.

To expand supply, the central government has contracted for imports in the Middle East and begun to form partnerships with possible future suppliers in Central Asia. The state-run Oil and Natural Gas Corporation (ONGC) increasingly seeks joint exploration ventures with foreign companies. The government has encouraged a long-term shift toward natural gas.

Managing of India's Electricity: The electricity sector is by law entrusted chiefly to India's State Electricity Boards (SEBs), all of which have been in financial trouble. Indian government figures show SEB transmission and distribution losses at 23 percent in 2000, but experts suspect losses are underreported. The World Bank estimates that in 1997-1998 commercial losses of the SEBs and state generating companies came to $3 billion. Estimates of the cost of producing the additional electricity India needs start at $200 billion per year. Successful reforms would delay some of this need for new capacity.

India's 2001 budget highlighted power sector reform, and the prime minister convened a meeting of chief ministers a few days after the budget speech to start developing state-by-state reform agreements. The results are not yet clear. The reforms center chiefly on restructuring the SEBs, eventually privatizing some parts of their operations; improving fee collection; and tackling the "third rail" of Indian politics, subsidies to consumers.

Most states are exploring "unbundling" the state power corporations into more manageable and efficient units. Maharashtra's energy review committee has recommended splitting its SEB into separate, state-owned transmission, distribution, and generation companies. That move followed similar "corporatisation" of SEBs in Orissa, Andhra Pradesh, Uttar Pradesh, Haryana, and Karnataka. Going a step further, Andhra Pradesh and Karnataka have decided to privatize distribution. These are theoretical decisions, however; little has changed on the ground.



Fee collection means metering. Rajasthan, one of the poorest states, aims to install meters at all feeders by September of this year and to have 100 percent metering by June 2002. This commitment to reform distribution helped land the state a $180 million loan from the World Bank. Tamil Nadu has formed "anti-power theft squads," bringing many theft cases to court. An aggressive audit program in the city of Ahmedabad in Gujarat, recovered $3.12 million in 1999-2000 from power theft cases. Karnataka, known for its electronic industry, is installing 4 million electronic meters and decentralizing payment collection. Uttar Pradesh lags behind; one-third of its consumers are unmetered.

Reform involves political risks. According to 1998-1999 budget estimates, India's power subsidies amounted to $4.2 billion. Take the widespread practice of providing free power to farmers. Analysts argue that farmers would willingly pay if power supply was more reliable. Even in the reform-oriented Andhra Pradesh and Tamil Nadu, however, political leaders are reluctant to take that chance. Those who steal electricity are often well-connected, making energy audits and elimination of theft difficult. The central government has offered incentives for SEB reform, but the process will be slow and uncertain.

Dabhol – A Test Case for Foreign Investment? The troubled Enron project at Dabhol in Maharashtra, the largest independent power project in the world and the largest private foreign

investment in India, put the spotlight on the difficulty of reforming the power sector. Its controversial 1993 operating agreement was renegotiated in 1995 when a new party came to power in Maharashtra. In late 2000, the Maharashtra State Electricity Board (MSEB) defaulted on $48 million of payments and terminated purchases from the plant, citing high tariffs. As of the end of August 2001, MSEB's efforts to renegotiate yet another fee structure had failed, Enron appeared to be moving toward terminating its power purchase agreement, and the fate of the payments still owed to Enron was still up in the air.

Enron executives with Shiv Sena leader Bal Thackeray

Enron was caught in the tempests of Maharashtra politics. Enron's large size and pioneering status made it a lightning rod. The project's Achilles heel was the weakness of the MSEB. Dabhol's pricing structure required MSEB to pay for larger up-front capacity in return for cheaper power at higher volumes. When power demand fell short, this became unsustainable. Enron's corporate shift in emphasis away from power generation to power trading made it harder for both sides to conclude a complex and controversial negotiation The central government, having given Enron a contingent guarantee for the project, agonized over the precedent involved in bailing out a troubled SEB. Even if the Dabhol project survives, it will serve as a cautionary tale about private investment in the Indian power sector.

Oil Supply: According to the U.S. Department of Energy (DOE), oil and gas constitute 63 percent of India's primary energy consumption, and that percentage is likely to grow. DOE estimates India's 1999 oil demand at 1.9 million barrels per day, and DOE expects it to rise to 5.8 million by 2020.

India's domestic oil production has limited prospects for growth, so increasing demand must be met from abroad. Foreign oil has increased from 40 percent of the Indian market in 1985-1986 to 66 percent in 1999. Oil imports account for almost half of India's trade deficit. India's major oil suppliers at present are Saudi Arabia, Kuwait, and Iran. India's recent efforts to improve relations with Saudi Arabia and the Persian Gulf oil producers reflect their major supply role. Looking further ahead, India's Oil and Natural Gas Corporation (ONGC) has been trying to expand its overseas relationships, with joint ventures in Iran, Iraq, Tanzania, and Vietnam. These have not yet resulted in new supplies reaching the Indian market, but they reflect a view widespread in India, especially in military circles, that energy supply may be a future constraint.

Iran-India Natural Gas Pipeline: Politics have inhibited energy trade within South Asia, despite the countries' complementary needs. Once increased trade takes hold, it could bolster stability. The 1960 Indus Waters Treaty, which settled the water dispute stemming from partition, has survived two India-Pakistan wars.

Natural gas is India's fastest growing fuel source. Consumption has risen from 0.6 trillion cubic feet (tcf) in 1995 to 0.8 tcf in 1999, and is projected to grow at 6.5 percent per year. India imports liquid natural gas (LNG) from Oman to run the Dabhol plant, and plans to expand its LNG infrastructure. In June, Indian and Iranian officials met to discuss a possible Iran-India pipeline that has been under discussion for many years. An overland route through Pakistan is likely to be far cheaper than an offshore project. A study by Reliance Industries estimates that a pipeline could eventually halve natural gas prices in India. Published estimates suggest that Pakistan could collect as much as $500 million annually in transit fees. Pakistan and India have both resisted becoming economically dependent on the other. A pipeline agreement that protected India, Pakistan, and Iran against politically driven disruption of flows, however, could have both economic and political benefits.

India would like to import gas from Bangladesh. Oil company experts' belief that substantial new resources are waiting to be developed is bolstered by a recent Petrobangla-U.S. Geological Service survey. Present government policy precludes gas exports, and export to India is controversial. Once the new government is in power after the October 1 elections, deft Indian diplomacy may be able to improve the odds for a favorable decision. Gas pipelines from Central Asia would have to pass through China or Pakistan and thus are unfeasible in the immediate future.

Domestic Supply: India is the world's third largest producer of coal. In 1995, coal generated 70 percent of India's electricity, and coal is expected to maintain a major role well into the next decade. India's coal mining has been exclusively in the hands of government companies and is highly inefficient. Even with a large domestic production base, India is a net importer of coal. Coal-bed methane energy has tantalizing possibilities, but these can only be realized with a major research investment.

Hydroelectricity supplies 16 percent of India's power, according to the World Bank. India's hydroelectric resources are located in areas difficult to exploit for political and ecological reasons. Nuclear energy accounted for 2 percent of India's electricity supply in 1999, and is unlikely to become a major factor in electricity supply in the next decade.

The Path Ahead: Petroleum Minister Ram Naik on June 13 announced a drive to formulate a national energy policy within the year. All the evidence suggests that energy management – technical and financial – is a more important constraint for India than energy supply for the next ten years. But most important of all will be the government's implementation of decisions already taken, especially those involving the business environment and the financial soundness of the SEB's. These governance issues will affect India's energy and economic outlook more profoundly than its energy policy does.

Jaideep Singh and Teresita Schaffer

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South Asia Program • Center for Strategic and International Studies
1800 K Street, NW • Washington, DC 20006 • Tel: (202) 775-7323• Fax: (202) 775-3199 • www.csis.org