



Mismanagement In Indian Power Sector

Asit K Biswas analyses the policy paralysis that besets electricity generation, impacting economic and social development in a big way

Early August more than 10% of the world's population suddenly found out that they have no access to electricity. A large-scale failure of this magnitude has never happened. It did immense long-term damage to the credibility and reputation of India in terms of attracting foreign direct investments (FDI) to keep its economic development engines humming. With declining FDI and lower GDP growth rates, this failure is likely to have long-term adverse implications for India's economic and social development.

In retrospect, while the actual timing of this event could not have been predicted, all the indications were evident for some time that it was an accident waiting to happen. Signs of this impending catastrophe have been evident for years.

Genesis of the problem

India's power sector faces severe headwinds due to innumerable challenges which have been consistently ignored or poorly confronted for decades. To begin with, the country has consistently underinvested in the power sector for the last six decades. Also, the country's lack of inclination towards making tough

policy decisions for long-term power development is well documented. The government has consistently ducked the opportunities for fundamental reforms and opted for short-term, politically expedient solutions that often have contributed to long-term adverse impacts.

To make matter worse, there has been a proliferation of central and state government institutions which have fingers in every pie but have different agendas and interests. These squabbling institutions have become part of the problem rather than offering cost-effective solutions. Add to these weak-kneed regulators who have no teeth, ill-informed and out-of-touch politicians invariably opt for politically-motivated solutions rather than what is good for the country, mandarins with monumental egos but often awfully ignorant of real problems and solutions, environmental and social activists, business tycoons with their vested interests, rampant corruption coupled with crooks, bandits and terrorists, and the power problem looks insurmountable. In fact, the miracle is how India's power sector has managed to muddle through the past 60 years in spite of these shortcomings.

The arrogance and incompetence is not confined to political figures alone. The chairman of Power Grid Corporation, the country's largest power-transmission network which is a state-owned body, proved his loyalty but lack of appreciation of the magnitude of the problem by proclaiming "The country is in safe hands", even after the grid had collapsed twice in two consecutive days.

Current and past problems

The power sector is facing innumerable challenges which would not be easy to overcome because of social, economic and political problems that have been allowed to fester unchallenged for decades. A major problem is what the country targets in its five-year development plans and what the sector actually delivers. For example, for the 8th, 9th and 10th Plans, spanning between 1992 and 2007, the Planning Commission has estimated that only about 50.5% of the power sector targets were achieved. Even for the 11th Plan, by mid-2011, only about 40% of the target of 78.7 GW was achieved even though the Plan ends in 2012. The original target was revised down to 62.37 GW. By all indications,



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Current power situation in India

The 2011 census showed that one-third of the households do not have regular access to electricity. The original target was that by the end of this year every Indian would have access to electricity, which now appears impossible.

If more Indians are to enjoy the benefits of middle class life, the country has to ensure that electricity availability increases roughly in line with economic growth. Within the next decade alone, India's power demand is likely to double because of increasing industrial demands and rising per capita requirements. By 2050, the Indian population is estimated to increase by another 500 million. The aspirations and expectations of average Indians for a better quality of life will not be achieved if the electricity availability cannot be increased very significantly. If this does not happen, the country is likely to face considerable social and political unrest. With an accelerating power deficit and political unrest, FDIs which are essential for its economic growth are likely to dry up significantly.

If India has to compete favourably with its Asian neighbours, all its citizens must have access to reliable supply of electricity and it would have to increase its per capita electricity availability rapidly. The country is already well behind. Per capita electricity consumption in China is about 3.5 times that of India, Malaysia (6.33), Thailand (3.5), Singapore (14) and Korea (16.6). Thus, India has to significantly increase its electricity generation, transmission and distribution facilities during the next decades and continue this accelerated development of power till at least 2050.

Power generation

At the end of June, thermal power accounted for 66.4% of the total installed capacity of the country, of which 56.6% was based on coal. Hydropower accounted for 19.1%, nuclear 2.3%, and renewable (small hydro, wind, solar,

biomass and urban industrial waste power) the rest. India thus depends on coal and hydro to provide over 75% of its power.

Hydropower generation should have been significantly better than what it is today. Jawaharlal Nehru, the first Indian Prime Minister, considered hydro dams to be "temples of modern India". During the early 1960s, hydropower provided nearly half the country's electricity. If more of Nehru's "temples" were constructed, India would not have been in such dire straits. At present, only about 25% of the country's hydro potential has been harnessed.

Lack of vision, populist tone of much of country's politics, social and environmental activism, rampant corruption, decision-making at a snail's pace, and weak law enforcement have ensured hydropower contributes to less than 20% of the country's current electricity generation. In April, power secretary Uma Shankar announced a reduction of 75% of the planned hydropower generating capacity for the next five years, from 30 GW to 10 GW because of regulatory delays, problems with environmental clearances and land acquisition for projects and poor planning practices. Sadly, these are not new problems. They were all identified as serious constraints under 8th, 9th and 10th Plans which ensured that barely half the planned capacity increase could be realized. Decades of dithering has ensured that not much has been done to solve these problems. The future of hydropower in the country is not bright unless the current conditions change radically. Sadly there are no visible signs that this may be the case in the foreseeable future.

This is in marked contrast to the progress countries like China and Brazil have made in hydro development. India simply could not have built Three Gorges Dam which now accounts for about 10% of China's electricity use because of its chaotic planning and decision-making processes.

even then, the country will meet about 60% of this reduced target. Thus, like the earlier plans, it is likely to achieve only about half of its original target.

The reasons for such poor performances have been well-documented by the Planning Commission and observers. For example, for the 10th Plan, among the main problems were shortages in core equipment availability (boilers, turbines and generators), serious bottlenecks in mining and transporting coal, delays in investment decisions, release of funds and award of contracts, significant delays regarding acquisition of land and environmental clearances, and intense inter-ministerial infighting. None of these problems have ever been resolved. The continuous mismatch of targets and achievements has severely eroded the credibility of all the government institutions linked to the power sector.

The problem is not going to disappear for even the 12th Plan (2012-17). The Commission has accepted a target of 100 GW which would allow the country grow at 9% rate. However, the environment ministry has concluded that the target is "ecologically unsustainable". In the absence of anyone with authority or inclination, the country will continue with the saga of non-implemented plans and unachievable targets for years to come.

Coal-based thermal power

Coal now accounts for more than half of India's electricity generation. The country has the world's fifth largest reserve of coal but its quality is poor because of very high ash contents. Coal India is 90% controlled by the Government. Its objectives are amorphous. Whether it should maximise profits, or pay a high dividend to its majority shareholder who has a serious budget deficit, or provide cheap fuel to the country is not clear. It is basically a non-regulated monopoly which has not increased production fast enough to meet the country's needs. Compared to China's rapidly increasing output, its production has reminded almost stagnant during the past two years. Existing mines have strict limits as to how much coal they can extract. New mines are difficult to open because of obtaining environmental and land clearances within reasonably time periods.

Coal prices are fixed by the government at far below international levels. Coal India has \$11 billion of unused net cash in its balance sheet but reinvests only about 20% of its gross cash flow. Technology and management practices used for mining and transportation are outdated. Management is weak because of strong trade unions and the system is rife with corruption. Presence of Maoist terrorists in some of its coal mining area has not helped.

On the financial side, most consumers receive heavily subsidized electricity. Farmers get free power to pump groundwater for irrigation, but some of this power is illegally diverted to factories. Since electricity is free, farmers run their pumps irrespective of whether crops require water or not. As a result groundwater levels in many states are declining by over 1 metre every year. This means each year farmers have to use more and more electricity to pump water from increasingly higher depths, thus accelerating the vicious circle.

Not only increasing the production of the coal is a problem but also its transportation from the eastern production belt to other parts of the country where the thermal power plants is located. The Indian Railways, another unregulated state monopoly, is simply not efficient enough for timely transportation of coal.

During June, because of the produc-

tion and transportation bottlenecks, the thermal power plants received 33 MT of coal when the demand was 40 MT. 31 power plants had critical coal stock of less than seven days, out of which 25 had stocks of less than four days. In addition, coal supply for 8,000 MT of new thermal power plants had not even commenced.

As a result at the end of 2007, the demand for coal for the power sector exceeded supply by 35 million tonnes (MT). This gulf is estimated to widen to 83 MT by the end of this year, and an astronomical 220-240 MT by the end of next Plan in 2017.

While private sector has been allowed to construct power plants, they are squeezed by the two national monopolies: Coal India and Indian Railways, which favour the public generating plants. Private sector plants often are the last to receive coal.

In a burst of enthusiasm, private sector operators spent over \$7 billion in acquiring mines outside India during the past few years in order to have an assured coal supply. However, ports and railways cannot handle the transportation of this extra coal. Besides, foreign coal is significantly more expensive than the price-controlled Indian coal. It is estimated that foreign coal could be three to four times more expensive in terms of their thermal value equivalent.

Use of imported coal means higher price for the electricity distributors which are predominantly state controlled and are invariably run poorly. They lose between 25% and 40% of power because of inefficient grid equipment, poor management and outright theft. Most are basically bankrupt for all practical purposes.

The regulators who set tariffs are theoretically independent but for all practical purposes have proved to be totally ineffective. The tariffs dictated by the local politicians, who mistakenly want to keep the price low for political expediency to win votes. In many places, the electricity rates have not been revised for years. For example, in Tamil Nadu, the tariff was not changed for about seven-eight years. It is estimated that the combined annual losses of state electricity boards which operate the grid will be around \$19.2 billion. No institution can be run efficiently with such heavy losses

year after year.

Accordingly, the Boards have insufficient funds to maintain and upgrade the grid on a regular basis. It is estimated that they would need capital investment of around \$200 to \$230 billion which of course they do not have, and will not have unless they are managed in a radically different manner. This means that in most states the networks will continue to worsen steadily.

Electrical infrastructure development has been consistently neglected for decades. Even now, interregional transmission capacity is only about 1/8th of the installed capacity.

An important challenge facing the power sector is the multiplicity of factors, with varying agendas and interests. At the central level there are various ministries, regulatory institutions, bureaucrats and politicians who often work at cross purposes. There is no one who can knock heads of squabbling politicians and bureaucrats together so that an agreed policy is followed that would ensure adequate power for the country's long-term development.

Similar complexities exist also at the state level. There are powerful business empires whose tentacles entangle central and state politicians and bureaucrats, single issue environmental and social activists, and pervasive corruption.

For India to grow at 7% to 10% per year in the coming decades, energy security is prerequisite. Without assured supply of electricity and with increasing population and rapid urbanization and industrialization, the country will not be able to fulfil the increasing aspirations and expectations of its people.

Perhaps the largest electrical blackout in human history will "concentrate" the minds of the politicians and the bureaucrats because of an enraged public, private sector and media. The country has the technology, skilled people and investment funds to ensure power security. What it does not have is political will or the capability to make this possible, at least over the short and medium terms.

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