



ENTERPRISE RISK MANAGEMENT

in Indian Power Companies **Part 1**

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The Indian power sector, even as it grows exponentially, continues to face challenges from technical, social, and geo-political factors affecting the viability of the companies and even the sector as a whole. This article provides an analysis of the current risk management practices in the Indian power sector based on the data shared by some notable utilities and also that available in the public domain. The article highlights the need for all the stakeholders to have an effective Enterprise Risk Management (ERM) to deal with the risks and at the same time take advantage of the tremendous growth potential presented by the government's initiatives to reform the sector. It is our expectation that this article will raise the awareness of all those involved on the benefits of ERM...

India has adopted the path of industrialisation for economic development and improvement in the quality of life of its people. This necessarily calls for a significant investment in energy, which is both reliable, secure and affordable. The Government has taken several steps to add capacity from various sources. And with climate change a reality, it is incumbent for India to focus on renewables and other low-carbon energy sources to minimize GHG emissions. It also has to extensively revamp its T&D network to reduce energy losses and theft of power.

As a developing country, India is faced with multiple challenges as it strives to become an equitable modern country. Providing cheap and reliable power to remote areas, is one of them but it is also an opportunity for the power companies. It calls for a lot of innovative solutions on the part of the industry to reap the benefits of this opportunity. The authors argue that designing and implementing an effective ERM ought to be an important part of the solution.

Background

‘Several parts of Delhi experienced massive power outages on 11th June, 2024 due to a fire at a power substation in Mandola, Uttar Pradesh, which supplies 1,500 MW of power to the national capital. The cause of the fire was attributed to a surge in load and excessive heat.’ (Refer: News18, June 11, 2024)

‘India projected its biggest power shortfall in 14 years in June after a slump in hydropower generation, its government told Reuters, and is racing to avoid outages by deferring planned plant maintenance and re-opening idled units.’ (Refer: Reuters, May 9, 2024)

‘On Monday, 30th July 2012, India suffered the biggest power outage in its history. The national electricity grids collapsed and around six hundred million people, more than half of the population, were left with no electricity.’ (Refer: The New Yorker, August 1, 2012)

Notwithstanding the steps taken over the years to augment the power availability, such headlines highlighting the issues with the Indian power industry still regularly surface. Indian power sector reforms have progressed in fits and starts, notwithstanding the obstacles due to social, economic, and political pressures. The load shedding and frequent blackouts of the past may not be the case anymore in most urban areas, but challenges remain and may get aggravated as energy demands grow.

Discussions regarding the Indian Power Sector generally tend to focus on addressing macro issues such as government policy, capital allocation to industry infrastructure and equitable distribution of power, etc. They underscore the need for the management of individual power companies to enhance their abilities to cope with the uncertainties. The authors, who are closely associated with the Indian power industry, posit that deploying a robust enterprise risk management program will help in sound decision making and efficient operation. That will in turn help these companies to not

only get better at managing downside risks but also help them get better at exploiting the strategic opportunities.

We surveyed the risk management landscape of some of the premier power companies in India, both in the public and the private sector. While there seems to be a recognition of the importance of enterprise risk management, scant information is available regarding the execution of such programs in the public domain. Our outreach to the leaders at different levels of the companies highlight a disconnect between the company’s professed risk management philosophy and the understanding of the same by employees (even those in leadership roles).

It is time that Indian power companies realize the benefits of proactively adopting enterprise risk management programs as a part of their strategic vision and day-to-day operations. There are already regulations spurring Indian companies to implement strong risk management programs. The goal of the company is not only to conform with the regulations, but also to protect and enhance enterprise value and ensure long term resilience, which an effective ERM would help achieve. This article attempts to generate a discussion leading to a more effective ERM in the Indian power companies.

Challenges facing the Indian power sector

Even as the Indian Power Industry has come a long way, many challenges still remain.

- **Increasing gap between demand and supply:** India’s total installed generation capacity is around 427 GW with a population of approximately 1.4 billion. This translates to a per capita capacity of roughly 0.3 kW. In the developed countries, the per capita capacity is generally above 1 kW, e.g. 3.4 kW in the USA, 2.8 kW in Germany and roughly 1.4 kW in China. According to the International Energy Agency (IEA), India’s electricity demand is expected to triple by 2040. To meet this demand, the Indian government has set a target to double the country’s present installed generation capacity by adding another 450 GW by 2030. While this may not be sufficient to close the gap, it surely points to a significant prospect for growth in the Indian Power Sector.
- **T&D losses:** T&D losses in India are currently around 18-20%, as against 6 to 8% in developed nations and 10 to 12% in China. India’s T&D infrastructure needs to be modernized to not only improve its efficiency but also address the leakages (technical losses, thefts, meter tampering). While efficiency improvements are

a gradual process and need significant investments, non-technical losses need to be controlled rather expeditiously.

- **Energy transition:** As on June, 2023, India's total electricity from fossil fuels amounted to 57% of total production, and that from non-fossil sources (Renewable sources including Hydro, Waste-to-energy, Cogeneration and Nuclear) comprised the remaining 43%. (cf. Power Sector at a Glance ALL INDIA | Government of India | Ministry of Power). India is committed to becoming net-zero or carbon-neutral by 2070 despite myriad challenges of transitioning to low-carbon or renewable energy systems.

Opportunities in the Indian power sector

There are several indicators that bode well for the Indian Power Sector.

- **Favourable policies:** The Indian government has taken important initiatives to encourage private investment in the power sector to strengthen and modernize the country's power infrastructure. Investments are being made in expanding and upgrading transmission and distribution networks to enhance their capacity and efficiency.
- **Power export opportunities:** India is already connected to the power grids of neighbouring countries such as Bangladesh, Bhutan, and Nepal. There are plans to expand cross-border electricity trading, which besides business will help in better bonding with the neighbours.
- **Technologies for risk mitigation:** Use of modern technology to monitor risk factors and measure risk severity levels has assumed significance, and help to take appropriate control actions to prevent or minimize their impacts. Technological advances have made it possible to deploy and integrate renewable generation at a competitive cost.

Technologies such as Internet-of-Things (IoT), Digital Twins, advanced telemetry, Artificial Intelligence (AI) and forecasting tools are providing us innovative ways to access and process time-series data of energy systems, draw useful insights and mitigate risks of supply interruptions.

Blockchain technology, widely accepted for secure energy trading and on-line payments, enhances cyber security and reduces the risks of online frauds. AI-based software tools, used for modelling and forecasting,

increase the accuracy of demand prediction and reduce the risks of supply mismatch, price shocks and revenue losses.

Advances in battery storage and smart grid technologies are helping to build energy backups and optimize energy flows. Adoption of advanced metering technologies are helping to accurately monitor the energy consumption, perform total energy accounting and check revenue losses. Load flow analysis software act on a multitude of network data to identify network vulnerabilities, apply corrections, plan timely upgrades and reduce operational risks. AI-based tools are helping to offset the risks associated with RE integration, such as intermittency of supply for the generators and grid stability for the network operators.

Analysis of failures in managing risks

During our review we found some notable failures, which we argue could have been dealt better if an effective ERM had been in place.

The information received from one distribution company currently embroiled in a series of disputes and litigation, highlighted multiple cases of failure of risk management and many areas where contractual terms between a government entity and this company were not defined in a way to address exigencies. Frankly, several of the issues could have been foreseen. Prolonged litigation and significant losses have finally resulted in the franchisee walking away.

When the companies incur losses or fail, and investors lose their appetite for further investment, Government's policy goals cannot be met. It can be inferred that these pitfalls could have been avoided if there were a comprehensive risk management program in place in both the parties.

The issues faced may be broadly classified as follows:

- **Projects stalled:** Factors such as fuel supply problems, disagreements over Power Purchase Agreements (PPAs), financing difficulties were cited. Examples include projects by companies like Jindal Power, Tata Power, and Reliance Power
- **DISCOMs' struggles:** State-owned power distribution companies face financial distress, often due to the state governments offering electricity subsidies but failing to compensate the DISCOMs, results in delayed payments to the generating companies. Despite regulatory reforms and easing of bureaucratic bottlenecks, debt ridden DISCOMs

are proving to be ineffective partners. A December 2023 study by a Delhi-based think tank, Centre for Science and Environment found that DISCOMs were supposed to provide seamless access and connectivity for rooftop solar systems to the national grid but that this was sometimes seen as “in direct conflict with business interests of the companies”.

- **Loss of market participants:** Some companies have exited the market due to these hurdles and other such challenges. It is perhaps not far-fetched to argue that some of these risks and challenges could have been identified and mitigated with better risk management.

Given the challenges and opportunities in its wake, a framework based on strong policies, high capital investment and entrepreneurship, supported by enabling technology and innovation, will be needed. One key factor of success will be how the risks are dealt with proactively and effectively in accordance with the strategic objectives of the individual companies.

Risk management in the Indian power sector

While not much information is available in the public domain regarding the risk management practices of the Indian power companies, we examined a few programs which we could obtain information on. It is clear that the companies we studied have recognized the need for having enterprise risk management programs in place. In several cases, we found clearly articulated risk policy and risk management programs in the public domain.

However, we could not find examples of a risk management success story. Even senior executives of some companies were oblivious of the risk management practices, which demonstrates that risk management has been perhaps a siloed activity mostly confined to the corporate headquarters. We suspect that such programs might meet the government or complinace requirements, but the operating level seems disconnected with such programs. It is understood from GRIDCO, Odisha that the loss of trained personnel is a major risk for them as skilled personnel in this fledgling area are scarce.

This illustrates that there is a need to approach risk management more strategically and use it as a decision-enabling tool rather than a checkbox exercise to satisfy a regulatory mandate. The true value of ERM can be unlocked only when strategy and risk management work

in tandem so as not to manage the downside risks only but also exploit the upside opportunities. This is required to ensure success on a sustainable basis.

To be continued... 



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