

# Paradoxical Performance – Indian Power Sector in need of interventions

SRINIVAS AINAVOLU

## Abstract

The Indian Power Sector responded positively to the policy reforms initiated in 1991 in the economic and industrial sectoral domains. The opening up of the power sector witnessed immediate interest and caused almost a gold rush kind of situation. Though the enthusiastic entry happened in tranches that are separated by settling period, overall the sectoral firms demonstrated fair surviving and growth over the last two decades. The sector witnessed aggressive capacity addition over the recent decade to meet the projected requirements for making power accessible to all, a national aspiration. However, the sector grew based on increased leverage and the assets created were not being fully utilised. This resulted in a sharp rise in risk for sectoral stakeholders. This study examines the performance of the power sector using data from the recent decade of companies forming this sector. The study highlights that the sector is stressed and stakeholders are at risk. Observations of poor asset utilization, stagnant profitability, and large amount of work-in-the-pipeline don't augur well for any sector. As a result, the power sector has declined in terms of investment preference. However, for investments that are already committed, there is a dire need of value recovery. Sustainability of the sector can be ensured by completing the pending pipeline of projects, operating commissioned assets with efficiency, managing costs well and mitigating fuel uncertainties. With an increase in leverage over the period, financiers' exposure to this sector is also a matter of concern. These issues need to be addressed along with mitigation of identified risks to improve economic performance. Power is a core sector with cascading benefits. It propels the economy and drives the national growth. Hence, the power sector requires immediate attention and follow-up in terms of policy interventions and successful execution.

**Key words:** *Power Sector, Policy Reforms, Sectoral Performance, Policy Interventions*

## Introduction

The Indian power sector has been in existence since the last decade of the nineteenth century. Due to the hazardous nature and sensitivity of the industry, the first sectoral regulations came into force very early in the form of the Indian Electricity Act, 1910. During the initial years, the sector witnessed slow progress and was present only in large cities and industrial townships. As a result of this slow progress, the country's installed base was a little over one GW at the time of the nation's independence in 1947. By restricting the sector to the public domain and operationalizing it through the Electricity Supply Act of 1948, the installed capacity increased to only 85 GW during the first fifty years post-independence. As against this slow capacity build up during the first fifty years of independence, the nodal agency Central Electricity Authority's compiled numbers indicate that the recent two decades have witnessed rapid growth, with installed generation capacity moving up to 132 GW by 2007 and to 326 GW by 2017.

As a result of this spurt in power generation post reforms, the average addition per annum of installed capacity moved up from 1.6 GW during the first fifty-year period to over 19 GW per annum during the recent decade, a twelve-fold increase. In terms of reach and per capita utilization too, there has been greater progress in the recent past than during the initial years. India has progressed from a state of 'no electrified villages' at the time of independence to '*all villages electrified*' today. Similarly, since independence, the average per capita annual consumption of electricity increased from 16 kwhr (kilo-watt hour) to over 1,100 kwhr today. This growth in installed capacity and per capita utilization are the result of sectoral policy reforms initiated since 1991. This makes it the right time to conduct research to improve policies pertaining to this sector. It is said that research plays an essential role in policy analysis and is a significant tool used to identify and prioritize alternatives for intervention (Mulvey, Gengler and Lever, 2016).

## Literature

Since the last century, world over, the power sector has followed an almost “standard” model for operations. India too had vertically integrated entities under state control, offering generation-to-transmission-to-distribution services. As a result of a resource crunch, the government was compelled to open up the sector for private participation in 1991. Prior to this, the private sector was barred from participating in this sector as a result of the Electricity Act of 1948. This “opening up” move was the beginning of a series of reform measures in India.

While the Indian Power Sector was mostly state-owned, winds of change started blowing internationally. Several countries attempted to reform and restructure the power sector by permitting private sector participation, which led to greater efficiency and introduction of competition (Baijal, 1999). China was in a similar situation as India in terms of this sector. The country initiated power sector reforms with emphasis on additional generation; greater investments in the sector were preferred over economic power (Andrews-Speed et al, 1999). This resulted in over-investments in the sector. Initiating policy reforms prior to sectoral reforms is critical.

In the context of emerging markets, Pakistan faced a delay in bringing in private sector investments in the banking, electricity, telecommunications and transport sectors due to lack of procedural clarity, unemployment fears among workers and consequential emergence of private monopolies (Ghafoor and Weiss, 1999). Price increases as a result of private sector participation is a key fear that many emerging economies face.

The benefits of opening up the power sector were analyzed from various angles. While it would resolve human/managerial issues, technical issues may still persist (Olukoju, 2004). Due to government ownership, the sector faced associated problems. The two major problems faced by the sector were enormous revenue leakage from the system in the distribution segment and administration of subsidies. The solutions were privatisation of the distribution segment and change in the institutional mechanism for administration of subsidy (Morris, 2000). Other problems experienced were capital crunch, project delays, and quality issues. Better governance was expected to resolve these issues with participants - the government, society and market-cooperating, participating and negotiating for a cause (Dash and Sangita, 2010). There were efforts to build a national consensus 'Common-Minimum National Action Plan for Power' with the aim of having independent regulatory commissions, rationalisation of tariffs and private sector participation in distribution; these were steps in the right direction (Upadhyay, 2000).

Reforms in the power sector encompassing restructuring and private sector participation were being undertaken from Asia to America. Reforms were attempted in Russia as well with vertically integrated monopolies broken up, generation companies privatised, and a competitive electricity market introduced (Skyner, 2010), almost along the standard reform process. In the United States, across different states, reforms were undertaken but on the benefits front; voices were more muted. Although the intent of restructuring the power sector in the US was to produce cost efficiencies and bring price benefits to the consumers, there is little reliable and convincing evidence that consumers are better off as a result of the restructuring (Kwoka, 2008). Additionally, the four stakeholder groups - political, industrial, academic and consumers - reportedly blame each other for the challenges being faced by the sector and don't see any role they could play to overcome these challenges (Sreekumar, 2007). Clearly, this attitude doesn't help resolve any sectoral conflicts when these arise.

## Electricity sector reforms in India

Before liberalization, the power sector in India faced a number of challenges including insufficient capex and supply, resulting in a significant demand gap. When the power sector was opened for private sector participation, key Indian promoters were in the process of restructuring their businesses to benefit from the ongoing reforms (Basant, 2000). At that point of time, Indian capital markets did not appear to be able to provide capital for the sector since the capital markets were also going through their own process of reforms. Hence, the government decided to permit foreign corporates to participate in the sector with the assumption that they would bring with them better management and higher technical skills (D'Saetal, 1999).

The power sector reforms in India have largely followed the World Bank model of unbundling, corporatisation, privatisation and regulation (Sinha, 2005). However, initially it was feared that the new power policy would cause power tariffs to rise drastically, cause destruction of the country's power equipment sector and a future drain on the national exchequer (Purakayastha,1993). After the country faced the Enron-Dabhol issue, and post-launch of the first-generation electricity reforms in India, there were fewer takers for the argument that the outlook on the power situation is so bleak that private

foreign investment in the power sector should be sought at whatever cost (Ghosh, Sen and Chandrasekhar, 1995). There was a constant refrain to avoid foreign participation which could have serious implications for the country in terms of very large tariff increases and unsustainable foreign exchange outflows (Purkayastha and Ghosh, 1997). By then, the Indian private sector was better prepared to invest and leverage the opportunity fully.

The power sector value chain covers generation, transmission and distribution. Among these three, the last one was the most problematic. Ideally, setting the house in order should have begun with distribution. It is said that reforms in the power sector should have actually begun with restructuring of state electricity boards (SEBs), but as an easy way out, it was considered simpler to begin at the generation end (Godbole, 1997). Distribution is a politically sensitive issue and administratively cumbersome (typically B2C business); hence, reforms in power generation were attempted first (this is a B2B business with limited number of parties involved). There were numerous views on the reforms process. There were opinions that privatisation of the distribution segment coupled with the setting up of effective regulatory bodies would alone provide a long-term and lasting solution to the power imbroglio; otherwise there would not be authentic reforms (Godbole, 1998). But reforms starting with generation showed that these voices were not heard and overwhelming political sensitivity concerns dominated the decision making process.

## Sectoral response and performance

There were views based on the international contexts too that integrated handling of reforms from restructuring to privatizing the assets should be completed on priority and at a faster pace. It was said that key issues revolved around the degree of restructuring of the state enterprises or industries to be privatised, the speed and timing of such moves and the methods used for transfer of ownership from public sector to private sector (Wood and Kodwani, 1997). Integrated approach was believed to be a better strategy than knee jerk, ad hoc or piecemeal approaches. In the Indian context (state of Karnataka) it was opined that the emphasis on energy services (rather than energy consumption) and the pursuit of Integrated Resource Planning were necessary to provide long-term multi-dimensional solution to capital, performance, equity and environmental crises threatening the power sector (Reddy and Sumithra, 1997).

The performance of the sector after policy reforms made different national governments relook at the pace and progress achieved. It is felt across Latin America that evolutionary approach is preferable to the typical big-bang approach of modified regulatory framework, unbundling of erstwhile vertically integrated utilities and privatizing the unbundled parts (Millan, 2005). Reforms were not juggernaut; the course correction can come, post assessment of outcomes. In fact the "standard" model of power sector reform in the form of vertical and horizontal unbundling, wholesale and retail competition and privatisation were halted in South Africa, though there was a commitment to ensure improved performance by state-owned enterprises through appropriate governance and regulation (Eberhard, 2005). Additionally, many reform attempting countries witnessed gold-rush like situation resulting in over-investments in the sector. In the Chinese context, then prevailing shortages led to a near-spontaneous nationwide boom in power plant construction and resulted in potential glut situation (Mathrani, 2006).

In the Indian context, impressive growth of the capacities over the recent period shall be the snapshot observational take-away. And this is not away from truth. However, the sector merits deeper study to uncover the traumatic trends that hide behind surface level progress statistics. There are fundamental issues that reduce the attractiveness of the industry for new entrants and inhibit full-fledged participation by the existing players.

This paper is more than an industry note; it reviews the situation, helps one appreciate the current anchoring of the industry and suggests policy measures for course correction; all based on recent period industry growth and performance data.

## Data

Data for this study is drawn from Capitaline industry database that provides company level information of different sectors. Its industry classification lists aggregate information for the Indian power generation and distribution companies. Overall information in usable format for the sector is available for the period from financial year 2009 till 2017, recent decade. To ensure the comparability of the information over this temporal line, *common sample* information of 54 companies for the period is utilized. Using common sample, sample firms' heterogeneity related variations are controlled. This set of fifty four companies' data represents the *industry/sector* for this study's data analysis and discussions. Sum of total assets of these companies at the end of FY17 is over INR ten lakh crores, equivalent of approximately two thirds of India's installed generational capacity.

**Table 1.1 Aggregate performance of the Indian Power industry over the recent decadal period**

SN	Year ==>>	2009	2010	2011	2012	2013	2014	2015	2016	2017
1	Overall profitability (Op Profit to Op Income)	28.5	31.4	32.1	28.4	30.0	30.4	30.8	34.0	31.8
2	Asset Turnover (Op Income to TA ratio)	37.4	36.0	32.2	34.7	34.0	32.2	32.4	31.2	29.8
3	Operating profit to TA	10.7	11.3	10.3	9.9	10.2	9.8	10.0	10.6	9.5
4	Leverage (Total Debt to TA ratio)	43.8	43.6	43.3	46.8	49.2	50.7	52.7	51.7	51.9
5	Depreciation to Op Income	6.1	7.1	6.7	6.2	7.0	8.0	8.1	9.3	10.4
6	Interest to Op Income	6.5	5.8	5.7	6.1	7.8	9.7	10.4	11.6	12.4
7	Op profit to Interest ratio	4.4	5.4	5.6	4.7	3.9	3.1	3.0	2.9	2.6
8	Serviceability (TD to Op Income)	1.2	1.2	1.3	1.4	1.4	1.6	1.6	1.7	1.7
9	Electricity & Fuel exp. to Total exp. as %	75.0	72.8	75.0	70.3	70.2	71.7	77.0	75.0	74.3
10	Employee cost to total exp. as %	11.3	11.7	10.5	9.1	9.7	9.9	9.5	9.5	10.1
11	Op Income to Employee cost	11.1	11.5	12.7	14.1	13.6	13.6	14.1	14.8	13.6
12	Overheads (OH) as % of Total Exp.	5.9	5.6	5.8	7.4	6.7	6.3	7.0	8.3	9.4
13	Capital WIP to Total Assets	28.8	30.1	29.3	29.2	25.6	24.8	22.2	20.3	18.4
14	Liquidity – C&B to Operating Income	28.2	29.7	28.9	20.9	17.2	16.1	13.0	8.7	6.1
15	Liquidity – Net CA to Total Assets	12.6	14.7	12.0	10.6	9.9	7.3	6.2	4.6	2.4
16	Liquidity – C&B to Operating Profit	98.9	94.5	90.0	73.6	57.2	52.9	42.1	25.6	19.1

Data Source: Capitaline

## Results and Findings on Sectoral Performance during the period under research

### A. Increased capacity but declined performance

During the recent decade, capacity additions in the sector were at an annual average of 19 GW compared to 1.6 GW per annum during the first fifty years of post-independence period. This growth got triggered based on demand projections that were made in late 1990s, which were revised upwards subsequently. This, based on the target for the country in the form of “Power for All by 2012”, propelled the sector with earlier unseen capacity addition aggressiveness.

During the period under research, the sector has grown rapidly. The total asset size for the industry (54 companies in the dataset) has increased by a factor of 2.69. All asset growth did not get translated into revenues. This can be appreciated by the fact that during the same period, operating income increased by a smaller factor of 2.15. With sectoral profitability not changing either way, operating profit to total assets scenario has seen a decline. This has slid from a respectable 10.6 to 9.5, over the period under research. Additionally, higher capacity resulted in higher depreciation during the following years. The same can be seen through depreciation to the operating income ratio increasing from 6.1 to 10.4 over the period for the sector. Thus, we find comparable assets are giving lower top-line, lower profits, and increasing depreciation, all become a cause of concern from the sectoral viability perspective.

The sector has also witnessed increased capital work-in-progress that reached the factor of 1.7 over the period. In other words, compared to the earlier periods, more asset formation is in the pipeline. This also indicates the possibility of stranded assets, if project through-put is not smooth.

### B. Increased Leverage levels

With aggressive demand projections and policy prioritization resulting in revamped electricity acts during the recent two decades, financing for the sector was not an issue. Thus, for the period under research, we see an increasing trend of leverage, captured as the ratio of total debt to total assets. This has increased from a moderate 43.8 percent in the beginning to 51.9 percent by the end of the year, with a continual worsening trend. Had the profitability increased over this period, increasing leverage levels would not have been an issue. But the fact is otherwise. Higher quantum of assets, created with greater leverage without correspondingly increasing top-line resulted in a vulnerable situation.

It is appreciated that with almost stagnant levels of profitability, debt serviceability becomes a challenge with increasing levels of leverage. This is true in the current case of the Indian power sector as well. Ratio of interest expense to operating income saw a steady worsening from 6.5 percent to 12.4 percent. In other words, for similar income level, the debt service obligation sharply increased over less than a decade. Similarly, the coverage ratio, operating profit as interest times, too witnessed a constant fall from 4.4 to less than 2.6 over this period. Further substantiating the vulnerability, total debt to operating income ratio worsened from 1.17 to 1.74 during the period. These instances raise concerns regarding operational viability and eventually the sectoral sustainability. It is said that by increasing the debt component in the capital structure of the company, firms can reduce the overall cost of capital; however, a higher proportion of debt need not necessarily increase shareholder value (Pandya, 2017). The potential reason is with over-leverage, the risks disproportionately increase leading to a precarious situation.

#### *C. Reduced Liquidity position*

To appreciate the vibrancy of any industry or sector, the average liquidity levels are examined. Liquidity position of the power sector has seen a sharp decrease over the period under research. Cash and Bank to the operating income ratio has seen a decline from 28 to a mere 6. Similarly, Cash and Bank to operating profit ratio moved down from 99 percent in the beginning to 19 percent, indicating the possibility of paper profitability. There is a positive link perceived between efficient working capital management and firm success; hence, firms across different industries traditionally focused on long term capital budgeting and capital structure, started focusing on working capital management efficiencies (Panigrahi, 2017). Lower liquidity might force companies in the industry to look for more dependable working capital management arrangements. Apparently the aggressive capacity build up has reached its maximum. Capital work-in-progress as a ratio of total assets has seen a change from 28 to 18 over the period, largely on account of huge increase in total assets but not a corresponding increase in WIP, thus indicating possible sectoral saturation.

#### *D. Decreased asset turnover*

It is well known that the power sector is highly capital intensive. The average cost of setting up of one MW of generation capacity in the thermal sector to which majority of installed capacity in India and energy generation belongs, is over Rs. 5 crores. Additionally, lifecycle cost of the facility for the next twenty five years triples this number. With this sectoral profile, one expects the assets to sweat on a continual basis. For the same quantum of total assets, the sector has to return higher operating income over the years, for it to be rated as being on the path to improvement. On the contrary, the ratio of operating income to total assets in case of the Indian power sector during the period under research was on the decline. On a continual basis it reduced from 37.4 in the first year of the study to 29.8 during the last year of 2017. This is an area of concern as the implication is, either significant excess capacity exists compared to the articulated demand, or the implemented capacity is not being utilized for various other reasons.

With fundamental industry knowledge, it is known that still a fifth of the population has to be provided with reliable electric supply and hence, supply exceeding the real demand (including the unarticulated demand) is not true. The second reason above, 'not utilized for various other reasons' is closer to the truth. Again, two reasons account for this; first the affordability of power from higher capex & opex based generation facility, and second, the availability of economical alternatives that developed as viable sources during the recent period. Capex costs of renewable sources plummeting is, in fact, a major game changer for the power sector.

#### *E. Increasing Overheads*

The success for firms in any industry is through better utilization of assets, efficient cost management and timely revenue realization. Selling & Administration expenses and Miscellaneous expenses, together termed as "overheads" account for a significant portion of the cost structure of companies. Firms in the power industry are no exception to this. Ratio of Overheads related expenses as a part of total expenditure indicates close monitoring or the lack of the same by organizations' management. During the period under research, for Indian power sector firms, the overheads have slowly worsened from a healthy 5.9 percent to 9.4 percent. Power industry has managed costs and operating expenses well, but overheads apparently did not receive necessary attention. There is a clear scope for improvement on this front. Profitability of the industry, and hence, the odds for survival as a whole, can move up through efficient control on costs in general and overheads in particular.

#### *F. Stagnated profitability in the sector*

Profitability of the industry is measured through the ratio of aggregate, operating profit of all companies in the dataset to the operating income of these companies. In other words, it is the ratio of combined operating profits of common sample companies in the dataset to their operating incomes for the specific financial year. This ratio has marginally fluctuated over the

period under research, but the changes are small. Overall, during the period under research, it hovered around thirty percent, +2 above or below.

#### *G. Organizational efficiencies*

The major cost for the sector is fuel. It accounts for three quarters of the costs. In spite of the importance attached to it, it has not seen definite improvement during the period. Another major cost item is operating expenses; it increased only by a factor of 1.5 compared to 2.15 times increase in operating income for the period. This indicates a clear control over these expenses, at least at an aggregate level for the industry. It has to be appreciated that going deeper, there shall be firm level variations which shall merit further study at the organization/firm level.

For the sector, another significant line item in terms of costs is employee cost. Over the period under research, aggregate employee cost as a percentage of total expenditure has improved from 11.3 percent to 10 percent. This could be the result of industry wide productivity improvement measures, which have resulted due to manpower rationalization efforts over the decade. The motive for rationalization of employee numbers could be productivity. Productivity improvement in quantitative terms can be gauged from the improvement in the “employee cost contribution” measured through operating income to employee cost ratio. Every rupee spent as employee cost had operating income of 11 in the first year of study and the same reached 14 at the end of the period under research. In terms of improvement, it is significant as employee costs dropped by only ten percent; employee cost contribution saw an improvement by almost a quarter.

Confirmation of the above indicates that organizational level improvement in productivity terms can be through aggregate numbers as well. During the period under research, total assets and operating income have increased to 2.69 and 2.15 factors respectively, but the employee cost increased by a much smaller factor of 1.76. Thus, cost improvements and efficient resource utilization were seen at an industry level, though individual company level improvements might vary across the sample.

## **Discussion, Implications and Interventions**

1. Necessity of policy effectiveness analysis - Two decades is an appropriate timeframe for effects of policy reforms to percolate and get reflected through the results on the ground. The first decade of reforms shall have the benefit of passing off as being the “allowance period”, but performance during the next decade shall be expected. The Indian power sector has passed through this temporal filter and hence, it is apt time for a review of the impact of reforms on the sectoral performance. Integrated performance appreciation of the industry value chain, course correction and policy revisits for better alignment can be the ultimate aim. With this higher aim, this study attempted examining recent decadal performance of the Indian Power Sector.

2. Mixed performance, more growth - Performance for any industry is two-fold; first is growth, both absolute and relative, to the economy in terms of installed capacity; second, performance along the various firm level metrics aggregated for the industry. In this paper, we did both, basing it on a common sample of 54 power sector companies for the recent period. Based on the common sample, we observe that the Indian Power sector responded very positively to policy reforms attempted over two decades. But its performance has been paradoxical. Paradoxical it is, as the capacity additions were the highest of any decade, but project/operational performance is of serious concern. It is true that the sector witnessed aggressive capacity additions over the recent decade. In fact, it is to suffice the developed requirements which were projected based on increased requirements on one hand and to “make up” for the capacity addition target slippages witnessed during 1990s and 2000s.

3. Mixed performance, poor economic returns - Though there was sufficient capacity addition, this being done using increased leverage levels is a serious concern. Additionally, Solar with lower capex demand has become the game changer, threatening conventional power sources. This resulted in underutilization of existing capacities. Challenges on the fuel front resulted in lower utilization of existing capacities. This can be corroborated from the lower levels of Plant Load Factors (PLF) that has been the recent trend. Thus, the macro takeaway can be that the power sector added enough capacities (as was the quoted case in China, almost resulting in a glut), but combined with economical alternatives that became available, these highly leveraged assets are vulnerable due to lower top-lines getting generated and harder impact on the bottom-line due to the stings from fuel, leverage and other costs.

4. Fuel, the perpetual concern - Additionally, power generation in the thermal sector is highly fuel intensive, which can be appreciated from firms’ cost structures. In the current dataset too, Electricity & Fuel costs account for almost three quarters of total expenditure. During the period under research, for the Indian power industry, these costs hovered in the range of seventy

to seventy seven percent. This variation can be attributed to fluctuating fuel prices, especially due to the variability in the dependence on imported coal, which costs twice the Indian coal, in terms of landed cost. This is due to the invisible cause of concern that doesn't get reflected here, the failure of the coal industry in responding to the increasing demand for its output, which is primarily used for thermal power generation. During the period, the shortfall in the supply of Indian coal resulted in increased imports, which touched two hundred million tonnes per annum. India is the second largest coal producer in the world, but its coal sector has not been gearing up to meet demand expectations.

5. Whither industry attractiveness? – Drawing from the above, even the most optimistic would pause and say that the overall attractiveness of the sector is a question mark now. Current indication is, it is a declining preferential investment option. This is seen through capital work-in-progress as a ratio of total assets. With increased leverage happening over the recent period, financiers' exposure to the sector turned above the safety threshold. This needs to be addressed and identified risks need to be mitigated. Power is a core sector with cascading benefits, as it is power that propels the economy's development and drives national growth. Thus, the sector is in immediate need for attention and follow-up interventions.

6. Better cost management from operations perspective - Sectoral performance review yields (a) lessons for participating firms and (b) provides insights for policy interventions. Over the study period, in addition to the asset turnover reducing, interest burden being on the rise, and capital work-in-progress becoming higher, profitability has almost stagnated. Utilizing the maxim of *"if one can't push up the top-line, then improve the middle (of costs) so that bottom-line is pulled up"*, the immediate implication for the sector is improving cost management.

7. Policy intervention lines - It is said that public policies are a medium through which governments solve problems of the people, society and nation (Yadav, 2016). Hence, policies need to be re-looked to bring in sustainability to the sector by ensuring (a) completing pending pipeline of projects, (b) helping firms manage the costs by mitigating fuel uncertainties, (c) leveraging technology in terms of Industrial IoT (Internet of Things) for achieving drastic performance improvements, (d) financial restructuring of firms of the industry in terms of debt restructuring and equity recalibration, (e) professionalizing the sector completely and (f) re-configuring both the generational and allocated fuel assets and (g) objectively rationalizing the Power Purchase Agreements (PPAs) that factor in changed realities so that sectoral level win-win shall happen.

8. Taking up the task through task force - With the above objective measures that are carried out without historical baggage outlook, the Indian power sector shall drive the next level of orbit changing mechanisms for the Indian economy. Whether the structural shifts shall happen towards or away from manufacturing or service sectors, power is always the propelling and facilitating force. A firm step of resolving the crisis shall help the country take the first step towards completing the proverbial thousand mile journey. This first step can be in the form of appointment of firm-agnostic, industry professionals with mastery of value chain to an empowered "Policy Advisory and Implementation Review" (PAIR) committee. This committee shall help achieve consensually arrived milestones in a strict, time bound manner. Resolving the sectoral stagnation through value recovery and priming the next level growth through appropriate policy interventions development and implementation shall be the biggest achievement of any such committee.

## Embedded Learning Potential for global peers

India provides great learning for peers in terms of policy applicability, effectiveness and course correction measures. Electricity reforms have been attempted in the last four decades in different parts of the world, in various measures and in distinct phases. Due to the perceived unsustainability of the electricity sector of their countries, World Bank model for unbundling, corporatisation, privatisation and regulation was pursued (Sinha, 2005) among many countries from South Asia to Latin America. Over the years, countries from Asia, Africa and Latin America had opened up their power sectors for reforms and overseas investments, with expected benefit of better management and higher technical performance (D'Saetal, 1999). Investment targets were achieved to various degrees; these have happened in various measures but also with attendant risks.

Just like in India, other countries too undertook reforms in the power generation segment instead of addressing the much-needed reforms in the distribution segment due to political compulsions (Godbole, 1998). This is akin to pouring more water in a leaking vessel than addressing the leakage. Also, as most of the countries that attempted power sector reforms are lower income countries, concerns were voiced that tariff increases would make electricity unaffordable and reforms unsustainable due to foreign exchange outflows (Purkayastha and Ghosh, 1997). Hence, from time to time, the supply-demand gap needs to be studied from "affordability" perspective as well, as articulated demand depends on the affordability of the price of the supply. This point is more relevant as these countries are more price sensitive, which shows up in price elasticity of demand for various goods.

Additionally, opening up the sector without addressing the issues of the sector on the ground shall result in “excess capacity”. In fact, the current situation of almost no supply-demand gap (with respect to supply at expected cost and price sensitive demand) is similar to the glut situation experienced in China due to spontaneous capacity additions (Mathrani, 2006). These shall become stranded assets, burdening the limited finances available in the economy.

Overall, there is a need to remind various stakeholders of the sector in India and across other countries undertaking power sector reforms that an integrated resource planning approach to reforms is better as it alone can provide long-term multi-dimensional solutions from capital, performance, equity and environmental perspectives for the power sector (Reddy and Sumithra, 1997). This alone shall guarantee sustainable solutions to the energy situation, anywhere in the world. The experience of reforms in the Indian power sector spanning over the last two decades proves that an integrated approach alone can bring the sector to the desired state.

---

## References

- Andrews-Speed, Philip, Stephen Dow, Aijuan Wang, Jin Mao, and Bin Wei. 1999. “Do the Power Sector Reforms in China Reflect the Interests of Consumers?” *The China Quarterly*, no. 158: 430-46. <http://ezproxy.svkm.ac.in:2100/stable/656088>
- Bajjal, Pradip. 1999. “Restructuring Power Sector in India: A Base Paper.” *Economic and Political Weekly* 34, no. 39: 2795-803. <http://ezproxy.svkm.ac.in:2100/stable/4408458>.
- Basant, Rakesh. 2000. “Corporate Response to Economic Reforms.” *Economic and Political Weekly* 35, no. 10: 813-22. <http://ezproxy.svkm.ac.in:2100/stable/4408993>.
- Dash, Bikash Chandra, and S. N. Sangita. 2010. “Governance reforms in infrastructure: State and market perspectives.” *The Indian Journal of Political Science* 71, no. 1: 97-114. <http://ezproxy.svkm.ac.in:2100/stable/42748371>.
- D’Sa, Antonette, K. V. Narasimha Murthy, and Amulya K. N. Reddy. 1999. “India’s Power Sector Liberalisation: An Overview.” *Economic and Political Weekly* 34, no. 23: 1427-434. <http://ezproxy.svkm.ac.in:2100/stable/4408049>.
- Eberhard, Anton. 2005. “From State to Market and Back Again: South Africa’s Power Sector Reforms.” *Economic and Political Weekly* 40, no. 50: 5309-317. <http://ezproxy.svkm.ac.in:2100/stable/4417523>.
- Ghafoor, Abdul, and John Weiss. 1999. “Privatisation of Electric Power Sector in Pakistan: Some Important Issues.” *The Pakistan Development Review* 38, no. 1: 69-84. <http://ezproxy.svkm.ac.in:2100/stable/41260897>.
- Ghosh, Jayati, Abhijit Sen, and C. P. Chandrasekhar. 1995. “Life after Enron.” *Economic and Political Weekly* 30, no. 33: 2038-041. <http://ezproxy.svkm.ac.in:2100/stable/4403097>.
- Godbole, Madhav. 1997. “‘Islanding’ of Reform of State Electricity Boards.” *Economic and Political Weekly* 32, no. 46: 2923-924. <http://ezproxy.svkm.ac.in:2100/stable/4406058>.
- Godbole, Madhav. 1998. “Power Sector: Back to Minus Square One.” *Economic and Political Weekly* 33, no. 20: 1158-159. <http://ezproxy.svkm.ac.in:2100/stable/4406772>.
- Kwoka, John. 2008. “Restructuring the U.S. Electric Power Sector: A Review of Recent Studies.” *Review of Industrial Organization* 32, no. 3/4: 165-96. <http://ezproxy.svkm.ac.in:2100/stable/41799375>.
- Mathrani, Sunil. 2006. “China’s Power Sector: Shortages Complicate Reforms.” *Economic and Political Weekly* 41, no. 3: 193-95. <http://ezproxy.svkm.ac.in:2100/stable/4417693>.
- Millan, Jaime. 2005. “Power Sector Reform in Latin America: Accomplishments, Failures and Challenges.” *Economic and Political Weekly* 40, no. 50: 5291-301. <http://ezproxy.svkm.ac.in:2100/stable/4417521>.
- Morris, Sebastian. 2000. “Regulatory Strategy and Restructuring: Model for Gujarat Power Sector.” *Economic and Political Weekly* 35, no. 23: 1915-929. <http://ezproxy.svkm.ac.in:2100/stable/4409358>.
- Mulvey, Michael S., Gengler, Charles E and Lever, Michael. 2016. “Perspective-Taking for Policy-Making: An Analysis of Canadian Cross-border Shopping.” *NMIMS Journal of Economics and Public Policy* 1: 27-39.
- Olukoju, Ayodeji. 2004. “‘Never Expect Power Always’: Electricity Consumers’ Response to Monopoly, Corruption and Inefficient Services in Nigeria.” *African Affairs* 103, no. 410: 51-71. <http://ezproxy.svkm.ac.in:2100/stable/3518420>.

- Pandya, Bhargav. 2017. "Association of Financial Leverage with Cost of Capital and Shareholder Value: An empirical study of BSE Sensex Companies." *NMIMS Journal of Economics and Public Policy*, 2, no 1: 17-28.
- Panigrahi, Ashok Kumar. 2017. "Working Capital Management Efficiency of the Indian Cement Industry." *NMIMS Journal of Economics and Public Policy*, 2: 8-28.
- Purakayastha, P. 1993. "New Power Policy: Bankrupting the Power Sector." *Economic and Political Weekly* 28, no. 20: 955-57. <http://ezproxy.svkm.ac.in:2100/stable/4399719>.
- Purkayastha, Prabir, and Arun Ghosh. 1997. "Power Policies: Need for a National Debate." *Economic and Political Weekly* 32, no. 3: 95-100. <http://ezproxy.svkm.ac.in:2100/stable/4404989>.
- Reddy, Amulya K. N., and Gladys D. Sumithra. 1997. "Karnataka's Power Sector: Some Revelations." *Economic and Political Weekly* 32, no. 12: 585-600. <http://ezproxy.svkm.ac.in:2100/stable/4405198>.
- Sinha, Sidharth. 2005. "Introducing Competition in the Power Sector: Open Access and Cross Subsidies." *Economic and Political Weekly* 40, no. 7: 631-37. <http://ezproxy.svkm.ac.in:2100/stable/4416200>.
- Skyner, Louis. 2010. "The Reform of the Russian Power Sector: The Rhetoric and Reality." *Europe-Asia Studies* 62, no. 8: 1383-402. <http://ezproxy.svkm.ac.in:2100/stable/20787631>.
- Sreekumar N. 2007. "Power Sector: Bridging Theory and Practice." *Economic and Political Weekly* 42, no. 18: 1610-611. <http://ezproxy.svkm.ac.in:2100/stable/4419543>.
- Upadhyay, Anil K. 2000. "Power Sector Reforms: Indian Experience and Global Trends." *Economic and Political Weekly* 35, no. 12: 1023-028. <http://ezproxy.svkm.ac.in:2100/stable/4409056>
- Wood, Douglas, and Devendra Kodwani. 1997. "Privatisation Policy and Power Sector Reforms: Lessons from British Experience for India." *Economic and Political Weekly* 32, no. 37: 2350-358. <http://ezproxy.svkm.ac.in:2100/stable/4405844>.
- Yadav, Lalit Kumar. 2016. "Transformational Leadership behaviours, Public Policy and Policy Actors: A Theoretical Perspective." *NMIMS Journal of Economics and Public Policy*, 1, no. 2: 23-40.

**Srinivas Ainavolu** is Associate Professor, SBM-NMIMS, Mumbai. He was awarded Fellow title (doctorate in Management) for examining the performance of business group affiliate firms over the post-reform period in the Indian context. He obtained his first degree in Engineering and contributed for twenty years to large power and infrastructure companies in India, both in government and private sectors. He closely participated in and understood the Concept to the commissioning evolution of companies in the studied sector over the post-reform period. His focus is on sectoral performance improvement, value creation opportunities and sustainability of the core sector and firm level strategies. He can be reached at [Srinivas.Ainavolu@sbm.nmims.edu](mailto:Srinivas.Ainavolu@sbm.nmims.edu)