

CHAPTER 4

Indian Power Sector & Current Uncertainty

“With the policy of encouraging private sector participation in generation, transmission and distribution and the objective of distancing the regulatory responsibilities from the Government to the Regulatory Commissions, the need for harmonizing and rationalizing the provisions in the Indian Electricity Act, 1910, the Electricity (Supply) Act, 1948 and the Electricity Regulatory Commissions Act, 1998 in a new self contained comprehensive legislation arose.” - Statement of Objects and reasons, Electricity Act, 2003

4.1 Introduction

The first statute laying down the Indian Power Sector business framework was enacted in 1910, which led to Private Investments in the pre-Independence era. Laws were remodelled thereafter from time to time. Until 1998, two statutes, primarily, governed electricity industry in India, viz. Indian Electricity Act, 1910¹⁴ and the Electricity (Supply) Act, 1948. These two Acts were amended several times, but the basic cornerstones and structure changed very little, until Electricity Regulatory Commissions Act 1998 brought in the concept of independent regulation through establishment of Regulatory Commissions. Electricity Act, 2003 followed it up by consolidating all electricity laws. It repealed earlier Acts and made sweeping structural changes laying special

¹⁴ “Public distribution of electricity in India started in Calcutta, the then Capital of British India, in April 1899. In 1895, Kilburn & Co. Ltd. obtained a licence for generating and distributing electricity in Calcutta. For some reasons, the Company sold the licence to the Calcutta Electric Supply Corporation Limited in 1897, who set up a generating plant at Emambagh Lane (now known as Prinsep Street) and started its operation in April 1899. After the licence was given to Kilburn & Co. Ltd. the British Government felt that a law must be enacted to control this new and novel industrial activity, which would affect the interests of the public and the Government. The India Electricity Act, 1897 was therefore enacted. It is to be remembered that very few people in India and in Britain had knowledge about electrical engineering and technology, which was developing fast. Therefore, Government repealed the 1897 Act and enforced the Indian Electricity Act, 1903. Shortly thereafter the Indian Electricity Act, 1910 was enacted to keep pace with the developments in electrical engineering and technology, repealing the 1903 Act.”-A Handbook of The Law of Electricity in India by Santanu Chatterjee

emphasis on generation capacity addition and sector efficiency. It also aimed at consumer protection in a big way through promotion of competition together with market development.¹⁵

4.2 Pre Independence Scenario

Early power utilities in India were mostly private sector investments with Government fixed ceiling on margin. Bombay Stock Exchange had seen a significant presence of new private investments in the then electricity sector.

For some period just before independence, there was an interesting debate on the role of science and technology in India's future. Electricity was considered to be a space where science and technology could play a major role for national development. Certain nationalized elite strongly felt that this was an absolute must. The contrary view came from eminent personalities like Mahatma Gandhi. On large-scale industrial development his view was quite strong - "the smoke and the din of mill chimneys and factories ... are held to be symbolical of material progress", and felt confident that "they add not an atom to our happiness"¹⁶ However, his view towards electricity was coloured by the apprehension that the era of local autonomy will be over with large-scale electrification which is essentially driven by centralized State power.¹⁷

¹⁵ "An Act to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal and for matters connected therewith or incidental thereto."(emphasis supplied)- The Electricity Act, 2003 - Preamble

¹⁶ Electrifying India: Regional political economies of Development – Sunil S Kale, Stanford University Press, Pg.28

¹⁷ "While it is true that you will be producing things in innumerable areas, the power will come from one selected centre. That, in the end, I think would be found disastrous. It would place such limitless power in one human agency that I dread to think of it. The consequences, for instance, of such a control of power would be that I would be dependent on that power for light, water, even air and so on. That I think, would be terrible". Article in Harijan 1934; cited in Electrifying India: Regional political economies of Development – Sunila S Kale, Stanford University

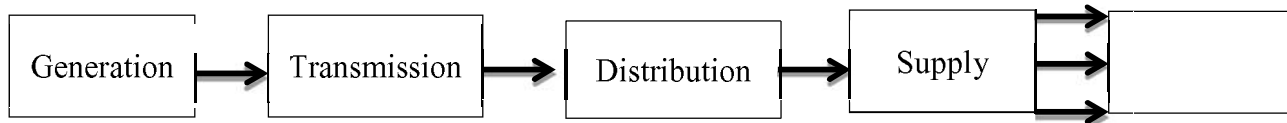
Jawaharlal Nehru's ideas on such issues were dramatically different from that of Gandhiji's. His 'Glimpses of World History' contains communication to his daughter where he quoted a much-used phrase of Lenin that "electricity plus soviets equals socialism". Nehru was deeply impressed with the Russian electrification programme and was a major champion for development through electricity. (Kale, 2014). Visvesvaraya also was a strong advocate for such need. Accordingly the 1936 Economic Plan for India drafted by him expressed concern on low energy production/ consumption in the country.

4.3 Evolution of the sector – Post Independence

State controlled growth in post-Independence Indian Power Sector, following creation of State Electricity Boards, led to a large scale expansion of the electricity grid reaching semi-urban and rural areas. However, simultaneously and progressively, the sector suffered from huge financial losses due to, among others, lack of commercial and populist Government decisions. Efforts by the Central Government to open up the sector to private capital in the generation segments in 1990's, as a corollary to the overall economic liberalization, did not meet with success. In the initial stage, there was significant enthusiasm enticed by liberal sops and large size of the economy, which was not sustained due the model of Single Buyer (SEB), whose finances were in shambles. Despite bringing in a new law in 1998 for independent regulation, huge unsettled dues piled up and rose to a level of Rs.41473 Cr. (as of 28 February 2001) when the Central Government had to step in for framing a One-time Scheme (Ahluwalia, May 2001). It was concluded that the malady of distribution segment had to be addressed first - issues external to the utilities, mainly tariff issue, were to be dealt on economic considerations, while internal mechanism to be tightened through reorganization and unbundling of SEBs and bringing in private sector for commercial focus and efficiency. With electricity as a concurrent subject in the constitution of India, it was decided that the best way to drive Distribution Reform would be at the State level. Efficacy of competition was

acknowledged for achieving economic efficiency - Electricity Act 2003 introduced concept of competition – both at wholesale and retail markets.

Figure 4-1: The electricity delivery chain



The new law required following National policies on Electricity to be framed by Government of India:

(a) National Electricity Policy

National Electricity Policy framed by Government of India in 2005 promotes competition with appropriate regulatory intervention to drive at efficiency gains. This is expected to result in availability of quality supply of electricity to consumers at competitive rates. The policy specifically mentions about introduction of competition in distribution business and offering competition to consumers through the concept of open access and multiple licensees.

(b) Tariff Policy

After National Electricity Policy, Government of India framed Tariff Policy in the year 2006 which has recently been remodelled (MOP, 2016). A principal objective therein is promotion of investment in power sector [Cl.1.3].

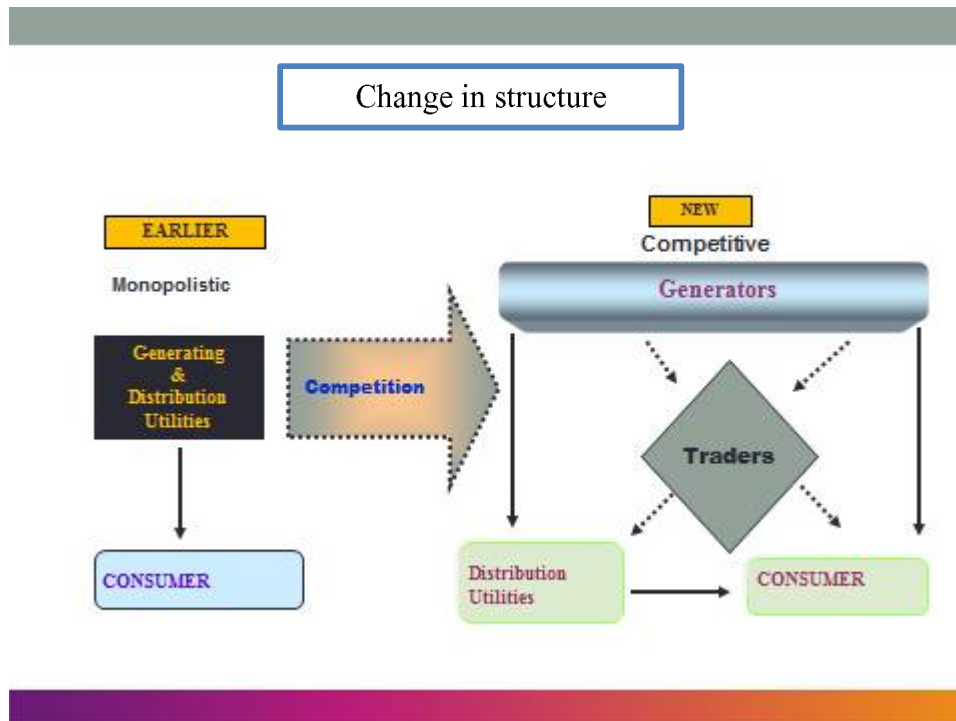
4.4 Industry Structure

As a marked departure from monoliths in the form of State Electricity Boards controlling power generation, transmission and distribution in State, the new Act encouraged segregation of functions viz. Generation, Transmission and Distribution. Transfer Schemes were accordingly drawn by many States for achieving unbundling and corporatization of State Electricity Boards into separate functional bodies. Such schemes envisaged transfer of assets and

staff into successor companies. However, Distribution and Supply were not segregated.

A new concept of “Traders” was introduced in the new law to perform as intermediary and aggregator for supplying electricity to the wholesale and retail market. Power Exchanges were also established for market development.

Figure 4-2: Change in structure



4.4.1 Wholesale market

Complete freedom was granted to captive generation under the new Act. A captive power plant did not need approval any more either from Central Electricity Authority or SEB (or its successors). The law also allowed two or more firms to join together for setting up a captive generating plant for collective use. Policies framed under the Act, viz. Electricity Policy and Tariff Policy prescribed the path forward for future market development.

Bulk purchase of the distributing licensees, as per Electricity Policy and Tariff Policy, was recommended through competitive bidding (except Hydel). Power Exchanges¹⁸ provided mechanized platform for short-term contracts even for a retail buyer¹⁹.

Since Transmission corridors were needed to be available for transfer of bulk power without discrimination, the law not only mandated the transmission companies to provide non-discriminatory open access but also prohibited transmission companies from engaging in supply business, the activity of purchase and sale of electricity. The prohibition sought to ensure that transmission companies would not have any commercial interest except in network business. Usage of the transmission network would entail paying the transmission tariff as determined by the regulator.

4.4.2 Retail market

Indian retail market is dominated by successors of State Electricity Boards as supplier. These “Distribution Licensees”²⁰ are still bundled entities in the sense that they own the wires (distribution network) and also supply power through such wires. Although provision for multiple licensees in the same area was in 1910 Act and continued in Electricity Act 2003, in reality, wire industry is considered as a natural monopoly and duplication of network is avoided on economic consideration

4.4.3 Demand and Supply Position

The following table summarises the demand and supply position. It is noticed that

- (a) Deficit is easing in the recent past
- (b) There is a growth of per capita electricity consumption although it is significantly less than the world average of 2700 kWh in 2014/15²¹

¹⁸ Two Power Exchanges are functional since 2008 – IEX and PXIL.

¹⁹ There are about 3000 retail consumers accessing power from Exchanges currently.

²⁰ Electricity Act, 2003 provides for Licences to be engaged in Distribution business.

²¹ IEA website

Table 4-1: All India Demand Supply Position -

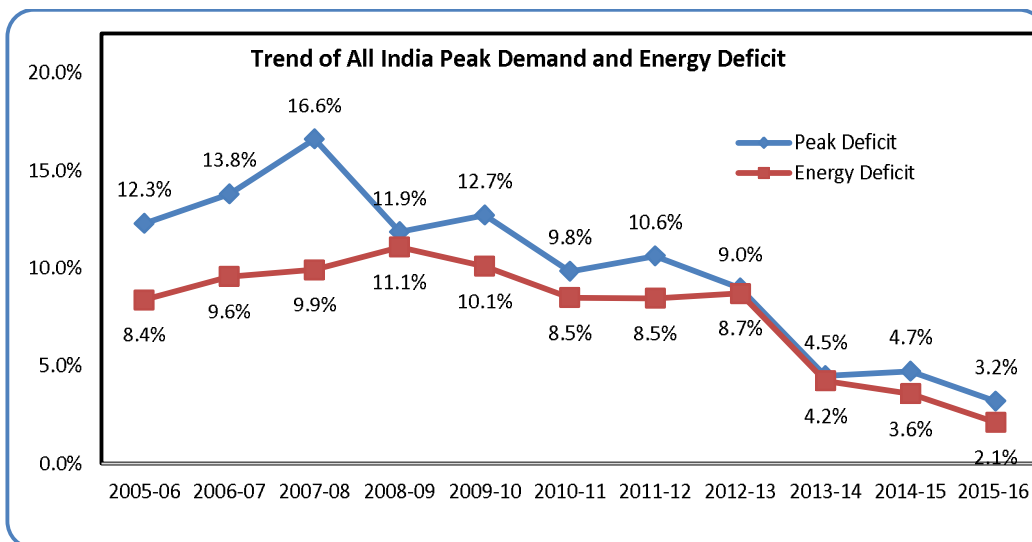
Year	Demand				Energy			
	Peak Demand MW	Peak Met MW	Peak Deficit MW	Peak Deficit %	Energy Requirement MU	Energy Availability MU	Energy Deficit MU	Energy Deficit %
2005-06	93,255	81,792	11,463	12.30%	631,757	578,819	52,938	8.40%
2006-07	100,715	86,818	13,897	13.80%	690,587	624,496	66,091	9.60%
2007-08	108,866	90,793	18,073	16.60%	739,345	666,007	73,338	9.90%
2008-09	109,809	96,785	13,024	11.90%	777,039	691,038	86,001	11.10%
2009-10	119,166	104,009	15,157	12.70%	830,594	746,644	83,950	10.10%
2010-11	122,287	110,256	12,031	9.80%	861,591	788,355	73,236	8.50%
2011-12	130,006	116,191	13,815	10.60%	937,199	857,886	79,313	8.50%
2012-13	135,453	123,294	12,159	9.00%	998,114	911,209	86,905	8.70%
2013-14	135,918	129,815	6,103	4.50%	1,002,257	959,829	42,428	4.20%
2014-15	148,166	141,160	7,006	4.70%	1,068,943	1,030,800	38,143	3.60%
2015-16	153,366	148,463	4,903	3.20%	1,114,235	1,090,713	23,522	2.10%
CAGR	5.10%	6.14%			5.84%	6.54%		

Figure for 2015-16 is provisional, as per CEA document

Table 4-2: Per Capita Consumption of Electricity

Per Capita Consumption (kWh) (As per U.N. Methodology)	
2002-03	566.7
2003-04	592.0
2004-05	612.5
2005-06	631.4
2006-07	671.9
2007-08	717.1
2008-09	733.5
2009-10	778.6
2010-11	818.8
2011-12	883.6
2012-13	914.4
2013-14	957.0
2014-15	1010.0
2015-16	1101.0 (provisional)

As per: PFC / CEA data

Figure 4-3: Trend of All India Peak Demand and Energy Deficit

Both Peak Deficit and Energy deficit are reducing.

4.5 Investment by IPPs

Post enactment of new Electricity Act, GOI constituted a Task Force on Power Sector Investment and Reform in the year 2004. The report provided a mechanism for competitive bidding for procurement of power by Discoms and in January 2005 Central Government notified requisite Guidelines.

Figure 4-4: Chronology- Competitive Bidding (Case-1 & Case-2 Projects)

Year	Instrument	Key areas
2003	Electricity Act 2003	<ul style="list-style-type: none"> • Emphasis on Competition • Section 63 of Act • Tariff Policy
2004	Task Force Report-2004	<ul style="list-style-type: none"> • Five Mechanisms for Bidding • Basic Framework
2004	CERC Guidelines	<ul style="list-style-type: none"> • Four Mechanisms • Draft Guidelines • Statutory Advice to Government
2005	MOP Guidelines	<ul style="list-style-type: none"> • Two Mechanisms • Case 1 & Case 2 concepts

Case-1 and Case-2 are two variants.

- (a) **Case 1 Procurement:** Where location, fuel or technology is not specified by the procurer of power, and the bidders are free to choose their source / technology / fuel, and all the associated risks are passed on to the seller (i.e., the supplier); and
- (b) **Case 2 Procurement:** Where location and fuel are specified and provided by the procurer – the procurer prepares the project, including seeking initial clearances for setting up the project on behalf of the future project developer, who is then selected under a competitive process.

Concept of Merchant Power Plant

For increase in introduction of competition in electricity market, MOP, GOI announced a scheme of Merchant Power Plant in 2006. The concept paper embodied a definition of MPP as “a generator that has only the market place to assure a long term income stream”. MPPs do not have any significant long-term sales contract for the term of their project debt or even later. (Infraline, February 2012) ²²

²² Development of MPPs was discussed in a meeting taken by Secretary (Power) on 21st December, 2006. Subsequently, Secretary (Power) vide DO dated 22.12.2006 to Chairperson, CEA desired that a group of experts to be formed to look into issues and suggest the provisions to so that the scheme of Merchant Power Plants could be operationalized. The expert group thus formed, comprised Shri Rakesh Nath, Chairperson, CEA, Shri V. Ramakrishna, Member (PS), Shri R.S. Sharma, Director (Commercial), NTPC, Shri S. Mazumdar, Director (Projects), POWERGRID, Shri V. Raghu Raman, Principal Advisor, CII, Shri A. K. Sardana, MD, NDPL / Tata Power, Shri Umesh C. Dubey, Vice-President, Allian Duhangan Hydro.

Table 4-3: Major Central level policies impacting development of IPP/MPPs in India

Policy/ Act	Key features of development	Impact on Investors
IPP Policy, 1991	Promotion of private participation to bridge demand supply gap	Liberalisation of power sector and acceptance of merchant model
Mega Power Policy, 1995	Incentives for huge capacity power plants	Attractive high returns for private players
ERC Act, 1998	Independent Regulators established	Level Playing Field
Electricity Act, 2003	Power generation delicensed, Promotion of open access and Trading	Generation decontrolled, thrust on promoting investment and competition
National Electricity Policy, 2005	15% power sales from merchant plants allowed	Promoting market development
National Tariff Policy, 2006	Allowed coal linkage (1000 MW) and captive blocks for 500-1000 MW MPP.	
New Hydro Policy, 2008	Allowing 40% from Hydro on Merchant basis	Incentive for Hydel MPPs for short term opportunities

In the wake of policy liberalisation, large number of developers showed interest in building up power plants in India.²³

4.6 Coal Supply Framework

Coal mining is still largely a Government play but the new law provides for future commercial mining by agencies other than CIL and SECL (The Coal Mines (Special Provisions) Act, 2015). The gap between demand and domestic supply is traditionally bridged by coal import.

²³ The then Secretary, MOP, GOI in a paper presented in the IEA Governing Body meeting in Sydney, asserted that following new Act and policies over 7000 MW IPP achieved financial closure and another 9000 MW was under construction. Altogether about 16,000 MW capacity has been committed for investment.

4.6.1 Domestic supply and Import of Coal²⁴ (Economic Survey 2015-16, Vol.2, 2016)

Table 4-4 : Coal : Domestic & Imported

	(million tonnes)	
	Domestic Supply	Import
2008-9	489.17	59.00
2009-10	513.79	73.26
2010-11	523.47	68.91
2011-12	535.30	102.85
2012-13	567.14	145.78
2013-14	572.06	166.86
2014-15 (P)	607.63	212.10
2015-16*	463.23	111.68#

Source : Ministry of Coal

* Upto December 2015

Import figures are up to October 2015

4.6.2 Industry structure

Roles and responsibilities of Government agencies involved in exploration, production and allocation of coal are indicated below:

Ministry of Coal (MOC)

The Ministry of Coal (MOC) has the overall responsibility of framing policies and strategies for exploration and development of coal reserves. It also lays down general guidelines for production, supply and distribution of coal.

Coal Controller's Organisation (CCO)

Coal Controller's Organisation (CCO) is a subordinate office of MOC. The CCO discharges various statutory functions such as inspection of collieries for ensuring class, grade and size of coal, adjudicating claims of consumers on grade and size of coal; collection and publication of information relating to the sector and also to grant permission for opening/ reopening of coal mines.

²⁴ GOI is undertaking major initiatives for stepping up domestic supply. New mines are being opened up and existing mines beefed up.

Coal India Limited (CIL)

Coal India Limited (CIL), came into being in November 1975. CIL has seven wholly owned coal producing subsidiaries, i.e. Bharat Coking Coal Limited (BCCL), Central Coalfields Limited (CCL), Eastern Coalfields Limited (ECL), Mahanadi Coalfields Limited (MCL), Northern Coalfields Limited (NCL), South Eastern Coalfields Limited (SECL), Western Coalfields Limited (WCL) and one mine planning and consultancy company viz. Central Mine Planning and Design Institute Limited (CMPDIL).

CIL and its subsidiaries are incorporated under the Companies Act, 1956 and are wholly owned by the Central Government. In addition to CIL and its subsidiaries, there is one more coal producing company in the Public Sector - Singareni Collieries Company Limited (“SCCL”), is a 51:49 joint venture between the Government of Andhra Pradesh and Government of India.

Until 1960’s Coal Sector was a private play and saw large private investment across India.

4.6.3 Estimation of coal reserve

Estimation of coal reserves was made by Geological Survey of India on the basis of the Indian Standard Procedure (ISP) code of 1956, a geological reserve classification system which addresses the volume and tonnage.

GOI took a decision in May 2001 to do away with ISP and implement the internationally accepted system of United Nations Framework Classification (UNFC) for minerals which lays down a standard procedure for calculating the size of reserves and resources based feasibility, viability and geological estimate.

4.6.4 Captive coal block Allocation

Under the Coal Mines (Nationalisation) Act 1973, coal mining was exclusively reserved for the public sector. Subsequently, Coal Mines (Nationalisation) Amendment Act, 1976 allowed exceptions of Captive mining by private companies engaged in manufacturing of certain products. Another important amendment to the Coal Mines (Nationalisation) Amendment Act was made in 1993 which allowed coal mining for captive consumption for power generation and certain other industry segments. Thus, mining of coal by Indian private companies was allowed in phases for end uses like iron and steel production, generation of power, and cement production.

Currently, GOI is experimenting with major changes in policies/procedures of coal supply and coal block allocation.

4.7 Policies & Procedures – coal linkage for thermal power plant

In 2006, GOI laid down its approaches in respect of coal linkage and coal block allotment to power plants. The policy recognised the need for merchant power plants in India and allowed coal linkage / allotment for such plants.²⁵

4.7.1 Standing Linkage Committee

The developers for end use plants need to seek "fuel linkage" (assurance) for their projects from inter-ministerial Standing Linkage Committee. The Committee considers the cases keeping in view availability of coal from the desired source(s) indicated by coal companies, movement logistics and other relevant considerations including recommendation of the nodal Ministries.

²⁵ Communication dated 24th March 2006 (F No.FU-5/2003-IPC) provided a framework of priorities read with subsequent communication dated 17th July, 2006

Sanction of linkage is vital for finalization of investment decisions for developers of EUPs. Power plants are the largest off-takers for coal through this process.

4.7.2 New Coal Distribution Policy, 2007 (NCDP)²⁶

System of Letter of Assurance (LOA) confirming supply of coal to developers was introduced through New Coal Distribution Policy to bring in clarity and certainty to potential investors. These LOAs prescribed project milestones for EUP and once such milestones are met by the developers, they would be entitled to enter into fuel supply agreement for long term supply of coal with the coal company. LOAs did not have any restriction as to term of the power sale contracts (short/medium/long) that the developers would enter into in order to qualify for such linkage.

4.7.3 CCEA decision

Cabinet Committee on Economic Affairs (CCEA) took the following decision in 2013:

- 1) CIL to supply domestic coal of 90% of contracted quantity for pre-2009 power projects
- 2) CIL to sign FSAs for 78,000 MW capacity for plants to be commissioned by 31.3.2015.
- 3) Fuel Supply Agreements (FSAs) to be signed with following provisions:

Table 4-5: Yearwise FSA provisions

Year	% of (Actual Contracted Quantity) ACQ
Year 1	65%
Year 2	65%

²⁶ Since amended 4 September 2013

Year	% of (Actual Contracted Quantity) ACQ
Year 3	67%
Thereafter,	75% of contracted quantity

Actual coal supplies would commence only on tying up long term Power Purchase / Agreements with Discoms

CIL was also directed to supply to 4660 MW capacity plants ones and other similarly placed ones not having any fuel linkage. Such Supply to be based on MoU/Best effort basis.

4.7.4 Captive coal block Deallocation & Auction

Between 1993 and 2011 about 214 blocks were allocated for captive production for specified end-uses. In 2012 a PIL was moved before Supreme Court alleging irregularities in the procedure for awarding these blocks and Supreme Court deallocated all such blocks. Following deallocation of coal blocks by Supreme Court, new law (The Coal Mines (Special Provisions) Act, 2015) has been framed to institutionalize the award process through a mix of auction route in general and allotment route specifically for public sector coal user companies (Government companies). The new law also envisages commercial mining by agencies other than CIL and SCCL.

4.8 Wholesale Power Market Issues – Short term & Long term

4.8.1 Power Exchanges – Spot Market – Fall in prices

Indian short term inter-state power market typically constitutes less than 10% of power generated in the country. Balance is procured by distribution companies through long term contracts.

Two Power Exchanges were set up in the year 2008 and discovered high prices during the initial few years. However, such high phase

did not last long and prices started moving southward rapidly. The following table speaks for itself.

Table 4-6: Price movement in Power Exchanges

YEAR	2008	2009	2010	2011	2012	2013	2014	2015	2016**
AVERAGE(RTC)	7.54	5.35	3.54	3.39	3.14	2.31	3.23	2.55	2.17
MAXIMA (RTC)*	9.96	13.84	10.55	7.79	7.02	4.07	6.99	4.98	2.70
MINIMA (RTC)*	4.44	0.47	1.22	1.98	1.29	0.47	0.56	1.07	1.69

*Maximum and Minimum values of daily Round The Clock (RTC) prices discovered in the year

**IEX price data available upto 16th February 2016

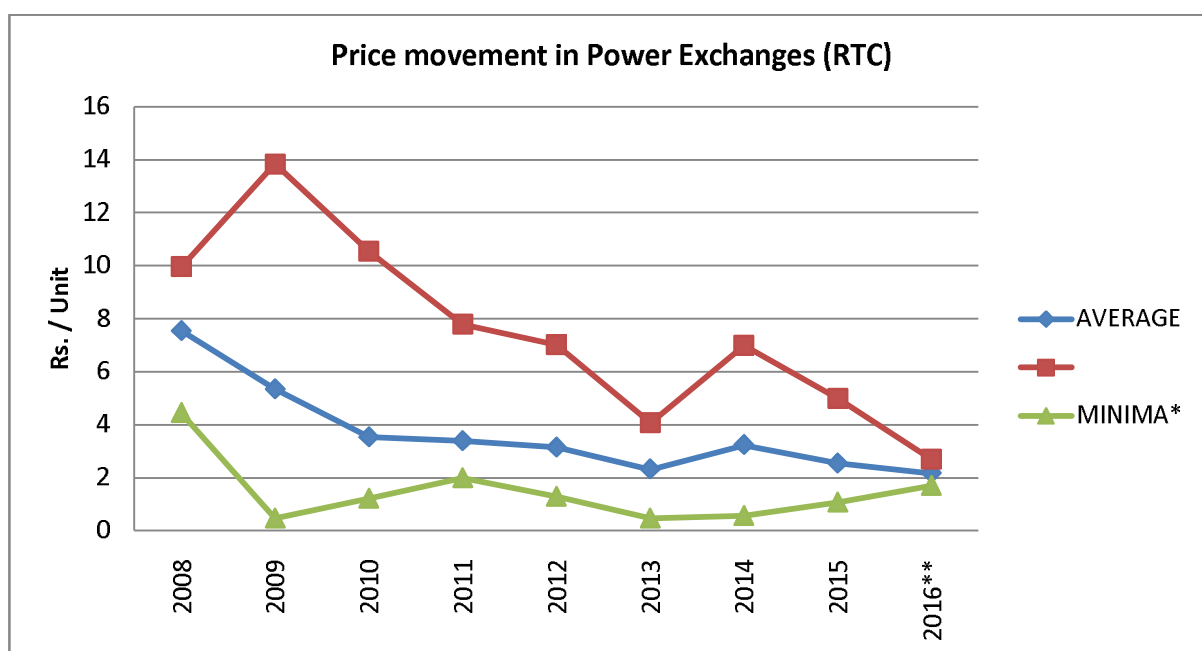


Figure 4-5: Price movement in Power Exchanges (RTC)

Day Ahead market is the main product available on the Power Exchanges. Other products that have been introduced are Term Ahead, Intra Day Contingency etc. The Exchanges are now permitted operate round the clock.

4.8.2 Issues in the Long Term Market for Power – Uncertainty in demand

Electricity Act 2003 provides for two different routes for long term power procurement by a Discom:

- (a) **Regulated Route** provided under Sec 62, under which the appropriate regulatory commission scrutinizes all costs and determines tariffs based on approved costs, and
- (b) **Competitive Route** provided under Sec 63, where the tariffs are discovered through a transparent competitive bidding process conducted by the procuring Discoms, which are then adopted by the appropriate regulatory commission.

According to the Act, generation is a de-licensed business in India, while the other businesses (transmission, trading and distribution) continue to operate under license from the appropriate regulatory commission. The National Tariff Policy, 2006, notified by the Govt. of India, mandates that all long term procurement of power by the Discoms would be through competitive bidding only. The competitive bidding mechanism allows for the bidder to bid on the basis of tariffs under a transparent and time bound framework.

With this perspective, the Ministry of Power (MOP) under the Central Government, in 2005, notified two modes for competitive procurement of power (Ministry of Power, 2005):

Characteristics of Case I and Case II Mechanism

Case I	Case II
Plant Location not specified by Buyer – Can be anywhere	Location (Land) is provided by the buyer
Technology not specified by Buyer	Technology selected by the Buyer and Clearances and Approvals are provided to the Successful Bidder
Fuel not specified by Buyer	Fuel tie-up arranged by Buyer, to be transferred to the Successful Bidder

Type of procurement

Tenure	Long Term (≥ 7 years); Medium Term (1 yr to 7 yr)
Load Specification	Base Load, Peak Load, Seasonal Load
Mechanism	Case 1; Case II

So far contracts for purchase of power are generally for a period of 25 years as per the guidelines. The general understanding is that the long term contracts mitigate risks of both buyers and sellers in terms of price and volume volatility.

In 2013, based on the actual experiences and difficulties faced by project developers in implementation of the competitive bidding framework, and with an aim to further improve the risk sharing framework between the supplier and the procurer, the Central Government came up with a revised framework for procurement of power as:

1. **DBFOT (Design-Build-Finance-Operate-Transfer) Framework, akin to the earlier Case-2 route:** where the project developer sets up the project under a long term procurement framework, and on expiry of the term, transfers the project to the procurers, on a pre-defined value; and
2. **DBFOO (Design-Build-Finance-Own-Operate) Framework, akin to the earlier Case-1 route:** where the generation project is set up and operated on Design, Build, Finance, Own and Operate basis by the project developer.

While initially, the results of competitive bidding for procurement of power was showcased as a huge success in the discovery of competitive power tariffs (with the Sasan UMPP being awarded at a levelled tariff of Rs. 1.19 / kWh under Case-2), a vast majority of about 52 GW bid capacity contracted through competitive bidding, representing about 76 GW of

installed capacity of coal based power, are facing serious viability challenges today, seeking for compensatory tariffs beyond the discovered tariff to meet the changes in the business conditions. The quoted tariffs have purportedly become non cost-reflective (i.e. quoted tariffs are inadequate, compared to the actual costs being incurred by the developers). Projects are either not able to generate adequate cash flows to cover operating costs and service debt or not able to secure financing to complete the project.

Inability of the competitive bidding framework to provide an adequate mechanism for sharing of risks has led to a situation wherein the unanticipated increases in costs have resulted in controversies and legal actions. Alongside, financial positions of the State Discoms (potential buyer) is also far from encouraging. With this uncertain background, Discoms do not seem to be willing to invite fresh bids in large scale, restricting avenues for securing long term contracts. Current fuel policy stipulates that only long term contracts with Discoms will allow coal to flow to the power developer.

4.8.3 Procurers' Financials – DISCOM's viability

Cumulative loss of Indian Discoms stand at a staggering Rs.4,00,000 Cr. **Ujwal DISCOM Assurance Yojana (UDAY)** is a financial turnaround and revival package conceptualised with the intent to find a permanent solution to the ailing distribution segment.

The scheme comprises four initiatives - improving operational efficiencies of discoms, reduction of cost of power, reduction in interest cost of discoms and enforcing financial discipline on discoms through alignment with state finances. It allows state governments, which own the discoms, to take over 75 percent of their debt as of September 30, 2015, and pay back lenders by selling bonds. Discoms are expected to issue bonds for the remaining 25 percent of their debt.

The scheme is optional for the states to join. As of January 2017, 21 states have signed MOU expressing willingness to join the scheme with Andhra Pradesh being the first state to join. The following table illustrates:

Table 4-7:UDAY status

		Commercial loss on subs recd basis	Debt FY2015	Bonds to be issued
	MoU signed	(553)	3,818	2,527
1	Rajasthan	(125)	811	772
2	Tamil Nadu	(127)	755	304
3	Uttar Pradesh	(87)	570	498
4	Haryana	(21)	341	345
5	Madhya Pradesh	(50)	334	45
6	Punjab	(11)	219	203
7	Maharashtra	(4)	170	66
8	Andhra Pradesh	(25)	138	110
9	Telangana	(29)	119	0
10	Karnataka	1	98	0
11	Jharkhand	(0)	98	64
12	Himachal Pradesh	(1)	46	39
13	Bihar	(12)	38	31
14	Assam	(6)	23	0
15	Gujarat	1	22	0
16	Chhattisgarh	(16)	19	13
17	Uttarakhand	(3)	14	0
18	J&K	(39)	2	35
19	Goa	(0)	1	0
20	Manipur	0	0	0
21	Puducherry	2	0	0
	Formally agreed to join	(9)	46	0
1	Odisha	(9)	46	
	Total	(562)	3,864	2,527
	Non-UDAY states	(21)	204	
	All States	(583)	4,068	

Source: MOSL, PFC, UDAY.gov.in

It is expected that with successful implementation of this, Discom's financial viability would improve and their reluctance to invite long term bid will go down.

4.9 Conclusion:

This section traces the evolution of Indian power sector over a period of the past 100 years and captures major milestones in its growth trajectory. It also deals with the current industry structure and coal supply framework for thermal power plants. It introduces certain important concepts like Merchant Power Plant and discusses the current issues relating to power market.

Thus it sets the context for Data Analysis.