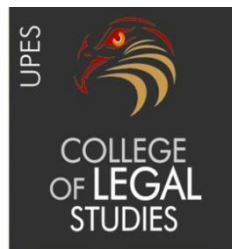


**LEGAL FRAMEWORK FOR TRANSMISSION OF ELECTRICITY IN UNDER
ELECTRICITY ACT, 2003**

Ashwani Aman
BA.LLB, 2010-2015
College of Legal Studies,
University of Petroleum & Energy Studies, Dehradun

Submitted under the guidance of: Dr. Venugopal B S

*This dissertation is submitted in partial fulfillment of the degree of
B.A., LL.B. (Hons.)*



College of Legal Studies
University of Petroleum and Energy Studies
Dehradun
2015

CERTIFICATE

This is to certify that the Dissertation titled "*Legal Framework for Transmission of Electricity in under Electricity Act, 2003*" submitted by *Mr. Ashwani Aman* to **College of Legal Studies, University of Petroleum & Energy Studies, Dehradun** for the partial fulfillment of the degree of B.A., LL.B. (Hons.) and is a record of *bonafide* work carried out by him under my supervision and guidance.

The work reported in the Dissertation/Project has not been submitted elsewhere to the best of my knowledge.

Dr. Venugopal B. S
Assistant Professor,
College of Legal Studies,
University of Petroleum & Energy Studies, Dehradun

Date:_____

DECLARATION

I declare that the dissertation entitled “*Legal Framework for Transmission of Electricity in under Electricity Act, 2003*” is the outcome of my own work conducted under the supervision of **Dr. Venugopal B S**, at College of Legal Studies, University of Petroleum and Energy Studies, Dehradun.

I declare that the dissertation comprises only of my original work and due acknowledgement has been made in the text to all other material used.

Ashwani Aman

BA.LLB (Hons.), 2010-2015

College of Legal Studies,

University of Petroleum & Energy Studies, Dehradun

Date:_____

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Thanking you all!
Ashwani Aman
BALLB, Sec A
SAP ID: 500012368, Roll No. R450210035
Sem X, College of Legal Studies,
University of Petroleum and Energy Studies, Dehradun

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LIST OF ABERRATIONS

&	:	And
/	:	Or
All.	:	Allahabad
ABT	:	Availability Based Tariff
AC	:	Alternating Current
AEGCL	:	Assam Electric Generation Company Limited
AIR	:	All India Reporter
APP	:	Atomic Power Plant
CEA	:	Central Electricity Authority
CERC	:	Central Electricity Regulatory Commission
Ckm	:	circuit kilometer
CPP	:	Central Power Project
CTU	:	Central Transmission Utility
D/C	:	Double Circuit
DVC	:	Damodar Valley Corporation
EA 2003	:	Electricity Act 2003
EHV	:	Extra High Voltage
EMTP	:	Electro Magnetic Transient Phenomena
EPS	:	Electric Power Survey
ER	:	Eastern Region
ERC	:	Electricity Regulatory Commission
FICCI	:	Federation of Indian Chamber of Commerce

GOI	:	Government of India
GW	:	Giga Watt
GWe	:	Giga Watt Electrical
HVDC	:	High Voltage Direct Current
ISTS	:	Inter State Transmission System
iSTS	:	Intra-State Transmission System
LTOA	:	Long Term Open Access
No.	:	Number
NDLC	:	National Load Dispatch Centre
NEP	:	National Electricity Plan
NER	:	North Eastern Region
NHPC	:	National Hydro Power Corporation
O&M	:	Operation and Management
Pg.	:	Page
PGCIL	:	Powergrid Corporation of India Limited
PLF	:	Plant Load Factor
PPA	:	Power Purchase Agreement
PTC	:	Power Trading Corporation
RLDC	:	Regional Load Dispatch Center
RPCs	:	Regional Power Committees
RoW	:	Right of Way
Reg.	:	Regulation
Sec.	:	Section
SC	:	Supreme Court

SLDC	:	Regional Load Dispatch Center
STU	:	State Transmission Utility
SEB	:	State Electricity Board
SERC	:	State Electricity Regulatory Commission
SLDC	:	State Load Dispatch Center
SR	:	Southern Region
STU	:	State Transmission Utility
UI	:	Unscheduled Interchange
Vol.	:	Volume
WB	:	World Bank
WR	:	Western Region

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- Adoni Cotton Mills Ltd. v Andhra Pradesh State Electricity Board, AIR 1976 SC 2414
- Karthik Entp. Pvt Ltd. v. Orissa State Electricity Board, AIR 1980 Orissa 3
- LML Ltd, Kanpur v State of UP, AIR 2001 All. 321
- WBERC v. CSES Ltd AIR 2002 SC 3588

1. CHAPTER I: INTRODUCTION

India today stands as one of the major generator and consumer of electricity in world¹. Electricity has been the main catalyst to the overall economic and industrial growth and development of India. The role of electricity gets even more sanctity in a country like India, where the energy generated decides the economic growth of the country². Electricity is a critical infrastructure value chain especially for a developing nation like India³. The chapter of electricity in India started with the era of British controlled India⁴.

Indian power sector has made a remarkable progress over the years. The graph of installed generating capacity has grown from 1361MW in the year 1947 to 158.6 GW in January, 2010. However, even after the blasting growth, the shortage of power sector continues to persist till date. Even after many innovative steps the gap between

¹ India is fifth 5th Highest Producer of Electricity World Wide, Index Mundi, Comparison of Country by Production, Accessed at <http://www.indexmundi.com/g/r.aspx?v=79&t=100>, Accessed on 19th Feb, 2015

² Ramya.L.N, M.A.Femina, Energy Auditing – A Walk-Through Survey, International Journal of Advanced Research in Electrical,Electronics and Instrumentation Engineering, Vol. 3, Special Issue 2, April 2014

³ Asia Pacific Partnership on Clean Development and Climate, Power Generation and Transmission Task Force: Action Plan, Accessed at <http://www.asiapacificpartnership.org/pdf/Projects/Power%20Generation%20and%20Transmission%20Task%20Force%20Action%20Plan%20030507.pdf>, Accessed on 19th Feb, 2015

⁴ The first test for electricity was done in Calcutta on 24th July, 1979 by a British Company named P W Fleury & Co.

the demand and supply could not be vanished and the power shortage remained an important issue in India⁵. There have been many factors which have contributed to his gap between the demand and supply⁶. Also, this has led to India being the home for the largest number of people without access to electricity⁷.

1.1. Indian Power Sector: Legislative History

The electricity has been put in the concurrent list⁸, so that both central and state have the power to make legislation concerning it. The first regulation was enacted in the British era to regulate the electricity sector was the Electricity Act, 1910⁹, which now stand repealed. Thereafter, the government after independence to set further reforms enacted the Electricity (Supply) Act, 1947. The act was based on a stringent socialistic policy and could not perform well as per the needs of the nation¹⁰. Finally,

⁵ Subodh Garg, Light at the end of the Tunnel: Indian Power Sector Challenges and Opportunity, NPTI, Accessed at www.npti.in/pdf/Article%20on%20Power%20Sector%20DG,%20NPTI.pdf Last accessed on 19th Feb, 2015.

⁶ One of the most pertinent factor is the inadequate transmission ifrastructre.

⁷ The total count of people in the world who do not have access to electricity is around 1.4 Billion out of which around 300 Million accounts from India. Ramya.L.N, M.A.Femina, Energy Auditing – A Walk-Through Survey, International Journal of Advanced Research in Electrical,Electronics and Instrumentation Engineering, Vol. 3, Special Issue 2, April 2014; Deepak Jhalani, Dr Himanshu Chaudhary, **Inclusion of Human Power (HP) In Micro Grids Portfolio: A Solution for Indian Rural Electrification**, *IOSR Journal of Mechanical and Civil Engineering Volume 2, Issue 5 (Sep-Oct. 2012)*, PP 39-47 Available at <http://iosrjournals.org/iosr-jmce/papers/vol2-issue5/H0253947.pdf>, Last accessed on 19th Feb, 2015.

⁸ Entry 38, Concurrent List, 7th Schedule, Constitution of India.

⁹ The Indian Electricity Bill was passed by the Legislative Council on 18th March, 1910 and it became the Indian Electricity Act, 1910 (9 of 1910) and it came into force with effect from 1st January, 1911.

¹⁰ All powers and function was put in the hands of SEBs. They were both, regulators as well as players.

the Electricity Act, 2003 was enacted as to satisfy the contemporary demand and encouraging the private participation in the power sector¹¹. Thus, the whole story of the Indian electricity could be divided into three phases, i.e. the pre-independence phase, the post-independence and post reform phase.

1.1.1. Pre-Independence Era

The pre-independence era existed till the year 1947, i.e. the year of independence in India. The commercial production of electricity in India was way back to 1879 in Kolkata. In 1897, a 21-year license was granted by the then government of Bengal to the Calcutta Electricity Supply Corporation to supply electricity to Calcutta¹². After Calcutta, Mumbai was the second city to have electricity and after Mumbai, the private companies concentrated on developing the power supply systems in major city¹³. The growth in the electricity during that phase was basically driven by demand from commercial and industrial requirements. Apart from commercial and industrial use, domestic use also triggered the growth to a certain extent. Almost all private companies operating at that period cease to exist today as they were brought into state-owned enterprises. However, a few of them continue to exist as private players.

The Electricity Act 1910 was the first legislation in the power industry, which was introduced in the year 1910. The Act provided for the basic framework for supply of

¹¹ As the Preamble of the Act say “*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, rationalisation 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*”

¹² Regulatory and Policy Environment: Indian Power Sector. D&B, Accessed at https://www.dnb.co.in/IndiasEnergySector/Regu_Power.asp, Accessed on 19th Feb, 2015.

¹³ *Ibid.*

electricity. The sector at that point of time at a nascent stage required huge investment requirement for setting up the basic infrastructure. The Act buoyant the growth of the industry by making the provision of granting licenses to private companies. Thus, during this phase, the generation was mainly concentrated in the hands of the private sector and coal and hydropower were the prominent source for generation. Tata Power, which today strands as the country's largest private sector utility, commissioned its first hydroelectric generating plant with a capacity of 72 MW at Khopoli¹⁴.

The best aspect about the pre-independence era was firstly, the marking of electricity in India and secondly, it promoted private players in electricity sector. Also, the Act materialized in 1910 gave the importance to the structural framework for the electric supply and encourage private participation. However, the supply of energy was restricted to the urban areas as private players were reluctant to invest in the rural areas.

1.1.2. Post Independence

As discussed earlier, before independence the electricity generation and supply was concentrated in hands of private players, due to which there was an uneven growth which concentrated only in urban areas. The second phase existed between the years 1947 to 1990. The government realized the importance of supply of electricity across all parts of the country¹⁵. To cope up with this issue, the legislators come up with the Electricity (Supply) Act, 1948. The legislation was based on the UK Electricity Act, 1926. Under the Electricity (supply) Act, 1948, the Central Electricity Authority (CEA)¹⁶ was established at the central level and State Electricity Boards (SEBs)¹⁷

¹⁴ *Ibid.*

¹⁵ The Electricity (Amendment) Act, 1948

¹⁶ Sec. 3, *The Electricity (Supply) Act, 1948*

¹⁷ *Id. to Sec. 5.*

were constituted in each state. The creation of SEBs was mandatory in each state¹⁸. Where CEA had to ensure development of a sound, adequate, and uniform national power policy to coordinate development of the power sector in India¹⁹ and SEBs role was to generate, transmit and distribute the electricity in their respective states²⁰. The planning and development was done by the SEBs where the overall supervision was given by the CEA. The CEA also provide planning at the national level and it provided the SEBs with broad guidance, planning, and development.

The development of Indian Electricity grids has been started from 1964 when it was planned to develop the electricity grids in whole country on the basis of regions were developed on the concept of Regional self sufficiency²¹. The regional grids came into their own in mid 1980s with minimum power exchanges at interregional level in radial mode. The first asynchronous HVDC back to back station connecting the Northern and the Western grids was commissioned in Vindhyachal in 1990. The Eastern and North Eastern synchronization took place through initial radial operation on 132 kV Alipurdwar to Gosaigaon and 220KV Birpara to Salakati, this line was commissioned as early as 1986 as a part of the Chukha(Bhutan) Transmission System but synchronous operation had to wait till 1991. At that time (1991) NER system size was 600 MW while Eastern Region was 6000 MW.

The SEBs acquired the private companies operating within their respective states and the state electricity boards were interconnected as to enhance system reliability and to

¹⁸ *Ibid.*

¹⁹ Sec. 3, *The Electricity (Supply) Act, 1948*

²⁰ *Id. to* Sec. 18.

²¹ S. R. Narasimhan Hemlata Vyas P.C.Pankaj Umesh Chandra, Empowering India through integrated grid operation A case study, FICCI Technical Paper, Available at <http://www.nrlde.in/docs/Documents/Papers/EmpoweringIndiathroughIntegratedGridOperation-SRN.pdf> Last Assessed on 20th Feb, 2015

ensure wider geographical coverage²². The electricity sector was brought into public domain.

The SEBs performance was adequate in the initial year and they started an overall development of the sector. As per the Electricity (Supply) Act 1948, the SEBs was required to generate a minimum return of 3% on their net fixed assets in service after meeting the financial charges and depreciation²³. The SEBs were able to somehow to generate the said returns for many years, but, later on their performance faltered and they had to seek financial aid from the state government in different forms²⁴. The 1970s were marked by incidents of power blackouts and grid collapses. As hydropower generation were dependent on the water resources which in turn was dependent on monsoon season, which become uneven therefore their capacity was compromised. Moreover, the public characteristics elevated the issues for the board further. There were delays in supply of equipment, delays in the civil works supply, and the infrastructure additions in proportion to the transmission and distribution were also not adequate. In its attempt to cater these issues the states and the Central government established some private companies, who could escalate the overall development.

Amendment was made in the Electricity (Supply) Act 1948 and the National Hydropower Corporation (NHPC) was established in the year 1975 to build and operate hydropower plants and the National Thermal Power Corporation (NTPC) to set up thermal power plants to supplement the capacities of the SEBs and private companies.

²² *Id. to* Sec. 7, .

²³ *Id. to* Sec. 43, .

²⁴ Since the SEB were restricted with 3% of the profit, *their* financial health started degrading.

NTPC developed its own transmission network to transmit electricity to different SEBs²⁵. In 1981, the government integrated the operations of the central and state transmission systems to by forming a national power grid to smoothen the progress of transmission of power generated by non-SEB generators. These efforts led to the emergence of the National Power Transmission Corporation in 1981²⁶. The company initially it was engaged in managing the transmission assets of the three companies i.e. NTPC, NHPC and North-Eastern Electric Power Corporation however but in 1992, the company was renamed as Power Grid Corporation of India Ltd and the transmission assets of the three companies were transferred to it under by way of an ordinance²⁷. Also, the government formed the Power Finance Corporation (PFC) in 1986 as a principle financial institution dedicated to the sector financing to supplement planned expenditure on generating plants, specifically new generating plants.

A lot of stress was laid on establishing hydropower plants during this stage as the government wanted to develop the power and irrigation simultaneously. The capacity in the hydropower sector witnessed a significant rise in 1970²⁸. However, the rise was lesser-than-expected growth rate and longer gestation period decreased its share in total power generation capacity. In the meanwhile coal-based power plants continued to grow and the graph of thermal power capacity kept on increasing²⁹.

²⁵ History of NTPC, Available at <http://www.ntpc.co.in/en/about-us/history>, Accessed on 04 Mar, 2015

²⁶ Renamed as Powergrid Corporation of India Ltd.

²⁷ R. V. Shahi , Towards Powering India: Policy Initiatives and Implementation Strategy, Excel Books, First Edition, Pg. 83

²⁸ The installed capacity from hydro in year 1969 was 5907 MW which reached upto 10,833 in 1979. Growth of Electricity Sector in India, CERC, Government of India, July, 2013, Accessed at <http://www.cea.nic.in/reports/planning/dmlf/growth.pdf> Last accessed on 19th Feb, 2015.

²⁹ Poor revenue collection and billing, poor metering and energy accounting, electricity theft, cross subsidies and SEB staff's inefficiencies were the main reasons for their losses.

While the SEBs aided the growth in the Indian electricity sector, by the end of the phase under review, they suffered huge financial crisis and technical losses³⁰, as a result of these losses; they tend to provide poor service to consumers. Also the state-owned corporation power plants were running at low plant load factor (PLF) and the SEBs did not have enough funds for renovation and modernisation of their plants which resulted in huge gap between demand and supply leading to an electricity crisis.

All these issue accumulated and created a huge pressure on the government to think about the restructuring the sector. The government responded to this situation by restructuring the whole sector in 1991.

1.1.3. Post Reform Period

The third phase started in the year 1991, when the government started reforming the power sector. The State Governments were not able to further help the ill-health SEBs financially; therefore the much needed reform was brought into force in 1991. For the convince of the study, this third phase is further divided into three parts or period.

1.1.3.1. First Part (1991-1996)

In this first part the government introduced the concept of Independent Power Producers (IPP). The main reason was to draw investment from the private players. The government open the sector for investment from both foreign and domestic players³¹. The step was affected by way of an amendment in both Electricity Act,

³⁰ Technical issues related grid operation, inadequate generation etc.

³¹ Reforms In The Power Sector, Press Information Bureau, Government of India, Accessed at <http://pib.nic.in/feature/feyr2000/fapr2000/f060420001.html>, Last accessed on 19th Feb, 2014

1910 as well as the Electricity (Supply) Act, 1948³². The government took an unprecedented effort and brought 100% ownership to the foreign players.

Apart from that in 1995, government introduced the Mega Power Policy to increase private investments in over 1,000-MW generation projects that would supply electricity to more than one state. The selection was to be made on the criteria of competitive bidding and the project was to get support from the CEA, NTPC and PGCI.

The initiative taken by government can be called revolutionary, however the result was not satisfying. The experiences of the first phase were not great and the Enron created a very bad picture of the unstable investment scenario. So overall, the first part of the reform failed to attract the investors, as it could not create a viable and attractive option for the private players to invest in this sector. The picture of unhealthy SEBs was in front of the private players, which further restricted them from investment.

1.1.3.2. Second Part (1996 to 2003)

The government learnt from their mistakes made in the first part with further reforms. The Government in 1998 came with a revised Mega Power Policy, with better enrolment and opportunity for the investors. The Power Trading Corporation (PTC) was also established to purchase power from identified projects and to sell to identified-SEBs. Establishing regulatory commissions and privatizing distribution in cities having population of more than one million were the pre-conditions included in the revised policy.

The sector's performance improved as compared with the first period as the PLF reached around 70% but still the commercial losses posed a major issue in the sector's progress. During this period private players were already being made for capacity

³² Both the legislations were simultaneously amended by way of Electricity Laws (Amendment) Act of 1991

addition in generation but the need was felt for private investment in transmission as well therefore, the Electricity Laws (Amendment) Act, 1998 was passed to enable private investment in the power transmission sector³³. The Central Transmission Utility (CTU)³⁴ and the State Transmission Utility (STU)³⁵ were set up under this Act. The maintenance and construction activity of transmission network was supervised by CTU at the inter-state level and by the state transmission utility (STU) at the intra-state level.

The CERC issued the first Indian Electricity Grid Code (IEGC) in January 2000 to guarantee grid discipline and to set operation and governance parameters for players in the transmission and distribution sectors.

1.1.3.3. Third Phase (2003 onwards)

In last two parts, we could observe that there were lot of changes brought into the sector. Both the Electricity Act, 1910 and Electricity (Supply) Act, 1948 were amended twice³⁶ to suit the reforms brought in the sector. Apart from that to set up regulatory commission the Electricity Regulatory Commission Act, 1998 was enacted. Finally, the Electricity Act, 2003 was enacted which repealed Electricity Act, 1910, the Electricity Regulatory Commission Act, 1998 and Electricity Supply Act, 1948³⁷. The Act of 2003 aimed at providing a a legal framework for enabling

³³ The Electricity Laws (Amendment) Act, 1998 (22 of 1998)

³⁴ Sec. 27A, *The Electricity Act, 1910*

³⁵ *Id. at Sec. 27B*

³⁶ By way of Electricity Laws (Amendment) Act of 1991 & the Electricity Laws (Amendment) Act, 1998

³⁷ The Electricity Bill was passed by the Parliament in 2003; this Bill sought to provide a legal framework for enabling reforms and restructuring of the power sector. The Bill became an Act with effect from June 10, 2003 and replaced the earlier laws governing the power sector, namely, *the Indian Electricity Act 1910, the Electricity (Supply) Act 1948, and the Electricity Regulatory Commission Act 1998.*

reforms and restructuring the power sector. The Act created a liberal framework for development of the power industry, promoting competition, protecting interests of consumers and supply of electricity to all areas, rationalization of electricity tariff and ensuring transparent policies and promotion of efficiency, among others³⁸. The Act came out with the National Electricity Policy³⁹, mandatory creation of SERCs⁴⁰, emphasis on rural electrification⁴¹, open access in transmission and distribution⁴² and some other provisions. It mandated the regulatory commissions to regulate the tariff and issues of license. This Act focused on laws relating to generation⁴³, transmission⁴⁴, distribution⁴⁵, trading, and uses of electricity⁴⁶. The Act was further amended on May 28, 2007 and the Electricity Act 2003 was enacted with stronger power and clarity and with greater emphasis on assessment, fines, and legal framework to check the commercial losses due to theft and unauthorized use of electricity⁴⁷.

³⁸ Regulatory and Policy Environment: Indian Power Sector. D&B, Accessed at https://www.dnb.co.in/IndiasEnergySector/Regu_Power.asp, Accessed on 19th Feb, 2015.

³⁹ Sec. 3, Electricity Act, 2003

⁴⁰ *Id at* Sec. 82,

⁴¹ *S Id. to ec.* 5, .

⁴² *Id. to* Sec. 41, .

⁴³ *Id. to* Part III, .

⁴⁴ *Id. to* Part V, .

⁴⁵ *Id. to* Part VI, .

⁴⁶ *Id. to* Part VII, .

⁴⁷ The Electricity (Amendment) Act, 2007 (No. 26 Of 2007)

One of the most essential features of the Act of 2003 is the concept of Open Access⁴⁸. The open access created a big room for private players in the areas of transmission and distribution. Also, the deregulation of the generating sector gives added advantage to the prospective investors. The Act also removed obstacles for the captive power generation⁴⁹ and made the procedures simple. Open access was allowed in transmission, which helped the private producers or any other generating utility to sell their power to any entity, as per their wish using transmission network. Due to these liberalizations, industries could now set up captive power generation units and by virtue of open access they were allowed them to sell electricity to using transmission network. Captive units could thus sell their surplus power to the customers of their choice therefore add value to the overall production⁵⁰.

1.2. Relevance of Transmission

The power transmission system of India is one of the important arteries of the power value chain. For a proper and efficient development of power sector, it goes without saying that robust and non-collapsible transmission is inevitable⁵¹. The increase in the graph of the generation of power has created a pressure on the transmission system, so that the surplus electricity could be transmitted to the region in need. In last five years the generation capacity has been increased by 50%, however the transmission capacity has been increased however only restricted to 30%.⁵² This unparallel growth

⁴⁸ As per Sec. 2(47) of Electricity Act, 2003 “open access” means the non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission.

⁴⁹ Sec. 9, *The Electricity Act, 2003*

⁵⁰ *Ibid.*

⁵¹ Growth of Electricity Sector in India, CERC, Government of India, July, 2013, Accessed at <http://www.cea.nic.in/reports/planning/dmlf/growth.pdf> Last accessed on 19th Feb, 2015.

⁵² *Ibid.*

of generation capacity and transmission capacity has been resulting in inadequate utilization of electricity and loss of resources.

Even after having 225 GW of installed generating capacity in 2012-13⁵³, India still comes under power deficit country. One of most relevant short coming leading to such situation is the inadequate transmission capacity, which does not match the generation capacities and load requirements. Unlike infrastructure sectors like the road network, where substitutes like rail, ship, waterways, airways, etc. are available, no such alternative to the transmission lines exist in the power sector⁵⁴. With the sole exception of captive power, cross country transmission lines ferry every unit of the power generated in the country.

Power evacuation is turning out to be a bigger problem than power generation for the country⁵⁵. Plants supplying electricity to SEB under long term agreements lost 1.93 billion units of generation due to transmission capacity bottlenecks⁵⁶. Based on the current supply position, Northern-North Eastern-Eastern-Western of the National Grid region is surplus to the extent of 2.3% of total regional demand during peak hours, while, the Southern region is anticipated to face a peak-time shortage of 26% of regional demand in 2013- 14. However, the power transmission constraints do not allow for the Southern grid's shortfall to be met by the surplus in the National grid.

Further the states like Chhattisgarh which are rich on resources are also not able to evacuate the excess generated power. With an expected power generation capacity in

⁵³ *Ibid.*

⁵⁴ FICCI, Power Transmission: The Real Bottleneck, Sept 2013. Accessed at http://www.ficci.com/spdocument/20311/power-transmission-report_270913.pdf Accessed on 20th Feb, 2015.

⁵⁵ *Ibid..*

⁵⁶ Noor Mohamad, Infra woes trip transmission despite power-surplus oases, *The Financial Express*, Jul 09, 2013 Accessed at <http://archive.financialexpress.com/news/infra-woes-trip-transmission-despite-powersurplus-oases/1139647>, Last accessed on 20th Feb, 2013.

excess of 30,000 MW by end of 12th plan, against the state's peak demand requirement of about 3,300 MW, currently there is only 7000 MW of transmission capacity available to evacuate power from the state. With a typical transmission project requiring around four to five years to get commissioned and inordinate delays expected in securing forest clearance in the region, it seems that the number of projects running below capacity, owing to transmission bottlenecks, will only increase in the near future⁵⁷.

The importance of transmission of electricity was ignored before the post reform period, and the same is evident that the no emphasis was paid on transmission in both Electricity Act, 1910 and Electricity (Supply) Act, 1947. However, the legislator identified the importance of transmission and made a very detailed and sound layout for the regulation of transmission.

As discussed above, the Indian Power Sector was closed for the private investment till the year 1991⁵⁸. It was only in 1991, when the sector was opened for investment. Initially in the year 1991, the government concentrated in increasing the generating capacity, thereafter only allowed for the private investment in the generation sector. Then after the gradual increase in the power generation, when the government has to face the issue related to unparallel transmission capacity, the private players were allowed to investment in power transmission by way of an amendment in the Electricity (Supply) Act, 1948⁵⁹. The amendment first of all segregated the transmission and gave it status of a separate activity. Further, provision was made for the establishment of Central Transmission Utility and State Transmission Utility.

Further, under the Electricity Act, 2003, a very vivid framework for the transmission was made. This shows the commitment and need towards the transmission sector.

⁵⁷ *Supra note 38.*

⁵⁸ IBEF, *The Indian Power Sector: Investment, growth and prospects.* Available at <http://www.ibef.org/download/Power-Sector-040213.pdf>, Accessed on 26th Feb, 2015

⁵⁹ The Electricity (Amendment) Act, 1998

Also, the other important factor that counts for the relevance given to the transmission is the uneven geographical location of generating station. The location of generating station is influenced by different factors like availability of fuel, level of clearance, proximity of market, water availability, climatic and atmospheric condition, labor etc. Therefore one cannot expect the power generating plant nearby or just adjacent to their consumers.

The following aspects depict the importance of transmission in power sector value chain:

1.2.1. Increase in Generating Capacity

There has been a robust increase in the generating capacity of the India after the liberalization of the sector in the year 1991. Whereas the installed capacity was 69065 MW in the year 1990, the same has increased to almost four times to 258701 MW in 2015⁶⁰ which shows the rate of development of generating unit of the Indian Power Sector.

But if we look into the figures of the installed capacity of transmission we could observe that growth has not as significant as compared to the growth of generation. If we talk about the transmission lines below 66Kw, the installed capacity was around 4,20,000 km and increased only to 8,50,000 Kames in 2013⁶¹. So, the generating capacity has grown upto four time after the liberalization where as the transmission facility has only reached twice its capacity. The inadequate transmission lines have very huge impact on the overall economy and statistics of the power sector. Many a

⁶⁰ The figures of installed capacity represent the total installed capacity till January, 2015. CEA, Installed Capacity, Accessed at http://www.cea.nic.in/reports/monthly/inst_capacity/jan15.pdf, Accessed on 29th Feb, 2015.

⁶¹ *Supra note 36.*

times apart from making huge investment in generating station, the players again have to invest on transmission so that they can optimize their production⁶².

Therefore, the increase in the generating capacity has added an additional pressure on the development of transmission lines. The relevance of the transmission lines is equivalent to that of generation, as without adequate transmission lines the whole process would be futile⁶³.

1.2.2. The uneven location for generation and demand

A lot of factor influence the establishment of site of a power plant. The factor differs even on the type of power plant, the fuel used, or even on the prospective consumers.

In the past, transmission infrastructure was created with respect to generation and was focused on setting the adequate transmission systems which could evacuate power sufficiently, however, with the contemporary needs are different. Transmission sector has started to move towards integrated system planning due generation capacities being distributed unevenly in respect to their location. While thermal capacity is concentrated in the eastern region due to the presence of the coal fields which are the chief raw materials, hydro capacity is concentrated in the Northern and North-Eastern regions which have natural river system and dams. The capacity is used to evacuate power according to the demand in other regions like the Western region; thus, the integrated system planning has turned out to be a good option.

⁶² For instance, *the* Adani's Mundra-Mohindergarh high voltage-direct current is an Interstate Transmission System (ISTS) developed by Adani Power for the adequate utilization of power generated. Basically the duties lies with the Power Grid Corporation of India to provide with the adequate infrastructure facility. This added burden of the players represent that PGCIL has failed in providing services for the transmission line.

⁶³ Similar situation has arise in Indian as if now. The energy surplus states and regions are not able to transmit their surplus energy to the region or state in need.

1.3. Statistics of Indian Transmission Sector.

The country has been demarcated into five electrical Regions viz. Northern (NR), Eastern, Western, Southern and North Eastern. However, Northern (NR), Eastern, Western, Southern and North Eastern have been synchronously interconnected and operating as single grid –Central Grid. The overall capacity is around 110,000 MW. The Southern region is asynchronously connected to the Central Grid through HVDC links⁶⁴.



Power map showing National Grid at present

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⁶⁴ PGCIL, Transmission and Distribution in India: A report, Accessed at <http://www.npti.in/Download/Transmission/World%20Energy%20Council%20Report%20on%20T&D%20in%20India.pdf>, Accessed on 19th Feb, 2015.

⁶⁵ *Ibid.*

The backbone transmission system in India is mainly through 400 kV AC network with approximately 90,000 circuit kilometers of line length. The highest transmission voltage level is 765 kV with the line length of approximately 3120 Circuit KM. There are around 7,200 Circuit KM of 400 kV of 400kV system, 5500 MW, 500k long distance⁶⁶.

Overall there has been a rapid growth in the transmission sector, however the growth is not suffice to the need as to growing generation graph of the power.

⁶⁶ *Ibid.*

2. CHAPTER II: GROWTH OF THE LEGAL REGIME FOR THE TRANSMISSION OF ELECTRICITY

As discussed earlier, the transmission was not given much importance both in practice as well as in legislations. The same is evident from the Electricity Act, 1910 which has no relevant provision for the promotion or regulation of transmission. Even the original Electricity (Supply) Act, 1948 was not having any provision for the regulation of the transmission. It was only in later 1990s, the government realized the importance of the transmission sector and there after formed a separate company for the affairs of transmission⁶⁷. After that the other important event which comes across was the Electricity Laws (Amendment) Act, 1998, which introduced the provision for transmission and regulation of transmission in both Electricity Act, 1910 and Electricity Supply Act, 1948⁶⁸.

Further, the provision was more strengthened with the enactment of Electricity Act, 2003. The Act, completely restructured the Indian Power Sector and contains provision to suit the contemporary needs and demand of the sector. The Act contained a special chapter for the regulation of transmission⁶⁹. The Act contained a value added version of the compilation of amendment related to transmission made in the year 1998.

For more than three quarters of a century electricity was widely and uncontroversial regarded as a regulated public good that had to be delivered to customers by vertically integrated entities⁷⁰. This thinking was due to the socialist policy of the government,

⁶⁷ Powergrid Corporation of India of India

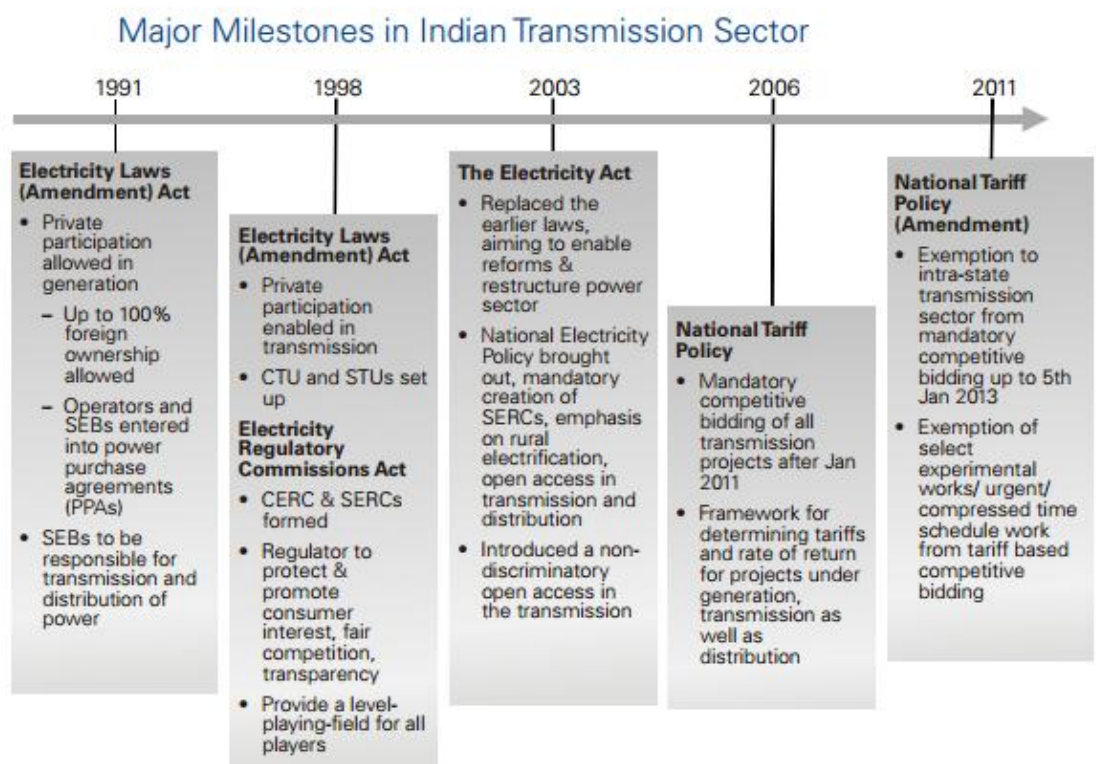
⁶⁸ The amendment brought in the provision for transmission in the Electricity Act, 1910 and Electricity (Supply) Act, 1948

⁶⁹ Chapter IV, *The Electricity Act, 2003*

⁷⁰ Amol Phadke and Sudhir Chella Rajan, *Electricity Reforms in India: Not Too Late to Go Back to the Drawing Board*, *Economic and Political Weekly*, Vol. 38, No. 29 (Jul. 19-25, 2003), pp. 3061-3072

which has the complete control over the electricity sector. The same led to the degradation of the sector and also resulted in the serious financial deficiency in the SEBs. The state government has to keep them alive by putting heavy funds. The post liberalization of the economy created some room for the development of the sector. However, the problem again restricted the growth of the sector was the inadequate legal backing. The sector was opened but the regulation was not appropriate. The legislature come to the aid and amendment were made in the existing laws to suit the new reforms.

Amendment was also made in the existing legislation to suit the need for the transmission. The legislative era of the transmission started with this. The image below shows the development of the legal regime for the transmission of electricity.



2.1. History of development of Legal Provisions for Transmission of Electricity in India.

After the generation of energy for the first time in Bengal in late 19th Century, the legislative measures were only taken in 1910 with the enactment of the Electricity Act, 1910. However owing to small and dedicated generation, attention was not paid to the transmission. If we look into the original Electricity Act, 1910 as passed in 1910, we could only see the provisions related to “supply and use of the electrical energy”⁷¹. Or otherwise we could say that the whole concept of the electricity transmission was missing at the time of the enactment. There was not much advancement made in the transmission scenario till the decade after the independence of the country. During the fifties, electricity was supplied to the load centers from generating stations. At the time of independence, power systems in the country were essentially isolated systems developed in and around urban and industrial areas. The installed generating capacity in the country was only about 1300 MW and the power system consisted of small generating stations feeding power radically to load centers. The highest transmission voltage was 132 kV. The state-sector network grew at voltage level up to 132 kV during the 50s and 60s and then to 220 kV during 60s and 70s. Subsequently, in many states (U.P., Maharashtra, M.P., Gujarat, Orissa, A.P., and Karnataka) substantial 400kV network was also developed in the State sector as large quantum of power was to be transmitted over long distances. With the development of state grids in most states of the country the stage was set for development of regional grids⁷².

⁷¹ Also, as per the Preamble of the Electricity Act, 1910 which says “ *An Act to amend the law relating to the supply and use of electrical energy*” it is clear that no emphasis was paid on the transmission.

⁷² CEA, Draft National Electricity Plan, Ministry of Power, Government of India, February, 2012 Available at http://www.cea.nic.in/reports/powersystems/nep2012/transmission_12.pdf, Last Accessed on 19th Feb, 2015

It was in the third Five Year Plan, the concept of Regional planning in this Sector was introduced⁷³. Accordingly, for the purposes of power development planning, the country was demarcated into five Regions i.e. Northern, Western, Southern, Eastern and North-Eastern. In 1964, the establishment of the Regional Electricity Boards each of the Regions of the country for facilitating integrated operation of State Systems in the Region and therefore encouraging exchange of power among the States was made possible. Also to encourage the States to build infrastructure for exchange of such power, inter-State lines were ‘centrally sponsored’ and the States were provided interest free loans outside the State Plan. 55 nos. of inter-State lines were constructed under the program of which 13 lines were connecting States located in different Regions and this created the initial set of inter-Regional links. These lines facilitated exchange of power in radial mode among the various Regions⁷⁴.

However, with the rapid increase in the capacity, a state grid was built for ensuring reliability in power supply. Even though demand from different regions was rising, the resources were confined to some regions like the eastern and north eastern regions. In 1975, a very innovative step was taken by way of an amendment⁷⁵ in the Electricity (Supply) Act, 1975 which enabled the formation two big companies, i.e. National Thermal Power Corporation⁷⁶ (NTPC) and National Hydroelectric Power Corporation⁷⁷ (NHPC). Whereas the objective of NTPC was to increase generation

⁷³ *Ibid.*

⁷⁴ *Ibid.*

⁷⁵ The Electricity (Supply) Amendment Act, 1976 (115 of 1976)

⁷⁶ Responsible for the development of the thermal power generation plant through-out India. Till date it has an installed capacity of 44,398 MW. See NTPC Overview, Available at <http://www.ntpc.co.in/en/about-us/ntpc-overview>

capacity through thermal power plants and the objective of HHPC was to develop hydroelectric power plant to increase the generation.

Due to the having a national status, these companies operated in different part of India, and for the transmission of electricity developed their own transmission lines. The transmission lines were basically to transmit the energy to different SEBs. However, the government in 1981, decided to integrate the operation of the national and state transmission systems to form a national power grid to facilitate transmission of power generated by non-SEBs. This effort led to the incorporation of the National Power Transmission Corporation in 1981. In the initial phase the company was given the duty to manage the transmission assets of the generating companies under the control of the Central Government, NTPC, NHPC and North-eastern Electric Power Corporation. But finally in 1992, after the reform was brought into picture, all the assets of the said companies were transferred to it and the company was renamed as the Power Grid Corporation of India Limited (PGCIL). The transfer and renaming was done by way of an ordinance which shows the government identified the immediate need for the same, after bringing the reforms in the year 1991.

2.2. Legal provisions for Transmission under Electricity Act, 2010 and Electricity (Supply) Act, 1948

The Electricity (Supply) Act, 1948 was enacted in the year 1948 to “*provide for the rationalization of the production and supply of electricity, and generally for taking the measures conducive to electrical development*”⁷⁸. The preamble of the Act indicates the intend of the legislature, which is the in the instant case to cover all aspects for the supply of electricity. The original Act as enacted in year 1948 dealt

⁷⁷ NHPC is responsible for the development of the hydroelectric generation. it has an installed capacity of 6507 MW till 2014. See NHPC: About Us, Available at <http://www.nhpcindia.com/about-overview.htm>

⁷⁸ Preamble, Electricity (Supply) Act, 1948

with the Constitution of the CEA, Constitution of SEBs, and basic function of the SEBs. There were very nascent provisions which for the transmission of electricity.

The Amendment⁷⁹ in 1991 was the first effort to bring in the provision for transmission in the Act. However, not much was done with respect to privatization in the transmission of electricity. The SEBs were responsible for the transmission and development of its infrastructure.

Another significant amendment made in the Electricity (Supply) Act, 1948 was in the year 1998⁸⁰. The Act now defined the terms transmission⁸¹, and transmission license⁸². For the first time the Act was amended to introduce the private participation in the transmission. The transmission license were granted for the for the construction, maintenance and operation of transmission lines. The Act also introduced the concept of Central Transmission Utility and State Transmission Utility As per the amendment, now the CTU shall operate the Regional Load Dispatch Centre (RLDC) and STU shall operate the State Load Dispatch Centre (SLDC)⁸³. RLDC were made the apex body for the power system in their concerned region⁸⁴ and entity has to abide by its direction⁸⁵. The Act also contained provisions related to the Specified the licensing role of the Central Electricity Regulatory Commission (CERC) and state electricity regulatory commissions (SERCs) with respect to CTU, STUs and transmission licensees.

⁷⁹ The Electricity Laws (Amendment) Act, 1991

⁸⁰ Electricity Amendment Act 1998 (22 of 1998)

⁸¹ *Id. to* Sec. 2(m), Electricity (Supply) Act, 1948

⁸² *Id. to* Sec. 2(n), Electricity (Supply) Act, 1948

⁸³ *Id. to* Sec. 55(1), Electricity (Supply) Act, 1948

⁸⁴ *Id. to* Sec. 55(2), Electricity (Supply) Act, 1948

⁸⁵ *Id. to* Sec. 55(3) Act).

The Amendment Act of 1998 subsequently brought changes in the Electricity Act, 1910 also⁸⁶. As per the amended legislation, the Central Government was given the responsibility for the setting up the Central Transmission Utility⁸⁷. The Central Government shall by notification in the official gazette, has to specify any government company as the CTU.

The functions of the CTU were as follows⁸⁸:

- Undertake transmission of electricity through inter-state transmission system
- Discharge all function of planning and co-ordination related to interstate transmission system with
 - State Transmission Utilities
 - Central Government
 - State Government
 - Generating Companies
 - Regional Electricity Boards
 - Central Electricity Authority
 - Licensees
 - Transmission Licensees
 - Any other person as notified by the Central Government

The Amended Act also contains the provisions for the setting up of the State Transmission Utilities⁸⁹. The state government was given the power to make their SEB or state company as STU. The function of STU was similar to that of CTU, but they have to operate within state. They were responsible for the intra-state

⁸⁶ The Electricity Law Amendment Act, 1998 introduced a complete new part in the Electricity Act, 1910. Part IIA was inserted in the Act, which deals with the Transmission of Energy

⁸⁷ Sec. 27A, Electricity Act, 1910

⁸⁸ Sec. 27A (2), Electricity Act, 1910

⁸⁹ Sec. 27B(1), Electricity Act, 1910

transmission of electricity. The function of STU as stipulated in the Act is as follows⁹⁰:

- Undertake transmission of electricity through intra-state transmission system
- Discharge all function of planning and co-ordination related to intrastate transmission system with
 - Central Transmission Utilities
 - State Government
 - Generating Companies
 - Regional Electricity Boards
 - Central Electricity Authority
 - Licensees
 - Transmission Licensees
 - Any other person as notified by the State Government

The STU were given the power to exercise the control and supervision over the Intra-state transmission system⁹¹. Also, the STU has to comply with and had to ensure compliance with the of other in their state with the direction of the CTU, which it may give from time to time in relation with the integrated grid operations and operation of the power system or other matters affecting the operation of interstate transmission.

The amended act also talks about the grant of the licences for the transmission. The Act has provided the temporary powers to Ministry of Power, Central Government for the grant of transmission licences⁹² until the CERC was formed in 1998. The transmission licensee will have the right to construct, maintain, and operate any inter-state transmission system, but subject to the direction supervision and control of the

⁹⁰ Sec. 27B(2), Electricity Act, 1910

⁹¹ Sec. 27B(3), Electricity Act, 1910

⁹² Sec. 27C, Electricity Act, 1910.

CTU⁹³. The Act also stipulated the procedure for making an application for obtaining the licences⁹⁴. Apart from the other requirements, the application under the Act has to obtain an approval from the CTU⁹⁵.

Also, the state governments were given the power to grant licence under the Act, until the SERC were constituted⁹⁶. The transmission licences granted under the Act by State Government will have the authority to construct, maintain, and operate any intra-state transmission system, but subject to the direction supervision and control of the STU.

2.3. Transmission under Electricity Act, 2003

The Electricity Act, 2003 swiped away all the existing legislation governing transmission, generation and supply of electricity. Electricity Act 2003 was enacted to consolidate the laws relating to Generation, Transmission, Distribution, Trading and use of Electricity and for measuring which would be helpful for development of electricity sector, promoting competition, restructuring of the State Electricity Boards, establishment of the regulatory committee both in Centre & State, establishment of Appellate Tribunal for all tariff related issues of the sector. The act replaced the earlier Acts of 1910, Supply act 1948, Regulatory Commission Act of 1998 etc.

As per the Act of 2003, the Central Government has been vested with the power for demarcating of the regions in the country for the efficient, economical and integrated transmission⁹⁷. The country has been demarcated into five transmission regions viz. Northern, Eastern, Western, Southern and North Eastern. The Northern, Eastern,

⁹³ Sec. 27C(2), Electricity Act, 1910

⁹⁴ Sec. 27C(3), Electricity Act, 1910

⁹⁵ Sec. 27C(4), Electricity Act, 1910

⁹⁶ Sec. 27 D, Electricity Act, 1910

⁹⁷ Sec. 25, Electricity Act, 2003

Western and North Eastern regions have been synchronously interconnected and operate as a single grid National Grid from a very long period of time⁹⁸. Recently, the southern regions have also been brought into the National Grid⁹⁹.

The Electricity Act, 2003 has also contained the provision for establishment for National Load Dispatch Centre¹⁰⁰, and Regional Load Dispatch Centre¹⁰¹. Apart from that it also contains the provision for the interstate¹⁰² and intrastate transmission.

2.4. National Tariff Policy 2006

National Tariff Policy 2006 brought the mandatory Tariff Based Competitive Bidding (TBCB) for all transmission projects with the objective of promoting competitive procurement of transmission services, encouraging greater investment by private players in the transmission sector and increasing transparency & fairness in the process. In addition, the policy further pushed to make the power sector not only financially viable but investment worthy. It restructured the tariffs and guaranteed a 16% rate of return on investments made between 2001 and 2004, and 14% return 15 on investments made after 2004. The NTP deals with the general approach to tariffs, wherein it talks about issues such as return on investment and equity norms to be abided by project developers.

⁹⁸ Inter Regional Energy Exchanges, CEA, Accessed at http://www.cea.nic.in/reports/monthly/gm_div_rep/inter_reg_energy_exchange.pdf Accessed on 21st Feb, 2015

⁹⁹ Southern grid to be integrated with national grid by January 2014, *The Economic Times*, Sept 14, 2014

¹⁰⁰ Sec. 26, Electricity Act, 2003

¹⁰¹ Sec. 27 .

¹⁰² Sec. 31-33 .

3. CHAPTER III: LEGAL FRAMEWORK FOR TRANSMISSION UNDER ELECTRICITY ACT, 2003

The present governance of transmission is regulated by the Electricity Act, 2003. As already discussed the Electricity Act, 2003 scrapped the legislation that existed before 2003 and regulated the supply of electricity in any manner¹⁰³. The Act of 2003 was kind of proper arrangement to the restructuring that started way back from 1991 after the reforms were enforced in sector. To sum up, we can say that the Electricity Act, 2003 in a very sophisticated manner consolidated all the legal development as to suit the contemporary issues in the generation, transmission, trading and supply of electricity.

The Act of 2003 has been divided into XVIII parts and a very exhaustive piece of legislation that deals with each and every aspects of electricity. The Act has been very innovative and promising in dealing with the issues arising out of different operation. One of the examples of such provision is setting up of Special Courts, which shall try for the certain offences under the Act¹⁰⁴.

The Act also put forth a complete structure and regulation of transmission system, which consist of following aspects:

- a) Procedure for obtaining Licenses for the transmission

¹⁰³ The Electricity Act, 2003 repealed the following legislations:

- Electricity Act, 1910
- Electricity (Supply) Act, 1948
- Electricity Regulatory Commission Act, 1998

¹⁰⁴ Sec. 153, Electricity Act, 2003 provides for the Constitution of Special Court. The Special Court shall be set up by the State Government by notification in official gazette, which shall conduct speedy trial for the offence referred in Sec. 135 to Sec. 140 and Sec. 150.

- b) Provision for demarcating the geographical location
- c) Provisions related to the establishment of CTU & STU
- d) Provision related to the establishment of RLDC and SLDC
- e) Duties and function of the transmission licensee
- f) Inter State and Intra State transmission
- g) Grid Standards
- h) Authority for regulation of grid standards
- i) Open Access
- j) Tariff Determination
- k) Dispute Resolution

3.1. Legal Framework of transmission of electricity

Ministry of Power, Government of India is the nodal agency that looks after the issues of electricity including transmission. The Ministry plays the role in the perspective planning, policy formulation, monitoring of the implementation of power projects, processing of projects for investment decision, training and development of manpower including the administration and formulation of legislation in regard to power generation, supply, transmission and distribution.

Next to the Ministry comes Central Electricity Authority of India¹⁰⁵. The Central Electricity Authority is a statutory body formed under the Electricity Act, 2003. The duties of Central Electricity Authority includes advising the Central Government on the matters National Electricity Plan, formulating short term and long terms plans for developing the electricity system, providing technical standards for the power plants, electric lines, grids etc., specify the safety requirements, including other. It is

¹⁰⁵ Sec. 70, Electricity Act, 2003

basically an advisory body, which advises and make plans both *suo moto* as well as on the demand by the government.

Then comes the regulating bodies, i.e. Central Electricity Regulatory Commission¹⁰⁶ (CERC) and State Electricity Regulatory Commission¹⁰⁷ (SERC). The duty of CERC is basically to regulate the tariff of those companies who are engaged in the generation of electricity¹⁰⁸ who are either:

- Central Government controlled companies
- Are operating in more than one state.

The role CERC come in transmission n respect to the interstate transmission and regulation of the tariff for the in the interstate transmission.

Whereas the role of SERC emerges with respect with the state owned generating companies and the operation that are carried with respect to the electricity with its jurisdiction. The SERC also determines the wheeling charges for the transmission of electricity within its jurisdiction¹⁰⁹.

Transmission being a natural monopoly has been recognized as a licensed activity¹¹⁰. Transmission utility has been envisaged at the centre and in the states with the responsibility *inter alia* for the planning and co-ordination of inter-state and intra-state transmission respectively. Also, the Act contains provision for the private licenses for the transmission of electricity for both inter-state and intra-state. For management of day to day function of dispatch and scheduling, there has been load

¹⁰⁶ Sec. 76, Electricity Act, 2003

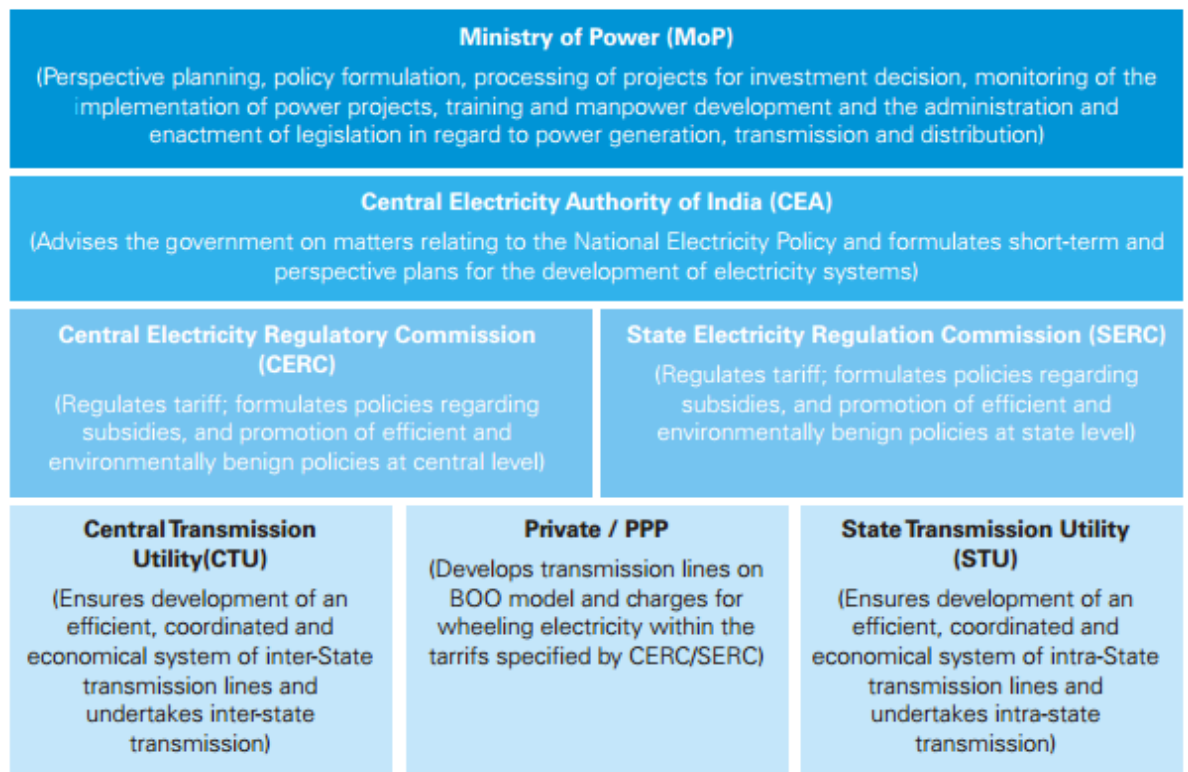
¹⁰⁷ Sec. 82, .

¹⁰⁸ Sec. 79, .

¹⁰⁹ Sec. 86, .

¹¹⁰ S. K. Chaterjee, Commentary on the Electricity Act, 2003, 2nd Edition, Delhi Law House, Pg. 75

dispatch centre each at the Central, Regional and state level. The function of the load dispatch centre being very critical, the law provides these function should be performed by the government companies or organization only.



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The other important aspect of transmission under Act is open access¹¹². The law mandated that it is the duty of the transmission utility or licensee to provide non-discriminatory open access to its transmission sector to every licensee and generating

¹¹¹ FICCI

¹¹² As per Sec. 2(47) of Electricity Act, 2003 Open Access is defined as “*the non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission;*”

company¹¹³ and also to the consumer¹¹⁴. Open access in transmission thus enables the licensee and the generating companies to use the transmission system without any discrimination.

In order to ensure that the transmission does not become a bottleneck, the law prohibits the transmission licensee from trading of electricity, i.e. engaging in the business of sale and purchase of electricity¹¹⁵. The rationale behind such prohibition is to secure the interest of transmission licensee in transmission and completely segregate it from the commercial interest from the commercial sale and purchase of electricity. The only role which the transmission licensee has to play is to construct and maintain their transmission lines and get paid by the person using their transmission lines¹¹⁶. This concept has been different from the earlier practice where the electricity traders were the owners of the transmission lines and used to buy the electricity from the generating companies and trade them.

Since under the new regime the distribution licensee would be at liberty to procure power from any of the source, which has generated competition amongst the seller and therefore helped in reducing the cost of generation or procurement. It is also pertinent to note that, unlike the open access in the distribution, the open access in transmission was allowed from the very beginning without the payment of any surcharge¹¹⁷.

¹¹³ Even the captive power have right to open access to transmission of electricity. Sec. 9(2) of Electricity Act, 2003

¹¹⁴ Sec. 42, Electricity Act, 2003

¹¹⁵ *Proviso* to Sec. 41, .

¹¹⁶ Sec. 41 .

¹¹⁷ S. K. Chaterjee, Commentary on the Electricity Act, 2003, 2nd Edition, Delhi Law House, Pg. 76

3.2. Licensing

As per the Act, license is required for the activities of transmission, distribution and trading of electricity. However, no license is required for the generation of electricity¹¹⁸. Under the previous legislation, the power to grant license and consequently to amend , and revoke were with the State Government, however under the new regime of Electricity Act, 2003, the powers are with the Central and State regulatory commission in their respective jurisdiction.

As per Section 12 of the Act, no person shall:

- Transmit electricity
- Distribute electricity
- Undertake trading in electricity

Unless he is authorized to do by way of a license granted under Section 14. So as per the provision, the transmission, distribution and trading of electricity are licensed activity and a license under the Act is required for carrying on such activities.

Section 13 stands as an exception to the Section 12. The provision empowers the Appropriate commission to grant exemption from the requirement of licensing to certain organization like local authority, panchayat, user's association, co-operative society, NGOs, etc. The Appropriate Commission has to grant such exemption on the recommendation from the appropriate government and while granting exemption the Appropriate Commission can impose condition and restriction and specify the period for which such exemption will be valid.

This provision stands parallel to the execution of the National Policy¹¹⁹ for achieving the electrification and total coverage. The existing provision corresponds to the Section 28 of the repealed Electricity Act, 1910, which provided the concept of non-

¹¹⁸ Sec. 7 .

¹¹⁹ Sec. 5, .

licensee who were the person other than the licensee, authorized by sanction by the State Government, to undertake the business of supplying energy.

The grant of license is covered under Section 14. As per Section 14, on an application made under Section 15, the Appropriate Commission can grant a license to any person :

- To transmit electricity as transmission licensee
- To distribute electricity as distribution licensee
- To undertake trading of electricity as an electricity trader

in the area specified in the license.

The provision also places restriction on any person who is engaged in the business of either transmission or supply of electricity under the provision of repealed law or appointed date shall also come within the meaning of the licensee under the Act. The provision also grants the CTU and STU and the appropriate government which transmit, distribute or trade in electricity as the status of licensee under the Act.

The people who are deemed to be licensee are:

- Persons engaged in the transmission and supply of electricity under the repealed law or the state reform laws
- CTU and STU
- Appropriate government undertaking transmission, distribution, or trading of electricity whether before or after the Act.
- Damodar Valley Corporation
- The government companies or the companies created after the reorganization of SEBs

One of the most pertinent factors to be noted in Section 15 is that, it allows multiple licenses for the same area of supply of supply¹²⁰. It empowers the appropriate commission to grant more than one license in the same area of supply and each such licensee is allowed to build his own distribution system.

Also, the provision allows a person who is intending to generate and distribute electricity in the rural areas is to be notified by the State Government shall not require a license. However, he shall have to comply with the safety requirement¹²¹. The provision also provides that the distribution licensee does not require a licensee to trade in electricity.

Section 15 deals with the procedure for grant of license. Each application which is made under Section 14 shall be in such form and manner as specified by the appropriate commission and on payment of appropriate fees. The manner and form of the application has to be specified by the Appropriate Commission, however the fees to be paid along with the application has to be determined by the Appropriate Government.

The Central Government has already notified the rules prescribing the grant of license¹²². The following are the procedure for the grant of license:

- The applicant shall, within 7 days of the making an application, publish his application in such manner and such particular as prescribed by the appropriate government.

¹²⁰ This feature corresponds to the Sec. 3(2)(e) of the Electricity Act, 1910, which enabled license to more than one person in the same area of supply. The provision in Electricity Act, 2003 is however more comprehensive.

¹²¹ Specified in Sec. 53 Electricity Act, 2003

¹²² The Fees for Making Application for Grant of License Rules, 2004, Gazette of India Extraordinary, 23rd March, 2004

- The intention of publication is to invite objection for the same. The public shall have the liberty to raise their objection within 30 days of the publication
- The application shall also be forwarded to the different parties like STU, CTU, CERC, concerned SERC etc
- Before the granting of the license, the Appropriate Authority shall publish the notice in two daily newspapers. The notice shall state the name and address of the person proposed to be issued the license.
- The Commission shall consider all the suggestions or objections received and the recommendations, if any of the CTU/STU.
- The Appropriate Commission shall take decision on the application within ninety days from the receipt of the application and shall support its decision with the reasons.
- The Appropriated Commission shall forward a copy of the license issued to
 - Appropriate government
 - CEA
 - Local Authority
 - Such Other person as it consider Necessary
- The Validity period of the license shall be of 25 years unless it is revoked

The Appropriate Commission can also specify any general or specific condition which shall either apply to the license or a class of license¹²³. The condition as specified by the Appropriate Government shall be deemed to be condition of such license¹²⁴.

The Act also laid down certain prohibition on the conduct of license¹²⁵. It stipulates that the license is forbidden to

¹²³ Sec. 16, *The Electricity Act, 2003*

¹²⁴ The Provision corresponds to Sec. 3 of the *Electricity Act, 1910*

¹²⁵ Sec. 17, *The Electricity Act, 2003*

- Undertake any transaction to acquire by purchase or takeover or otherwise, the utility of any other licensee
- Merge the utility owned by him with the utility of any other licensee

Unless, it has obtained the approval of the Appropriate Commission. However, this provision will not be applicable if, utility to be acquire or merged lies in the state other than the state where utility of licensee is situated.

Also, a licensee intending to undertake the said transaction within the state shall before obtaining the approval from the said transaction shall give one month prior notice to every other licensee within that area¹²⁶. Also, if any such transaction made without the prior approval of the Appropriate Government shall be void¹²⁷.

The Act also specifies the provision for making alteration of the licenses¹²⁸. Where in the opinion of the Appropriate Commission, the public interest so permits, it may either on application of licensee or *suo moto*, can make amendments and alteration in the terms and condition of license, as it thinks fit.

The license can also be revoked by the Appropriate Commission on the following grounds:

- where the licensee, in the opinion of the Appropriate Commission, makes willful and prolonged default in doing anything required of him by or under this Act or the rules or regulations made there under;
- where the licensee breaks any of the terms or conditions of his license the breach of which is expressly declared by such license to render it liable to revocation;

¹²⁶ Sec. 17(3), *The* .

¹²⁷ Sec. 17(4) .

¹²⁸ Sec. 18 .

- where the licensee fails, within the period fixed in this behalf by his license, or any longer period which the Appropriate Commission may have granted therefore –
 - to show, to the satisfaction of the Appropriate Commission, that he is in a position fully and efficiently to discharge the duties and obligations imposed on him by his license
 - and obligations imposed on him by his license or
 - to make the deposit or furnish the security, or pay the fees or other charges required by his license;
- Where in the opinion of the Appropriate Commission the financial position of the licensee is such that he is unable fully and efficiently to discharge the duties and obligations imposed on him by his license.

The License can also be revoked for a certain area in the public interest on the application of the license or suo moto¹²⁹. However, a notice of three month period in writing has to be given before the revocation of license¹³⁰.

3.3. Interstate Transmission System (ISTS)

Transmission has been categorized as interstate and intrastate transmission. The ISTS is mainly owned and operated by the PGCIL which is also the CTU. However, there have been many private players also operating in this field. The purpose¹³¹ served by ISTS are as follows:

- Evacuation of power from the inter-state generation stations which have more than one beneficiary

¹²⁹ Sec. 18(2), *The Electricity Act*, 2003

¹³⁰ Sec. 18(3) .

¹³¹ CEA, Draft National Electricity Plan, Ministry of Power, Government of India, February, 2012 Available at http://www.cea.nic.in/reports/powersystems/nep2012/transmission_12.pdf, Last Accessed on 19th Feb, 2015

- Transmission of power on onward basis for the delivery of power from inter-state generation station up to the delivery point of the state grid
- Transfer of operational surpluses from surplus states to deficit state or surplus region to deficit region.

As per Section 25, the Central Government shall have the power to make demarcation of the country regionwise, and its modification from time to time as per the necessity for the efficient and integrated transmission of electricity and supply of electricity. The Central government shall also facilitate inter-connection and co-ordination facilities for the inter-state, regional and inter-regional generation and transmission of electricity. Therefore the Central Government is required under the provision to make region wise demarcation of the country for following purpose:

- Efficient, economical and integrated transmission and supply of electricity
- To facilitate the voluntary interconnection and coordination of facilities for the inter-state, regional and inter-regional generation and transmission of electricity.

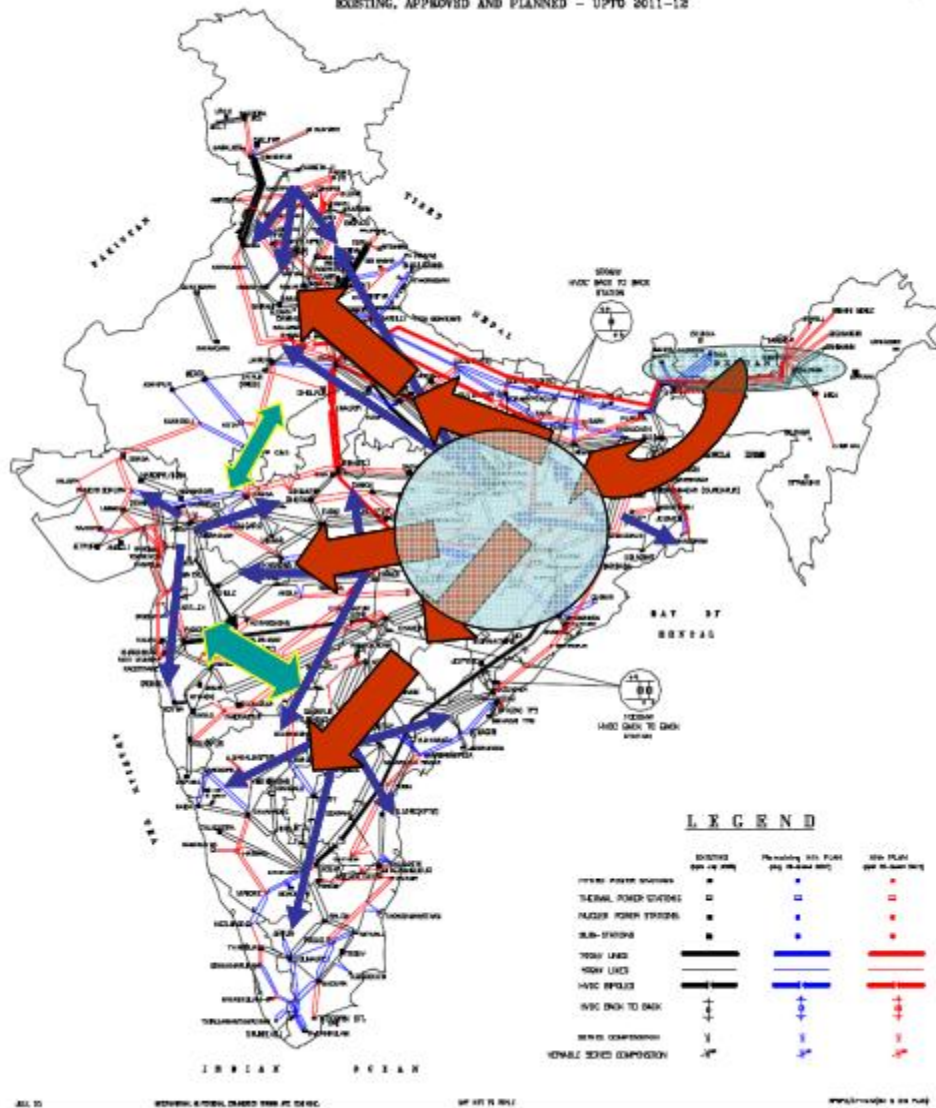
Under the power conferred to Central Government i.e. the Ministry of Power, the country has been divided into five regions for the better and integrated management of the grids. The regions are as follows:

- Western Region
- Northern Region
- Southern Region
- Eastern Region
- North Eastern Region

The Indian Power system for planning and operational purposes is divided into five regional grids. The integration of regional grid, and establishment of One National Grid, was conceptualized in early 1990s. The integration of regional grids which began with asynchronous High-voltage direct current (HVDC) back-to-back inter-regional links facilitating limited exchange of regulated power was subsequently graduated to high capacity synchronous links between the regions.

MAJOR TRANSMISSION NETWORK OF INDIA

400KV AND ABOVE
EXISTING, APPROVED AND PLANNED - UPTO 2011-12



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¹³² Growth of Electricity Sector in India, CERC, Government of India, July, 2013, Accessed at <http://www.cea.nic.in/reports/planning/dmlf/growth.pdf> Last accessed on 19th Feb, 2015.

3.3.1. National Load Dispatch Centre

Section 26 of the Act, deals with the establishment of National Load Dispatch Centre (NDLC), which shall be established by the Central Government at a national level, for the optimum scheduling and dispatch of electricity among the Regional Load Dispatch Centre(RLDC). The constitution and the function of the NLDC was to be decided by the Central Government. The NLDC shall be operated by a government company/organization¹³³.

The Power System Operation Corporation Limited (POSOCO) which is the wholly owned subsidiary of PGCIL is presently the NLDC which has around 5RLDC and 33 SLDC under its control¹³⁴.

Also, the Central Government vide the Gazette of India has prescribed the rules regarding the constitution and function of NLDC¹³⁵. The NLDC has been prohibited for carrying out or engaging in trading of electricity.

As per the repealed law, the load dispatch centre was to be constituted at state and regional level, however under the new law, NLDC has been provided apart from the SLDC and RLDC. The ultimate objective of introduction of NLDC was creation and development of a national grid.

3.3.2. Regional Load Dispatch Centre

The establishment of Regional Load Dispatch Centre is also conferred in the hands of Centre. The Central Government shall establish for each region as determined under Section 25. Even the RLDC shall be operated by the Government Company or

¹³³ Sec. 26(3) .

¹³⁴ Origin, Power System Corporation Ltd, Accessed at <http://posoco.in/about-us/origin> Accessed on 20th Feb, 2015

¹³⁵ National Load Dispatch Centre Rules, 2004. 07th March, 2005

organization similar to the NLDC¹³⁶. Until the government appoints any company or organization as the RLDC, the CTU shall operate as a RLDC.

The territory of India has been divided into five Regional Load Dispatch Centre for ensuring the integrated operation of power system and transmission in the concerned region. The RLDCs for North, East, West, South and Northeast regions are located at Delhi, Kolkatta, Mumbai, Bangalore and Shillong respectively.



Five Regional grids in India

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The RLDCs coordinate amongst themselves both offline as well as online for maintaining the security and stability of the integrated pan India grid.

¹³⁶ Sec. 26 (2) .

¹³⁷ Growth of Electricity Sector in India, CERC, Government of India, July, 2013, Accessed at <http://www.cea.nic.in/reports/planning/dmlf/growth.pdf> Last accessed on 19th Feb, 2015.



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The RLDC in India are presently owned, managed and operated by the Central Transmission Utility (CTU), i.e. PGCIL while the SLDCs in the state are owned operated and managed by the respective State Transmission Utility (STU) or the State Electricity Board (SEB) as the case may be¹³⁹.

The RLDC performs very essential function which include ensuring integrated operation of power operation in India¹⁴⁰. The other functions which the RLDC performs¹⁴¹ are:

¹³⁸Growth of Electricity Sector in India, CERC, Government of India, July, 2013, Accessed at <http://www.cea.nic.in/reports/planning/dmlf/growth.pdf> Last accessed on 19th Feb, 2015.

¹³⁹ *Ibid.*.

¹⁴⁰ Sec. 28(1), .

¹⁴¹ Sec. 28(3), .

- a) It is responsible for the optimum scheduling and dispatch of the electricity within the region which shall be in accordance with the contract entered into with the licensee or the generating companies within the region
- b) Monitoring grid operation
- c) Keep the account of quantity of electricity transmitted in the regional grid
- d) Exercise the control and supervision of interstate transmission system
- e) It shall also be responsible for the carrying out real time operation for the grid control and dispatch of electricity within the region through secure and economic operation as per the Grid Code and Grid Standards.

Also, the power has been given to the RLDC to levy and collect such fees and charges from the companies generating electricity. However, the rates to levied or fees to be collected be specified by the Central Government in such cases¹⁴².

The RLDC has been given power to ensure that it acts as an apex body, and therefore ensure the integrated operation of the power system in the region. While doing so, it shall have to comply with the principles, guidelines and methodology in respect of the wheeling and optimum scheduling and dispatch of electricity as may be specifies by the central commission with respect to the Grid Code. The procedure has been specified by way of notification by central government¹⁴³.

Under, the repealed legislation, the supervision and control over the interstate transmission was the function of CTU; however this important function has now been transferred to RLDC¹⁴⁴.

Under Section 29 of the Act of 2003, the RLDC has been given power to give directions and exercise such supervision and control for ensuring stability of grid standards and achieving the maximum economy and efficiency in the operation of the

¹⁴²Sec. 28(4), .

¹⁴³ The Electricity (Removal of Difficulty) (Fourth) Order, 2005.

¹⁴⁴ Sec. 27 A of Electricity Act, 1910.

power system in the region under its control. The licensee, generating companies, generating stations, sub-stations or any other person connected with the operation has to comply with the directions of the RLDC¹⁴⁵.

The Act also provides the medium for the transmission of the direction to the entities in the jurisdiction of SLDC. The direction of the RLDC to any intrastate transmission or any state level licensee or generating company or sub-stations shall be issued through SLDC¹⁴⁶. The SLDC shall ensure the compliance of such direction by such entities.

The provision also discuss about the Regional Power Committee¹⁴⁷ (RPC). The RPC is envisaged as forum of discussion on the matter concerning the smooth and stability operation of the power systems in the particular region. The concept of RPC has been derived from the Regional Electricity Board¹⁴⁸; however they differ in the enforcement part.

The provision also stipulates the punishment on the failure of complying with the direction of the SLDC. A penalty of Rs. Fifteen lakhs is imposed for not complying with the direction of the SLDC.¹⁴⁹ The provision has to be read with the Section 143 and Section 144 and an adjudication officer has to be appointed for imposing the penalty under this provision.

¹⁴⁵ Sec. 29(2), .

¹⁴⁶ Sec. 29(3), .

¹⁴⁷ As per Sec. 2(55) of the Electricity Act, 2003, Regional Power Committee” means a committee established by resolution by the Central Government for a specified region for facilitating the integrated operation of the power systems in that region”

¹⁴⁸ Sec. 55, Electricity (Supply) Act, 1948

¹⁴⁹ Sec. 29(6) .

3.4. Intrastate Transmission.

Intrastate transmission is an important value chain of the whole transmission system. As per the definition it is “*any system for transmission of electricity other than an inter-state transmission.*”¹⁵⁰ Therefore any system of transmission which is not an inter-state transmission is intra-state transmission. Since the Acts define the inter-state transmission¹⁵¹ in a very vivid manner, the definition given to the intrastate gives a clear picture of its true nature.

3.4.1. Interstate Transmission: General Understanding

The entities of Interstate transmission are Generating Companies, Generating Grids, Sub-stations, SLDC, etc. It is the duty of the State Electricity Regulatory Commission (SERC) to facilitate and promote transmission within the state¹⁵². Apart from this the State Commission shall also provide for the wheeling charges and inter-connection arrangements within its territorial jurisdiction for the transmission and supply of the electricity¹⁵³.

This provision entails the State Commission to facilitate and promote transmission, inter –connection arrangements within its territorial jurisdiction for the transmission and supply of electricity for economic and efficient utilization of the electricity. Apart from the State Commission, the SDLC plays a very important role in the transmission within the state.

3.4.2. State Load Dispatch Centre.

¹⁵⁰ Sec. 2(37), *The Electricity Act, 2003*

¹⁵¹ *Ibid.*

¹⁵² *Id. at Sec. 30*

¹⁵³ *Ibid.*

The State Government is responsible for the establishment of the SLDC which shall operate within its state. The State Government shall constitute a centre known as the State Load Dispatch Centre¹⁵⁴. Similar to the NLDC and RLDC, the SLDC has also to be operated by a government company or organization over which the state government has the complete control.

To bring immediate effect to the SLDC, provision was inserted that till the constitution of SLDC, the STU will carry on its function. Similar restriction has also been placed on the SLDC, that it cannot engage itself in business of trading¹⁵⁵. There has been 33 SLDC operating in India¹⁵⁶. Each state and Union Territories has come up with their own SLDC for regulating and promoting of the transmission within their states.

SLDC role is pivotal in the transmission within the state. It is the apex body for the regulation and promotion transmission in a state. The main task of the SLDC is to act as an apex body to ensure integrated operation of power system in a state¹⁵⁷. Other function of SLDC¹⁵⁸ are as follows:

- SLDC is responsible for the optimum scheduling and dispatch of electricity within the boundaries of a state, as per the contract entered into with the licensees or the generating companies operating within the state
- SLDC is also responsible for the maintenance of grid operation within the state

¹⁵⁴ Sec. 31, *The Electricity Act, 2003*

¹⁵⁵ Proviso to Sec. 31, *Electricity Act, 2003*

¹⁵⁶ State Load Dispatch Centre, Renewable Energy Certificate Registry of India, Accessed at <https://www.recregistryindia.nic.in/index.php/general/publics/SLDCList>, Accessed on 26th Feb, 2015

¹⁵⁷ Sec. 32, *The Electricity Act, 2003*

¹⁵⁸ *Id at* Sec. 32(2).

- it should keep an account of the quantity of electricity transmitted through the state grid
- it has the power to exercise control and supervision over the intrastate transmission system
- It is also responsible for carrying out the real time operation of the grid control and dispatch of electricity within the State through secure and economic operation of the State Grid in accordance with the Grid Standards and the Grid Code.

The SLDC is also empowered to levy and collect fees and charges, which shall be decided by the state government, from the licensee and generating company as the case may be¹⁵⁹. However, under the repealed act, the power to levy and collect fees was the function STU¹⁶⁰ but now this important function has been transferred to the SLDC.

Also, the SLDC have been provided the power to give direction and supervise control to ensure the integrated grid operation and for achieving maximum economy and efficiency in the operation of the power system of the state¹⁶¹. Apart from that to ensure the proper application, provision has been inserted into the Act, which ensures that the generating company, generating station, sub-station and other person connected within the state comply with the direction of the SLDC¹⁶². However, even the SLDC has to comply with the direction of SLDC.

To ensure proper compliance to the direction of SLDC, the provision of fine has also been provided under the Act¹⁶³. A fine of Rs. 5 Lakhs can be imposed for the failure

¹⁵⁹ Sec. 32(3), *The Electricity Act, 2003*

¹⁶⁰ *Id. to Sec. 27B.*

¹⁶¹ *Id. to Sec. 33(1).*

¹⁶² *Id. Sec. 33(2).*

¹⁶³ *Id. Sec. 33(3).*

to comply with the direction of the SLDC. However, this provision has to read with Section 143 and Section 144 of the Act, and for imposing of the penalty the state commission has appoint an adjudication officer under Section 143. While adjudicating the adjudicating officer has to take into consideration the factors mentioned under Section 144.

3.5. Grid Standards

Grid Standard is the standard code of conduct, which is issued by the Central Electricity Authority. Every transmission licensee, have to mandatorily comply with the technical standards, operation and maintenance of the transmission lines, in accordance with the grid standards.

The grid standards are the technical benchmarks which help in the maintenance of the technical viability of the grid. The Central Government has made a regulation under the power conferred to it under the Act¹⁶⁴ and by virtue of Section 34 for the grid standard. The Central Electricity Authority (Grid Standards) Regulation, 2010 specifies for the operation and maintenance of the transmission lines. As per Regulation 3, entities, appropriate Load Dispatch Centers and Regional Power Committees, for the purpose of maintaining the Grid Standards for operation and maintenance of transmission lines shall all efforts to operate at a frequency close to 50 Hz and shall not allow it to go beyond the range 49.2 to 50.3 Hz or a narrower frequency band specified in the Grid Code. Also, the RPC shall periodically review the performance of the grid for the past period and plan stable operation of the grid for the future, considering various parameters and occurrences such as frequency profile, voltage profile, line loading, grid incident, grid disturbance, performance of system protection schemes and protection coordination¹⁶⁵. Important instruction such as

¹⁶⁴ Sec. 177, *The Electricity Act, 2003*

¹⁶⁵ Regulation 4, *The Central Electricity Authority (Grid Standards) Regulation, 2010*

Maintenance Planning¹⁶⁶, Co-ordination in operation¹⁶⁷, operating instruction¹⁶⁸ and islanding scheme¹⁶⁹ are also provided in the Regulation.

The Regulation also provide for the categorization of grid incidents and grid disturbance as per the severity of disturbance¹⁷⁰. The Regulation also deals with the reporting of any event which could affect the grid operation to the Appropriate Load Dispatch Centre by the entities¹⁷¹. The regulations also contain the safety¹⁷² and maintenance¹⁷³ procedure for the grids.

3.6. Provision for intervening transmission lines

Intervening transmission lines as defined in the Section 36 refers to the electric lines owned and operated by a licensee where such electric lines could be utilized for transmitting electricity for and behalf of the other licensee at his request after the payment of a tariff or charge.

In implementation of the system of open access, the provision has been inserted in the Act of 2003, for the intervening transmission facilities¹⁷⁴. The Appropriate

¹⁶⁶*Id.* Regulation 5

¹⁶⁷ *Id.* to Regulation 6

¹⁶⁸ *Id.* to Regulation 7.

¹⁶⁹ *Id.* to Regulation 10

¹⁷⁰ *Id.* to Regulation 11,

¹⁷¹ *Id.* to Regulation 12.

¹⁷² *Id.* to Regulation 18.

¹⁷³ *Id.* to Regulation 19, 20 and 21

¹⁷⁴ Sec. 35, Electricity Act, 2003

Commission may on the application made by any licensee or by order require the other licensee owning or operating intervening transmission facilities to provide the use of such facilities to the extent of surplus capacity. In case of any dispute related to the surplus capacity, it shall be decided by the appropriate commission, within whose jurisdiction such transmission lines are existing.

As discussed earlier also, this provision plays a very important role in the implementation of the principle of open access in the transmission. It empowers the Appropriate Commission to require the owner or operator of the transmission facilities to provide the use of such facilities by any other licensee to the extent of the surplus available.

When the order under Section 35 is passed for the use of intervening transmission lines, then every licensee shall, provide his intervening transmission facilities at rates, charges and the terms and condition as mutually agreed between them¹⁷⁵. However, the Appropriate Commission could also specify the rates, charges and terms and conditions referred above, if the parties could not mutually agree for the terms and condition and tariff and charges¹⁷⁶.

To have legitimate output from the use of intervening charges, and for the prevention of the exploitation, the fair and reasonable clause has also been added to it. The provision says that the terms and condition and tariff and the charges should be fair and reasonable and should be allocated as per the use of such facilities¹⁷⁷.

¹⁷⁵ *Id to Sec. 36.*

¹⁷⁶ *Proviso to Sec. 36, Electricity Act, 2003*

¹⁷⁷ *Sec. 36(3), Electricity Act, 2003*

3.7. Central Transmission Utility and State Transmission Utility

Power Grid Corporation of Indian Limited has been notified as the Central Transmission Utility¹⁷⁸ by the Central Government by way of power conferred to it by Section 38 of the Electricity Act, 2003. It has transmission network of about 67,000 circuit KM of Extra High Voltage transmission lines with 116 Nos. of EHVAC & HVDC sub-stations having power transformation capacity of more than 73,000 MVA. Currently, the transmission network handles inter-regional power transfer of about 18,700 MW¹⁷⁹.

PGCIL was created by transfer of transmission assets and human resources of NTPC and NHPC in 1989. The objective behind forming of a separate transmission entity was too fulfilled to a great extent, as Power Grid has been pivotal in the growth of transmission infrastructure and operation in India. During Eleventh Plan, Power Grid has targeted to multiply its network to twice the existing network, by adding about 60,000 circuit kms. of transmission lines.

Under Electricity Act, 2003 as already discussed the Central Government has appointed the PGCIL as the CTU. It also provides that the CTU should not be engaged in the business of generation of electricity or trading in electricity¹⁸⁰. The law has also enabled the Central Government to transfer scheme, any property, interest in property, rights and liabilities connected with, and personnel involved in the

¹⁷⁸ The Power grid Corporation of India Limited, Gurgaon, Haryana declared as the Central Transmission Utility, Extraordinary Gazette of India, SO 1392(E), Dated 4th Dec, 2003. Available at http://www.egazette.nic.in/WriteReadData/2003/E_1084_2011_005.pdf, Last Accessed on 28th Feb, 2015.

¹⁷⁹ Tata Power, Transmission Sector in India grappling with private investment, Available at <http://www.tatapower.com/whatsnew/pdf/transmission-sector-in-india.pdf>, Last accessed on 28th Feb, 2015

¹⁸⁰ *Proviso I* to Sec. 38(1), Electricity Act, 2003

transmission of electricity. The Company so created will be deemed to have a status of transmission licensee under the Act¹⁸¹.

CTU performs very essential functions related to the transmission. The functions of CTU¹⁸² are as follows:

- Undertaking transmission of electricity through inter-state transmission system
- Discharging functions of planning and co-ordinations related to interstate transmission system with
 - STU,
 - Central Government,
 - State Government,
 - generating companies,
 - RPC,
 - CEA,
 - Licensee or any other person as notified in this context by Central Government.
- To ensure development of an efficient, coordinated and economical system of inter-State transmission lines for smooth flow of electricity from generating stations to the load centers;
- To provide non-discriminatory open access to its transmission system for use by
 - (i) any licensee or generating company on payment of the transmission charges;
 - (ii) any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on

¹⁸¹ *Proviso II* to Sec. 38(1), Electricity Act, 2003

¹⁸² Sec. 39(2), Electricity Act, 2003

payment of the transmission charges and a surcharge thereon, as may be specified by the Central Commission:

Such surcharge shall be utilized for the purpose of meeting the requirement of current level cross-subsidy. Also such surcharge and cross subsidies shall be progressively reduced and eliminated in the manner as may be specified by the Central Commission:

It also provide that such surcharge may be levied till such time the cross subsidies are not eliminated. Also that the manner of payment and utilization of the surcharge shall be specified by the Central Commission ensure development of an efficient, co-ordinate and economical system of the inter-state transmission lines for the smooth flow of electricity from the generating station to load centers.

In order to appreciate the role of the CTU under this Act, its function under his provision has to read in conjunction with the role envisaged under Section 15 in the context of the grant of the transmission license to a person.

Section 39 provide for the establishment of STU. The State Government shall notify the Board or a Government Company as the STU. The STUs could not engage in the business of trading of electricity. Also, the State Government by its will can transfer and vest any property, rights and liabilities connected with and personal involved in the transmission of electricity to function as transmission licensee.

The functions of STU are as follows:

- to undertake transmission of electricity through intrastate transmission system;
- to discharge all functions of planning and co-ordination relating to intra-state transmission system with
 - (i) Central Transmission Utility;
 - (ii) State Governments;
 - (iii) generating companies;
 - (iv) Regional Power Committees;
 - (v) Authority;

- (vi) licensees;
- (vii) any other person notified by the State Government in this behalf;
-
- (c) to ensure development of an efficient, coordinated and economical system of intra-State transmission lines for smooth flow of electricity from a generating station to the load centers;
- to provide non-discriminatory open access to its transmission system for use by
 - any licensee or generating company on payment of the transmission charges
 - any consumer

3.8. Duties and Rights of Transmission Licensee

As per Section 40, the duties of transmission licensee are as follows:

- To build, maintain and operate an efficient, coordinated and economical inter-State transmission system or intra-State transmission, economical inter-State transmission system or intra-State transmission system
- To comply with the directions of the Regional Load Dispatch Centre and State Load Dispatch Centre as they may be.
- To provide non-discriminatory open access to its transmission system for use by
 - any licensee or generating company on payment of the transmission charges; or
 - any consumer as an when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the transmission charges and a surcharge thereon, as may be specified by the State Commission:

The transmission licensee cannot engage in the trading of electricity; however he has the right under the Act, to engage itself in any business by which optimum utilization of its assets could be reached¹⁸³. However, it has to take the prior permission of the Appropriate Commission before proceeding with such business.

In such a event where the transmission licensee has been carrying out a business for the optimum utilization of its asset, the revenue derived from such operation has to utilize for reducing its charges for the transmission and wheeling. In lieu of it, the transmission licensee has also required to maintain a separate account of the each such business.

The objective here is to enable optimum utilization of the of the transmission infrastructure for the other related business, which is subject to some restriction to ensure that the business of the transmission does not get affected.

3.9. Transmission Pricing Policy

Transmission charges are the charges which are to be paid to transmission licensee for the use of transmission system and associated facilities by another person for the conveyance of electricity¹⁸⁴. Basically the transmission licensee gets transmission charges and the wheeling charges for the infrastructures and services which it provides.

There are two modes of determination of any kind of charges under electricity Act:

- Determination by Appropriate Commission
- Determination by way of Competitive bidding

¹⁸³ Sec. 41, *The Electricity Act, 2003*

¹⁸⁴ Understanding Open Access Charges, Indianpower Sector.com, Available at <http://indianpowersector.com/home/open-access/oa-charges/>, Last Accessed on 15th March, 2015.

3.9.1. Determination of Tariff by Appropriate Commission

The power of determination of tariff has been provided to the Appropriate Commission under the Act.¹⁸⁵ The Appropriate commission decided the tariff as per the provision of the Act and the Regulation made under the Act¹⁸⁶. The Appropriate commission has the power to determine the tariff for:

- Supply of the tariff by a generating company to a distribution licensee
- Transmission of electricity
- Wheeling of electricity¹⁸⁷
- Retail Sale of electricity

In this study, we are only concerned about the scope of determination of tariff for the transmission and wheeling.

The essential elements relevant to the tariff determination under Section 62 are:

- That the Appropriate Commission shall not give any undue preference to any consumer of the electricity, but decide as per the consumer load factor, power factor, voltage factor, total consumption of energy during specified period of time, nature of supply and the purpose of the supply¹⁸⁸.
- The tariff determined by the Appropriate Commission shall not be amended more than once in a financial year¹⁸⁹.

¹⁸⁵ Sec. 62, *The Electricity Act, 2003*

¹⁸⁶ This provision corresponds to Sec. 49 of the Electricity (Supply) Act, 2003.

¹⁸⁷ As per Sec. 2(76), *The Electricity Act, 2003* Wheeling means “*the operation whereby the distribution system and associated facilities of a transmission licensee or distribution licensee, as the case may be, are used by another person for the conveyance of electricity on payment of charges to be determined under Sec. 62*”

¹⁸⁸ *Adoni Cotton Mills Ltd. v Andhra Pradesh State Electricity Board*, AIR 1976 SC 2414

¹⁸⁹ The only exception in this is with respect to any fuel surcharge formula, which may be specifies.

- If the licensee, recovers a price or charge exceeding the tariff determines by the Commission, the excess amount shall be recoverable by the person along with the relevant interest¹⁹⁰.
- While determination of tariff the financial capacity of the Individual consumer are irrelevant¹⁹¹.
- The tariff determined by the commission shall be binding on the licensee and the consumer¹⁹².

The procedures for the determination of tariff by the Appropriate Commission are also provided under the Act¹⁹³. An application for the determination of the tariff has to be filed in the manner and after the payment of fees as determined by the regulation¹⁹⁴. Then the Application has to be published in abridged form and in such manner as determined by the Appropriate Commission.

The Appropriate Commission has to issue a tariff order or reject the application within 120 days of the receipt of the application¹⁹⁵. The tariff issues after the acceptance of the application can be accompanied by any modification or subject of such conditions. Also, if the appropriate commission reject the application, then reason and ground of such rejection has to be noted, with reference to the provision of Act and Regulations which are not adhered to in the said application.

¹⁹⁰ Sec. 62(6), *The Electricity Act, 2003*

¹⁹¹ *Karthik Entp. Pvt Ltd. v. Orissa State Electricity Board*, AIR 1980 Orissa 3, Pg 7

¹⁹² *LML Ltd, Kanpur v State of UP*, AIR 2001 All. 321, Pg. 322

¹⁹³ Sec. 63, *The Electricity Act, 2003*

¹⁹⁴ Central Electricity Regulatory Commission (Procedure for making of application for determination of tariff, publication of the application and other related matters) Regulations, 2004

¹⁹⁵ Sec. 64(3), *The Electricity Act, 2003*

The Central Electricity Regulatory Commission (Procedure for making of application for determination of tariff, publication of the application and other related matters) Regulations, 2004, has been made under the Section 64 of the Act, to provide with the procedure for making the application for the determination of tariff, publication of application and other related issue. The applicant shall be given reasonable opportunity for being heard before rejection of his application.

The Appropriate commission shall send the copy of the order made to the Appropriate Government, Authority and the concerned licensee and the other concerned persons.

In the case of *WBERC v. CSES Ltd*¹⁹⁶, while fixation of the tariff the consumer has the right of hearing and representation. The Commission can permit an association, body corporate or any group of consumer for the participating the proceeding before the commission.

The procedure under the Regulation¹⁹⁷ is as follows:

- (1) The application shall be made to the Commission in the form appended as Appendix I to the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004 and shall be accompanied by such fee as may be specified by the Commission from time to time.
- (2) Before making the application, the applicant shall serve a copy of the application on each of the beneficiary.
- (3) The applicant shall post the complete application on its website or any other authorized website, before making an application to the Commission.

¹⁹⁶ AIR 2002 SC 3588

¹⁹⁷ Regulation 3, *The Central Electricity Regulatory Commission (Procedure for making of application for determination of tariff, publication of the application and other related matters) Regulations, 2004*

(4) While making an application to the Commission, the applicant shall indicate whether copy of the complete application has been served to each of the beneficiaries and whether the application has been posted on its websites or any other authorized websites of not, with address of the IP of the website where on the application has been posted.

(5) The application made shall be supported by an affidavit of the person acquainted with the facts and figures stated in the application. Then the application shall be kept on the website at least for 30 days from the date of publication of the notice of application in accordance with clause (6) of this regulation.

(6) The applicant shall, within 7 days after making the application, publish a notice of his application in at least two daily newspapers, one in English language and one in vernacular language, having circulation in each of the State/Union Territory where the beneficiaries are situate in the same language as of the daily newspaper in which the notice of the application is published, as per the specimen given in the schedule to these regulations.

(7) The suggestions and objections, if any, to the proposal for determination of tariff, may be filed before the Secretary, Central Electricity Regulatory Commission, 7th Floor, Core-3, Scope Complex, Lodi Road, New Delhi-110003 (or other address where the office of the Commission is situate) by any person, including the beneficiaries within 30 days of publication of the notice with a copy to the applicant.

(8) The applicant shall within 15 days from the date of publication of the notice as aforesaid submit to the Commission on affidavit the details of the notice published and shall also file before the Commission relevant copies of the newspapers in which the notice has been published.

(9) The applicant may file his comments on affidavit on the suggestions and objections, if any, received in response to the public notice within 45 days of its publication in the newspapers, with an advance copy to the person who has filed the suggestions and objections on the proposals made in the application.

The Act also contains the provision for the grant of subsidy by the state government¹⁹⁸. If the State Government wants to give any subsidy to any consumer or any class of consumer in the tariff which has been determined by the State Commission under the procedure of 62, then it has to pay in advance the amount to compensate the person affected by the grant of subsidy, in such manner as the State Commission may direct. Also, the directive of providing subsidy to the consumer will not be operative if the payment is not made in accordance with the orders of the commission. Also, it was held in the case of *Andhra Steel Corporation Ltd. v APSEB*¹⁹⁹, by the Supreme Court that even after the direction of the governmental tariff, there is no immunity from the payment of minimum charges.

3.9.2. Determination of tariff by Competitive Bidding

Under Section 63, the determination of tariff is done by bidding process. Without any effect of Section 62, the Appropriate Commission can adopt the tariff, when such tariff has been determined by way of a competitive bidding which has all the attributes of transparency and such bidding has abided by the guidelines issued by the Central Government. So, this provision stipulates that the tariff determines by way of a transparent process of bidding in accordance with the guidelines issued by the

¹⁹⁸ Sec. 65, Electricity Act, 2003

¹⁹⁹ AIR 1991, SC 1456

Central Government shall be adopted by the Appropriate Commission. The guidelines have been issued by the Central Government in 2005²⁰⁰.

²⁰⁰ Guidelines for Determinations of Tariff by Bidding Process for Procurement of Power by Distribution Licensees, Extraordinary Gazette of India, 19th Jan, 2005. Available at http://egazette.nic.in/WriteReadData/2005/E_14_2011_087.pdf, Last accessed on 17th March, 2015.

4. ISSUES AND CHALLENGES IN TRANSMISSION SECTOR

The power sector of India has shown a very triggering growth in last two decades. India has shown a total capacity addition of approximately of 54,000 MW during the Eleventh Five Year plan which corresponds to the potential in the sector²⁰¹. Similar to generation, the transmission sector has also performed very well in the last two decades.

If we see the transmission system before independence, we can observe that the transmission system was scattered and isolated and developed in and around the urban and industrial areas²⁰². The highest transmission voltage was equivalent to 132 kV.

Particulars	Transmission Lines (Ckt Km)		Sub-stations (MVA)	
	400 kV	220 kV	400 kV	220 kV
End of VI Five Year Plan	6029	46005	9330	37291
End of VII Five Year Plan	19824	59631	21580	53742
End of VIII Five Year Plan	36142	79600	40865	84177
End of IX Five Year Plan	49378	96993	60380	116363
End of X Five Year Plan	75722	114629	92942	156497
End of XI Five Year Plan	113367	140164	151027	223774

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The above table shows the growth of the transmission sector in last 30 year. As evident from the table it is clear that the rate of development has been revolutionary in the X and XI five year plans.

²⁰¹ The Economic Times, India sees 54,000 MW capacity addition in the 11th Plan, 23rd Jan, 2015

²⁰² Subodh Garg, Light At The End Of The Tunnel: Indian Power Sector Challenges & Opportunities, NPTi, Available at <http://npti.in/pdf/Article%20on%20Power%20Sector%20by%20DG.%20NPTI.pdf>, Last accessed on 17th Mar, 2015

²⁰³ Growth of Electricity Sector in India, CERC, Government of India, July, 2013, Accessed at <http://www.cea.nic.in/reports/planning/dmlf/growth.pdf> Last accessed on 19th Feb, 2015.

Since the transmission system comprises of both interstate and intrastate transmission system, there has been consistent growth in both interstate and intrastate transmission system. The interstate transmission system has been mainly owned and controlled by the PGCIL.

The process and planning of the transmission system becomes very strategic due to the volatile market condition and increasing generation capacity. It is estimated that with the installed generation capacity of 388 GW by 2022, the transmission sector need some miracle to catch up with the generation sector²⁰⁴. Therefore the need of the hour is to strengthen the transmission system and increasing the investment in the transmission sector which will increase the infrastructural requirement in the sector.

There are several challenges that the transmission has to face with. The first and foremost comes with the acquiring of right to way for the construction, which is getting tougher by the increasing environment norms and human right activism. Apart from that this also facing issues like shortage of human resources.

Some of the issues which pose a challenge to the transmission sector are:

- Clogging Inter Region Transmission Capacity
- Attracting Private Players and Investment
- Approval, Planning and Project Execution
- Technical Challenges

4.1. Clogging Inter Region Transmission Capacity

One of the most important issues that exist in the transmission sector is the clogging Inter Region Transmission capacity. The inter region transmission capacity has been subject to frequent congestion, which affects the operation of the power exchanges. The cumulative inter-regional power transfer capacity of the National Grid has been enhanced up to 28,000 MW. The Commissioning of the interregional links has been

²⁰⁴ As per the analysis done by the Booz & Company.

strengthened to the interregional grid capacity of the Eastern Region with the Western Region and the Northern Region.

The solution to this issue, various high capacities HVDC and EHVAC has to planned and installed to take care of the inter-regional power transfer requirement of the various planned generation projects.

4.2. Attracting Private Players and Investment in Transmission sector

It is proposed that there will be an investment of \$75 Billion in the next 10 years, the investment in the transmission sector is still inadequate. The transmission sector requires almost 50% of the investment of the total investment in the electricity sector in next 10 years. In order to refrain the collapse of the power sector, the investment needs to divert into the transmission sector. Also, the other important aspect which needs to be implemented in its true sense is open access. For the implementation of the open access in the true sense adequate infrastructure has to exist, which is only possible if the investment is diverted²⁰⁵.

The transmission sector has not been able to impress the investor, due to high investment ratio and late and unquantifiable returns as compared to generation and distribution sector. The majority of business in transmission sector is in the hand of the Central or State Government, so it creates an anticipation of unfair competition in the minds of the investors²⁰⁶.

Therefore the promotion of the investment and participation, the government should take active reforms and provide incentives. Also, to reduce the fear of being prejudiced the PPP model should be introduced.

²⁰⁵ FICCI, Power Transmission: The Real Bottleneck, Sept 2013. Accessed at http://www.ficci.com/spdocument/20311/power-transmission-report_270913.pdf Accessed on 20th Feb, 2015.

²⁰⁶ Power Grid should not be Central Transmission Utility: FICCI, *The Economic Times*, Aug 15, 2013

4.3. Approval, Planning and Project Execution

Power transmission is already a bottleneck in the flow of the power surplus region to the power deficit region²⁰⁷. In the last 5 years, transmission capacity has grown by ~30%, as compared to 50% growth in the power generation capacity, leaving for significant*ground to be covered by the transmission sector²⁰⁸.

The bottleneck included the approval of projects, the planning and execution of the projects. Multi level clearances add to the problem. The issue like land acquisition, unsupportive environment from the local government etc, elevates the issue further.



The figure above shows the timeline of the all the procedure involved for the licensing and award of the project. Also, the slow processing of government bodies, like bidding process, licensing procedure, clearance etc creates a very bad environment for the investors.

4.4. Technical Issues

The following are the technical issues relevant to the transmission system in India:

a) Grid Failure:

With the expanding transmission network in the Country, the issue of Grid Operation has evolved. Even though the facilities of the grids have been upgraded continuously, there have been instances of grid failure in last five

²⁰⁷ The Economics Time, Western states sell less power due to transmission bottlenecks, Available at http://articles.economictimes.indiatimes.com/2015-03-04/news/59767169_1_power-demand-iex-western-states, Accessed on 20th Mar, 2015

²⁰⁸ Tata Power, Transmission Sector in India grappling with private investment, Available at <http://www.tatapower.com/whatsnew/pdf/transmission-sector-in-india.pdf>, Accessed on 14 Mar, 2015

year due to the improper behavior of the entities. The chance of failure during the peak hour becomes more probable as the three develops a gap between the demand and supply. Also, the quality of transmitted current elevated the matter to much higher extend during the peak hour²⁰⁹.

b) Transmission & Distribution Losses

In India, average Transmission & Distribution losses, have been officially indicated as 23 percent of the total electricity generated²¹⁰. The officially declared transmission and distribution losses in India have gradually risen from about 15 percent up to the year 1966-67 to about 23 percent in 1998-99. The continued rising trend in the losses is a matter of serious concern and all out efforts are required to contain the them. The losses in any system would, however, depend on the pattern of energy use, intensity of load demand, load density, and capability and configuration of the transmission and distribution system that vary for various system elements²¹¹.

²⁰⁹ Subodh Garg, Light At The End Of The Tunnel: Indian Power Sector Challenges & Opportunities, Accessed at <http://npti.in/pdf/Article%20on%20Power%20Sector%20by%20DG,%20NPTI.pdf>, Accessed on 23rd Mar, 2015

²¹⁰ Electric power transmission and distribution losses, World Bank, Available at <http://www.tatapower.com/whatsnew/pdf/transmission-sector-in-india.pdf>, Accessed on 20th Mar, 2015

²¹¹ *Ibid.*

5. CHAPTER V: CONCLUSION AND WAY FOREWORD

The transmission sector in India has been ignored from the very beginning of time. The transmission before independence was grossly ignored and infrastructure of transmission existed only in the areas of the commercial or industrial viability²¹². The position did not improved even after the enactment of the Electricity Act, 2010 as the act has not dealt with the transmission in a very vivid manner. Also, there was no need to have a complex transmission at that time because the generation was very much inclined to the urban areas and transmission infrastructure was required in negligible quantity.

Even the after the independence not much was done for the transmission. Even the original Electricity (Supply) Act, not dealt with the transmission in a very exhaustive manner. Also, the Act had such provision which actually did not helped in prospering of the transmission sector²¹³. The true chapter of transmission in India started with the national power companies, like NTPC and NHPC, who started building their own transmission lines. Later when the network grew very large, a separate company was incorporated which was responsible the transmission asset of the above named companies. The same company was then renamed as Power Grid Corporation and all the transmission lines of the said company was now transferred to it for the better management of resources²¹⁴.

²¹² Regulatory and Policy Environment: Indian Power Sector. D&B, Accessed at https://www.dnb.co.in/IndiasEnergySector/Regu_Power.asp, Accessed on 19th Feb, 2015

²¹³ Provision of the Act granted all the power and function from generation to distribution to the SEBs, which to a great extent restricted the growth of the transmission infrastructure.

²¹⁴ Tata Power, Transmission Sector in India grappling with private investment, Available at <http://www.tatapower.com/whatsnew/pdf/transmission-sector-in-india.pdf>, Last accessed on 28th Feb, 2015

It was only in 1991, the sector of transmission was opened for the private investment along with the generation and distribution. After, that there was substantial increase in the transmission in India. Further, through an amend in year 1998, the transmission in electricity sector was reorganized²¹⁵. The Electricity Act, 2003 further organized the changes and reforms that were brought in the reform related to the transmission and also included the concept of openaccess.

The transmission of power in India has not been able to keep itself parallel to the rising power demands and generation in India. Transmission today is one of most important contributor to the deficiency of power even after the installed capacity of 225 GW²¹⁶. The inability of the transmission sector to transmit the excess power from the power surplus region and states to power deficit region or state has added woes to the situation. On one side we are not able to fulfill the requirement for supply of electricity to every person, and on other side the excess power going waste due to the inefficiency of our transmission system.

The 1991 reforms were brought in to rejuvenate the diseased and ill power sector of India. There were many revolutionary and daring steps taken in the process to revive the sector. Reforms were introduced as to create the opportunity for bringing the investment into the sector. The reforms consisted of the fundamental transition, and are considered one of the biggest reforms in any sector²¹⁷. But the reformers could not anticipate the problems which would arise in future. The whole sector concentrated on the generation and distribution; however the transmission was totally ignored.

²¹⁵ Electricity Laws (Amendment) Act, 1992

²¹⁶ CEA, Monthly Reports, Available at http://www.cea.nic.in/reports/monthly/inst_capacity/jan15.pdf

²¹⁷ Sunila S. Kale, Current Reforms: The Politics of Policy Change in India's Electricity Sector, Pacific Affairs, Vol. 77, No. 3, *The Political Economy of Electricity Reform in Asia* (Fall, 2004), pp. 467-491

But even after the situation was realized, not much was done to rectify the mistake that was made earlier²¹⁸. Today also, we are in the middle of repeating the same mistake, that to after the lesson that cost us the fortune²¹⁹.

Non-performance of the transmission arm of the power sector has resulted in the adverse spiral effect on the economy of the entire country²²⁰. One of major factor behind the lagging of the transmission in India is the monopolistic model which the CTU and the STU presents, on which the burden of the planning and development has be authorized. The monopolistic nature of the CTU and STU has resulted to set up a monopolistic market scenario in transmission market²²¹. It has been more than 20 years since the sector was opened for the private players, however the ration is substantially negligible if we compared it to the private players in the generation²²². Even certain independent organizations like FICCI, has suggested that PGCIL is not eligible to act as the CTU as it hampers the interest of the prospective investors²²³.

²¹⁸ The same is evident from the comparison of the growth of the Transmission Sector and Generation Sector from last five year. The equations are same as it was 20 year ago during the era of revolution.

²¹⁹ Power Shortage has resulted in many issues in India. There has been uneven development of commerce and industry due to the shortage of power supply to such areas. Also, this has affected the GDP of India. See FICCI, Power Transmission: The Real Bottleneck, Sept 2013. Accessed at http://www.ficci.com/spdocument/20311/power-transmission-report_270913.pdf Accessed on 20th Feb, 2015.

²²⁰ *Ibid.*

²²¹ Power Plus, Special Edition: Indian Electricity Act, 2003, Accessed at <http://indianpowersector.com/wp-content/uploads/2013/04/power-plus-10-page.pdf>, Accessed on 19th Mar, 2015.

²²² *Supra* note 200.

²²³ Power Grid should not be Central Transmission Utility: FICCI, *The Economic Times*, Aug 15, 2013

The transmission system faces is subject to many issues today. First of all is the there is no single window clearances for it. A lot of time is wasted on seeking clearances and approval for the same. Even if one gets the approval, the second issues are related to Right to way, which created hurdles in the execution of the projects²²⁴. If we go by the statistics, as many as 120 transmission projects has been delayed, because of the licensee's inability to acquire land and timely clearance for the project²²⁵. There have also been instances, where the alternate route was taken by the licensee, since a lot of agitation was made.

With a planned future investment of more than Rs, 4.5 lakh crores in next 10 years in the electricity sector, the government need to create an investor friendly regime for prospective investors in the transmission. Greater investment and active private participation is the vital for the development of the efficient transmission system. Since the transmission sector is already lacking in the investment, the government should shift the concentration of the investors from the generation to the transmission. To lure the investors the government should come up with different scheme and should treat the investors with par the PGCIL during both award and the execution of the project. Also, the clearance process and redressal mechanism should be made more convenient.

Also, there need to work done on the technical standards evolved in transmission. Since the transmission and distribution loss in India is the highest²²⁶, new technology shall be implemented to reduce the transmission loss. Apart from that, strict regulation

²²⁴ Tata Power, Transmission Sector in India grappling with private investment, Available at <http://www.tatapower.com/whatsnew/pdf/transmission-sector-in-india.pdf>, Last accessed on 28th Feb, 2015

²²⁵ FICCI, Power Transmission: The Real Bottleneck, Sept 2013. Accessed at http://www.ficci.com/spdocument/20311/power-transmission-report_270913.pdf Accessed on 20th Feb, 2015.

²²⁶ Electric power transmission and distribution losses, World Bank, Available at <http://www.tatapower.com/whatsnew/pdf/transmission-sector-in-india.pdf>, Accessed on 20th Mar, 2015

shall be made for the grid discipline, which shall comprise of strict penalty for the any contravention. Grid discipline is important for proper functioning of the transmission system, therefore proper code for the grid maintenance should be evolved²²⁷.

Since the Electricity Act, 2003 has introduced the concept of open access, therefore for the proper implementation and application of open access, an efficient and integrated transmission grid has to be present. Therefore the role of transmission is even enlarged with the implementation of the open access.

Finally, the investors should identify the prospect that exists with the transmission in India, as without the adequate transmission infrastructure the whole sector will collapse. Also, the investors who have already invested in the generation or the distribution should be encouraged to invest in the transmission, as they could get proper returns. There could be lot of prospect in the transmission sector, since the demand today is not the power generation, but the adequate system for the transmission of power.

²²⁷ TERI, Transmission and Distribution Losses (Power), Available at <http://www.teriin.org/upfiles/pub/papers/ft33.pdf>, Accessed on 19th March, 2015.

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