

# Deregulation and privatization scenario in India

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**Abstract-** Deregulation basically means restructuring the whole power system scheme, giving it a new face which is more likely to be vastly accepted by the consumers. India is far behind other countries in context of deregulation. So there is a need to concentrate more in this field. Before carrying out the whole process, we must have an idea of the present status. It will help us to confine our study. So the whole scenario of the process has been studied.

**Keywords-**Deregulation, privatization, regulation, generation economy.

**Introduction-** If we talk about the present scenario of electric industry, we have ample amount of generation sources and various means of transmission and distribution too, which is a very huge accomplishment. But the main problem arises in how to satisfy the consumer as per his needs and demands. Electricity can be dealt as any other commodity that is available in market at different prices in different stores but the main problem is it can't be stored. It has to be sold directly either from generation, transmission or distribution companies at their own reasonable prices which will give consumer a chance to buy accordingly. This whole process of re-regulating or restructuring the electric or power sector is called deregulation and since to fulfil requirements of consumers every company has to fix its own rates i.e. a centralized price mechanism can't be applied, hence leads to privatization of power industry[3]. In this paper, the deregulation and privatization scenario of power sector in India has been taken into account. Although deregulation of power sector came into existence in nineteenth century but in India it is yet to be achieved in many states. Not even half of states of our country are completely privatized. It is a bigger fish to be caught still.

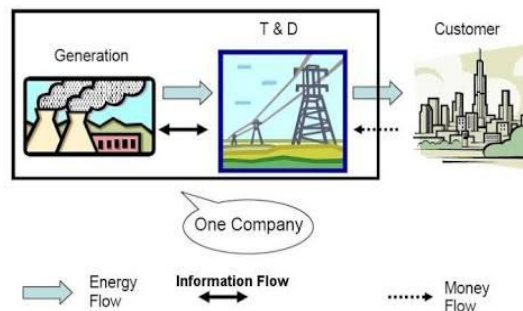


Fig.1 A regulated/conventional power system structure[1].

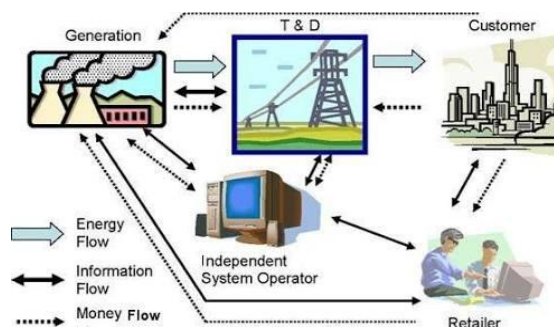


Fig. 2 A deregulated power system structure[1].

## I. Indian scenario

Deregulation of electricity involves the unbundling of conventional vertically integrated system into different entities entitled to perform specific functions. This process is spreading very rapidly all over the world. India is also adopting this reform in its flourishing power market structure. In the past few years, the generation sector of country has gone through significant changes including private sector investment which in turn lead to more focus on renewable energy sources. The unbundling process in India is also growing very fast with some states/UT's having the fully unbundled or privatized system and some partially under the process[6]. The overview or pictorial representation of Indian scenario of deregulation can be shown as in fig. 3.

| Bundled     | Transco separate, genco & disco bundled | All unbundled, one disco | All unbundled, multiple discos |
|-------------|---|--------------------------|--------------------------------|
| ➤ Tripura   | ➤ Tamil nadu                            | ➤ West Bengal            | ➤ Bihar                        |
| ➤ Sikkim    | ➤ Punjab                                | ➤ Uttarakhand            | ➤ Uttar Pradesh                |
| ➤ Nagaland  | ➤ Himachal Pradesh                      | ➤ Chhattisgarh           | ➤ Rajasthan                    |
| ➤ Mizoram   |   | ➤ Meghalaya              | ➤ Gujarat                      |
| ➤ Manipur   |   | ➤ Assam                  | ➤ Orissa                       |
| ➤ Goa       |   | ➤ Maharashtra            | ➤ Karnataka                    |
| ➤ Jharkhand |   |                          | ➤ Haryana                      |
|             |   |                          | ➤ Madhya Pradesh               |
|             |   |                          | ➤ Andhra Pradesh               |
|             |   |                          | ➤ Delhi                        |

Fig.3. Indian scenario of deregulation

**II. Controlling structure of power sector**

To adopt a new policy government needs to frame some policies and programs which play a major role in making a country to reflect well on the global energy map. With the new power sector reform i.e. the unbundling process, Indian government framed some policies and to look over these policies, some governing or controlling structures are established. As the generation sector of Indian power sector has already gone privatized though the distribution sector in the country continues to suffer primarily due to weak state regulators (known as state electricity regulatory commissions). However, the situation seems to be improving, with the central government jumping in to set specific targets for the distribution companies to ensure the well established distribution system.

The stages involved in controlling the power sector are:

**A. Setting up of Regulatory Mechanism**

In view of the Electricity Regulatory Commissions Act, 1998, the Central Electricity Regulatory Commission (CERC) along with State Electricity Regulatory Commissions (SERC) have been established in 19 states to perform the following duties:

- 1) To regulate the tariff of generating companies owned or controlled by the Central government.
- 2) To regulate the tariff for generating companies owned or controlled by agencies other than the Central Government.
- 3) To regulate the Inter-State transmission of energy with including tariff of the transmission utilities.
- 4) To promote competition this will in turn boost the efficiency and economy in the electricity industry.

- 5) To advise the Central Government in the formulation of tariff policies.
- 6) To associate with the various environmental regulatory agencies to establish appropriate policies taking into consideration the environmental aspects.
- 7) To frame the guidelines related to electricity tariff matters.
- 8) To resolve the disputes occurring in the generation or transmission companies.
- 9) To assist the Government of India in any issue related with Central Commission.
- 10) To provide license to the suitable and eligible person for the construction, maintenance and operation of Inter-State transmission system[9].

**B. Regional Electricity Boards**

The Central Electricity Authority (CEA) is responsible for power planning at the national level. The CEA reports the national power policy to the power ministry whereas the central electricity regulatory commission looks after the regulatory issues in the power sector. To look after the day to day operation and planning policies of the state, regional electricity boards are constituted. These boards are more specifically called Regional Load Dispatch Centres (RLDCs) and are controlled by PGCIL. The RLDC performs the function of carrying out the integrated operation of the power system in that region and the Regional Electricity Board (REB) facilitates the integrated grid operation.

In India five REBs are functioning i.e. Northern REB, Southern REB, Western REB, Eastern REB and North-Eastern REB .The responsibilities of these REBs are to review project progress and to plan the integrated operation among the utilities.

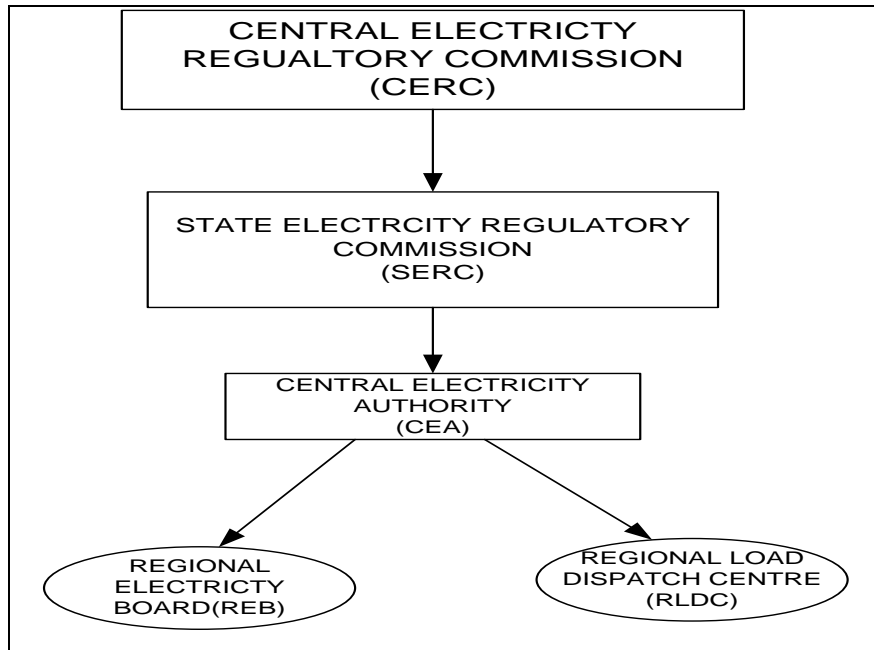


Fig.3 Control mechanism of power sector

**C. Functioning Restructured Models in India**

**1. Odisha Model** – The very first state in India to adopt reformed power structure is Orissa. The electricity Board there is partially unbundled into three separate entities:

- i) Orissa Hydro Power Corporation (OHPC)
- ii) Orissa Power Generation Corporation OPGC
- iii) Grid Corporation of Orissa GRIDCO. GRIDCO is further segregated into four distribution companies.

The various entities involved in Orissa restructured model are as follows:

NTPC- National Thermal Power Corporation.  
OHPC- Orissa Hydro Power Corporation.

OPGC- Orissa Power Generation Corporation.

IPPs- Independent Private Power Producers.

CPPs- Captive Power Plants.

WESCO- Western Electricity Supply Company of Orissa.

NESCO- North Eastern Supply Company of Orissa.

SOUTHCO- Southern Electricity Supply Company of Orissa.

CESCO- Central Electricity Supply Company of Orissa.

The overall restructured system of state has been depicted in the figure below:

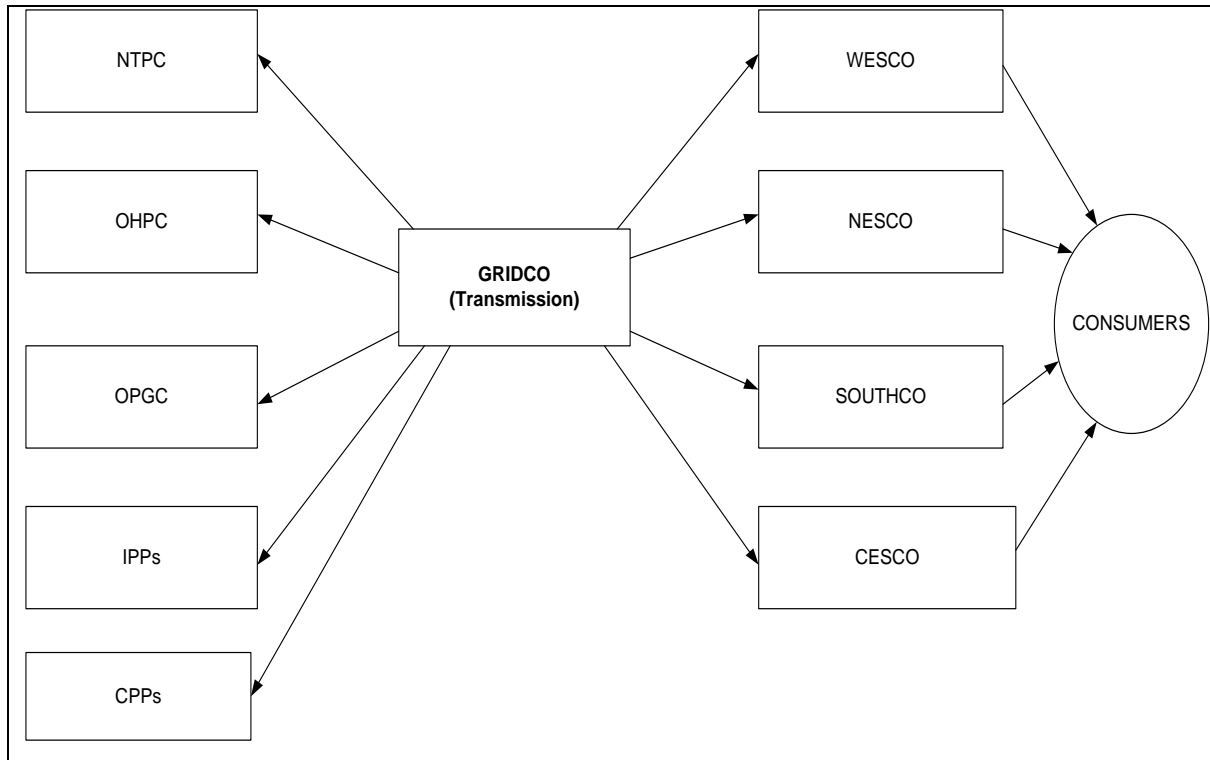


Fig. 5 Orissa Restructured model

**2. Delhi Model-** Delhi Electricity reform comes into action in March 2001. Delhi Vidyut Board DVB was organized to look after the process. In addition three distribution companies were set up. The nomenclatures are:  
 DPCL-Delhi Power Company Limited.

IPGCL-Indraprastha Power Generation Company Limited.  
 DTL-Delhi Transco Limited.  
 BSES- Bombay Sub urban Electric supply  
 TPDDL- Tata Power Delhi Distribution Limited.  
 An overview of Delhi model of restructured system is shown in fig. below:

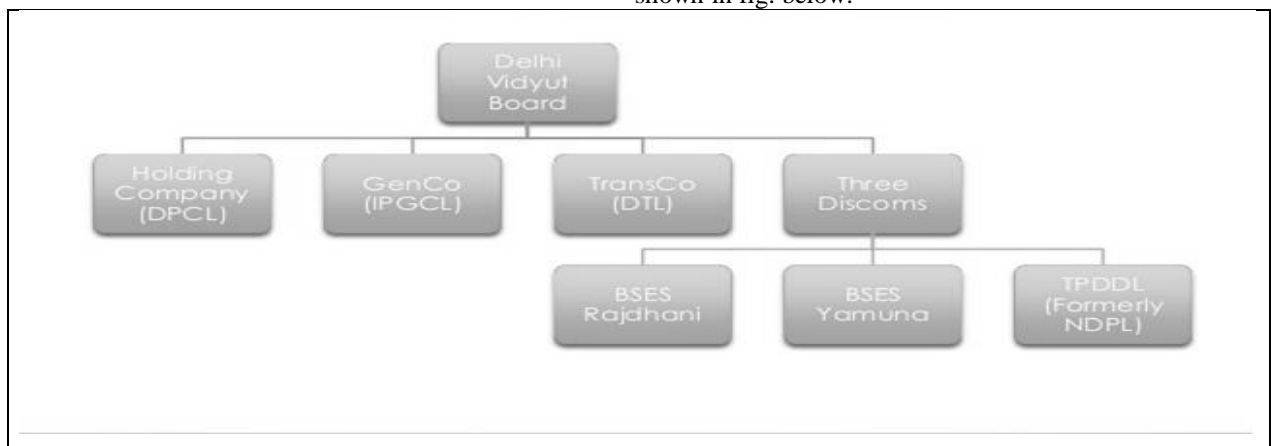


Fig. 6. Delhi restructured power model

**3. Andhra Pradesh Model** – In 1999 the Andhra state power sector is unbundled into Andhra Pradesh Generation Company Ltd. (APGENCO) for generation purposes and Andhra Pradesh Transmission Company Ltd. (APTRANSCO) for transmission and distribution purpose.

**4. Haryana Model** - The deregulation reform in Haryana started in 1998.the state electricity board (SEB) was unbundled into Haryana Vidyut Prasaran Nigam Ltd. (HVPNL) and Haryana Power Corporation Ltd. Later on two governments owned distribution companies were set up:

i) Uttar Haryana Bijli Vitaran Nigam Ltd. (UHBVNL)

ii) Dakshin Haryana Bijli Vitaran Nigam Ltd. (DHBVNL).

*E. Uttar Pradesh Model-* The reform of deregulation or restructuring was notified in the state in the year 2000. To carry out the process of restructuring, the services of Uttar Pradesh State Electricity Board (UPSEB) were transferred to:

i) Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd. (UPRVUNL),

ii) Uttar Pradesh Jal Vidyut Nigam Ltd. (UPJVNL),

iii) Uttar Pradesh Power Corporation Ltd. (UPPCL)

### III. CONCLUSION

Electricity reforms in India are at full swing although at a slow pace. As mentioned in paper, some states have completely transformed their electricity boards into separate companies i.e. generation (GENCOS), transmission (TRANSCOS) and distribution (DISCOS). In this paper, a survey of Indian scenario of deregulation has been presented. The independent entities e.g. ISO's are being introduced in the system to provide consumers with full transparency regarding electricity bills, load in coordination with demand i.e. flexibility of electric supply is being provided to the consumer.

### REFERENCES

- [1] Loi Lei Laai, "Power System Restructuring and Deregulation", John Wiley & Sons, England, 2002.
- [2] E.A. ANDROULIDAKIS et. al. "Challenges and Trends of Restructuring Power Systems due to Deregulation". Proceedings of the 5th WSEAS Int. Conf. on Power Systems and Electromagnetic Compatibility, Corfu, Greece, August 23-25, pp49-54, 2005.
- [3] Y.H. Song, X. Wang and J.Z. Liu, "Operation of Restructured Power Systems".
- [4] Stephen J.et. al. "Using Experiments To Inform The Privatization/Deregulation Movement In Electricity", *Cato Journal*, Vol. 21, No. 3, Winter 2002.
- [5] H. Bevrani, "Robust Decentralized LFC Design In a Deregulated Environment", 2004 IEEE International Conference on Electric Utility Deregulation, Restructuring and Power Technologies (DRPT2004) Hong Kong, pp. 326-331, April 2004.
- [6] Ravindrakumar Yadav and Prof. Ashok Jhala "A Comprehensive Study about Deregulation of Indian Power Sector", *International Journal for Scientific research and development*, vol.4,issue 6, pp.321-325,2016.
- [7] Khaparde S. A. et. al., "Role of Distributed Generation in Indian Scenario", Proceedings of South Asia Regional Conference, New Delhi, India ,February 2003.
- [8] Vindal, S. S., Saxena, N. S., and Srivastava, S. C., "Industry Structure Under Deregulated Wholesale Power Markets in India", Proceedings of International Conference on Present and Future Trends in Transmission and Convergence, New Delhi, India,
- [9] Government of India, "The Electricity Act, 2003", The Gazette of India, Extraordinary, 2003, Part II Section 3 Sub-section (ii), New Delhi, Ministry of Power,JuneIO,2003.
- [10] Kothari D. P., Nagrath I. J., *Power System Engineering*, 2nd Edition, Tata McGraw Hill, New Delhi, 2011.