

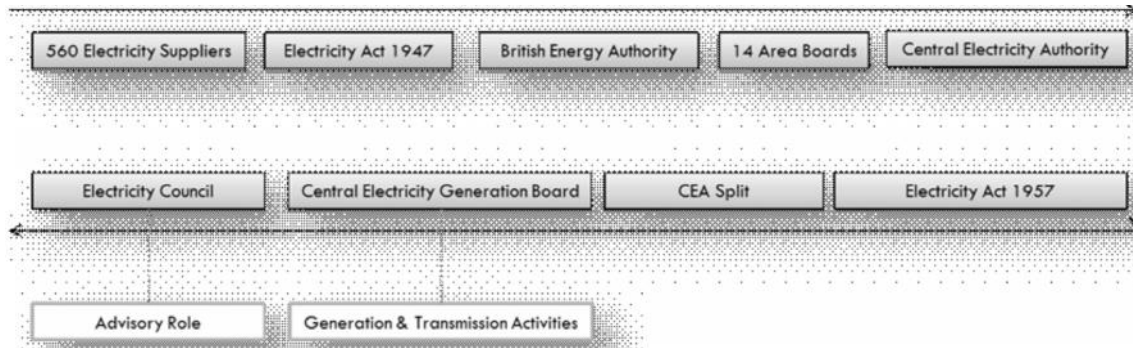
**Case Study****Power Sector Reforms : A Case Study of  
United Kingdom****Atul Agrawal***Department of Power & Infrastructure Management  
University of Petroleum & Energy Studies, Uttrakhand***Dr. Anil Kumar***Department of Power & Infrastructure Management  
University of Petroleum & Energy Studies, Dehradun, Uttrakhand***Dr. T Joji Rao***Department of Accounts & Finance Management, University of  
Petroleum & Energy Studies, Dehradun, Uttarakhand***Abstract**

*Design and regulatory structure of the power sector is a complicated one. Power sector may have participation of different type of enterprises like government controlled public utilities, private utilities or utilities with the public and private partnership. Decision making is usually affected in such utilities which are regulated and controlled by the government. Deregulation is needed to some extent to ensure the competition in the sector and hence governments come up with the various liberalization policies to reform the sector. Such liberalization policies incorporate next generation reforms in the sector with the combination of restructuring, unbundling and privatization. This paper analyses the reform experience of the power sector of United Kingdom. This paper also outlines the certain regulations of Utilities Act 2000, which helped the sector to adopt the ownership unbundling of supply and distribution.*

**Key Words:** *Utilities Act 2000, Supply, Distribution, Reforms, United Kingdom*

**Introduction****Era of Pre Privatization**

In this era, power utilities in the United Kingdom were vertically integrated. During 1940s, There were 560 electricity suppliers in the United Kingdom. Amongst them approximately one third suppliers were from the side of private players. In 1947, the Electricity Act 1947 came into force with the establishment of British Electricity Authority (BEA). The Electricity Act 1947 nationalized and reorganized the electricity industry of UK. British Electricity Authority which was a public corporation, made responsible to make policies and to manage financial schemes, transmission and generation. By further restructuring, 14 area boards (12 in E&W, 2 in South Scotland) were created which were responsible for both the distribution and retail in the respective regions. Thereafter, a South of Scotland Electricity Board (SSEB) was created through Electricity Reorganization (Scotland) Act 1954. SSEB was made responsible for all function of power i.e Generation, Distribution & Transmission. In the meantime Central Electricity Authority (CEA) replaced the British Electricity Authority (BEA).



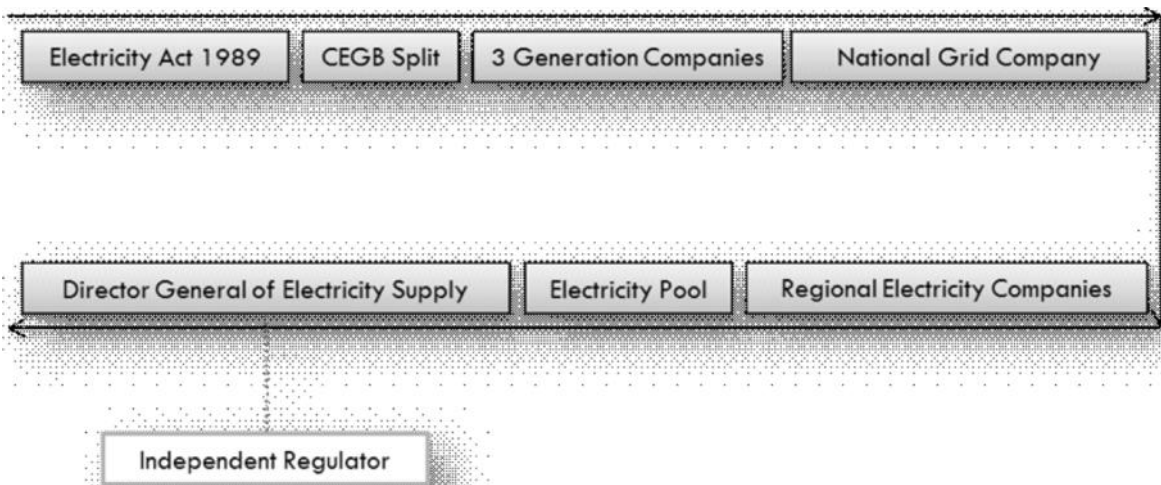
**Figure 1: Flow of Reforms [Era of Pre Privatization]**

Further, Electricity Act 1957 was introduced in the country with the objective of fresh reforms. In line with the Electricity Act 1957, Central Electricity Authority was segregated into the Electricity Council (EC) and the Central Electricity Generating Board (CEGB). Central Electricity Generating Board owned and operated all the generating stations and transmission system of England & Wales. Central Electricity Generating Board was also made responsible to plan new generation, to identify and to install new transmission capacity and to provide bulk supply of power to all area boards. Thus, Central Electricity Generating Board had the monopoly in generation and transmission. The Electricity Council (EC) played the advisory role with the duty to coordinate with the industry and government.

**Era of Privatization**

Next cycle of power sector reforms in United Kingdom started in 1989 with the introduction of Electricity Act 1989. The Electricity Act 1989 laid down the next phase

of reforms and restructuring in United Kingdom. Various changes in the ownership of power utilities to have competitive market were initiated. The Electricity Act 1989 had the provision to introduce an independent regulatory body. As per the result of this act, a new industry structure was introduced in March 1990. Central Electricity Generating Board was split into three generation companies and one transmission company. Area boards were replaced by Regional Electricity Companies (RECs) and consequently authorized supply and distribution areas were defined for those RECs. National Grid Company which was responsible for the transmission, was jointly owned by the Regional Electricity Companies. Electricity Council was abolished and Electricity Pool to facilitate the Electricity Trading was established. An independent regulatory system also came into force with the support of Office of Electricity Regulation. The regulatory system<sup>2</sup> was chaired by the director general of electricity supply.



**Figure 2: Flow of Reforms [Era of Privatization]**

These reforms unbundled the vertically integrated structure of the power sector of United Kingdom, However distribution and supply both remained as the combined function of Regional Electricity Companies. These Regional Electricity Companies were allowed to do limited investment in Generation which was up to 15% of the sales volume of respective company.

**Power Generation**

In 1990, 6 electricity generation companies had the highest ration in the production of electricity in Great Britain. During 1990 – 1991, all the power generation companies (not nuclear power bodies<sup>3</sup>) and Regional Electricity Companies (RECs) were sold through the public flotation on stock exchange.

In 1996, Government came up with a holding company which was named as the “British Energy”. Scottish Nuclear and Nuclear Electric were made the wholly owned subsidiaries of the British Energy. However, operations and processes of Scottish Nuclear and Nuclear Electric were continued to be separate as before.

All the introduced Combined Cycle Gas Turbine Power Plants<sup>4</sup> were supported by the regional electricity companies (RECs). CCGTs were the joint ventures of Regional Electricity Companies and at the same time RECs had long term power purchase agreements with them. RECs were prohibited to meet only 15% of the supply demand through CCGTs. However, one REC, Eastern Group<sup>5</sup> get the relaxation in the said limit to 100%.

At this point of time, entry of new players in the generation segment was also seen. Players like Enron, Entergy, NRG, AES and Edison Mission Energy made their entry. Enforced Divestment<sup>6</sup> in some already established generation companies was happened which opened up new door for competition as the

same action created opportunities to change in ownership.

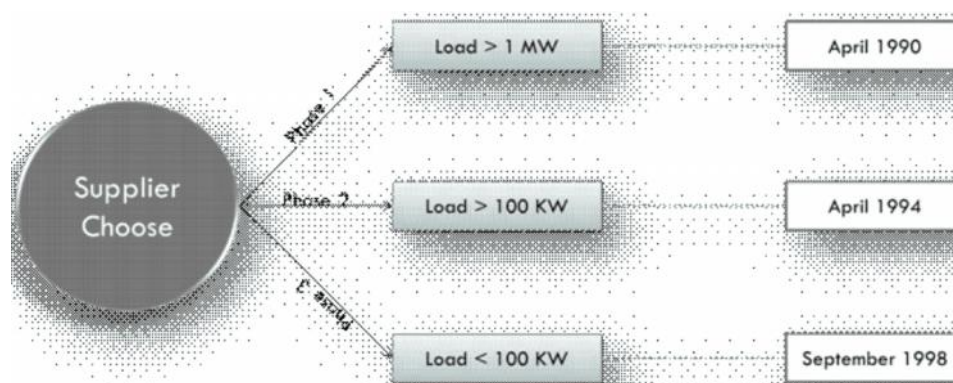
**Power Transmission**

Power Transmission is the natural monopoly. In United Kingdom, National Grid Company (NGC) is the owner and operator of Transmission System. To maintain and develop an efficient and economical transmission network is the statutory duty of NGC. The National Grid Company was initially jointly owned by the Regional Electricity Companies. Later on, in December 1995, it was also floated on the national stock exchange as an autonomous company. NGC is regulated under the provisions of Grid Code and the Electricity Act 1989. Technical aspects are governed by the Grid code while the regulatory aspects are governed by the Electricity Act 1989.

**Power Supply**

Supply industry choose to open up the “supplier choose” for consumers in three phases. In April 1990, consumers with the connected load of 1 MW and above were given freedom to choose the supplier. From April 1994 onwards, suppliers choose was opened up for the consumers with connected load of 100 KW and above and from September 1998 onwards, all consumer groups were given freedom to choose their supplier.

“Suppliers choose” introduced competition in the segment. During 1999-2000; 80% of the consumers who had load 1 MW and above, choose to take power from competitive market (Supplier other than the local PES). 67% consumers in the segment of 100 KW – 1 MW also choose to take power from such suppliers which were not the local PES. In lower segment of consumers (load < 100 KW), 38% power consumers switched their suppliers. This supplier switch happened either one or more time. By this phenomenon of competition, PESs lost nearly 30% of their consumers in the respective area.



**Figure 3: Introduction of Supplier Choose**

Initially, number of licensed suppliers got increased in an area. But later on the business of PES suppliers was acquired by major suppliers and hence such mergers and acquisition reduced the quantity to seven suppliers. On the other hand, Investment from the side of generation companies into supply side was also seen in the segment as many generation houses expanded their business to supply side companies by investing in them.

### Power Distribution

By the Utilities Act 2000, power distribution business had been separated out from the power supply business. Distributors in United Kingdom now hold the separate license to distribute the electricity. To connect a consumer and to maintain the connection is under the constitutional duty of a distributor. PES distribution companies have the regional monopoly in United Kingdom. As per the guidelines of Office of Gas & Electricity Market, potentially competitive activities like metering and billing are being separated out from the work of traditional distribution companies.

### Metering and Billing

Services related to the meter involve meter operation and meter provision. Metering services in United Kingdom are provided by meter operators while the services related to the metering point administration are supposed to be provided by distribution company. The area of metering services is not the monopoly and any authorized company may provide meter related services in line with the provisions of Electricity Act 1989. For half hour meter points, metering services are fully competitive as there are enough service providers which include third parties and ex PES distribution companies also. For non-half hour meter points, only ex PES distribution companies provide their services.

Ex PES distributors are the default metering service providers. They have obligation to provide their services whenever they get request from supplier. They also have obligation to define the statement of charges for metering services. Such charges should be published to ensure the competition in the sector.

Supplier has the freedom to choose the company to provide metering services under the agent commission scheme. Whereas, the metering company needs to provide its services for the particulars related to the data collection, data aggregation and meter operation.

### Regulatory Reforms

UK got its first powerful act "Utilities Act 2000" for the most needed regulatory reforms on March 28,

2000. By the effect of this act, regulatory board of Gas and Electricity Markets Authority was constituted to replace the individual regulator Director General of Electricity Supply. Regulatory Offices of gas and electricity sector were merged to become the OFGEM i.e Office of Gas and Electricity Markets. Energy watch was established as an independent consumer council to replace existing consumer committees. Secretary of state and regulatory authorities were awarded with new powers.

In the supply side regulations; the act abolished public electricity suppliers and introduced the concept of single license. A mandate to separate PES power supply and distribution business was provisioned with the requirement to take separate license for distribution. These provisions provided new directions to redefine the ownership structure of power industry in United Kingdom.

NETA, New Electricity Trading Arrangement was established by this act to replace already operationalized electricity pool. Purpose was to eliminate manipulation of pool prices and to have updated mechanics in price setting. NETA was introduced to solve number of existing problems and to remove hurdles which were identified during last decade.

### Utilities Act 2000

The Utilities Act 2000 was enacted on March 28, 2000. The act amended the legislation pertaining to the gas and electricity industry. Provisions which impacted the sector most are being described here.

### Provision Related to The new Regulatory Arrangements

**Gas and Electricity Market Authority [GEMA]** was established to carry out the functions of Director General of Electricity Supply as well as of Director General of Gas Supply. Act abolished the offices of Director General of Electricity Supply and Director General of Gas Supply. A body corporate **Gas & Electricity Consumer Council** was also established to perform the task as defined in the act.

As per the act, before the commencement of a financial year, the authority and the council both are required to publish "Forward Work Programme" to give the description of planned future projects. On the other hand, annual reports as defined in the act are also needed to be submitted both by the authority and by the competition commission.

Protection of consumer interest is the principal objective of both the authority and the secretary of state. Interest of end consumer must be protected by the promotion of competition amongst different

players in Generation, Transmission, Distribution and Supply segment. These bodies should also have the regard of persons who are either belong to disable, pensionable age or low income group or resides in rural area.

The council has the work to gather the consumer related information which affects the consumer in regard to electricity services. Also the information can be related to the view or experience of consumer for the particulars related to the power industry. The council may form committees to get the information and advice for the matter related to the consumer concern. Consumers may also get the information from council; if they need any. Council also has the duty to publish the statistical information as per the provision of this act. Council has the power to investigate the consumer complain related matters. If the Authority asks to supply any information, council has the duty to submit it within the specified time frame or as the case may be, the council may submit the notice with the reason to not to supply the asked information.

#### **Provisions Related to the Licenses**

Utilities Act 2000 defines both the distribution and supply. Distribution means the distribution system which conveys the power to any premise through the network of low voltage lines and electric substation. Supply means the supply of electricity with the use of distribution system to such premise which is not used by the license holder.

A license is required to generate, to transmit, to distribute and to supply the electricity. Same person cannot have licenses for both supply and distribution of electricity. Both distribution licensee and supply licensee can authorize a holder to distribute or supply the electricity respectively as per the area defined in the contract. The distribution or supply area can be redefined by the authority in consultation with the respective holder.

A part or the whole of license is transferrable by the holder of the license as per the terms specified in the act. Transfer must have the approval of the authority. Transfer may include assignment, assignation or any other form of transfer as specified.

Distributor has a duty to connect the requested premise from distribution system within the specified time whenever he gets the connection request either from consumer or from authorized supplier. Distributor must maintain and develop the power distribution system in an efficient and economical manner.

The authority in coordination with Secretary of State may prescribe standard of performance regulations

pertaining to the work of power distribution. If distributor fails to fulfil the prescribed standard then he needs to fill compensation for the same.

#### **The Electricity Code**

Supplier is not supposed to charge any amount whenever he alters the position of a meter or replaces the specially adapted meter, in case such work relates to disabled person.

Supplier has the power to install a prepaid meter or to disconnect the electricity connection in case consumer does not pay the due billing amount in specified time period. Supplier is supposed to have a deemed contract to supply the power with the occupier of premise wherever he supplies the electricity. In such cases, where electricity is supplied illegally, distributor is authorized to recover the value against the amount of supplied electricity. If any premise has been disconnected, then before restoring the connection, consent of the supplier or distributor as the case may be, is required. Both distributor and supplier have the power to disconnect the electricity connection. Also they both i.e. distributor and supplier may enter into any premise for the purpose of investigation of particulars. Supplier has the power to install or re install the meter at the consumer premise and to manage the same. However, a prior notice of two working days must be given from supplier's side before removing or installing a meter. Removal/Installation of a meter is the duty of supplier while connecting/disconnecting of the premise is the duty of electricity distributor.

Supplier is supposed to give power through an appropriate electricity meter only. Provision of service through a pre-paid meter is also there but such pre-paid meter can only be used by supplier to recover the amount which pertains to his services only.

#### **Separation of Electricity Supply and Distribution**

Before going further, we need to understand the term "associate". A company is taken as an associate of the supplier if the supplier or the company is a wholly owned subsidiary of a company or a supplier as the case may be. Both supplier and the company can also be the wholly owned subsidiary of another company.

This part applies to such license holder who had licenses both for supply of electricity and distribution of electricity before passing of this act. By the provisions of the act, such type of licenses needs to be granted to different persons. Licenses for supply and distribution may be separated amongst 2 associates nominated by the holder or one license can be given to associate and the other one may be kept by the same holder only, as the case may be.

Before the enactment of this act, if any holder of supply license generates or transmits electricity with the valid license, such license will have the effect if it was granted to the associate nominated by the supplier.

### Provision of Transfer Scheme

Under the transfer scheme, secretary of state will direct the supply licensee to make a nomination to divide assets, liabilities and rights between the licensee and the associate. In such cases where licenses are to be divided amongst the 2 associates, 2 nomination need to be done for the stated division as above. The transfer scheme should be carried out by the respective supplier as per the direction of secretary of state.

A transfer scheme must define all the assets, liabilities and rights which are supposed to be assigned to nominated associate. The transfer scheme and its particulars may be defined through questions, referring, undertaking and in other appropriate ways. Division of these assets, liabilities and rights shall be enforceable amongst such persons to whom the supplier nominates. Obligation to have a written agreement between such persons must be there. Incidental, consequential and supplemental provision should be made as the supplier thinks appropriate.

All the transactions and transfers should be happened in pre stated order. Nominated person or the nominated associate must be considered equivalent to supplier in law. The transactions and transfers are also enforceable by the civil proceedings for any remedy or relief; in case it feels necessary.

A transfer scheme must have the approval of secretary of state. Before approving it, secretary of state may make the appropriate modifications to ensure that the transfer scheme is aligned with the law. A transfer scheme is drafted keeping in mind the interest of public as the same should not be violated. The supplier needs to assist the Secretary of State for all the information required regarding the drafted transfer scheme.

Effective date of transfer from which transfer is supposed to take place, needs to be defined by the transfer scheme or it may be day for which the supplier is entitled as per the act. Secretary of the state may also direct the effective date for the purpose of this transfer scheme. Any asset, liability or the right which is retained by the supplier is believed to be shifted to supplier under the transfer scheme only.

Shares issued in line with any transfer scheme, should be of nominal value. They may be allocated or issued under the specified terms in the act. Issued shares are

supposed to be fully paid and must fulfil the provision of Companies Act 1985.

If any statutory account is set up by the transferee in line with the provisions of Companies Act 1985, then the supplier needs to assign an amount or a value against the assets and liabilities to define the corresponding statements for that account. In such cases, where no value is assigned or the value seems to be inappropriate; such value under the transfer scheme may be produced on the basis of the last year's accounting records of supplier.

On the other hand, the account which represents the accumulated profits of the transferee may include an amount or the proportion of any profit which is retained and realized by the supplier. The said amount may also be defined to realize under the drafted transfer scheme.

If the existing supply licensee has made the transfer scheme as per the date specified by the directions of secretary of state then the secretary of state will formulate another scheme to provide effect to the existing license of supplier to supply the electricity. Earlier<sup>7</sup> granted generation and transmission licenses will also have the effect if the associates were nominated by the supplier for the purpose of having license for either generation or transmission. In such case, where transfer scheme of a supplier does not take place, the described particulars and actions will not have any effect.

Further, Secretary of state is responsible to make a scheme after the enactment of this act which will define the particulars of the treatment of existing licenses. Standard conditions of the licenses should be defined and at the same time secretary of the state may do the necessary amendments. These amendments may also include the amendments in the terms of revocation and exemption of license. Scheme made by the Secretary of state may have the transitional provisions and other such provisions which depend on the category of cases. After making the scheme, an authoritative text is supposed to be published from the office of Secretary of the state.

### Deemed contract to Supply

Areas where the public electricity supplier is supplying the power before the commencement date, in such cases successor of the supplier is believed to have deemed contract for those areas to supply the electricity just after the commencement date. Terms and conditions of the supply and contract may be submitted by the earlier supplier. Secretary of state may also direct the supplier to make the scheme to describe such terms and conditions. Different

provisions as per the category of cases and nature of place may be drafted. The draft of terms and conditions must have approval of the authority and the authority may modify it before granting the approval.

If supplier finds it difficult to submit the draft of the scheme to authority within the specified time line or if the authority does not find the submitted scheme suitable; in such case, the scheme may be drafted by the Authority itself. Supplier is supposed to assist the authority with all desired information. Before the commencement date, such scheme shall be published in London and Edinburgh Gazettes to get operationalized on the publication date.

### **Concluding Remarks**

In many OECD countries, retail competition and unbundling of supply from distribution inspired the process of reforms. Countries like Germany, Norway, Finland, Sweden, New Zealand, Australia and USA opened up their electricity market to all class of consumers. United Kingdom also opted the same in phased manner and gave the freedom to end consumer to choose its' supplier. In United Kingdom, reforms had been mainly linked to privatization and unbundling. UK replaced the Electricity Pool with New Electricity Trading Arrangements and it made the participation in trading of the electricity voluntary. By the Utilities Act 2000, country made the separation of supply from distribution mandatory and hence UK entered into next generation of power sector reforms.

Reform is a process of continuation and it happens in the form of a chain. Uncertainty and risk always remain there for certain works but it is necessary to face it to go further. Today, many developing countries like India are having serious problems in their power sector. Their power sector is facing with huge technical and commercial losses, low efficiency, low customer satisfaction, frequent power cuts and high burden of debt on power sector utilities. Such countries may adopt the UK model of restructuring to make their power sector effective one.

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### **Endnotes**

1. Corresponding Author, Telephone : +91 7895227215, +91 9950606596 E Mail address : [india\\_atulagrawal@live.com](mailto:india_atulagrawal@live.com) (Atul Agrawal)
2. System was to regulate the newly privatized industry.
3. Nuclear Bodies remained in the public ownership at that time.
4. CCGTs were the First independent power projects of UK.
5. Now TXU Europe
6. Later the divestment had become the voluntary one.
7. Before Utilities Act 2000