ABSTRACT

The Indian power sector has been grappling with several challenges for a long time now. Power shortage is the key issue at hand. The government has taken cognisance of the power shortage and come-up with several policy interventions over the last decade in addressing this gap. The “short-term transactions of electricity” means the contracts of less than one year period for electricity transacted through Trading Licensees, Power Exchanges, and Unscheduled Interchange (UI).¹ This paper focuses on the policies that have played key role in addressing the issue of power deficit. We also analyse one of the emerging areas which is gaining significance in the Indian energy sector – short-term power transactions.

INTRODUCTION

I CURRENT SCENARIO

India is a power deficit country. In spite of appreciable growth in electricity generation, to the tune of 6.73% (over previous year) in 2012-13 (Total installed capacity being 233 GW)²; India has been facing electricity shortages. In fact, studies carried out for anticipated power supply

¹Annual Report- Short-term Power Market in India, 2013, CERC
²Monthly Review of Power Sector (December 2013), CEA
position for the year 2013-14, indicate that there would be energy shortage of 6.7% and peak shortage of 2.3% in the country during 2013-14.\textsuperscript{3} This shows an improvement as compared to the energy shortage of 8.7% and peak shortage of 9% in the country during 2012-13.

In the face of these shortages, several distribution companies procure power from the spot market to meet their short-term needs. There has been a rising share of the short-term market in total generated electricity, as witnessed in the year 2011 and 2012. As per reports of Central Electricity Regulatory Commission (CERC), which is the central commission of India to regulate matters related to the power sector, the share of short-term market in total electricity generation in the country increased from 9% in 2009-10 to 11% in 2012-13.

The government has taken cognisance of the power shortage and come-up with several policy interventions over the last decade in addressing this gap. With increased focus on increased power generation through both conventional and clean sources of energy, it is expected that India might not be power deficit in the future.\textsuperscript{4} In that situation, it is interesting to note how competitive the short-term market is.

II POLICY INITIATIVES

The Indian power sector has been grappling with several challenges for a long time now. Some of the most important ones being:

- Shortage in power supply to meet the fast increasing demand
- Financial viability of State Electricity Boards
- Lack of access to power to the rural population
- High Aggregate Technical & Commercial (AT&C) losses

Several attempts have been made, from time to time, to improve the condition of the power sector in the country. The year 2003 marked a new beginning of reforms in the electricity sector in India with enactment of the Electricity Act 2003 (EA2003). Inter-alias, the Act tried to bring private sector participation in power generation, transmission and distribution. The Act also introduced the concept of Trading Licensees, which could involve themselves in the short-term trading of power. Its objectives as stated in the preamble were “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

\textsuperscript{3} Load Generation Balance Report 2013-14, GoI, MoP, CEA
\textsuperscript{4} Five year strategy for Renewable Energy- Briefing Paper, MNRE
Commissions (CERC) and establishment of Appellate Tribunal and for matters connected therewith and incidental thereto”\textsuperscript{5}.

The EA2003, also mandated the State Electricity Boards to unbundle and segregate into separate independent entities involved in the business of power generation, transmission and distribution. Along with these, to overlook the working of all the newly created entities it also made it compulsory for each state to have a state electricity regulatory commission.

In pursuance of the provisions of the EA2003, the government notified the National Electricity Policy (NEP) in February 2005. The policy laid emphasis on promoting competition through market development by setting aside a proportion of new capacities being built, for trading in the short term market. It envisaged inter-state trading by trading licensees, introduction of intra-state Availability Based Tariff (ABT), creation and regulations of power trading markets and power exchange. The Policy also envisaged “Power for All” by 2012. Thus a number of initiatives from that point onwards were taken to meet this end. Thus started an era of increased focus on rural electrification. This linked to the overall policy of the government to improve the living conditions in the rural parts of the country.

The Indian Power Sector has traditionally had very high levels of losses. These losses mainly occur during the transmission and distribution of electricity. The losses have been both technical and commercial in nature. In order to reduce these losses the central government introduced the Accelerated Power Development Program (APDP) in the year 2001. In 2003, the government added new features to this scheme and made it more structured. The revised scheme was rechristened as Accelerated Power Development Reforms Programme (APDRP). As part of the XIth Five-Year plan, the scheme was further improved and in the year 2008 it was re-launched with the name of Restructured Accelerated Power Development Reforms Programme (RAPDRP). The learning’s from the previous schemes were built into this new scheme and focus was now on demonstrable and sustainable loss reduction of the power distribution utilities of the country. The scheme is now under implementation all across the country and unlike its previous avatars, it is closely being monitored by the centre.

The challenge of the Indian power system was not only shortage of power but also difficulty in grid operation caused by indiscipline in the prevailing system. The CERC with the objective of facilitating grid discipline introduced the new concept of pricing known as ABT vide its order dated January 4, 2000 at inter-state level.\textsuperscript{6} In the ABT, a two-part tariff is supplemented with a charge for Unscheduled Interchange (UI) for the supply and consumption of energy in variation from the pre-committed daily schedule and depending on grid -frequency at that point of time.\textsuperscript{7} The UI mechanism enforces a penalty/incentive for producers/consumers of power when they inject/draw power from the grid, which is different from their original injection/drawl schedule.

Moving towards its policy to encourage competition in the Power Sector, CERC issued guidelines for grant of permission to operate to power exchanges in India in January 2007, and subsequently gave approval for the first power exchange Indian Energy Exchange (IEX) in

\textsuperscript{5} The Electricity Act 2003, GoI
\textsuperscript{6} Investigation and Analysis of Indian Power Grid after Regulatory Reforms & Dynamic Pricing, Ibraheem et al.
\textsuperscript{7} Power sector reform in India: current issues and prospects, Singh A.
August 2007. This brought in competition into the short-term power market of India. With this, India became one of the few power-deficit countries (e.g. Brazil) to have a power exchange. As per CERC’s reports, the current volumes trading on the exchange are only around 20% of the total short-term power trade.

III SHORT-TERM POWER MARKET

There are now three platforms for sale/purchase of short-term power in the country viz. Trading Licensees, Power Exchanges and UI. All three of these platforms are very tightly regulated. CERC has fixed a maximum and minimum price band for trading of power through two power exchanges as well. The UI price, which is also regulated by the CERC, is also operated in a fixed band. Thus over drawl of energy by a consumer costs the consumer short-term power in a particular range depending on the availability of power in the grid. There is evidence that the three platforms compete against each other and thus the price ranges of short-term power is in a similar range and follow similar trends across the three. Thus, it appears that regulations could be bringing in an imperfection to the competition in the short-term power market.

It is important to note that being a power deficit country, there is not enough power to be sold in the short-term market in India. An analysis of the buy-sale bids on the exchanges reveals that there is more volume of buy bids than sale bids. Therefore in such a scenario, perfect competition may not be observable.

The private sector is being encouraged in the Indian power sector. The government is relying in a big way on private sector to contribute to the power generation capacity of the country. Policy allows the upcoming private power generating plants to generate some power which is not tied in long term power purchase agreements. Also the concept of merchant power plants (MPP) has been introduced in the country. The MPP will be plants which can trade a large percentage of their power to meet the short-term peak demand. The behaviour of short term price in the future affects the financial viability of these plants.

IV CONCLUSION AND FURTHER RESEARCH

Following the balance of payment crisis in 1991, India took off on liberalisation and reform of the economy, at the same time the electricity sector, which is the backbone of a developing economy, too witnessed major policy and regulatory initiatives. Power distribution utilities today are finding it difficult to buy power from the short-term market, and at times end up paying a very high price for the power they procure from the market in a short-term. This has had a negative effect on their balance sheets in the recent past. Forecasting of short-term price of power can help policy makers to understand its effect on the financial viability of utilities. Moreover, the inability of some utilities to purchase expensive power from the short-term power market, leads to the phenomenon of “load-shedding”. Long power-cuts are a popular mechanism used by the India power distribution companies to handle the power deficits faced by them hours of power deficit. Thus this leads to a lack of access to electricity to a number of people of the country.

8 ICRA Rating Feature- Summary Opinion, Kadam et al.
Several studies have suggested models for determining electricity prices; however, these models that relate to the short-term power prices have mainly been tested on deregulated markets of developed countries. For the Indian case, which is not a completely deregulated market, there are only select studies and reports that have attempted to discuss the factors which affect pricing and demand of power in India.

Although forecasts are available for demand and supply of power in India, there is lack of academic discussion on India’s short term power market. International studies can provide a direction in which work on this emerging area in India can be carried forward. Literature suggests that the price of short-term power depends on a number of factors which depend on policy. Due to paucity of relevant data for India it has not been possible to identify how policy affects these factors and determine how they affect the price of short-term power. In future, once these effects are established, the short-term power prices could be forecast based on probable policy scenarios. However, the demand/supply situation would change considerably based on the policy measures the government undertakes. Also, policy would influence the various platforms available for short-term sale of power and their interplay. Thus the landscape of the Indian power sector is expected to be greatly influenced by the actions taken by policy makers.

REFERENCES


Sarangi G.K., 2008. Regulating Merchant Power Plants in India: Risks and Opportunities, Regulatori

