

Utility reforms in developing countries: Learning from the experiences of Delhi



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ABSTRACT

The power sector reforms of Delhi, the capital of India presents an interesting case in the evolution of power sector reforms in India, targeting improvements in distribution side. The Delhi reform design has benefitted from the experience of an earlier partially successful experiment in the state of Orissa. The reform format has tried many new ideas such as defining Aggregate Technical and Commercial (AT&C) losses, auctioning of Discoms based on highest AT&C loss reduction, direct privatization and transitory support provision. In the span of a little more than a decade from the year 2002, there has been tangible progress on many fronts. Other utilities planning the reforms may benefit from this experience. However, newer challenges such as an unexpected increase in power purchase costs with limited scope of passing these costs to the end customers seem to have emerged in the recent years. The paper ends with a cautionary note that for any utility not having access to lower cost power, the distribution reforms will reach a dead-end unless a competitive market is created at the generation side too.

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1. Introduction

Power sector reforms in the National Capital Territory (NCT) Delhi, the capital of India, were undertaken in difficult circumstances in 2002. In the year 1999, the local utility – Delhi Vidyut Board (DVB) – had outstanding liabilities towards generating companies to the tune of Rs. 65 billion (bn)² and an accumulated revenue gap of Rs. 30 bn. On the other hand, the peak demand was rising at an annual rate of 10 per cent and reached 2355 MW in 1997–98 against an in-house generation capacity of only 694 MW, of which only 50 per cent was available owing to forced outages (Hasan and Gaba, 2006). To make matter worse, the Transmission and distribution (T&D) losses had grown from 22.56 per cent in 1991–92 to 42.72 per cent in 1997–98 and were one of the highest in the country. This clearly points out that the sector was unable to mobilize resources to meet the needs of the present and the future.

The reform process included unbundling of vertically integrated utility into separate generation, transmission and distribution

companies. Another key aspect of reform was privatization of the distribution companies and providing transitory support to the newly created Discoms³ for five years till 2007. After 2007, the sector was allowed to function on its own, under a regulatory watch.

In a span of 10 years from 2002, the T&D losses⁴ for Delhi (now termed as AT&C losses) have come down from approximately 50 per cent to around 20 per cent. Investments in infrastructure have grown and there are improvements in power availability situation too despite peak demand rising from 2355 MW from 1997 to 98 to 5942 MW in 2012–13 with over 96% demand is being met.⁵ All this has been achieved without a significant increase in tariff, especially till 2010 as is indicated in Fig. 1.

This paper is an enquiry into the process of the reform model pursued in the NCT Delhi and what lessons can be learnt from Delhi's experience. Delhi's reform process assumes added importance because during the same time, India had to grapple with a

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² In 1999, 1 US \$ ≡ Rs. 43, Source: <http://www.rbi.org.in/scripts/PublicationsView.aspx?id=14503> last accessed on November 2013).

³ In unbundled electricity sector, the separately formed distribution, generation and transmission companies are called as Discoms, Gencos and Transcos, respectively.

⁴ Post reforms, the term has been broadened and rechristened as Aggregate Technical & Commercial (AT&C) losses which includes both technical and operation losses. Details about computation of AT&C losses are given later in the paper.

⁵ Sources: Government of NCT Delhi strategy paper on Power Sector (1999) and Load Generation Balance Report, CEA, 2013–14 (www.cea.nic.in/reports/yearly/lgbr_report.pdf accessed in June 2013).

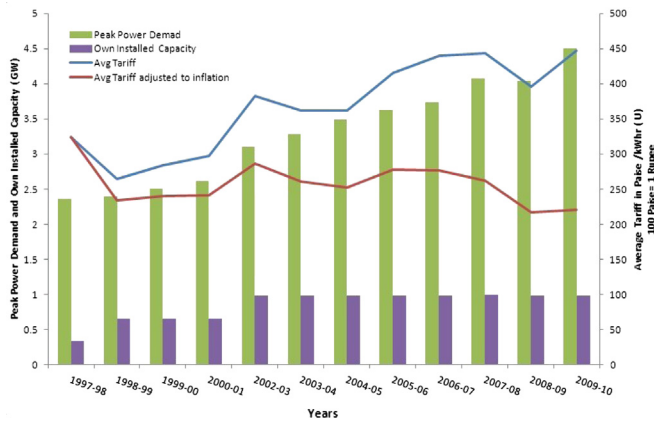


Fig. 1. Utility performance before and after the reforms.

Data Source: Various DERC orders on Transco and Discoms' annual revenue requirements; Inflation data from www.labourbureau.nic.in/indtab.html last accessed on 04.07.2013.

failed deregulation experiment in Orissa. The paper also looks into what distinguishes Delhi's reform model from Orissa's reform design, which resulted in far superior performance of Delhi. Our analysis yields that Delhi's reform design had three key elements: a) direct incentivizing performance (as measured by reduced AT&C losses) of Discoms; b) indirectly, supporting new Discoms by absorbing the cost of transitional support; and c) involvement of regulator in fixing AT&C losses. These elements seem to be instrumental in ensuring success of Delhi's reform process. The present paper has important policy implications as the learning from Delhi's reform design can be used by other urban utilities of developing countries, which are in the process of reform.

The remaining paper is organized in five sections. Section 2 gives the literature review in the context of power reforms in developing countries followed by the specific context of power sector reforms in India. Section 3 gives the backdrop under which Delhi power sector was reformed. The entire reform process in Delhi can be divided into two distinct time phases – 2002 to 2007 – also called the *policy direction* period and 2007 onwards, termed as the *multi-year tariff* (MYT) regime. Section 4 discusses the reform design of policy direction period and the outcome of those reforms. The section also discusses the salient points of Delhi's reform design that differentiates Delhi from the failed experiment of Orissa. Section 5 discusses the design features of MYT regime and performance of Delhi power sector during the regime. The paper concludes with Section 6 that discusses the learnings on policy front from Delhi's experience.

2. Literature review – the power reforms in developing countries

The developing countries while implementing the reforms tread a rather uncharted territory. For the developed countries, the pioneers of power reforms, the motivation of reforms has varied from price control in USA (Blumsack et al., 2005) to revenue generation in UK (Thomas, 2005) to performance improvement in Chile (Pollitt, 2005) and Norway (Bye and Hope, 2005). Two key ideas had triggered power sector reforms in the developed countries. First, private ownership under a competitive environment is more likely to be driven by economic considerations as compared to a government-owned firm. This is because government ownership, sometimes, have to factor in social considerations also (Galal, 1990). Second, the advent of new generation technologies which allowed

the smaller plants to match efficiencies of the large sized plants, challenging the central idea of the utility consensus in the USA from the beginning of 20th century till 1970s which favored larger plant sizes (Blumsack et al., 2005). Together this meant that the government-owned vertical utility business could be broken into Generation, Transmission, Distribution and Retailing. The Generation and Retailing could operate as competitive industries and Transmission and Distribution, as monopolies, which can be regulated to facilitate competition (Blumsack et al., 2005; Joskow, 2008). Such restructuring was expected to result in significant cost reduction as compared to a vertically integrated structure. Figure A1 in Appendix 1 illustrates this restructuring.

The governments in developing countries, however, have instituted reforms from an altogether different stand-point. Most of these countries including India have undertaken reforms as they face chronic capacity shortages, need for investments and to implement tariffs that reflect actual costs. The default cases have mostly been with sub-economic tariffs (Pollitt, 2009). This implies that to apply the available power sector reform models of developed countries due adaptation is required by the developing countries. A very careful balance of competition and regulation is needed to suite the country specific issues.

In case of India, the power reforms, especially in the distribution sector has met with mixed results. The initial assessment of prevalent conditions in distribution sector with respect to status of infrastructure, unsustainably lower tariffs, high sales of unaccounted power (AT&C losses), introduction of independent regulators, asset valuation methodologies, the then nascent experience of the state of Orissa, proposed joint venture model of the state of Rajasthan discoms (which did not happen) and the then conditions of Delhi power distribution marred by 80 percent tampered meters and requirement of capital to address the issues in its infrastructure have been reported (see for example, Banks et al., 1998 and literature cited therein). At the outset of reforms, though the operational efficiency related objectives have dominated the literature but social benefits arising out of reforms also find mention in the literature. During the first decade of power reforms on performance side neither the technical losses reduced nor (on social side) the per capita power consumption increased (Sharma et al., 2005).

On the distributive aspect of the achievements of reforms, there have been many arguments. It has been argued that the reforms and in particular privatization should be able to meet the two key requirements: 1) for a given cost, the prices should be kept low enough to avoid any exploitation by the businesses and high enough to earn a minimum return on capital; and 2) the producers should be motivated to keep the cost low (Galal, 1990).

The privatization of utilities affects vast population and three main factors: a) access. b) price, and c) quality have been reported crucial for public acceptance or disapproval of the reforms. From Latin American experience, it has been reported that even in the countries which pioneered the reforms in 1980s, on account of price rise the public discontent is growing (Cecchi et al., 2009).

2.1. Indian power sector: status leading to reforms

The Indian constitution under its Article 246 places electricity sector under concurrent list. This means that the federal government is empowered to frame policies but it is in the realm of state governments to arrange and supply power to the end consumers. After independence in 1947, faced with enormous challenge of expanding electricity availability from few large urban centers to entire country, the Electricity Supply Act 1948 (ESA 1948) mandated the constitution of the State Electricity Boards (SEBs) – the state level but government-owned vertically integrated

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