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Obstacles to Private Power Investments in India

Vishvanath V. Desai

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Vishvanath V. Desai is Former Chief Economist at the ADB and currently Advisor at the ICICI Bank Ltd. The views expressed in this paper are the views of the author and do not necessarily reflect the view or policies of the Asian Development Bank Institute.

This paper aims to highlight the critical importance of cost recovery in attracting and sustaining private investment for power development. Based on a brief review of Indian experience, it suggests that in the absence of requisite cost recovery, reform of sector policies and institutions alone, is unlikely to mobilise private investment for power development. The paper also suggests that far more focused attention and efforts than in the past need to be given to achieving adequate cost recovery as well as to implications of failure in achieving it.

Background.

Power sector in India is owned largely by the state governments and managed by their respective SOEs, namely the State Electricity Boards (SEBs). The Central government is responsible for establishing sector policies. The Central government, also undertakes the development of generating capacity through its owned enterprises (e.g. National Thermal Power Corporation), which sell energy to various SEBs. Since pre-independence times, a few privately owned power companies have been in operation, mainly in parts of major cities of Mumbai and Kolkata. Presently, total generating capacity in India is about 110,000 MW, of which about 10% is privately owned.

Sector Reforms.

The power sector has been at the forefront of reforms in infrastructure. The Government announced the decision to allow private investments in infrastructure for the first time in 1991 by opening the power sector to such investments. The primary objective of initiating reforms in the power sector was to mobilise private investment for its development, government having concluded that it did not have sufficient funds to develop the sector itself.

Over the past 12 years since the announcement, the power sector has undergone comprehensive and significant reforms. Formerly integrated state-owned power utilities- the SEBs, were unbundled and corporatised. Distribution activities began to be reorganised for more efficient and accountable operations by launching programs for network rehabilitation. Moreover, the entire distribution segment was privatised in two states.

The Electricity Laws (Amendment) Act was enacted in 1998. Under the Law transmission was for the first time recognized as an activity distinct from generation and distribution. Further, a Central Transmission Utility (CTU) was created to facilitate power flows from different sources and across various jurisdictions. This would also contribute towards the eventual creation of competitive power markets. Legislation was also passed in 1998 to create independent regulatory agencies at the Central government level and in the states of India. A regulator at the centre and in most states have since been set up and are functioning, and many have already issued tariff orders. Regulators have contributed to distancing government from the markets, and improving investor confidence about a level playing field for all sector participants.

An omnibus Electricity Act became operational in 2003, which harmonised various pre-existing laws. The Act has strengthened anti-power theft provisions, which is expected to help in reducing power leakages. Under another important provision, the Act recognises power trading as a distinct activity, and provides private power suppliers 'open access' to T&D networks enabling them to deliver power directly to their customers. The Act also delicensed generation activity except that based on hydro and nuclear resources.

Along with such policy and institutional reforms, incentives were also offered to attract private investments in the sector. In fact the announcement of the policy to permit and seek private investment in the power sector was soon followed by the announcement of special incentives to private investors. Such incentives included an assured return of 16% on investment, tax

concessions for ten years, and the reduction of import duties on power plants. The government also offered financial support in the form of Central government guarantees to selected projects. To encourage inflows of especially large sized private investment, the government announced a policy on Mega Power Projects which offered additional incentives for multi-state projects of over 500 MW. More recently, private ownership up to 100% has been also allowed in power projects.

Obstacles to Private Investment

Thus, over the past 12 years policy and institutional development in the power sector have substantially improved and become conducive for private investment. However, crystallisation of private investment in the sector has remained far below expectations, and may have actually declined in the last 3-4 years. As against the hoped-for addition of nearly 30,000 MW by private investors during 1992-2002, an addition of only about 6500 MW could be realised. As a result, after more than a decade of major policy and institutional reforms, private sector investment, including the pre-reform ones, account for about 10% of total installed capacity in the country.

Several factors can be considered to have acted as obstacles to private investment in the power sector. For instance, the various reforms mentioned above were not introduced all at one time, but in bits and pieces over a period of time, which may have diluted their impact on investors. Improvement in administrative and bureaucratic structures has not been commensurate with the spirit and pace of reforms. Improvements such as, simplification of procedures, reduction in administrative delays, elimination of multiplicity of clearances and approvals, adoption of a business-orientation, have been slow to develop, and may have dragged down the impact of reforms. The controversy surrounding the Enron project may have also adversely affected investor sentiment.

Having said that, however, it is important to recognise that perhaps the most severe obstacle to private investment in the power sector, has been its lack of financial viability. The dominant sector entities, namely the SEBs, are technically insolvent. They are unable to recover the costs of power supplied, and remain burdened with ever-growing commercial losses.

The power market in India is essentially a single-buyer market and the SEBs are the single buyer. Private power producers therefore, have to sell power to SEBs, who lack financial resources to pay for it. Initially, private investors sought comfort by asking SEBs to create ESCROW accounts so as to 'ring fence' the revenues payable to them. However, such arrangements did not address the basic issue of inadequate cost recovery, and turned out to be untenable. Private investors also sought comfort in guarantees from state governments, but these too proved to be of limited value given the precarious finances of the state governments themselves.

This meant that private investors, most of whom were interested to invest in generation, did not have credible counterparts to sell their output to. Faced with uncertain prospects of getting paid for their supplies, private investors held back from investing in the sector, despite substantial reforms and incentives.

Power sector Finances.

Like in several developing countries (and many developed countries as well), power is provided to agricultural and residential consumers at subsidised rates in India. SEBs therefore, suffers losses from sale of power to these consumers at tariffs that do not cover supply costs. Part of the losses are met through cross-subsidisation i.e. by charging more than supply costs to industrial and commercial consumers. The respective state

governments undertake to provide the necessary funds to neutralise remaining losses of the SEBs.

The policy of subsidisation and cross-subsidisation has resulted in a tariff structure that is highly skewed and unsuited to recover supply costs, as shown in Table1.

Table 1

Tariff Structure: 2001-02.

Consumer category	% Share in Consumption	Supply cost (Paise / KWh)	Tariff (Paise / K/Wh)	Cost Recovery
Agricultural	29%	350	42	12%
Residential	21%	350	195	56%
Industrial	29%	350	380	109%
Commercial	7%	350	430	123%
		Av. Supply Cost 350	Av. Tariff 240	Av. Cost Recovery 68.6%

With the rapid expansion of electrification in provincial and rural areas over the past decade, power supply to subsidised consumer groups steadily increased and its share in total supply grew from 46% in 1992 to 50% in 2002. This trend caused an increase in loss per unit of sale resulting in progressive rise in commercial losses suffered by the SEBs, as shown in Table 2.

Finances of SEBs.
(Rs. Bln)

	FY 1993	FY1997	FY 2002
Total Revenues*	243	525	928
Total Supply costs	273	572	1176
Commercial (Loss)/Profit	(30)	(47)	(248)
Rate of Return on capital	-13%	-20%	-44%

*(Include subsidies paid by the state governments).

This situation meant that losses suffered by SEBs were sharply rising and needed to be recovered through increased cross-subsidisation and the transfer of larger amounts by the state governments.

There are however, limits to cross-subsidisation. Tariffs for industrial and commercial consumers cannot be increased beyond a point where they exceed the cost of captive generation, lest the consumers switch to captive generation. Such point was getting closer and the scope for increased cross-subsidisation was fast shrinking. This placed demands for transfer of increased funds on the state governments. However, the governments were unable to provide such funds. This was because, with minor exceptions, the financial position of all state governments has been fragile, and they themselves run deficits of more than 20% on their revenue account!

The inability of SEBs to recover supply costs from consumers or through increased cross-subsidisation, as well as the failure of state governments to provide the necessary funds to them, placed them in financially untenable position. SEBs often have been unable to service their debt or even to make payments to their suppliers. Overdue payments to suppliers, and especially to central government-owned power producing entities assumed such proportions as to threaten the soundness of these entities. This caused the central government to intervene and devise a temporary solution to the issue in 2000 under which the payables

were securitised. This development further exposed the lack of financial viability of SEBs, further damaging their credibility as counterparts to private investors.

Relevance of Cost Recovery.

The absence of requisite cost recovery by SEBs and the non-availability of compensating funds from other sources thus made the SEBs as well as power sector operations financially unsustainable, and acted as a major discouragement to private investment in the sector. Moreover, owing to unremitting losses, the SEBs were also not able to provide resources for proper maintenance of their facilities, let alone to invest in new facilities, which affected sector growth.

The importance of cost recovery for sustainable development of the power sector has been recognised for a long time by governments, development agencies, as well as private investors. Accordingly, the Indian government requires that SEBs not only cover their supply costs, but also earn a return of 3% on the capital employed. (return on capital employed is -44% at present!). Several expert bodies appointed to look into the sector problems have also highlighted strongly the need to achieve higher levels of cost-recovery for improved operations and growth of the sector. At the level of policy-makers, the conclaves of Power Ministers and Chief Ministers of states have also endorsed such need from time to time. And more recently, the Electricity Act 2003 has required that cost recovery should be enhanced so as to eliminate cross-subsidies by 2008, and to also reduce government transfers as much as possible.

Notwithstanding such broad-based consensus, the majority of state governments appear to have made only feeble attempts to raise cost recovery. Consequently, cost recovery performance has failed to improve. In fact, ironically the rapid progress in sector policy reforms since 1991 was accompanied by an equally rapid deterioration in cost recovery, which declined from about 80% in 1992 to 68% in 2002. Moreover, current trends point to possible further lowering of cost recovery levels in the years to come. For instance, until 1998 only one state government was supplying power to agricultural consumers at zero or near-zero tariffs. From that year, another state government decided to adopt the policy of supplying free power to agriculture. In the current year, two more states have announced the decision to do likewise. The decision by the four states to supply power to agricultural consumers at zero tariffs would mean that about 12% of total power supply in the country would be provided without any recovery of supply costs. It is not unlikely that the attractions of such populist policy might persuade more states to adopt it in the future. Predictably, such a development would have substantially damaging impact on SEB finances.

India's disappointing experience with cost recovery is fairly common among developing countries, especially those with low per capita incomes (< $1000). With few exceptions, the financial situation of power sector entities remains poor, as they are required by governments to sell large chunk of power at below supply costs without being compensated by the concerned governments. The World Bank, ADB and other development agencies have been routinely obligating borrower governments to achieve a certain level of cost recovery as a condition of loans for power projects. Most governments also commit themselves to achieve stipulated levels of cost recovery by agreed dates. However, records show that most governments fail in fulfilling their commitments in this regard. Post-evaluation studies of the World Bank, ADB and other donors demonstrate that borrowers seldom comply with cost recovery covenants.

Reforms sans Cost recovery?

In the context of widespread failure of governments to achieve necessary cost recovery, it is tempting to consider whether private investment in the sector can be promoted by accelerating other reforms instead.

For instance, the Electricity Act 2003 has further liberalised the power sector by providing 'open access' to private power producers and traders to transmission-distribution networks and enabling them to supply power directly to their customers. It can be argued that with such development, private investors would not need to sell power to SEBs, as they can sell power directly to industrial and commercial customers who are able to pay for it.

Would such a development encourage private investors to commit large amounts of investments in the power sector?

It is possible that few modest sized investments may be attracted under such conditions. However, it appears unlikely that major investments would be committed by private investors when the sustainability of the power sector as a whole is far from assured. This is so because the issue of inadequate cost recovery from subsidised consumers would remain unaddressed. And so long as that continues to be the case, SEBs, who are likely to retain responsibility for the bulk of power distribution for the next several years, would continue to be financially unviable. In fact, in the absence of increased cost recovery by SEBs, accelerated liberalisation of the sector could result in further deterioration of SEB finances, and in the sustainability of sector operations.

Consider, for instance the possible impact of private investors taking away from the SEBs the entire market segment for industrial and commercial consumers[1]. It is likely that regulators would recover from the private investors and transfer to SEBs the 'surplus', which SEBs presently collects by charging above-supply cost tariffs to these consumers. If the level of 'surplus' that accrues to SEBs is protected by regulators, SEBs finances would not be affected on account of such a change.

There would be however, another source of grief for the SEBs. After the loss of industrial and commercial consumers to private investors, SEBs will be left with power that was earlier being sold to these consumers. Under conditions of large unmet demand for power in the country, SEBs would be required to sell such 'excess' power to its remaining consumers, namely the agricultural and residential ones. The impact of such developments on SEB finances would be severely adverse. Preliminary estimates suggest that with unchanged supply costs, tariffs, and the energy sold in 2002, SEBs commercial losses would escalate from the present level of Rs. 248 billion, to Rs. 550 billion as a result of this change.

Implications.

Given the importance of cost recovery for sustainable development of the power sector as well as for attracting private investment, it appears that the issue has not received the attention it deserves in policy prescriptions and advice by policy-makers, donors and private investors. Perhaps for the same reason, the difficulties and failures encountered in achieving enhanced cost recovery have also not been fully appreciated.

What is needed therefore, is to recognise that inadequate cost recovery is a serious and intractable obstacle to sector development in general, and to private investment in the sector

[1] This is obviously an extreme assumption, but perhaps useful in highlighting the underlying dynamic. At a practical level, success of private power suppliers in capturing markets for industrial and commercial consumers would depend on several factors. These would include, among others, the regulatory stance on 'surcharge' payable by those catering to the subject consumers' demand, the dependability of private suppliers in the minds of consumers, competitive response of SEBs etc. Owing to such considerations, the extent and the pace of switchover from SEBs to private suppliers is likely to progress only gradually.

in particular. Consequently, it is also necessary to go beyond the mere stipulation of tariff recovery obligations, and to examine the feasibility of its being fulfilled in a realistic setting[2]. For instance, it has not been uncommon for governments to sign PPAs implicitly requiring tariff increases of up to 300% to 400% to be effected within a short period of time. Such undertakings are basically infeasible and should not be entertained in the first place. Instead, a more realistic assessment of what could be expected to be achieved in a given political economy situation should guide expectations in regard to cost recovery. In parallel, there should be search for alternative financing structures that would be consistent with feasible increases in tariffs and cost recovery.

The second important action needed in this context is to develop better understanding of the causes of failure to achieve cost recovery, and to explore ways to help and support authorities in this difficult task. Admittedly, the decisions to raise levels of cost recovery are difficult to implement as these involve complex political economy considerations that only governments can tackle. However, governments can be considerably assisted in this task if they are equipped with reliable information and advice on various factors that make impact on cost recovery.

Development agencies can make an especially important contribution to creating the necessary knowledge and database, and documenting and sharing related experience among developing countries. Such an exercise would provide a robust basis for policy-makers in making and implementing difficult decisions, mobilising public support and improving cost recovery.

The suggested exercise should focus on various issues including the ones outlined below.

Public Education on Subsidies: Governments avoid cutting subsidies to enhance cost recovery because of expected public opposition to such moves. Perhaps for this reason, the majority of state governments in India did not appear to have made strong efforts to increase cost recovery despite committing to do so. It is however, possible to moderate public opposition by educating the public about the impact and costs of subsidies. Most governments however, do not have adequate specific data on beneficiaries of subsidies, although it is a widely held that the undeserving capture the bulk of subsidies. To the extent such view can be validated by reliable data, narrowing and redesigning the subsidies to serve the really needy, and eliminating the undeserving is facilitated. This should result in reducing the subsidies. There is also lack of clarity about benefits derived by different groups of subsidised consumers, especially the farmers, from access to electricity. If benefits can be convincingly demonstrated, those with high gains might be willing to accept higher tariffs.

Likewise there is a need to highlight the implicit trade-offs involved in supplying subsidised power in terms of resources being taken away from other important services for the needy, such as schools, water supply, and roads. Similarly, social costs of subsidised power in the form of excess withdrawal of ground water, and the development of unsustainable water-intensive crops also need to be publicised. Another area where more information is needed to blunt public opposition is the possible impact of tariff increases on inflation to dispel public misgivings on this aspect.

Most governments appear reluctant to place such information before the public and to engage in public discussion and education. Such a process would, however, enable the

[2] Some analysts note that 'governments and private investors overestimated governments' ability to implement tariff increases. In fairness, part of the responsibility should fall also on development agencies, which have had far more experience of such failures.

public to participate in decision-making and take a more informed position on tariffs. Governments would feel encouraged to do so if they possess the needed information.

Affordability: While cost recovery is essential for the sustainable growth of the power sector (irrespective of whether investment is from private or public sources), it is important also to look at the affordability of tariffs to the population served. Countries with low per capita incomes (say below $1000) will likely have greater difficulty in raising cost recovery than those with higher per capita incomes. This poses important policy questions such as whether or not the desired level of cost recovery should vary according to per capita incomes. And also, where cost recovery has to be less than adequate, what options should be considered to ensure sustainable growth of the power sector.

Costs and Efficiency: Being a state-owned monopoly or a state-approved private monopoly, the power sector has traditionally harboured several inefficiencies, such as: overstaffing, lack of commercial orientation, poor availability and utilisation of plant, excessive system losses and leakages. However, closer scrutiny of cost structures has not usually received serious attention even after private investors having entered the sector. Private investors are often sensitive about fully disclosing commercially sensitive data. Besides, they may also hope to benefit from having industry standards benchmarked to performance of the state-owned entities such as the SEBs, which may provide enough cushion for new entrants.

Since supply costs have a defining impact on the quantum of costs to be recovered, it is important to subject the cost structure of power supply to careful examination, and identify areas where costs can be reduced[3]. Another important area for improving efficiency is to reduce the amount of power 'lost' during its transmission and distribution. Part of such loss is due to the poor condition or overloading of networks that require rehabilitation and strengthening. The other and sometimes the more important part is accounted for by theft of power, which calls for provision and effective enforcement of anti-theft legislation. These are not always available in many countries, who need to be encouraged and assisted in installing the same. Likewise, the effectiveness and cost-benefit impact of innovative technological solutions for reducing power theft, need to be evaluated for their possible large-scale adoption.

In a welcome development, sector regulators in India have begun to scrutinise the costs and performance efficiency of sector operators. This is creating a better validation of costs and also promoting improved performance including reduction in system losses in the sector. However, the regulators face the challenge of inadequate data since reliable records of historical data are not available. The building of a relevant database would considerably assist regulators in the better monitoring of sector costs and efficiencies.

[3] Concerted efforts to improve maintenance of plants since 1991, improved the availability and utilisation of generating facilities in India from about 57% to 70% with consequent beneficial impact on fixed costs of generation. Likewise, strengthening of distribution network and metering is expected to yield significant efficiency gains.