

# BRIEFING PAPER

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## Rationalising Electricity Subsidy in Farm Sector

*One of the main objectives of power sector reforms was rationalisation of end-users tariff. The Electricity Act 2003 and National Electricity Policy 2005 require elimination of high cross-subsidies inherent in the tariff structure. However, in most of the states the tariff structure is still irrational and skewed. In comparison to industrial and commercial users, the tariff for agricultural supply was too low to cover the cost of electricity. Free power supply by some states such as Punjab, Tamil Nadu etc. has adversely affected the financial health of distribution companies.*

*This briefing paper makes a comprehensive analysis of the impacts of electricity subsidy on the financial performance of state distribution companies and finally quality of service. It concludes that the subventions give by respective state government were inadequate in bridging the revenue gap resulted from lower agricultural tariff. It is suggested that there is an urgent need to rationalise the electricity subsidy for restoring the financial health of distribution companies and promoting efficient use of power.*

### Background

Power sector reforms were initiated as a part of overall economic reforms in the country. The main objective of power sector reforms was to improve access to power and quality of service through promotion of competition and, thus, economic efficiency as well as enhancement of systemic transparency and accountability.

Orissa was the first state to initiate reforms. This involved restructuring of the power sector – unbundling of the State Electricity Board (SEB) and constitution of an independent regulatory agency to regulate the power sector at the state level – under the supervision of the World Bank in 1996. Subsequently, a few other states followed the same model.

The reforms were motivated by the poor technical and financial performance of the SEBs reflected in aggregate commercial losses excluding subsidy increasing from Rs 4117 crore in 1991 to Rs 28445 crore in 2001. These losses, which not only affected the capacity of the SEBs to make new investments but also deterred potential private investors, were attributable to several factors: tariffs for certain consumer categories fixed at levels which were low in comparison to the cost of supply; and large transmission & distribution (T&D) losses, amounting to 50 percent of the total energy input in certain states, caused by electricity thefts, poor metering technology, technical losses etc.

One of the major elements of reform was rationalisation of tariffs and subsidies. The paper elaborates on the relevant provisions of acts and policies that constituted the reform

process and reviews the implementation of these by various states.

### Issues in Power Subsidy

Tariff rationalisation is one of the key responsibilities of regulators assigned by the provisions of the Electricity Act, 2003; National Electricity Policy, 2005; and National Tariff Policy, 2006. Regulatory commissions are supposed to fix the tariff on the basis of economic factors such as cost of supply and incentives for efficient use. Moreover, cross subsidy (of one category of consumers by another) needs to be eliminated and any policy decision to subsidise certain consumer categories has to be now supported by advance subventions to the concerned distribution companies so that their financial viability is not affected. The key provisions from relevant statutes and policy documents are reproduced in *Annexure I*.

However, there has been very little progress in regard to implementation of these provisions. The tariff structure remains irrational and distorted: agricultural/rural consumers still continue to be highly subsidized by others. In extreme instances, Punjab and Tamil Nadu have provided free power to these consumers at the cost of the financial health of distribution companies.

Ironically, such initiatives have not even benefited the recipients of subsidy as these have been accompanied by deterioration of quality of service provided to targeted consumers by inadequately motivated distribution companies. The continuation of such subsidy does not adequately address the requirements of farmers who

**Table 1: Share in Electricity Consumption and Revenue Generated through Tariff**

State	Agriculture Sector		Industrial Sector	
	Percentage share in total Consumption (MKwh)	Percentage share in revenue generated through tariff (Rs crore)	Percentage share in total Consumption (MKwh)	Percentage share in revenue generated through tariff (Rs crore)
Andhra Pradesh	36	1	30	48
Bihar	16	3	19	32
Gujarat	34	11	42	62
Haryana	41	6	27	47
Karnataka	38	8	23	37
Maharashtra	19	11	50	56
Punjab	30	0.37	36	56
Rajasthan	33	16	34	46
Tamil Nadu	21	0	39	58
Uttar Pradesh	20	10	24	43

Source: Power Finance Corporation Report 2008

prefer reliable and adequate power, even if it adequately covers costs, to cheap/free power that is of poor quality<sup>1</sup>. Moreover, it has been appreciated at various platforms as one of the key factors responsible for the poor financial performance of state distribution companies.

### Progress in Different States

As mentioned above, there has not been any significant progress in the adoption of the provisions of the Electricity Act, 2003 and National Electricity Policy, 2005 regarding tariff rationalisation. The agricultural sector remains highly subsidised by the government and cross-subsidised by industrial and commercial consumers. This is the source of huge losses as significant agricultural consumption as a proportion of total consumption in some states such as Andhra Pradesh, Bihar, Tamil Nadu, Punjab etc. (Refer to table 1) has accompanied very low levels of revenue realisation from agriculture.

For example, in Haryana, the reported share of agricultural consumption was 41 percent while the sector contributed only six percent to total tariff revenues. In Andhra Pradesh, Punjab and Tamil Nadu the consumption shares were 36, 30 and 20 percent respectively but revenue shares were less than one percent. The situation was exactly the opposite for the industrial sector – shares in consumption were much lower than those in revenue generated (the only exception being Maharashtra) – owing to the high tariffs paid to cross-subsidise the agricultural sector.

Table 2 shows that the ratio of agricultural to industry tariff is very low. But there is some disparity across states – West Bengal at 31 percent is way above the other states which languish in the range of 0 -17 percent.

**Table 2: Tariff Structure for Agriculture and Industrial Consumers**

State	Average tariff for Industry	Average tariff (AT) for Agriculture	(Paisa/Unit)
			Agriculture AT as percentage of Industry AT
Andhra Pradesh	414	24	6
Bihar	526	52	10
Gujarat	468	55	12
Haryana	500	18	4
Karnataka	521	45	9
Maharashtra	584	90	15
Punjab	413	0	0
Rajasthan	460	76	17
Tamil Nadu	487	0	0
Uttar Pradesh	452	45	10
West Bengal	471	147	31

Source: CEA website (cited on October 06, 2009)

**Table 3: Subsidy Given by Different State Governments**

(Rs crore)									
	2004-05			2005-06			2006-07		
	Subsidy Booked	Subsidy Received	Percentage Received	Subsidy Booked	Subsidy Received	Percentage Received	Subsidy Booked	Subsidy Received	Percentage Received
Andhra Pradesh	1303	1303	100	1533	1483	97	1346	1346	100
Bihar	804	0	0	844	358	42	720	720	100
Gujarat	-	-	-	1,178	1,178	100	1237	1206	97
Haryana	1102	1102	100	1289	1289	100	1544	1544	100
Karnataka	1569	1289	82	1044	1046	100	1764	1764	100
Madhya Pradesh	764	817	107	361	361	100	419	411	98
Maharashtra	0	0	NA	0	0	NA	0	0	NA
Orissa	0	0	NA	0	0	NA	0	0	NA
Punjab	924	2285	100	1436	1436	100	1424	1424	100
Rajasthan	2014	1046	52	1629	1012	62	1741	1143	66
Tamil Nadu	925	925	100	1179	1179	100	1330	1330	100
Uttar Pradesh	693	693	100	915	915	100	1078	1022	95
West Bengal	0	0	NA	0	0	NA	0	0	NA
<b>Aggregate</b>	11871	11672	98	12234	10939	89	13590	12781	94

Inadequate revenue generation from the agricultural sector relative to consumption hurts the financial viability of distribution companies unless adequate subvention is paid by respective state governments. However, many of the state governments have erred in this regard, as illustrated in *Table 3*.

A few state governments such as Maharashtra, Orissa and West Bengal have not been paying any subsidy and yet forcing utilities to supply power at low tariffs to agriculture. Some others have been booking subsidy but not paying the entire amount: in 2004-05, Bihar Rajasthan and Karnataka paid 0, 52 and 82 percent of the booked

subsidy respectively. Other states such as Haryana, Punjab and Uttar Pradesh etc. have been paying the full amount of booked subsidy which is, however, not adequate for fully covering the revenue gaps resulted from low tariffs for power supply to agriculture.

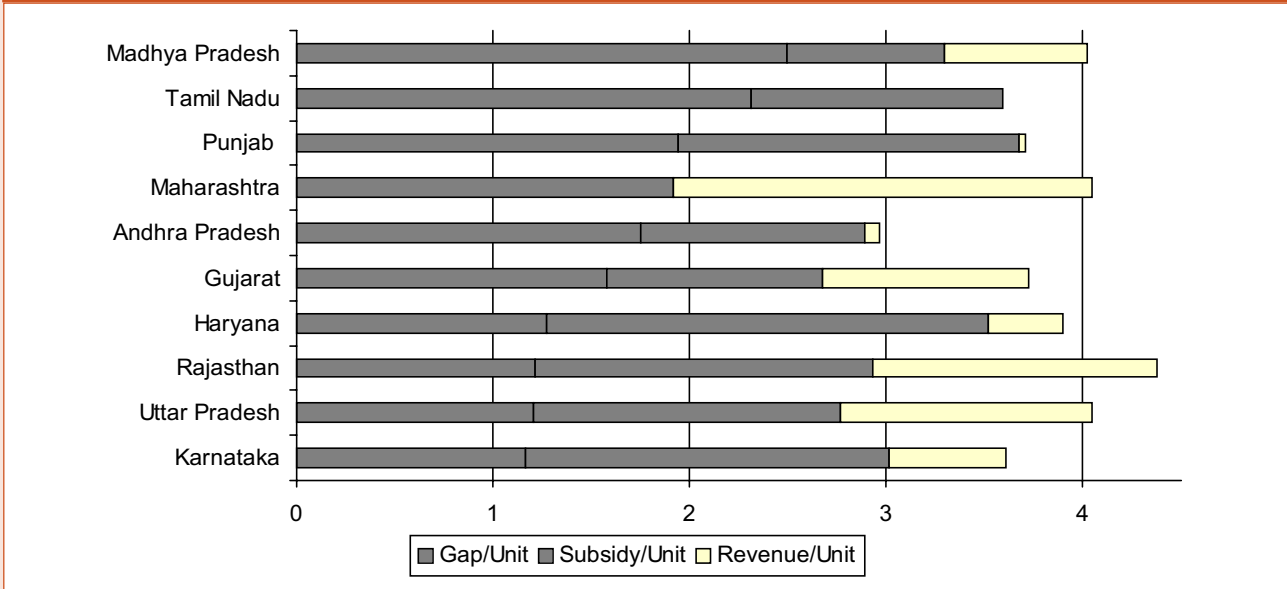
As shown in *Table 4*, only a fraction of the cost of supply is being recovered through tariff revenue<sup>2</sup>. These revenue gaps plague all states, even those that book subsidies and pay all or most of the booked amount. Among the ten states covered by *Table 4*, Andhra Pradesh and Tamil Nadu exhibit the largest revenue gaps at Rs 2843 and Rs 2411 crores while Gujarat, Karnataka, Madhya Pradesh,

**Table 4: Cost of Supply and Uncovered Revenue Gap Across States (2006-07)**

State	1	2	3	4	5	6
	Cost of Supply Rs/Kwh	Agricultural Consumption (Crore Kwh)	Cost to utilities (Rs Crore)	Tariff Revenue (Rs crore)	Subsidy Received (Rs crore)	Uncovered Gap (Rs crore)
Andhra Pradesh	2.96	1621	4805	120	1842	2843
Gujarat	3.73	1101	4102	1160	1206	1736
Haryana	3.90	686	2672	259	1544	869
Karnataka	3.61	955	3443	566	1764	1113
Madhya Pradesh	4.02	511	2055	372	411	1272
Maharashtra	4.05	944	3818	2012	0	1806
Punjab	3.70	824	3050	25	1424	1601
Rajasthan	4.38	666	2914	963	1143	808
Tamil Nadu	3.59	1042	3741	0	1330	2411
Uttar Pradesh	4.04	655	2647	835	1022	790
<b>Sub total</b>	<b>3.73</b>	<b>9003</b>	<b>33247</b>	<b>6312</b>	<b>11686</b>	<b>15249</b>

Source: Compiled from the PFC Report (2008)

**Figure I: Per Unit Revenue, Subsidy and Gap (Rs/Kwh) 2006-07**



Maharashtra and Punjab all bear losses exceeding Rs 1000 crore each.

Figure 1 illustrates that the per unit revenue gap is above Re 1 in all states and above Rs 2 in Madhya Pradesh, Tamil Nadu, Punjab and Maharashtra. Among these, Maharashtra is characterised by the absence of any subsidy transfer from the state to utilities.

This revenue gap obviously has to be covered through cross subsidisation. But because of the captive power option available to industry, its purchases from the distribution company are often not adequate to ensure the needed transfer of resources. This has adverse implications for the financial sustainability and hence performance of the distributing company. Thus, timely and adequate payment of subventions by the state governments to distribution companies, as per the mentioned act and policy, is imperative for adequate and quality service as well as for attracting new investments.

### Conclusions and Recommendations

One of the core objectives of reforms was to ensure good financial health of distribution companies so that overall quality of service was improved and required investment attracted into the sector. However, most states have been marked by deterioration in the financial performance of distribution companies with the gap between cost of supply and recovered revenue increasing due to inadequate revision of tariffs (mainly because of political reasons) coupled with increasing cost of electricity generation.

Though the Electricity Act 2003, National Electricity Policy and Electricity Tariff Policy require electricity regulators to fix tariffs on the basis of cost of supply of power, the tariff structure has not been adequately rationalised because of pressure from electorally motivated state governments.

Subsidies to agriculture, the benefits of which mostly accrue to large farmers capable of paying the full cost of supply, have continued. Such subsidies, when accompanied by inadequate subventions to distribution companies, not only threaten the financial viability of these companies but also induce excessive use of power for ground water extraction, with adverse implications for future availability of ground water<sup>3</sup>.

Free or highly subsidised power also affects the quality of service supplied to farmers, especially as distribution companies consider agricultural segments to be associated with low profitability. One dimension of poor quality is power supply by distribution companies to farmers only during odd hours. While big farmers can make their own arrangements for power supply, small farmers are not able to make the needed investment.

In spite of many directions issued on behalf of Electricity Regulatory Commissions (ERCs), the metering status of agricultural consumers is very poor. Most consumers are billed a fixed amount per connection which does not provide any incentive for efficient consumption. On the other hand, it provides a window to distribution utilities to book more consumption to the farm sector. Many regulatory commissions have observed that distribution companies have been over estimating electricity consumption by the farm sector to under report energy losses as also claim a higher than warranted level of subsidy from the respective state governments.

On the basis of our analysis it can be concluded that there has been poor progress in tariff rationalisation. Moreover, while state governments have been putting pressure on the utilities as well as regulatory commissions to keep agricultural electricity tariffs very low, these have not been paying the needed subsidy to the utilities for maintaining their financial viability. Consequently, quality of service

has been affected. The following measures need to be implemented to remedy this state of affairs:

- i) **Cost Benefit Analysis:** Detailed studies should be conducted at the state level for cost benefit analysis of the subsidy. Its impact on income and employment generation and the environment should be taken into account.
- ii) **Targeted Subsidy:** The subsidy should be available only to small and marginal farmers who cannot afford supply at cost determined tariffs. This can be ensured by linking tariffs to the scale of monthly consumption.
- iii) **Universal Metering:** As mandated by the Electricity Act, 2003 all supply should be metered. Metering would encourage greater efficiency in consumption and more accountability on the part of utilities. One way to increase the incidence of metering is to provide incentives to farmers to adopt metered supply.
- iv) **More Autonomy to Regulators:** The regulatory bodies should be provided more autonomy in regard to tariff rationalisation which should be based on various economic factors such as cost of supply, and considerations such as economic efficiency.
- v) **Advance Payment of Adequate Subsidy:** As required by the Act as well as policy, the respective state government should pay the booked subsidy in advance so that financial viability of distribution companies is not affected. Moreover, the subsidy paid should cover the difference between cost of supply and tariff revenue.
- vi) **Promoting Energy Efficiency:** There are a number of schemes such as drip irrigation launched by the Government of India and state nodal agencies to promote energy efficiency in agricultural sectors. Incentives should be given to farmers for the adoption of these schemes.

## Annexure I

**The Electricity Act 2003:** There are various provisions in the Electricity Act 2003 which require regulatory commissions to fix the tariff on the basis of sound economic principles without giving undue preference to any class of consumers. The following relevant provisions should be taken into account:

Preamble of the Act – ... *rationalisation of electricity tariff ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies...*

Section 61 (Tariff Regulation) – *The appropriate commission... guided by the following, namely*

(c) *the factors which would encourage competition, efficiency, economical use of the resources, good performance and optimum investments;*

(g) *that the tariff progressively reflects the cost of supply of electricity and also, reduces and eliminates cross-subsidies within the period to be specified by the Appropriate Commission;*

It is clear from the stated provisions that tariff should be fixed on the basis of cost of supply and other economic factors. Further, the Act also authorises the respective state government to subsidise, if required. However, it requires the state government to compensate utilities in advance so that their financial position is not adversely affected:

Section 65 (Provision of subsidy by the state government) — *If the state government requires the grant of any subsidy the state government shall... pay ... within in*

*advance in the manner as may be specified, by the State Commission the amount to compensate the person affected by the grant of subsidy in the manner the State Commission may direct, as a condition for the licence or any other person concerned to implement the subsidy provided for by the state government:*

*Provided that no such direction of the state government shall be operative if the payment is not made in accordance with the provisions contained in this section and the tariff fixed by State Commission shall be applicable from the date of issue of orders by the Commission in this regard.*

**National Electricity Policy (2005):** National Electricity Policy also appreciates that the present level of subsidy is not sustainable. Para 1.4 specifies that *Cross-subsidies have risen to unsustainable levels*. The policy further emphasises adequate cost recovery to ensure financial viability of the sector:

Para 5.5.1 – *There is an urgent need for ensuring recovery of cost of service from consumers to make the power sector sustainable.*

Para 5.5.3 – *Over the last few decades cross-subsidies have increased to unsustainable levels. Cross-subsidies hide inefficiencies and losses in operations. There is urgent need to correct this imbalance without giving tariff shock to consumers. The existing cross-subsidies for other categories of consumers would need to be reduced progressively and gradually.*

Further, the policy requires governments to make advance payments if these want to continue subsidy to some

consumer categories. The provisions also require the government to ensure that the subsidy indeed goes to targeted beneficiaries:

*Para 5.5.4 – The State Governments may give advance subsidy to the extent they consider appropriate in terms of section 65 of the Act in which case necessary budget provision would be required to be made in advance so that the utility does not suffer financial problems that may affect its operations. Efforts would be made to ensure that the subsidies reach the targeted beneficiaries in the most transparent and efficient way.*

**National Tariff Policy:** In tune with the Electricity Act 2003 as well as National Electricity Policy, the National Tariff policy (NTP) requires elimination of cross-subsidies in a time bound manner. The following important relevant provisions are given below:

### 8.3 Tariff design: Linkage of tariffs to cost of service

This provision requires the state government to pay the subsidy directly rather than bridge the revenue gap through cross-subsidies. Only deserving consumers should be subsidised in a transparent manner.

*1 Direct subsidy is a better way to support the poorer categories of consumers than the mechanism of cross-subsidising the tariff across the board. Subsidies should be targeted effectively and in transparent manner.*

*2. For achieving the objective that the tariff progressively reflects the cost of supply of electricity, the SERC would notify roadmap within six months with a target that latest by the end of year 2010-2011 tariffs are within  $\pm 20$  percent of the average cost of supply.*

Tariff Policy also addresses the issue of deteriorating ground water table in certain geographical areas of the country through recommendations for tariff design:

*3 While fixing tariff for agricultural use, the imperatives of the need of using ground water resources in a sustainable manner would also need to be kept in mind in addition to the average cost of supply.*

The policy also raises serious concerns over free power supply being provided by states such as Punjab and Tamil Nadu. It states that such free supply adversely affects the water table by increasing the wasteful consumption of water/electricity and further affects the overall quality of power supply.

*4 Provision of free electricity is not desirable as it encourages wasteful consumption of electricity besides, in most cases, lowering of water table in turn creating avoidable problem of water shortage for irrigation and drinking water for later generations. It is also likely to lead to rapid rise in demand of electricity putting severe strain on the distribution network thus adversely affecting the quality of supply of power. Therefore, it is necessary that reasonable levels of user charges are levied.*

The policy also aims to ensure universal metering at the consumer end, especially through the support of the local government, to facilitate accountability in the system,

*5 Metering of supply to agricultural/rural consumers can be achieved in a consumer friendly way and in an effective manner by management of local distribution in rural areas through commercial arrangement with franchisees with involvement of panchayat institutions, user associations, cooperative societies etc.*

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## Endnotes

- 1 In a consumer survey (targeting about 1100 respondents from all consumer categories) conducted by CUTS in Haryana state, it was observed that about 75 percent of agricultural consumers shared that they can pay little bit more if there is improvement in the quality of service.
- 2 However, it may be noted that the data reflects the average cost of supply for the whole system. The cost of supply to agriculture (especially the cost of power purchase which is the dominant cost item) should be lower because most of the utilities supply power to farm sector during off peak hours.
- 3 Dixit Shantanu and Grish Sant (1997), How Reliable are Agricultural Power Use Data? Economic and Political Weekly, April 12-18

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