

## **Orissa Case Study**





# Privatisation of Electricity Distribution in Orissa

## A Case Study



*Prepared for*  
Department of Personnel and Training, GoI

*by*  
Division of Regulatory Studies and Governance  
TERI

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## Case Study Assignment

Group A: Preparatory work for reform implementation- What was done in Orissa and the lessons you derive from this with special reference to

Day I: The role of government & consultants

Day II: Choice of restructuring model

Day III: Communication strategy

Group B: Implementation of the reform program – What was done in Orissa and the lessons you derive from this with special reference to

Day I: The role of government and SEB

Day II: Employee related issues

Day III: Balance sheet restructuring

Group C: Distribution privatization – What was done in Orissa and the lessons you derive from this with special reference to

Day I : Models and strategy for privatization

Day II: Process of disinvestment & Investor interest

Day III: Role of government & regulator

Group D: Post privatization experience and lessons there on - What was done in Orissa and the lessons you derive from this with special reference to

Day I: Performance of the sector

Day II: Rural electrification & Power purchase models

Day III: Role of government & regulator

Each group will work on a specific theme, and incorporate it into an overall assessment of electricity distribution privatisation in Orissa. The group presentations will take place on last day.



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# 1 Introduction

Since the late eighties the power supply industry in many parts of the world has been going through reforms, resulting in radical changes to its structure as well as the regulatory set-up. In India the process started in the early nineties. Orissa was the first state to initiate a comprehensive reform programme in the country. Its main components were:

- Establishment of an independent electricity regulatory commission.
- Structural unbundling of the OSEB (Orissa State Electricity Board) into separate corporations for generation, transmission, and distribution.
- Private sector participation in hydro generation and transmission.
- Privatization of thermal generation and distribution.
- A cost-related tariff regime.

Distribution privatization was a critical element of the reform programme and its success would determine whether the sector became self-sustainable. Also, this was the first time a state-owned electricity industry was being restructured in India or South Asia.

This case study reports the distribution privatization experience in Orissa starting with the context of reform right up to the process and strategy for privatization, and including the post- privatization experience. A gist of the views expressed by different committees in recent years on the outcome of the reforms and some issues of interest arising from this case study are also presented.

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## 2 The context of reform

In the early nineties the Government of Orissa (GoO) was in a poor financial condition. The financial health of the state had eroded as a result of increased revenue expenditure since 1982/83. The revenue deficit in 1991/92 stood at 187.71 crore rupees against a surplus of 27.98 crore rupees in the year 1981/82 ([www.orissagov.com](http://www.orissagov.com)). The state was finding it increasingly difficult to support socio-economic and infrastructure development activities. The per capita net SDP was the second lowest in the country and 48.56% of the population (compared to a national average of 35.97%) lived the below poverty line.

The development of the state's power sector which was totally owned by the government was also getting affected. The installed generating capacity in the state in 1991/92 was 1612 MW (an increase of 4.55% during the past decade) (CMIE 2002) but this was insufficient to meet the demand. The State had a peak deficit of 23.9% and an energy deficit of 7% (Planning Commission 2001). The corresponding deficits at the national level during this time were 18.8% and 7.8%.

The average plant load factor of its generating stations hovered around just 30% compared with a national average of 55.3% in 1991/92. It further declined to 29% in 1994/95 when the national average was 60%. The reported transmission and distribution losses in the state were about 25.3% (an increase of 6% compared to 1980/81) as against 22.8% losses at the national level (Planning Commission 1997).

The financial performance of the OSEB (Orissa State Electricity Board), the utility responsible for power sector development in the state (see Box 1), was on the decline. The Board was also becoming increasingly dependent on government subsidies; in fact, it was the largest recipient of subsidies amongst all public sector undertakings in the state. Despite that, it was not earning the statutory 3% return on net fixed assets. Without a subsidy the return was -87% (certainly better than the national average of -12.7%). Thus even though it depended heavily on government subsidies, the government was finding it increasingly difficult to provide them because of its poor financial conditions.

Meanwhile, the gap between average cost of supply and average tariff was also increasing. It had increased from 8 paise in 1989/90 to 18 paise in 1991/92 (World Bank 1996; OSEB Annual Reports 1990-94). This was despite the fact that agricultural consumption constituted only around 4% of the total in Orissa. Further, a large portion of the billing was being based on average consumption and load factor in the absence of metering. The OSEB was also relatively overstaffed. (Number of employees per million units of energy sold was 6.2 compared to a national average of 4.5) (Planning Commission 1999; CEA 2000; CMIE 2002).

### **Box 1 Structure of power supply industry in Orissa**

The OSEB established by the GoO in 1961 under the provisions of the Electricity (Supply) Act 1948 was responsible for rational development of the power sector in the state. It was a statutory organization, but was to be guided by such directions on questions of policy would be given to it by the government. In case of dispute the matter was to be referred to the CEA (Central Electricity Authority). The OSEB depended entirely on state government loans so the government had considerable operational control over its functioning. This extended to matters of tariff also.

The organizational structure of the electricity supply industry differed from that in most other states. The OSEB was responsible for all transmission and distribution, but the DoE (Department of Energy) owned some hydro power generating stations. The OPGC (Orissa Power Generation Corporation) created in 1984 was responsible for constructing and operating thermal power plants in the state.

The OSEB was a member constituent of the EREB (Eastern Region Electricity Board) and its transmission system was connected to the power systems of West Bengal and Bihar. It also had radial transmission links to Andhra Pradesh and Madhya Pradesh.

In the early nineties, economic policies were getting liberalized in the country. Infrastructure reform programmes were aimed at reducing the fiscal deficit through a reduction in subsidies, technical gains to suppliers through efficiency enhancement, and gains to consumers through improvements in the quality of supply, and a reduction in the cost of services, or both (World Bank 1994). Of all these, the objective of limiting the fiscal deficit was the uppermost. Efficiency improvements were sought through commercialization, corporatization and gradual privatization of service providers. Privatization was considered necessary, as there was a general perception that improvements in public sector management were unlikely to provide adequate results (ADB, NCAER 1999). Also, over the years tariff decisions in the states had become increasingly subjected to compulsions of political populism with financial viability of SEBs not receiving due attention [9]. It was thought that consumers would benefit from tariff rationalization and improved supply and service.

Realizing these and the fact that the power supply conditions were deteriorating in other parts of the country as well, the GoI took the initiative of bringing about changes in the structure and regulatory set up. The first such step was opening up the generation business (on a standalone basis) to the private sector. However, it was soon realized that more comprehensive reforms were needed and the states should be their catalysts. GoI also strived for some national level consensus and so the reform climate in the country was tuned to structural and regulatory changes in the power supply industry.

Meanwhile, the World Bank (which was funding the power sector in many developing countries including India) became increasingly concerned about the poor performance of the utilities. It had suspended the disbursement of loans to Delhi, Uttar Pradesh, Karnataka, and Kerala and threatened suspension to some other states. The Bank was forced to review its funding policy based on this experience, with a focus on developmental process and improving the access to electricity. As a result, a new set of policies for power sector lending was formulated in 1993 by the Bank, according to which it would extend financial support to only those utilities which functioned on commercial lines or which were committed to improving the performance of the power sector through reform. These principles which would govern the World Bank's policy for involvement in the Indian power sector were formally announced in October 1993 at a conference in Jaipur. [see Box: 2].

**Box 2 Guiding principles of the World Bank for funding the power sector**

- Structural reforms involving dismantling of vertically integrated monolith organizations such as SEBs into separate entities dedicated to generation, transmission and distribution and the corporatisation of such entities.
- Electricity pricing to reflect the cost of supply. The subsidy to any particular group to be targeted and provided for by the government in a clear and transparent manner.
- Creation of independent regulatory body to regulate the electricity sector and to insulate tariff setting from political pressures and provide a measure of comfort to private investors.
- Induct private sector management skills and encourage private investment in the sector in the context of reduced availability of funds from governmental sources.

It was also around this time that the World Bank cancelled its loan to the DoE of GoO for the Upper Indravati hydroelectric project because of the slow progress.

In view of four factors — the poor socio-economic conditions in the state, the government's lack of finances to support power development programmes, the deteriorating performance of the power sector, and the World Bank's funding conditions of the World Bank, the GoO decided to implement comprehensive reforms. In November 1993 the Chief Minister of Orissa confirmed the government's commitment to implement a comprehensive reform package. The reforms programme was also reviewed and approved by the Council of Ministers in April 1994. The key drivers of this reform programme were:

The government expected that the reforms programme would enable Orissa to establish and develop a viable power industry and reduce its budgetary burden. The OSEB expected that this would cause a turnaround for the sector; but would not adversely affect career prospects. consumer expectation related to better quality of supply and service. The industrial consumers expected a more rationalized tariff structure and a reduction in the burden of their cross subsidy. The potential investors expected a more level playing field with the regulator in position. The government entered into a formal agreement with the World Bank in September 1994 to implement a reform programme as envisaged above. The Gol also supported their reforms.

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## 3 Preparatory work for reform implementation

Following the agreement with the World Bank, it was decided to appoint a multi-disciplinary team of foreign and Indian consultants to assist the government. The international consultants led by KPMG were in the areas of management, economics, legal and regulatory issues and engineering.

Table 1 Name of international consultants

Name of the firm	Area
G Peat Marwick, London	Management consultants
National Economic Research Associates Inc (NERA), USA	Economic Management
Deloitte Haskins and Co, London	Financial Management.
Stantec Inc. Canada	Engineering Management

An equivalent of US\$ 63 million dollars was available from various funding agencies including the World Bank and the ODA (now DFID) to meet the consultancy expenses.

As a first step, nine working groups were set up. These Working Groups were to study different aspects of the power sector reforms, identify basic strategies adopted and make suitable recommendations by February 1995 (see Box 3).

A Steering Committee comprising Secretaries to the GoO from the ministries of Energy, Finance, and Law, the Chairman of the OSEB, and the Reform Project Director was to guide these Working Groups. A Reform Directorate was also created under a senior Chief Engineer supported by other staff for day-to-day monitoring of power sector reform activities. A special Task Force was also set up under the chairmanship of the Secretary (Energy) to oversee the working of the above directorate and to provide necessary guidance to the Working Groups.

The Working Groups consisted of international consultants, local consultants (many of them retired Chief Engineers of OSEB) and serving officers of OSEB / state government. This composition ensured that the Working Groups had access to relevant documents and that their recommendations were based on a thorough knowledge of the ground realities — legal, administrative, political, and social.

### Box 3 Function of Working Groups

Planning	Identify planning responsibilities of each entity and coordinating agency for interfacing with neighbouring utilities and the central planning process; draft information requirements from generators and distributors for planning; define system design criteria.
Metering	Finalize needs and specifications of meters at the interface points.
Commercial, Financial, and Asset Valuation	Prepare asset register with a view to fixing their values at the time of transfer from OSEB to its successor entities; work on capital structure of these entities and their cash flows.
Power Purchase Agreements	Draft power sales contract from generators to transmission company and from the latter to distribution companies.
Tariff	Look into various aspects of bulk and retail tariff and recommend changes in the level and structure; provide inputs on tariff for trading with neighbouring utilities.
Technical Interface	Map interface points between the transmission and distribution entities.
Legal and Regulation	Review existing legislations and draft a Reform Act.
Distribution	Make recommendations on splitting the distribution into zones
Human Resource Development	Identify manpower and training requirements; make recommendations on funds required for meeting terminal liabilities like pension, provident fund, gratuity etc. in the context of the reforms programme; formulate a VRS (voluntary retirement scheme)

Simultaneously a communications strategy aimed at winning over the stakeholders to the cause of reforms was also launched. At the very start, consultants made several presentations to the chief minister, groups of ministers and senior officers of the OSEB /state government to explain to them the need for and the scope of the reforms. Consultations were also carried out through a council that included the state government, the electricity board, and consumer groups.

The first step in spreading the message of reform among the employees of OSEB was taken in January 1995 with a four-day workshop organized in the

state capital, Bhubaneswar. Officers of the rank of superintending engineer and above, most of them deputed to the OSEB from the state government, participated. This was followed by separate workshops for unionized employees. The main purpose of these workshops was to emphasize the following:

- The reforms are driven by the needs of the utility and the consumers, and are not dictated to by any external agency. The Working Groups, in fact, comprised local experts, with foreign consultants providing assistance.
- Even senior officers of the Board did not have a clear idea of the OSEB's deteriorating finances. It was imperative that the true state of the finances of the Board be revealed to the participants to make them aware of the urgency and a willingness to change.
- The reforms should start at the top, with the senior officers, as agents of change, agreeing to a set of common goals and a time bound programme to achieve them.
- There would be no retrenchment (compulsory redundancy) under any circumstances.
- Preference/willingness of employees to join the successor entities of OSEB would be obtained before they were assigned to new entities.
- The employee entitlement on account of salary allowances, leave holidays, seniority, and terminal benefits such as pension, provident fund, gratuity etc. would be fully protected.
- Officers' Service Regulations for the successor entities would be framed in consultation with officers and circulated to them to help them indicate their preferences. For non-executives, all earlier wage agreements would be honoured by the new entities.

Similar workshops were thereafter held with employees in different circles and divisions. Predictably, the discussions started off on a note of suspicion and hostility, but by the time they ended, there was a grudging admission that there was a need for reforms, but nothing should be done without consulting and involving the employees at every stage.

Efforts were also made to reach out to the consumers through newspapers and television. The Chief Minister at the time, Biju Patnaik who flagged off the reforms and his successor, J B Patnaik were also fully supportive. Biju Patnaik was the first to hammer home to the legislators and to consumers that electricity costs money and has to be paid for by those who use it. There was nothing apologetic about their stand. During the debates on the Orissa Electricity Reform Bill in the Assembly, Chief Minister J B Patnaik reinforced the message of reform. There was no strong farm lobby in Orissa.

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## 4 Reform blue print

Based on inputs from the Working Groups, the GoO finalized the blue print for the reform programme. Its key features related to establishment of a regulatory commission, restructuring of the OSEB, privatization strategy, competition, and tariff reforms. The same was also communicated to the World Bank along with an expression of the government's commitment.

### **Establishment of the OERC (Orissa Electricity Regulatory Commission)**

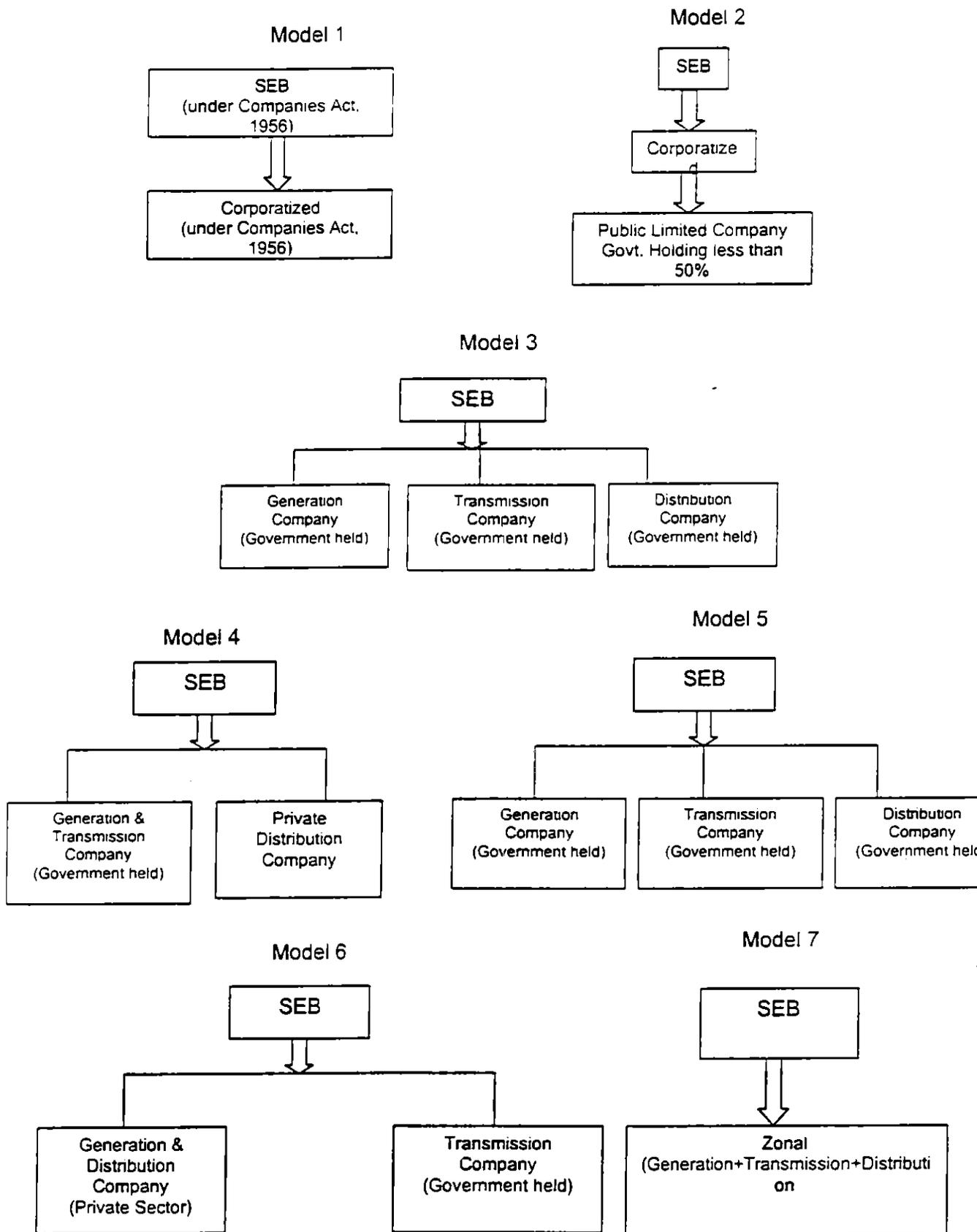
The regulatory commission was to be a multi-member body, with one of the members functioning as chairperson. The qualifications and appointment procedures and the conditions of appointment were specified in the legislations to ensure the selection of qualified persons. The OERC was required to work at 'arms length' from the government in a transparent and accountable manner. The functions and powers of the proposed commission included:

- Setting retail tariffs for the distribution companies and the bulk supply and transmission tariffs of GRIDCO;
- Setting related performance standards in the supply of electricity;
- Setting performance standards in the promotion of efficient use of electricity by consumers to be achieved by licencees;
- Settlement of certain disputes between licencees and consumers;
- Advice to GoO in matters concerning generation, transmission, distribution, and supply of electricity in the state;
- Issue of licence to those engaged in transmission, distributions, and supply.
- Regulating the working of licencees;
- Creation of environment for private sector participation and,
- Promotion of competition.

The proceedings of the commission were deemed to be quasi-judicial.

### **Restructuring of the OSEB**

The power supply industry can be restructured in a number of ways (Fig 1)(MOP 2002). A combination of these models could also be evolved. These differ from each other from the point of view of government control, extent of private sector participation, functional grouping, and level of competition. In the case of Orissa, the structure was primarily guided, by the 1993 policy guidelines of the World Bank loans to utilities.



**Figure 1 Generic models for restructuring power supply industry**

Accordingly, the generation, transmission, and distribution functions of the OSEB were to be unbundled and, to start with, corporatized. It was proposed that the transmission and distribution functions would be performed by one corporation, the GRIDCO. The distribution business was then to be demarcated into four zones and separate corporations created as subsidiaries of GRIDCO. The decisions on zoning was based on detailed studies carried out by the Working Group on Distribution, on the size, configuration, present and anticipated sales, and consumer mix, likely revenue streams, etc.

The outcome of the studies is shown in Table 2. Each zone comprises between 4000 to 5000 staff with the exception of Central Zone, which has approximately 8500 staff. There was near uniformity in the salient features of all zones except the Central. The structure of each zone is similar with each comprising 2 to 3 circles with 3 to 7 Divisions, each of which has 2 to 6 Sub-Divisions. These in turn are sub-divided into a number of Sections which would typically cater to 3000 to 4000 consumers in urban areas and 1600–2000 in rural areas.

Table 2 Key statistics of each zone

	Western	N. Eastern	Southern	Central
Population as per 1991 census ('000)	7579	7410	7035	9636
Consumers ('000)	257	214	290	452
Area ('000 sq km)	48	28	47	29
Consumers as a % of population (%)	3.4	2.9	4.1	4.7
Technical losses (%) (97/98)	17.1	19.6	19.3	16.9
Non-technical loss (%) (97/98)	22.6	23.2	20.2	31.6
Employees (1 January 1998)	5572	4610	5013	8820
Km network as of 31 <sup>st</sup> March 1997 ('000)	30.1	26.3	23.6	28.3
Electricity sales (Gwh)	1557	1149	882	1851
Electricity sales/population (GWh)	0.21	0.16	0.13	0.19

Source: Privatization of Electricity Distribution in Orissa, India, Information Memorandum

These corporations were later to be privatized. The industry structure as per this blueprint is shown in Figure 2.

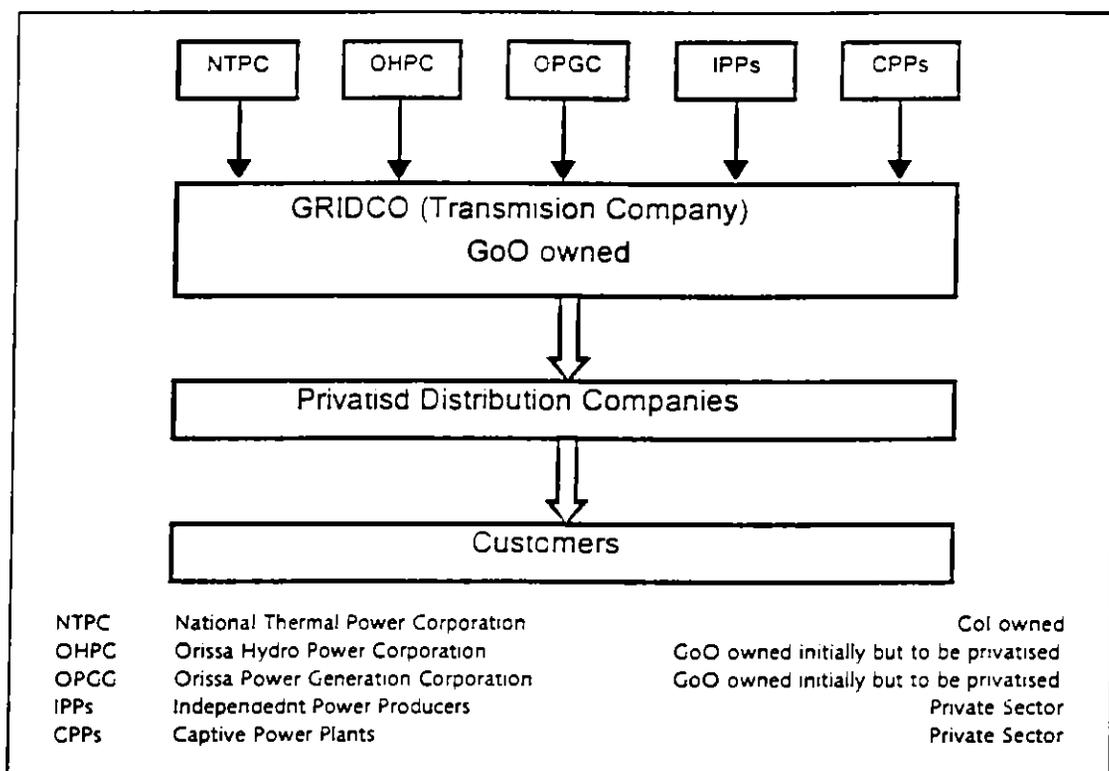


Figure 2 Blueprint for power supply industry structure in Orissa

### Privatization of distribution

The following options were considered for privatization of the four distribution zones.

#### *Trade sale:*

It is an outright sale of the assets to a company in the same trade. An outright sale is the easiest method of transferring management responsibility into the hands of the private investor. There is however, the possibility of public criticism that GRIDCO has 'sold off the family silver'. The fear that GRIDCO would retain neither the means for ensuring effective performance from the private sector nor the ability to prevent the disposal of the business or the assets eventually ruled out this mode of privatization.

#### *Public placement or floatation*

While this is similar to an outright sale, the difference is that the shares in the distribution companies are sold through open offer, which is not restricted to parties already in the same trade. Most of the perceived advantages of a Trade Sale would apply in this case also but uncertainties and difficulties in the structuring of a deal, which would attract private investors, ruled out this mode.

*Long-term lease*

This is a lease for 25 to 99 years terminable in the event of default, insolvency or non-performance. The lessee gets operational control of the assets for which he may pay a consideration in one or more installments. The leased assets would revert back on expiry of the term. The perceived disadvantage of this mode is that the risk of running the enterprise is not transferred to the lessee. There is also uncertainty about the lessee's control over the staff. This mode also was hence found unacceptable.

*Long-term concession*

This is a concession for a period of 30–40 years. The consideration amount will be paid through premium and rental payments. As in the case of a long-term lease, there is termination in the event of default, insolvency or non-performance of the concessionaire. The perceived disadvantages are that the fixed term of the concession will give no incentive to make investments; there are not enough safeguards to protect the interests of GRIDCO in the event of the concessionaire abandoning the business.

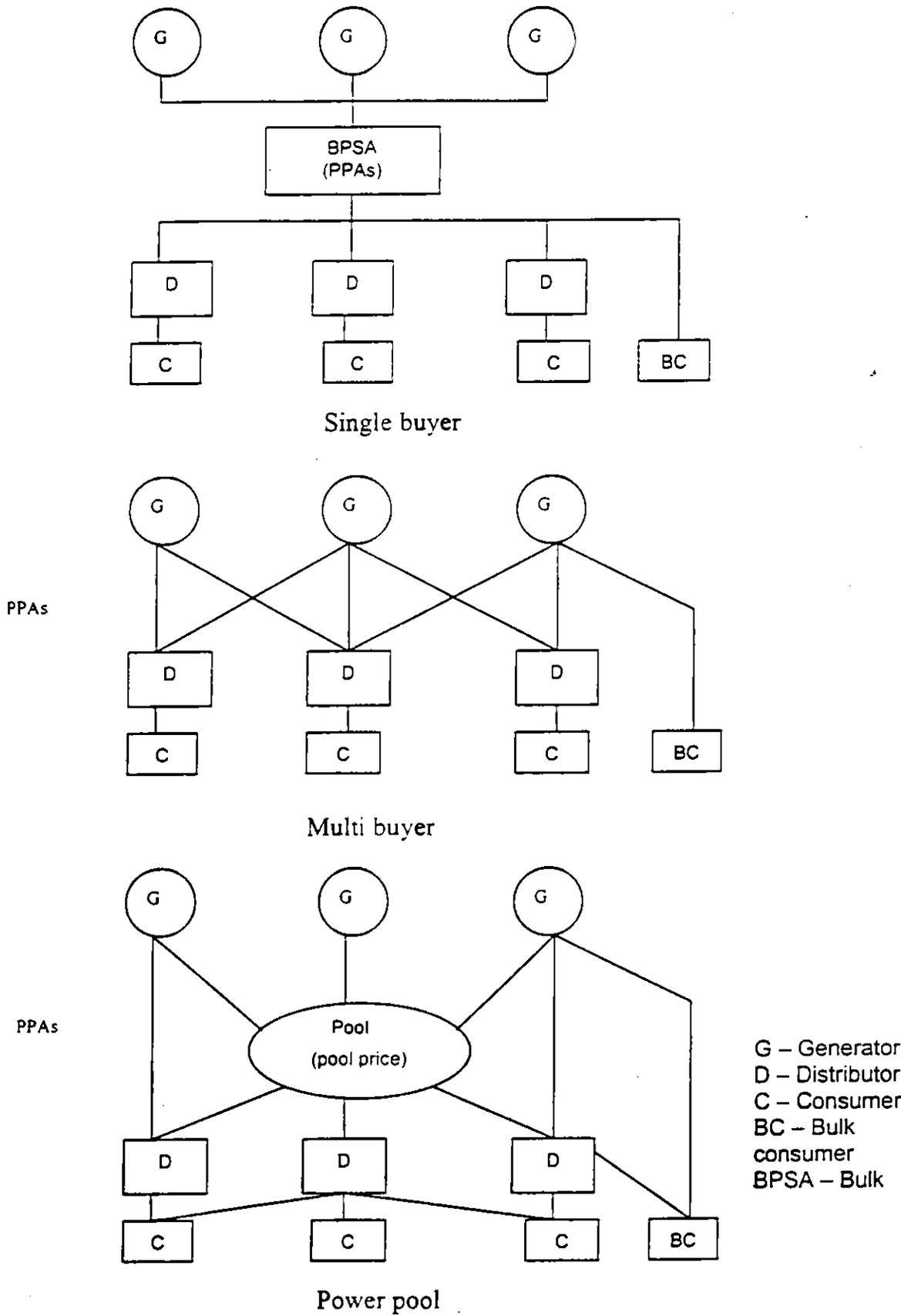


Fig 3: Generic power purchase models

### *Management contract*

Under a management contract, the ownership of the assets remains with GRIDCO but the management of the company is contracted out to a party chosen through open tender. GRIDCO would continue to be responsible for making investments. The obvious disadvantages are several. There is no transfer of risk to the management contractor. The contractor's control over the staff placed at his disposal is questionable. The contractor has no responsibility for any investment.

### *Joint venture*

Selling 51% of GRIDCO's shareholding in the distribution company to a private investor selected through competitive bidding. The private investor would be fully responsible for investments as well as for managing the distribution business. The majority shareholder would have full control over staff employed by the company. GRIDCO would retain 49% of the shareholding out of which 10% would be given to employees' shareholding trusts, who are also entitled to have a representative on the Board of the company. This would give a measure of comfort to the state government and employees — in the event of non-performance or malpractices such as asset-stripping by the majority shareholder, the state government would not be completely helpless.

It was finally decided to try out management contract in the central zone and then go in for the JV model for all DISTCOs. It was expected that the management of the contract would bring in private sector skills into the management of distribution business, and generate investor confidence. It was also anticipated that this management contract would be converted into a long-term lease in about three years. For the other three zones, it was agreed that there might be advantage in privatizing them (in the joint sector venture mode) sequentially so that errors would not be repeated (Gol 1998). Accordingly, it was decided to privatize all the zones by the end of year 2000 at the latest as per the following timetable (GRIDCO 1997):

First Zone – Management Contract

Second Zone – Contract to be signed by December 31<sup>st</sup> 1998

Third zone – Contract to be signed by December 31<sup>st</sup> 1999

First Zone – December 31<sup>st</sup> 1999 (long term arrangement)

Fourth Zone – Contract to be signed by December 31<sup>st</sup> 2000

### **Preparation of a Reform Bill**

'Electricity' is a concurrent subject specified in List III of the Seventh Schedule to the Constitution of India. This means that both the Parliament and the State Legislature have the authority to legislate on the subject but an Act enacted by the Parliament (Central Act) shall prevail over an Act enacted by the Legislature of the State (State Act). Also, the states are bound by the Electricity (Supply) Act 1948, which is a Central Act and lays down the functions and duties to be performed by the Electricity Board. However, Article 254 of the Constitution empowers the legislature of the state to enact laws in relation to electricity even if it is inconsistent with or contrary to the Central Acts. This would, however require the assent of the President of India to remain valid (TERI 1999). Since the existing legislative framework did not provide for implementing the reform components envisaged in Orissa, for example,

establishment of an electricity regulatory commission, unbundling and corporatization/privatization of the SEB. etc., a new legislation was necessary. It was also necessary to process it through the Gol and obtain Presidential assent.

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## 5 Unbundling and corporatizing the OSEB

Implementation of the reform blue print started with the enactment of the Reform Bill. It was notified in January 1996 and came into force on April 1996. The OERC became functional in August 1996. The two new corporations, GRIDCO and OHPC, into which the OSEB was initially unbundled had been incorporated in April 1995 under the Companies Act of 1956.

On 1 April 1996 GRIDCO took over the transmission (all lines and substations above 33 kV) and distribution (lines and substations at 33 kV and below) assets of OSEB. All hydro projects of the DoE and OSEB were also transferred to the OHPC. GRIDCO was further unbundled into one transmission and four distribution corporations. The distribution companies were: the Central Electricity Supply Company of Orissa Limited (CESCO), the Western Electricity Supply Company of Orissa Limited (WESCO), the North Eastern Electricity Supply Company of Orissa Limited (NESCO), and the Southern Electricity Supply Company of Orissa Limited (SOUTHCO). All these four companies began their activities as subsidiaries of GRIDCO from November 1998 and the 43 Distribution Divisions of GRIDCO were transferred to these respective subsidiary companies on 26 November 1998, pursuant to the Orissa Electricity Reforms (transfer of assets, liabilities, proceedings, and personnel of GRIDCO to distribution companies) Rules 1998. The balance sheet restructuring and transfer policies adopted in this regard are briefly discussed below:

### Balance sheet restructuring

Preparing of a healthy and realistic balance sheet is an essential prerequisite for the corporatization and privatization of any enterprise. Once the exercise is completed, it is expected that it would allow for additional investment to be brought in by achieving appropriate gearing and adequate returns to the investor, and that it would not lead to a tariff shock to the consumers. The liabilities of the company may need to be restructured through writing-off or transfer to ensure that the debt-equity ratio and the debt-service coverage ratio do not exceed what financial institutions in the sector find acceptable. The restructuring of a balance sheet, may or may not be accompanied by revaluation. If revaluation of assets is involved as a part of the restructuring exercise, three options are available:

- Go by the depreciated book value
- Get the asset revalued
- Assess the business value of the proposed transaction.

Each of these options has its merit and demerits from the point of view of the government, the consumer, and the prospective investor. Valuation of assets on the basis of book value less depreciation is likely to produce an unacceptably low value, while revaluation may result in a substantially high value. The government of the day can not be seen to be underselling its assets and would be interested

in getting at least as much money as value. From this angle, the route of revaluation of assets appears attractive. However, any substantial upward revision of the value of assets could lead to considerable tariff increases, since the tariff is calculated in accordance with the provisions of the Sixth Schedule to the Electricity (Supply) Act, i.e. it is based on the concepts of capital base. Such tariff shocks may not be desirable, particularly so in the initial stages of the reform process as they would undercut the sustainability of the reform process itself. At the same time, what matters to the successor company is the income it can produce from the assets as a going concern during the life of the license. All these considerations, therefore, define the contours of the context in which a pragmatic judgment has to be skillfully made.

In Orissa, the GoI took over all transmission and distribution assets, and hydro stations of OSEB at a historical depreciated cost of 1036 crore rupees. It then transferred the T&D assets to GRIDCO at depreciated replacement value of 1,958 crore rupees (historical cost Rs. 838 crore). Against the T&D assets, the GoO transferred to GRIDCO 109 crore rupees of loans taken from the PFC, 498 crore rupees from other lenders and also converted 73 crore rupees of its own loans into share capital.

Against the revaluation of fixed assets by 1120 crore rupees, 39.2 crore rupees of electricity charges and 301.2 crore rupees of subsidy payable by the GoO were adjusted. Rs 50.6 crore worth of unserviceable maintenance stocks were also written off, leaving a net increase in assets of 729 crore rupees. The corresponding increase in liabilities involved a conversion of 73.2 crore rupees of GoO loans into equity in addition to issuing a fresh equity to the GoO of 253 crore rupees, and the issue of partly convertible bonds of 400 crore rupees and 150 crore rupees respectively to the GoO and the Employee Trust. The total additional liability thus created was 803 crore rupees. It may be seen that in the process of this restructuring exercise, there was no fresh infusion of cash in the business of the new entity. The restructuring exercise provided that the dividends, if any, payable by the GRIDCO for the first four years would be ploughed back in the shape of fresh loans. It was also provided that the bond to the GoO would not carry any interest for the first five years and further, that part one amounting to 200 crore rupees would be convertible into equity in three equal installments in the 6<sup>th</sup>, 8<sup>th</sup>, and 10<sup>th</sup> years. The remaining part was to carry interest at the rate of 13% per annum until redemption in a period of 15 years, with a moratorium on interest of 5 years. The opening balance sheet (provisional) of the four DISTCOs is in Annexure A.

Table 3 Opening balance sheet for the year 1996/97

Opening balance sheet FY 97	From OSEB To GRIDCO (Rs Lakhs)	
<b>FIXED ASSETS</b>		
Gross Fixed Assets	11032	11032
Revaluation of Assets		11200
Interest and Expenses Capitalized	975	975
Less Accumulated depreciation	3630	3630
Net fixed assets	8378	19578
Cap. Exp. in progress	1340	1340
Total Fixed Assets	9718	20918
<b>CURRENT ASSETS</b>		
Cash and Bank Balances	308	308
Total Stocks	656	150
Receivables for sale of Electricity	5857	1468
Provision for Bad and Doubtful debts	3997	0
Net receivables	1860	1468
RE subsidy receivables	3012	0
Other Receivables	1115	1115
Total current Assets	6951	3041
<b>TOTAL ASSETS</b>	<b>16669</b>	<b>23958</b>
<b>NET WORTH</b>		
Equity	0	3262
Consumer's contribution	1323	1323
Retained earning (losses reserves)	270	270
Restructuring Account	740	0
Grants	478	478
Total net worth	2811	5333
Staff Superannuation Fund (GPF)	898	898
Other Reserve Funds	173	173
<b>LONG TERM DEBTS</b>		
State Government loans	732	0
PFC Loans	1182	1012
Other loans	5530	4977
Partially convertible bond issued to GOO		4000
Partially convertible bond issued to pension trust		1500
Total Long Term Loans	7444	11489
<b>CURRENT LIABILITIES</b>		
Account payable	4655	4655
Current Matunty Debt	0	723
Deposits from consumers	404	404
Accrued interest on non-govt. loans	284	284
Borrowing for working capital	0	0
Total current liabilities	5344	6067
<b>TOTAL LIABILITES</b>	<b>16669</b>	<b>23958</b>

### Transfer policies for employees

In reorganizing any industry, issues relating to transfer of employees are always of great significance. A correct legal and pragmatic approach is needed in dealing with these issues. A special feature in the case of the OSEB was that

unlike in other SEBs, the entire cadre of engineers was on deputation from the government. Transfers can be done by agreement or by operation of law (legislation passed in larger public interest). The sanctity of a transfer is significantly greater in the latter case, that of a statutory scheme. Accordingly, a separate section relating to transfer of personnel to GRIDCO and OHPC was included in the Orissa Electricity Reform Act.

The HRD Working Group set up in April 1994 looked into the staffing norms for the OSEB and its successor entities, training needs, funding needs for pension, provident fund and other terminal liabilities and criteria, and the mechanism for a VRS (voluntary retirement scheme). In its report of February 1995, the working group noted inter alia, that on the basis of norms in some of the other SEBs and nearby countries there was an overstaffing of 7–15% in hydel generation and 50% in the distribution set up of the OSEB. At the same time it cautioned that this was based on very broad comparisons and should not be taken as the basis for a staff reduction exercise. The report also strongly recommended that there should be no retrenchment in the absence of any social security net to help out those who lose employment. The possibility of a well-structured VRS along with likely costs was also discussed.

Towards the end of 1995 a fresh attempt was made to arrive at the staff requirement on the basis of physical and geographical conditions in Orissa, the work practices and other factors. This involved detailed discussions with the field organizations of GRIDCO and covered both the transmission and distribution functions. With the help of consultants, separate norms were evolved for the four distinct geographical divisions of the state, the coastal plain, northern plateau, western Ghats, (hilly terrain) and the central plateau. Within these broad geographical divisions, separate norms were evolved for urban, semi-urban and rural areas. Simultaneously, the study identified training needs of the organizations including the number of employees to be trained and the areas where they needed training. At the end of this exercise, it was found that after training the surplus staff would be 10% in transmission and 16% in distribution.

On the above basis employees of the erstwhile OSEB were transferred to GRIDCO and OHPC. In the case of GRIDCO, part of the employees were to be further transferred to the DISTCOs. In November 1998 the government notified transfer scheme rules for a transfer of the distribution companies, namely CESCO, WESCO, NESCO, and SOUTHCO. The spirit of this scheme was essentially the same. GRIDCO also put into operation the VRS as a result of which 42 officers and 641 non-executives had left the organization by the time the DISTCOs were privatized.

After creation of GRIDCO and OHPC, the respective management continued to maintain a dialogue with officers and staff. GRIDCO started a bi-monthly newsletter to open a direct and regular channel of communication with its employees. The newsletter featured a message from the Chairman in which he discussed topics of burning interest to the employees and kept them informed of concrete steps taken to safeguard their interests. The employee's questions were answered clearly. GRIDCO also took a number of measures — they checked stagnation of officers, regularized

ad hoc engineers and work-charged labourers, negotiated fresh wages, etc. to assure them that the reform programme was employee-friendly.

These measures contributed to the fact that the OSEB (which had 35,000 odd employees belonging to 46 unions, loosely affiliated to 4 federations) did not lose any time on account of employee's protests against the restructuring.

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## 6 Management Contract

As per the distribution privatization strategy, GRIDCO initiated action to award the management contract for the Central zone (comprising the Circles of Bhubaneswar, Cutback, and Dhenkanal) to a private company. It held discussions with a number of private operators and finally awarded the contract to the Bombay Suburban Electricity Supply Limited (BSES). The Distribution Operation Agreement (DOA) was signed on 1 October 1996.

### Provisions in the DOA

The DOA was a detailed document spelling out, inter alia, the duties and responsibilities of BSES and GRIDCO, payment terms, etc. The fees to be paid to BSES had three components: (i) a management fee, basic incentive fee, and a supplementary incentive fee. The management fee was around 4.187 crore rupees in subsequent years. The incentive fees were based on some elaborate formulae taking into account a host of factors such as billing, collection, metering, repair and maintenance expenditure, etc. during the period prior to the award of contract. The validity of the contract was 3 years; but there was also a provision for early termination. This could be by mutual agreement or one of the parties could invoke the termination based on certain stipulated criteria. One such condition, which gave GRIDCO the right to terminate the contract, was if the product of the following formulae (calculated in respect of any incentive fee calculation period) became negative.

$$R_1 - \left\{ R_1 \times \left( \frac{B_2}{B_1} \right) \right\} + R_3 - \left\{ R_3 \times \left( \frac{T_2}{T_1} \right) \times \left( \frac{S_2}{S_1} \right) \right\}$$

Where

$R_1$  and  $R_2$  = Revenue collected from EHT consumers during base and incentive period

$R_3$  and  $R_4$  = Revenue from LT consumers

$B_1$  and  $B_2$  = EHT billings

$T_1$  and  $T_2$  = Average LT Tariff

$S_1$  and  $S_2$  = Electricity supplied to LT consumer downside of 132/33 kV sub-stations.

The DOA had provided that if GRIDCO served notice on BSES terminating this agreement, BSES would pay to GRIDCO an amount equal to that paid to BSES by GRIDCO multiplied by  $X/12$ , where  $X$  is equal to 12 minus the number of monthly Management Fee Invoices, which were served on or prior to the date of such notice. In the event of early termination by GRIDCO, no Basic Incentive Fee or Supplementary Incentive Fee would be payable in respect of any unexpired

Incentive Fee Calculation Period. However, if the termination occurred due to a default or breach attributable to BSES, it would be entitled to a proportionate amount of any Basic Incentive Fee or Supplementary Incentive Fee in respect of that part of the Incentive Fee Calculation period, which had expired on the date, it terminates this agreement.

In case of any dispute between GRIDCO and BSES, which could not be resolved by the Management Committee (comprising Chief Executive and Chief Engineer of BSES and Director (Distribution) and Chief Engineer of GRIDCO), it was to be referred to the High Power Steering Committee consisting of the Chairman and Managing Directors of GRIDCO and BSES. The next course for resolution was by arbitration.

Some of the conditions of the DOA were (DOA 1996):

- 1 BSES shall acquire no proprietary interest in any of the distribution assets,
- 2 BSES shall have no right or discretion in relation to the fixing of tariffs,
- 3 BSES shall have the right to discuss a longer term arrangement provided it has complied in all material respects with the terms of the agreement,
- 4 Key management personnel amongst the GRIDCO staff shall not be reallocated, transferred to other positions or removed or replaced by GRIDCO without the prior written consent of BSES. Before taking any decision with regard to the disciplining of any of the GRIDCO staff who is a member of the Orissa Electrical Engineering Service, the consent of the GoO (as the lending authority) shall be obtained by the GRIDCO (as the borrowing authority).

The contract could not prescribe any specific level of performance for the BSES because reliable data were not available. The finalization of the DOA was, one of the preconditions for World Bank aid and this factor set the pace of the negotiations with BSES. It was noted by GRIDCO that the document was far from perfect, but as it was to be converted into a long-term agreement subsequently, it was decided to go ahead with it.

### **Contract performance**

The performance of the contract did not proceed smoothly. GRIDCO and BSES did not get along well on many issues. According to GRIDCO, BSES had more than once agreed to open counters in important centres to receive consumer's complaints. But BSES wanted additional staff for this which GRIDCO did not agree to. The scheme of opening counters did not therefore take off. BSES had also gone back on its earlier agreement to post assistant managers (Finance) as part of tightening revenue billing and collection activities. GRIDCO had also serious concerns about the attitude of BSES personnel, especially their senior management at Bhubaneswar. GRIDCO also realized that there were certain

inherent shortcomings in the contract such as no penalty clause, management fee unrelated to performance, etc.

BSES felt that non-cooperation by GRIDCO was the major hurdle. Since all the employees belonged to GRIDCO, they were not accountable to BSES. BSES had tried to get officers and staff on deputation before entering into the contract, but the Government of Orissa's Tribunal ruled that they would remain employees of the government alone (Sinha 2002). Also, the BSES was not willing to invest in improving the network's condition, since it only had management control but no ownership rights. In the mean time there was a steep deterioration in the collection during the 6-month period it was under the DOA compared to the previous 6-month period. While collection's in 1997 (April-September) exceeded the collection during the corresponding period in 1996 by 51%, the corresponding increase for the period October-March (DOA period) was only 22%. The product derived from the incentive fee calculations had also become negative.

### **Termination of the contract**

GRIDCO took up a detailed review of the situation and it was noted that if contracts were allowed to drift in this fashion, the investor's confidence would be very seriously eroded. This would be a boon to the private party selected to take over the Central Zone under a long-term privatization agreement as it would be able to grab the zone at a throwaway price but such a development was to be avoided at all costs (GRIDCO 1997). The termination of the DOA nationally and internationally led to, the consensus that the signal that had gone out was positive, namely that GRIDCO had accepted privatization not for its own sake, but because it was expected to be more efficient and responsive than a state-run system. If this aim was not realized, the arrangement with a private party would be terminated. Further, it was decided that a brief factual account of the matter should be published in the press to set at rest the rumours and half truths that were being circulated. The DOA was finally terminated on 30 April 1997 (GRIDCO 1997). BSES held the view that six months was too short a period to judge performance.

Soon after DOA was terminated, BSES issued legal notices to GRIDCO claiming damages of several crores of rupees. GRIDCO countered with even higher claims. The row between them was settled after mutual discussions. BSES withdrew its damage claim and GRIDCO agreed not to debar BSES from taking part in future privatization ventures. BSES also refunded the portion of the management fee relating to the post-termination period of the contract, which was paid in advance by GRIDCO.

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## 7 Process of disinvestment

After the premature termination of the management contract, the GoO decided to go ahead with its plans to privatize the distribution system at one shot by offering 51% equity to private distribution companies in all the four zones. The International Competitive Bidding (ICB) route was taken to select private investors. Several factors contributed to this decision which was different from the earlier one to go in for a sequential privatization. The most important reason was the continued deterioration of the distribution set up. Another reason was that a period of prolonged uncertainty should be avoided since it would lead to demoralization of the staff and fall of productivity [15]. The preparation of the documentation and the process of inviting bids and selecting the successful bidders would be very time consuming and expensive and would be best completed at one stroke. It was also hoped that offering all the four zones for privatization would stimulate investor interest, bring in better bids and wider participation (GRIDCO 2002).

### Pre-qualification of bidders

The first step in implementing the privatization strategy was to find out private investors who were interested in and qualified for the job. Accordingly, a Request for Qualification (RFQ) was prepared and widely circulated. It was published in three leading Indian dailies in English, sent out to all the Indian Embassies and High Commissions, the World Bank etc. Publicity was also given through some of leading Merchant Bankers. The document contained background information about prospective business and stipulated that the bidders may either quote for the DISTCOs individually or in a combination of two. The maximum number of bids which any bidder was allowed to make was ten. The main qualification criteria for these consortia or companies were:

- 3 years of operational experience in 33 kV distribution with over 100000 customers
- A turnover of 100 million dollars in the case of foreign companies and 350 million dollars in the case of Indian companies.
- Foreign firms should have at least one Indian partner (minimum 5% stake) in the consortium

The following companies or consortia were not eligible:

- Companies/consortia including companies generating electricity in the state of Orissa and which sell electricity to GRIDCO
- Companies/consortia including companies supplying power to GRIDCO.

In response to the RFQ, GRIDCO received 51 bids for which the following 11 companies or consortia pre-qualified.

- 1 Reliance Industries Limited and Escom of South Africa
- 2 Enron Corporation, Portland General Electric (Enron subsidiary company based in Portland, Oregon), and Delhi-based EMCO Transformers Limited
- 3 BSES Limited
- 4 National Grid Company, Energy Australia and Modicorp Private Limited
- 5 Grasim Industries, Singapore Power
- 6 United Utilities, UK, and AMP Life Limited, Australia and Indure Limited
- 7 Electricity de France, Infrastructure Leasing and Financial Services Limited
- 8 Cal Energy Company Inc, Northern Electric Plc and Dishergarh Power Supply Company Limited
- 9 Hydro Quebec International, Canada and HEG Limited
- 10 Tata Electric Company, Northern Ireland Electricity of UK and Viridian Group (the holding company of Northern Ireland Electricity) and
- 11 AES Corporation, Jyoti Structures Limited.

### **Preparation of Information Memorandum**

Simultaneously GRIDCO prepared an Information Memorandum (IM) for the benefit of all pre-qualified bidders. The IM covered important aspects of the business and features of the zonal businesses to be transferred to each of the DISTCOs. It covered broadly:

- An overview of the activities and organization of the zonal businesses;
- Sales of electricity by the zonal businesses including historic and projected load growth, tariffs, consumer mix, billing experience, and strategy for reduction of non-technical losses;
- A description of the physical system of the zonal businesses and programme of enhancement to improve system performance, increase capacity and reduce technical losses, which are being implemented (including planned improvements to the transmission system);
- The process of tariff -setting and other interactions with the OERC and the relationship of the zonal businesses with the GoO and GoI;
- An analysis of the employment issues relating to the zonal businesses and a description of the extensive training programme which have been implemented since 1996;
- A summary and analysis of the financial data relating to the zonal businesses for FY 1996/97 and FY 1997/98 and GRIDCO management projections for FY 1998/99 to FY 2001/02, and,
- Key provisions of the agreements to which, inter alia, the DISTCOs or purchasers will be a party, etc.

Some of the critical statistics included in the Information Memorandum are at Annexure C. The IM also provided a summary of what GRIDCO believed were

the investment opportunities for potential bidders. However, the IM carried the following disclaimer:

"The Information Memorandum includes certain statements, estimates, projections, targets and forecasts with respect to GRIDCO, each of the DISTCOs, the transmission and bulk supply business and the zonal businesses. Such statements, estimates, projections, targets and forecasts reflect various assumptions made by the management, officers and employees of GRIDCO, which assumptions (and the base information on which they are made) may or may not prove to be correct. No representation or warranty is given as to the reasonableness of, and no reliance should be placed on, any statements, estimates, projections, targets or forecasts or the assumptions on which they may be based and nothing in the Information Memorandum is, or should be relied on as, a promise, representation or warranty."

It also cautioned prospective bidders conduct their own analysis of the information contained in the IM and advised them to carry out their own investigations into the zonal businesses in Orissa, the legislative and regulatory regime which apply there and, any or all matters pertinent to the proposed privatization and to seek its own professional advice on the legal, financial, regulatory, and taxation consequences of entering into any agreement or arrangement relating to the proposed privatization. The reports prepared by various Working Groups and results of the studies undertaken by consultants were also made available to the bidders.

### **Due diligence**

The bidders were given time for a due diligence programme covering visits to the sites of interest, visits to the data room which contained hundreds of documents covering all aspects of OSEB/GRIDCO's activities and one-on-one discussions. This was to be completed in phases covering the period from 9 September 1998 to 10 December 1998.

Phase 1 covered:

- Access to documents in the data room

The bidders were invited to review the documentation in the data room. Each bidder was given sole access to it for a three-day period when he was at liberty to obtain copies of any document he considered relevant. Details of documents available in the data room were also circulated.

- Site visits to the zones

The bidders were also asked to make site visits to the zones in order to get a feel of the ground situation.

Phase 2 covered:

- Pre-bid conferences with the bidders and question-and-answer sessions

The areas covered during the pre-bid conferences were: the sale process dealing with details of investment structures, technical and financial bids, contractual documentation, financial projections, billing and collection procedure, and tariff policy and mechanics.

- Seeking information through written questions

The bidders were encouraged to seek information through written questions. All questions and answers were circulated to all bidders to make sure that each Bidder had exactly the same information as his competitor (Kanungo Committee Report 2001). (Kanungo Committee 2001)

Phase 3 was earmarked for further visits to the data room and discussions.

Because of local elections, the due diligence exercise took three weeks more than anticipated. None of the bidders sought any extension of the due diligence period. In fact, BSES had first-hand knowledge of CESCO by virtue of being a management contractor for that DISTCO for 6 months.

### **RFP (request for proposal)**

The Request for Proposal (RFP) documents were sent out to all the 11 pre-qualified bidders. The bids were submitted in two parts, technical and financial. The technical bid part of the RFP contained a detailed questionnaire designed to ensure that the bidders had made a study of the distribution business in Orissa. The bids were to be awarded marks based on their responses. In the first category of questions, the bidders were expected to clarify the following matters: the investment structure and preferred route, proposed capital and R&M expenditure, reduction of technical and non-technical losses, improvement in billing and collection, human resources (training, safety and management), consumer services, public relations, and regulatory issues. This carried a total of 500 marks. In another set the bidders were required to develop a preliminary plan of short, medium and long- term options and measures that would be implemented in Orissa. The bidders were specifically required to demonstrate their understanding of the distribution system and business as it currently operated. They were asked to show how they would apply their knowledge and understanding in operating and managing distribution business based on their own experience elsewhere. This carried a total of 250 marks. The minimum qualifying marks were fixed at 450 out of the total 750. It was also stipulated that no bidder would be allowed to buy more than two DISTCOs or to attach any conditions along with their proposals. There was no proposal to rank the technical bids, but it was stipulated that GRIDCO would open the financial bids of only bidders who got the minimum qualifying marks. The successful bidder was to be the one who offered the best price while satisfying the other conditions.

Two committees one technical and the other financial were formed to evaluate the proposals. The committees had nominees from GRIDCO, GoO as well as other experts from outside.

Out of the 11 pre-qualified bidders, the companies at serial numbers 4,6, and 9 dropped out after the due diligence exercise. Of the remaining seven, four did not

participate in the bidding process for reasons such as the Asian Economic Crisis, Pokharan-II blast or because they were unviable and small businesses, and regulatory risks [20], etc. Finally only the following three bidders, met the technical requirements.

BSES Limited  
Singapore Power and Grasim Industry

TEC-Viridian

A competitive statement of the offers received from the 3 bidders is given below:

DISTCO	51% face value (Rs crore)	Offer (Rs crore)		
		BSES	Grasim	TEC
WESCO	24.81	54.585	36.975	1.64
NESCO	33.614	33.614	No bid	0.71
SOUTHCO	19.20	28.81	No bid	0.569
CESCO	37.08	33.41*	No bid	41.00*

\*During re-bid

In addition to the four individual DISTCOs, BSES had also submitted two combination bids, one for WESCO and NESCO, and one for WESCO and SOUTHCO. If GRIDCO chose the latter combination, BSES had offered 30.73 crore rupees for SOUTHCO. There were no bids for CESCO. GRIDCO, therefore, went for a re-bid for this zone and solicited bids from all the seven pre-qualified bidders on the same terms and conditions as provided in the RFP except that bidders were allowed, if they considered it necessary, to stipulate conditions or reservations on a separate sheet attached to the financial bids. In response to this only BSES and TEC-Viridian submitted bids and both these had several conditions attached. TEC offered was for Rs 41.00 crore rupees compared to 33.41 crore rupees of BSES.

The GRIDCO Board deliberated at length on the different bids and decided to accept the offer of BSES for WESCO, NESCO, and SOUTHCO. Looking at the ground realities it also decided to relax the condition that no bidder could be given more than two DISTCOs. Further, it was decided that GRIDCO should not insist on the combination bid of BSES for WESCO and SOUTHCO, although it was slightly more attractive. This was because if GRIDCO did so, BSES might (relying on the RFP condition that it can not be compelled to take more than two companies) refuse to take NESCO under the individual bid. On the other hand, BSES had confirmed that if they had to take three companies, they would be willing to take WESCO and NESCO in combination and SOUTHCO under the individual bid. In case of CESCO, The Board decided to accept the 's offer of 41.0 crore rupees for CESCO subject to clarification from the bidder that the conditions included in their bid would not oblige GRIDCO to give financial support to CESCO to reduce shortfall in revenue. However, this could not be achieved and subsequently the bidder raised several issues in their meetings with GRIDCO making it clear that their offer was not unconditional. Sensing that the consortium was proposing long drawn negotiations (Rao 2001), a letter was issued to them on 12 April 1999 explaining the whole position and requesting

them to complete the share acquisition documentation and pay the consideration by 4 p.m. on 13 April 1999; if the consortium failed it would amount to a breach of the bid's terms and conditions. The matter was received at the meeting of the Board of GRIDCO on 13 April 1999 and further discussions were held with the consortium when a package of concessions was offered.

In spite of these efforts, the deal did not materialize and TEC-Viridian finally admitted their inability to complete the transaction. GRIDCO once again approached all the pre-qualified bidders and only the AES consortium expressed interest in CESCO subject to some new terms and conditions, which included GRIDCO opening an escrow account in favour of AES Ib Valley Project (a subsidiary of AES) and GoO accepting an offer from another AES subsidiary for the purchase of 2% more shares in OPGC. After further discussions, CESCO was offered to AES at a consideration of 4200 lakh rupees with effect from 1 September 1999. While taking this decision GRIDCO had noted that CESCO had been incurring losses of about 90 lakh rupees per day totalling of 120 –130 crores rupees from April end to August 1999 [18].

A summary of the prices offered to the successful bidders is in Table 4.

**Table 4 Proceeds of disinvestment of 51% of equity shares of the 4 DISTCOs.**

Name of Company	Name of the preferred purchaser	Amount offered (Rs in lakhs)	Offered price per share in Rs. (Face value Rs 10/- per share)
WESCO	BSES	8819.94	15.10
+ NESCO SOUTH CO	BSES	2880.99	15.00
CESCO	AES-Jyoti	4200.00	11.32
Total		15900.93	13.86

Source: An overview of Gridco, 2002

## 8 Post-privatization scenario

### Financial performance of DISTCOs

Based upon projections made by consultants intimated to prospective bidders through the IM, it was expected that WESCO and NESCO would achieve turn around by 1999 –2000, SOUTHCO by 2000-01, and CESCO by 2001-02. However, none of the DISTCOs could achieve this and suffered losses even at the end of the third year (Table 5).

Table 5 Net profit/(loss) in Rs lakhs

	1999/00		2000/01		2001/02*	
	Projected	Actual	Projected	Actual	Projected	Actual
WESCO	656	(5818)	3893	(11189)	4931	(4081)
NESCO	1686	(5427)	4679	(12280)	7783	(20805)
SOUTHCO	(2585)	(8737)	4350	(8605)	2220	(8372)
CESCO	(12956)	(17773)	(3915)	(17229)	13212	(23968)

Source: Projected figures given in the IM and actual performance figures collected from the OERC. The figures in parenthesis indicate net loss. \* Un-audited

### Government subsidies

Prior to these reforms the GoO was providing subventions to the OSEB under Section 59 of the Supply Act 1948. This practice was withdrawn immediately in the post-reform period. In the process the GoO saved subsidy payments of about 2770 crores rupees during the period 1995-96 to 2000-01 (GRIDCO 1999). However, this put an added strain on the newly-created entities. The net loss to GRIDCO and DISTCOs during this period was about 2104 crore rupees. The OERC had observed that non-payment of subsidies was in consonance with the spirit of the Reform Act, but the government's financial back-up in the form of a subsidy during the transition period could have substantially eased the situation. In fact, a number of reforming states have made provisions for transitional funding; for example, Andhra Pradesh (1585 crore rupees), Gujarat (1260 crore rupees), Uttar Pradesh ( 790 crore rupees), Haryana (769.3 crores rupees for one year) Rajasthan ( 3496.6 crore rupees in four years), and Delhi at the rate ( 500 crore rupees per annum for five years) (GRIDCO 1999).  
Quantum of sales

Figure 4 shows the quantum of sales actually realized by the DISTCOs alongside with those expected in the IM.

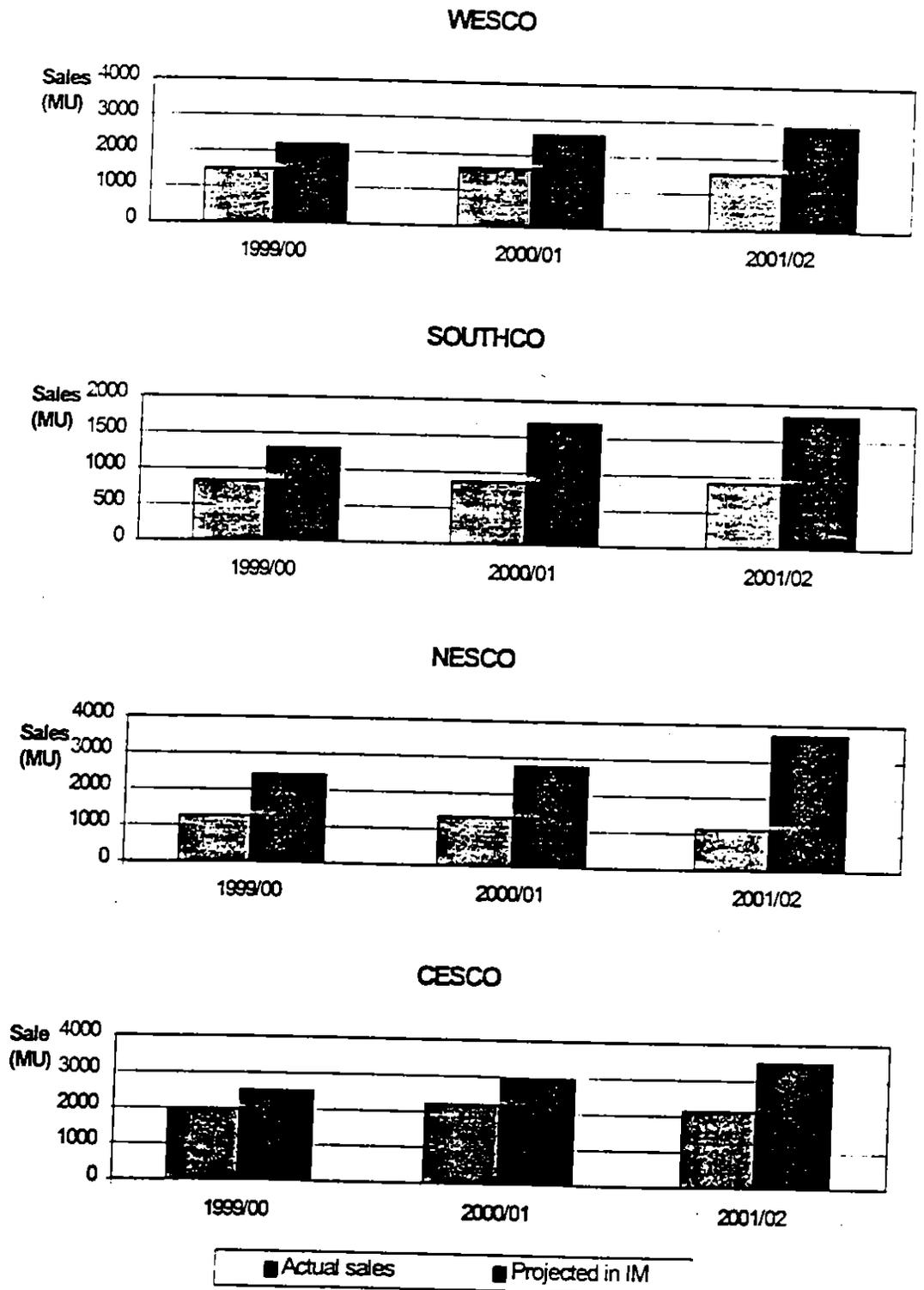


Figure 4: Actual vis-à-vis projected sales

## Billing and collection

Figure 5 shows the collection efficiency in the post privatization period compared to what existed in the OSEB and GRIDCO regime. Tables 6 and 7 give the DISTCO wise position.

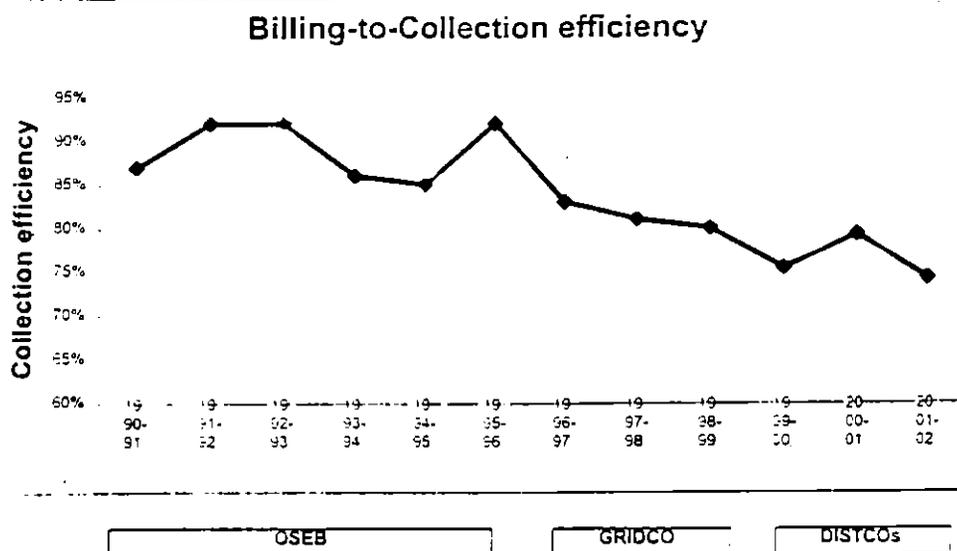


Figure 5 Collection efficiency prior/post reform

Table 6 Collection efficiency DISTCO- wise position

	Billing (Rs crore)	Collection (Rs crore)	Collection-to- billing efficiency
<b>FY 1999/2000<sup>a</sup></b>			
WESCO	427	350	81.97%
NESCO	327	244	74.62%
SOUTHCO	207	168	81.16%
CESCO	493	336	68.07%
Total	1454	1098	75.49%
<b>FY 2000/01<sup>a</sup></b>			
WESCO	472	364	77.12%
NESCO	317	276	87.07%
SOUTHCO	225	190	84.44%
CESCO	584	437	74.83%
Total	1598	1267	79.29%
<b>FY 2001/02<sup>b</sup></b>			
WESCO	509	400	78.59%
NESCO	338	228	67.46%
SOUTHCO	264	206	78.03%
CESCO	638	454	71.19%
Total	1733	1287	74.28%

Source: a- An overview of GRIDCO (April 96 to March 02);

b-OERC

Table 7 Consumer category-wise collection efficiency for 2001/02

	Billing (Rs crore)	Collection (Rs crore)	% of Collection - to-Billing
<b>CESCO</b>			
LT	356.71	211.36	59%
HT	163.65	183.41	112% <sup>1</sup>
EHT	117.85	59.55	51%
Sub-total	638.22	454.33	71%
<b>NESCO</b>			
LT	130.54	69.28	53%
HT	98.94	86.55	87%
EHT	108.78	71.73	66%
Sub-total	338.27	227.57	67%
<b>WESCO</b>			
LT	170.49	73.35	43%
HT	110.67	103.88	94%
EHT	227.37	222.35	98%
Sub-total	508.53	399.59	79%
<b>SOUTHCO</b>			
LT	140.72	90.54	64%
HT	49.87	45.83	92%
EHT	73.35	69.50	95%
Sub-total	263.95	205.87	78%
<b>TOTAL</b>	<b>1748.98</b>	<b>1287.38</b>	<b>74%</b>

Source: An overview of GRIDCO (April 96 to March 02)

<sup>1</sup> Percent of collection includes past dues collected during the year

## Tariff levels

Table 8 Variations in electricity tariffs since FY 1997

	UNITS/ MONTH	1996/97	1997/98	1998/99	1999/00	2000/01	% increase over 1996/97
Effective from		21-5-96	4-01-97	12-01-98	1-2-2000	1-2-2001	
Category		P/U	P/U	P/U	P/U		
Domestic	100	94	106	130	130	150	59.57%
Domestic	200	122	142	145	155	185	51.64%
Commercial	100	210	235	290	300	340	61.90%
Commercial	200	250	280	320	330	370	48.00%
Irrigation	200	65	80	100	100	120	84.62%
Small Scale Inds.	20% LF	165	205	262.54	306.73	346.73	110.14%
Med. Industries	30% LF	230	265	285.37	295.37	343.00	49.13%
Public Institutions	40% LF	175	200	259.03	289.03	317.12	81.21%
Public Lighting	1000 U/M	155	200	254.13	298.26	325.48	109.99%
Pub. Water Works	50% LF(LT)	210.88	270	285.22	304.35	344.35	63.29%
Pub. Water Works	50% LF(HT)	215.00	290.88	320.88	330.88	360.88	67.85%
General Purpose	40% LF	281.10	306.10	336.10	346.10	376.10	33.80%
Large Industries	70% LF(HT)	248.49	273.49	294.92	293.49	310.63	25.01%
Large Industries	70% LF(EHT)	273.49	293.49	283.49	280.63	297.77	8.88%
Pow. Int. Industries	80% LF(HT)	268.05	288.05	283.05	281.80	293.05	9.33%
Pow. Int. Industries	80% LF(EHT)	268.05	288.05	270.55	268.05	279.30	4.20%
Heavy Industries	70% LF	273.49	293.49	283.49	280.63	297.77	8.88%
Ministeel	40% LF	238.10	276.10	316.10	336.10	366.10	53.76%
Rly. Traction	40% LF	306.10	326.10	326.10	336.10	366.10	19.60%
Overall % Rise		17.00%	10.33%	9.30%	3.92%	10.23%	
				<b>CESCO</b>	<b>4.00%</b>	<b>11.59%</b>	
				<b>WESCO</b>	<b>4.00%</b>	<b>9.60%</b>	
				<b>NESCO</b>	<b>3.00%</b>	<b>8.30%</b>	
				<b>SOUTHCO</b>	<b>5.00%</b>	<b>11.27%</b>	

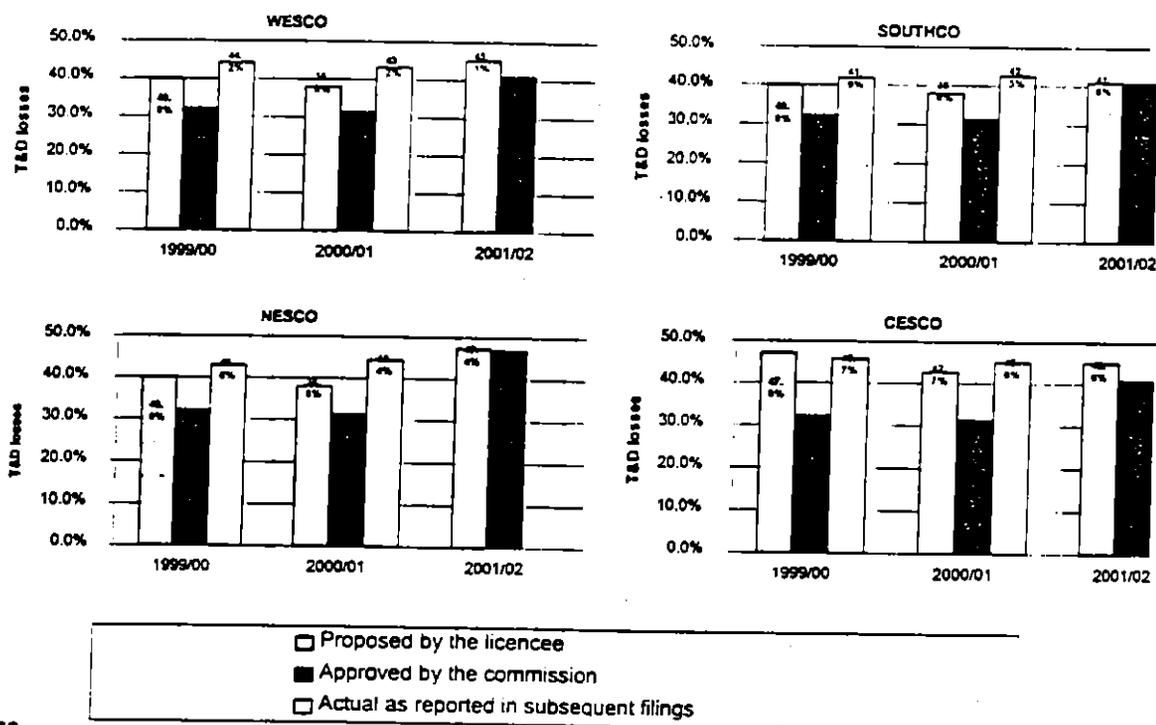
The tariff order of 2000/01 will be effective till July 2002.

### Power supply position

The power supply position in the state in terms of peaking power and energy availability has improved compared to FY 1997. Data compiled by CEA shows that peaking shortages have come down from 18% to 11.8% and energy shortage from 3% to 0.1% during the period from 1996/97 to 2001/02. In fact, the state had a marginal energy surplus during 1998/01 and in peaking during 2000/01. The shortages during 2002/03 (April-May 2002) were 10.2% in peaking and 2.2% in energy. There was enforced regulation in power supply in the state during this year due to non-payment of dues to the National Thermal Power Corporation.

## T&D losses

The audited statement of accounts of the OSEB had shown T&D losses in the state at 23.81% in 1994/95 and 46.94 in 1995/96. However, these losses had an element of estimate as the number of consumers was not metered (billed on flat-rate basis). Further there were also non-functional/defective meters. The World Bank consultants therefore took up some sample studies at the time of preparation of the Staff Appraisal Report (SAR) in 1996. According to this the losses were to be around 39.5% in 1996/97 and these were to be brought down to 21.7% in 2001/02. The IM also mentioned similar losses for 1996/97 and it was indicated that the technical losses at the distribution level were 15.7% (below EHT level) and around 5.8% at the EHT level. The rest, approximately 18%, were commercial losses. Figure 6 shows how the distribution losses varied in the four DISTCOs, corresponding values projected in the IM and those approved by the OERC are also shown alongside.



T&

Figure 6: Proposed/approved and actual T&D losses

Commercial losses, (which arise from the unauthorized use of electricity through hooking, tampering of meters, etc.) constituted the bulk of these losses. The DISTCOs were making special efforts to bring them down. However in doing so they faced obstructions from anti-social elements including attacks on their officers and personnel engaged in enforcement. Support from law and order enforcing agencies of the government assumed importance in this context. Taking note of this and also to address the other concerns of consumers, the GoO constituted district level Advisory-cum-Coordination Committees (May

2001). The composition of these committees and the range of issues they were to address are given in the box below. The committees were to meet every month and promptly submit the proceedings, duly approved by the Collector, to the Energy Department of the government. The Kanungo Committee while reviewing this set up was of the opinion that the district level committees may be substituted by two-tier forums, one at the district level and the other at DISTCO level.

**Box 4 Composition of Advisory- cum -Coordination Committee**

Collector	Chairman
MPs of the district or their nominees	Member
MLA of the district	Member
Superintendent of police	Member
Executive Engineer, R W SS	Member
Executive Engineer, PHD	Member
Executive officer of NAC/municipal bodies	Member
PODRDA	Member
Representative of Orissa Lift Irrigation Corporation	Member
Representative of Orissa Agro Industries Corporation	Member
M D Nominee of the distribution company	Member
Below the rank of superntending engineer	

**Range of issues:**

- Rural electrification
- Energization of L T points – Private /OLIC
- Grant of new connections
- Replacement/upgradation of transformers
- Removal of low voltage problems
- Collection of arrears in Electricity Duty of government
- Removal of low voltage problems
- Installation of meters
- Conducting consumer/load census
- Taking action in respect of meter tampering
- Taking action in respect of theft of conductors
- Regularizing unauthorized connections
- Law and order problems faced by the distribution companies
- Creating Awareness in the society
- Any other socially relevant programme concerning the department of energy

## Metering

Tables 9A and B show the status of metering in the four DISTCOs. The base of metering, the procurement mechanism, and the quality of meters were a subject of criticism.

Table 9A Status of metering (FY 2000/01)

	No of consumers	No of working meters	No of defective meters	No of connections without meter
CESCO	656918	261354 (39.78%)	263692 (40.14%)	131872 (20.07%)
NESCO	311804	146839 (47.09%)	99262 (31.83%)	65703 (21.07%)
WESCO	343962	209471 (60.90%)	58881 (17.12%)	75600 (21.98%)
SOUTHCO	381970	260585 (68.22%)	95588 (25.03%)	25797 (6.75%)

Table 9B Status of metering (FY 2001/02)

	No of consumers	No of working meters	No of defective meters	No of connections without meter
CESCO	692380	395694 (57.15%)	196522 (28.38%)	100164 (14.47%)
NESCO	374067	172237 (46.04%)	98940 (26.45%)	102890 (27.51%)
WESCO	379268	263210 (69.4%)	45637 (12.03%)	70421 (18.57%)
SOUTHCO	411596	296814 (72.11%)	86292 (20.97%)	28490 (6.92%)

Source. OERC. The figures in parentheses represent the percentage share with respect to total number of consumers

## Quality of service

Annexure D presents some parameters of the quality of service as reported by the licencees to the OERC under affidavit for the year 1999/00 and 2000/01. While these have not been verified by any independent agency, the public have not made any representations against the authenticity of these numbers as published in local newspapers.

## Impact of the 1999 cyclones on DISTCOs

Orissa was ravaged by two consecutive cyclones – one on 17.10.99 and the super-cyclone on 29-30.10.99. In the first cyclone the lines and sub-stations of SOUTHCO were severely damaged. The super-cyclone resulted in severe damage to the lines and sub-stations of CESCO and NESCO. The damage covered 12 districts.

The funds required to take up the barest minimum restoration work were estimated at 105.72 crore rupees. It was expected that this sum would be available as a grant from the GoO and/or from Gol, but, no such funds could be made available. A proposal to utilize the funds available from the unutilized portion of the existing World Bank loan amount earmarked for activities such as like Demand Side Management (DSM), and procurement of meters from the existing World Bank Loan could not also be implemented since the on-lending of the loan was not finalized. As a result the three DISTCOs had to incur unexpected expenditures when they had just entered into the business.

The OERC had authorized the DISTCOs to go ahead with the restoration work and divert stores from other schemes to procure 50% of materials as per their overall assessment. It was also monitoring the restoration works; the Commission had appointed an ex-chief electrical inspector to assess the damage. Based on this the allowable expenditure was decided. In the case of CESCO for example, the OERC authorized an expenditure of 52.719 crore rupees as against an initial proposal of 129.57 crores rupees by DISTCO. While adding this amount to the asset base, the Commission also ensured that cost of the old replaced assets was netted out so as to ensure that the consumers were not charged for assets that were not careful. In the case of CESCO the net increase in asset base was 16.61 crore rupees.

### **Changes in CESCO management**

The functioning of CESCO after it was taken over by the AES consortium in September 1999 was beset with problems right from the beginning. These were organizational, financial, and contractual by nature. Finally in August 2001, the OERC revoked the licence and vested the management of the DISTCO in a CEO (chief executive officer) deputed by the government. The status quo continues. The events leading to the exit of the AES consortium are presented in Annexure E.

### **Rural electrification**

Rural electrification is a socio-politically sensitive and relevant issue in the operation of any distribution company. However, these electrification schemes are normally not economically attractive in view of the capital investments, low load density, poor paying capacity of the consumers etc. According to a study by XIM, Bhubanehsvar (OERC 2002) typical economics for rural consumers in Orissa are characterized by a billing/input ratio of 35% and a collection/billing ratio of 25%. In other words for every one hundred rupees worth of input the utility was collecting only 8.75 rupees.

In the erstwhile set up these programme were being supported by government subsidies and soft loans. The OSEB had a dedicated wing under one chief engineer to look after rural electrification programme. When the OSEB was restructured and DISTCOs were privatized, the rural electrification wing was disbanded and the focus on rural electrification was lost, though the programme

was not given up. The super cyclone and the non-payment of the assured capital subsidy to DISTCOs by the government also contributed to the slackening of interest in taking up new programme. Table 10 presents some statistics on rural electrification during the past few years:

**Table 10 Progress in rural electrification**

	1997/98	11 1998/99	1999/2000	000/01
Number of villages electrified	800	817	748	42
umpsets energized	1903	1312	1167	99

The recent tariff filings before the OE\*RC show that the DISTCOs have practically no schemes on hand related to rural electrification except those under the PMGY (Prime Minister 's Gramina Yojanna).

The Kanungo Committee (2001) has noted that MPs and MLAs were willing to provide funds under local area development schemes for rural electrification works. However, this had not made headway due to disagreements on departmental charges payable to DISTCO. The Committee suggested that a Rural Electrification Planning Organization (REPO) be set up under the GoO to provide focus and direction to the rural electrification programme, have specific projects prepared of posing to funding agencies and oversee utilization of the funds procured. This organization should have under it four Rural Electrification Planning Units (REPU), one for each DISTCO with which it would work in close coordination. These units should be responsible for drawing up detailed schemes of rural electrification, monitoring the execution of the schemes by the concerned DISTCO and reporting completion of the projects and the expenditure incurred thereon to the Collector of the District and the REPO. On the basis of the Collector's certificate the Government should promptly settle the subsidy payment admissible to a DISTCO. The scheme should be prepared not only to provide domestic lighting but also to meet the requirements of agricultural pumping and agro-processing. They should also be prioritized in consultation with the collector of the concerned district.

In the mean time, alternative forms of intervention had also been tried out to improve power supply to the rural areas. One such initiative was taken by BSES though the formation of the Village Electricity Committees (VEC) or micro privatization. This was conceived by XIM Bhubaneshwar (OERC 2002) and started as a pilot project in August 1999. It now spans over 4900 villages. The role of the VEC includes meter reading, distribution of bills, complaint handling, and collection camp co-ordination, resolving of disputes, agreements on installments, dissemination of information, etc. Eventually it is proposed that independent franchisees be appointed on commercial terms who will handle all interaction with VECs.

Reports till date show that with this set up, billing and collection as well as quality of service has improved in the project areas. For example, records of WESCO as per its tariff filing before the OERC (GRIDCO 1999) show that micro privatization has provided the following benefits.

- Over 1100 long pending consumer's complaints were resolved
- consumers were able to avail connections
- Consumers no longer had to go out of the village for electricity-related problems
- Bill distribution, meter reading and cash collection have become more streamlined/improved
- Large scale metering has brought about reduction in input and an improvement in voltage. Distribution transformers are thereby less loaded and distribution transformer failures are reduced.

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## 9 Views on the outcome of reforms

The outcome of reforms in Orissa's power sector have been commented upon in a number of reports and articles. While some view it as a failure, other do not totally subscribe to this. It is a fact however that the GRIDCO and DISTCOs are continuing to incur losses and the sector has not been able to realize a turn around. Quality of supply and service has also not gone up to the expected levels.

There was a prolonged debate on this topic in the Orissa Legislative Assembly during early 2001, in which a large number of legislators participated. Following this the GoO constituted a six-member committee of independent experts under Sri Sovan Kanungo. This committee in its report submitted to the government in October 2001 has made some wide-ranging comments and recommendations (Kanungo Committee Report 2001). In addition, the Montek Singh Ahluwalia Committee in its report on SEB reforms (MoP 2001) submitted to the GoI in May 2001 had made certain observations on the outcome of reforms. The OERC has commented on the performance of the sector in its tariff order for FY 2001/02. Some of the main issues brought out in these documents are mentioned below.

- Estimation of the initial T&D losses and the targets for reduction in the 1996 SAR of the World Bank were unrealistic. This has been acknowledged in the Bank's Aid Memoir of 31 October 1998, which says "During Project implementation, once much more detailed information became available from RIAP and related work, it turned out that the starting point, the 1996 base figure was much higher, of the order of about 52-53% for OSEB's last year of operation in 1995-96 and about 50% for GRIDCO's first year of operations. The latter figure is confirmed in GRIDCO's audit report. Given that we so severely underestimated GRIDCO's system losses in 1996 and on that basis set unachievable performance targets under Ln. 4014-IN in May 1996, the Regulatory Commission in its March 1997 Tariff Order (which required GRIDCO to achieve 35% system loss level for 1997-98, in line with the original 1996 Bank estimates quoted above), it is not surprising and in fact unavoidable that GRIDCO's financial performance is well below agreed targets"
- The assumption in the SAR on the growth in demand for power in the state was highly ambitious, not only in terms of totals but also in the composition. The demand for industrial power (EHT) which, subsidizes domestic demand (LT supply), was grossly under realized while domestic and commercial demand with high losses grew fast. The preference for captive generation on part of EHT consumers with rising tariffs was not anticipated.
- On the collection front, the assumption in the SAR was that 100% of the billings would be collected from the year 1997/98 onwards but this was hard to achieve.

- Services of local consultants as well as highly rated consulting firms of international repute were used extensively at a high cost (cover 300 crore rupees) to prepare the blueprint of reform. High cost consulting services were also retained to assist the utilities in developing internal systems of operation management, financial control, technical services, contract management, project implementation, etc. However, judging by the fate of the reform and the present state of the utilities, this has belied the expectations.
- The private promoters of the DISTCOs neither brought superior management skills nor did they arrange financial support even by way of working capital for the companies, which were in dire need of capital, working capital in particular.
- There is no evidence of introduction of any innovative practices in the management of the DISTCOs except for the experiment of involving village communities in streamlining the power supply in rural areas.
- The power purchase model of SBM had inherent limitations in promoting competition.
- The process of tariff fixation on a year-to-year basis using a cost plus approach has excessive regulatory uncertainty. A multi-year framework is necessary.
- Many non-paying customers enjoy political patronage. Government agencies such as police stations, schools, public hospitals, etc. do not routinely pay their bills due to their own financial difficulties.
- Rural electrification has suffered as a result of reforms.
- The cyclones of 1999 were a set back to the efforts of the privatized DISTCOs in achieving turnaround.
- The assets were over-valued. This should have been kept in abeyance till the systems were brought to balance.
- GoO should allow a moratorium on debt servicing to the state except for the amounts in respect of loans from the World Bank.

A judgemental analysis of the above is left to the reader.

The distribution-privatization debate is still on as other states are reforming their power sector with a focus on improving the performance of distribution. The just concluded privatization of DVB differed in many respects (asset valuation, reckoning of losses, criteria for selection of bidders, government funds for the transition period to subsidise power purchase etc.). The following issues are of topical interest:

- Alternatives to privatization
- Efforts needed to make a utility privatizable
- Big bang approach vs sequential approach to privatization
- Alternative models for privatization of distribution
- Role of cooperatives and panchayats in rural electrification

- Enactment of anti-theft law
- Regulator's role in privatization
- Promotion of competition.

## Annexure A

### Provisional opening balance sheet of DISTCOs as on 31 March 1999 (figures in lakh rupees)

	CESCO	NESCO	WESCO	SOUTHCO
<b>Sources of Fund</b>				
Share capital authorized	72.72 (7,27,20,000 equity shares of Rs 10 each)	65.91 (6,59,10,000 equity shares of Rs. 10 each issued, subscribed and paid up)	48.65 (4,86,50,000 equity shares of Rs 10 each)	3766 (3,76,600 equity shares of Rs 10 each issued, subscribed and paid up)
Issued, subscribed and paid up	72.72 (7,27,20,000 equity shares of Rs 10 each)	65.91 (6,59,10,100 equity shares of Rs 10 each)	48.65 (4,86,50,000 equity shares of Rs 10 each)	3766 (3,76,60,000 equity shares of Rs 10 each)
Retained earnings	0	0	0	0
Staff Welfare Board	2	1	1	1
Contingencies reserve	119	90	93	83
Total – shareholders fund	73.93	6682	4959	3850
Consumer's contribution	65.24	4904	4978	4514
<i>Unsecured loan</i>				
Project related liabilities				
World Bank Loan	55.31	32.41	2870	2453
Other long term debt	16,126	1,0484	11696	10566
Total unsecured loan	21657	1,37,25	14566	13019
<b>Current liabilities</b>				
Accounts payable	9032	53,70	7038	2913
Other current liabilities	12418	41,32	2663	4326
Consumer security deposit	1777	27,70	4650	1880
Total current liabilities	23227	1,22,72	14351	9119
<b>TOTAL SOURCES</b>	<b>58801</b>	<b>3,75,83</b>	<b>38854</b>	<b>30502</b>
<b>Application of fund</b>				
<b>FIXED ASSETS</b>				
Gross block	3,60.43	2,63.39	26716	23382
Less: accumulated depreciation	67.66	53.32	5534	4920
Net block	2,92.77	2,10.07	21182	18462
Capital works in progress	61.79	42.14	3229	2838
Total fixed assets	3,54.56	2,52.21	24411	21300
Investments	118	90	92	83
<b>CURRENT ASSETS</b>				
Gross receivables for sale of power	3,54.27	1,28.68	21496	15276
Less provision for bad and doubtful debts	1,82.46	71.99	10428	9007
Net receivables for sale of power	1,71.81	56.69	11068	6269
Gross store and spares	32.89	24.09	2028	1544
Less provision for obsolete spares	7.03	1.87	790	682
Net stores and spares	25.86	22.42	1238	862
Cash and bank balances	14.37	10.00	1000	1000
Other receivables	20.23	33.61	1044	988
Total current assets	2,32.27	1,22.72	14351	9119
<b>TOTAL APPLICATIONS</b>	<b>5,88.01</b>	<b>3,75,83</b>	<b>38854</b>	<b>30502</b>

Source : Department of Energy, Government of Orissa Notification dated 25<sup>th</sup> November 1998

## Annexure B

### Balance sheet of DISTCOs (based on management accounts)

#### CESCO

	As on 31.03.2002
<b>SOURCE OF FUNDS</b>	7272
Shareholder's fund	7272
Share capital	
Reserves and surplus	49446.71
Loan funds	49446.71
Secured loans	
Unsecured loans	
Other funds	
Consumer's security deposits	3440.28
Capital contributions from consumers	8113.09
Capital reserves	251.00
Total	68523.08
<b>APPLICATION OF FUNDS</b>	
Fixed assets	47022.09
Gross block	48660.30
Less: Accumulated depreciation	15241.85
Net block	33418.45
Capital work in progress	13485.64
Investments	118.00
Current assets, loans and advances	
Sundry debtors (net) against sale of power	60715.35
Other receivable (net)	1675.00
Inventories or stocks (net)	2341.51
Cash and bank balances	3938.64
Loans and advances	
Less: Current liabilities and provisions	106139.33
Current liabilities (accounts payable)	106139.33
Provisions	-
Profit and loss account debit balance	58969.81
Net current assets	21500.98
Total application of funds	68523.07
Miscellaneous expenditure to the extent not written off or adjusted	

## NESCO

As on 31.03.2002

### SOURCE OF FUNDS

Shareholder's fund	
Share capital	6591.00
Reserves and surplus	304.87
Loan funds	
Secured loans	
Unsecured loans	38152.10
Other funds	
Consumer's security deposits	4060.96
Capital contributions from consumers	5182.24
Total	54291.16

### APPLICATION OF FUNDS

Fixed assets	
Gross block	36379.89
Less: accumulated depreciation	11674.61
Net block	24705.28
Capital work in progress	2390.94
Total CWIP	2390.94
Investments	
Current assets, loans and advances	
Sundry debtors	19656.29
Inventory	1488.46
Cash and bank balances	953.80
Loans and advances	241.48
Less: Current Liabilities and provisions	
Accounts payable	24527.99
Current liabilities	9388.60
Other current liabilities	-18518.69
Provisions	16458.41
Net current assets	-9516.28
Miscellaneous expenditure to the extent not written off or adjusted	
Profit and loss account debit balance	36711.23
Total application	54291.16

## WESCO

As on 31.03.2002

### SOURCE OF FUNDS

Shareholder's fund	
Share capital	4865.00
Reserves and surplus	341.23
Loan funds	
Secured loans	
Unsecured loans	33618.18
Other funds	
Consumer's security deposits	6673.38
Capital contributions from consumers	5300.59
Total	50798.38

### APPLICATION OF FUNDS

Fixed assets	
Gross block	38317.35
Less: Accumulated depreciation	12632.82
Net block	25684.53
Capital work in progress	
Capital stock	
Total CWIP	4784.68
Investments	0.00
Current assets, loans and advances	
Sundry debtors	29991.59
Inventory	1825.00
Cash and bank balances	767.02
Loans and advances	614.97
Less: Current liabilities and provisions	
Accounts payable	30701.72
Current liabilities	8502.81
Net current assets	6005.95
Miscellaneous expenditure to the extent not written off or adjusted	
Profit and loss account debit balance	26335.13
Total application	50798.39

## SOUTHCO

As on 31.03.2001

<b>SOURCE OF FUNDS</b>	
Shareholder's fund	
Share capital	3766.00
Reserves and surplus	168.76
Loan funds	
Secured loans	
Unsecured loans	17047.66
12.5% power bond to GRIDCO	13812.50
Consumer's security deposits	2795.35
Capital contribution from consumers	4721.09
<b>Total</b>	<b>42311.36</b>
<b>APPLICATION OF FUNDS</b>	
Fixed assets	
Gross block	29529.92
Less: Accumulated depreciation	8465.51
Net block	21064.42
Capital work in progress	1600.74
Capital stock	
Total CWIP	1600.74
Investments	0.00
Current assets, loans and advances	
Sundry debtors	14818.45
Inventory	
i) Capital	1476.29
ii) O&M	770.25
Cash and bank balances	697.50
Loans and advances	17317.78

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Less: Current liabilities and provisions	
Accounts payable	7134.13
Current liabilities	8055.83
Provision for pension, gratuity and leave encashment	17525.11
Long/short term working capital loan	0.00
Net current assets	2365.21
Miscellaneous expenditure to the extent not written off or adjusted Profit and loss Account debit balance	17280.99
Total application	42311.36

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## Annexure C

### Zone wise statistics as given in the Information

#### Memorandum

##### Western Zone

	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Input to the zone (MU)	2471	2582	2843	3191	3429	3604
Distribution technical loss (MU)	364	441	492	535	535	524
Energy consumed (MU)	2106	2140	2351	2656	2893	3080
Distribution non-technical loss (MU)	623	583	537	455	293	152
Energy billed (MU)	1483	1557	1814	2201	2601	2928
Distribution technical Loss (%)	14.8%	17.1%	17.3%	16.8%	15.6%	14.5%
Distribution non-technical loss (%)	25.2%	22.6%	18.9%	14.2%	8.5%	4.2%
Total loss (%)	40.0%	39.7%	36.2%	31.0%	24.1%	18.8%

##### Energy sold by consumer category (MU)

Consumer category	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Domestic	323	303	533	543	554	570
Commercial	84	81	96	108	133	153
Industrial LT	65	74	71	98	120	139
Industrial HT	801	878	879	1162	1434	1651
Public lighting	8	9	9	12	15	17
Public water works	16	21	16	28	34	40
Railway traction	98	92	96	122	151	174
Irrigation	41	45	51	59	73	84
Non- industrial	47	53	65	70	87	100
Total	1483	1557	1814	2201	2601	2928

##### Southern Zone

	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Input to the zone (MU)	1470	1457	1580	1737	2130	2274
Distribution technical Loss (MU)	228	281	275	293	335	333
Energy consumed (MU)	1242	1176	1305	1444	1795	1941
Distribution non-technical loss (MU)	384	294	202	142	90	96
Energy billed (MU)	857	881	1103	1303	1705	1845
Distribution technical loss (%)	15.5%	19.3%	17.4%	16.9%	15.7%	14.6%
Distribution non-technical loss (%)	26.1%	20.2%	12.8%	8.1%	4.2%	4.2%
Total loss (%)	41.7%	39.5%	30.2%	25.0%	19.9%	18.9%

### Energy sold by consumer category (MU)

Consumer category	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Domestic	261	321	417	453	514	569
Commercial	57	76	65	107	121	134
Industrial LT	47	48	50	68	77	86
Industrial HT	280	229	270	322	611	650
Public lighting	6	6	6	9	10	11
Public water works	19	19	20	27	31	34
Railway traction	75	72	73	102	116	128
Irrigation	37	39	47	55	62	69
Non- industrial	76	71	157	159	162	165
<b>Total</b>	<b>857</b>	<b>382</b>	<b>1103</b>	<b>1303</b>	<b>1705</b>	<b>1845</b>

### North Eastern Zone

	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Input to the zone (MU)	1770	2008	2170	3551	3697	4684
Distribution technical loss (MU)	329	394	408	649	633	751
Energy consumed (MU)	1441	1615	1762	2902	3065	3933
Distribution non-technical loss (MU)	527	466	391	474	282	198
Energy billed (MU)	915	1149	1371	2428	2782	3735
Distribution technical loss (%)	18.6%	19.6%	18.8%	18.3%	17.1%	16.0%
Distribution non-technical loss (%)	29.8%	23.2%	18.0%	13.3%	7.6%	4.2%
<b>Total loss (%)</b>	<b>48.3%</b>	<b>42.8%</b>	<b>36.8%</b>	<b>31.6%</b>	<b>24.7%</b>	<b>20.3%</b>

### Energy sold by consumer category (MU)

Consumer category	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Domestic	202	231	313	315	317	393
Commercial	42	47	48	49	59	79
Industrial LT	49	50	54	55	64	85
Industrial HT	539	544	683	1733	2036	2828
Public lighting	4	5	5	5	7	9
Public water works	6	7	6	6	9	12
Railway traction	12	12	11	11	15	20
Irrigation	42	57	53	54	73	98
Non- industrial	18	21	24	24	27	37
EOU sales to NTPC power at cost	-	174	174	174	174	174
<b>Total</b>	<b>915</b>	<b>1149</b>	<b>1371</b>	<b>2428</b>	<b>2782</b>	<b>3735</b>

## Central Zone

	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Input to the zone (MU)	3354	3597	3649	4036	4287	4494
Distribution technical loss (MU)	673	608	628	673	665	649
Energy consumed (MU)	2680	2989	3022	3363	3622	3845
Distribution non-technical loss (MU)	1059	1137	931	841	649	325
Energy billed (MU)	1622	1852	2091	2522	2973	3521
Distribution technical loss (%)	20.1%	16.9%	17.2%	16.7%	15.5%	14.4%
Distribution non-technical loss (%)	31.6%	31.6%	25.5%	20.8%	15.1%	7.2%
Total loss (%)	51.6%	48.5%	42.7%	37.5%	30.6%	21.7%

## Energy sold by consumer category (MU)

Consumer category	Actual/Forecast			Projections		
	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02
Domestic	606	702	912	930	1057	1267
Commercial	127	134	145	170	201	241
Industrial LT	96	92	105	117	139	166
Industrial HT	607	674	680	855	1072	1274
Public lighting	10	13	11	16	19	23
Public water works	61	46	60	59	70	84
Railway traction	-	-	-	-	-	-
Irrigation	39	50	49	63	75	90
Non- industrial	76	116	105	147	175	210
EOU sales to NTPC power at cost	-	25	25	165	765	165
<b>Total</b>	<b>1622</b>	<b>1851</b>	<b>2091</b>	<b>2522</b>	<b>2973</b>	<b>3521</b>

## Annexure D

### Quality of service in the DISTCOs

Sl No	Item of OERC overall performance	Minimum standard	Achievement * (1999/2000; 2000/01)			
			CESCO	NESCO	SOUTHCO	WESCO
1	Process and provide new connections to domestic consumer within 40 working days of date of application	85% of feasible cases	98%; 97%	99%; 99.64%	100%; 100%	98%; 99%
2	Process and provide new connections to commercial consumer within 40 working days of date of application	85% of the feasible cases	97.40%; 98%	99%; 99.64%	100%; 100%	98%; 99%
3	Process and provide new connections to commercial agricultural pumps within 60 working days of date of application	85% of the feasible cases	88.9%; 94%	68.8%; 26.3%	83.5%; 85%	100%; 88%
4	Process and provide new connections to industrial consumers with demand upto 22 KVA within 90 working days	85% of the feasible cases	85.50%; 95%	NA	100%	100%
5	Reconnect supply of domestic/commercial consumers if disconnected for non-payment of electricity charges as billed within 24 hours of production of proof of payment	80% of the feasible cases	49.20%; 71%	83%; 84.8%	73%; 80%	100%; 100%
6	Reconnect supply, of agricultural pumps if disconnected for non-payment of electricity charges as billed, within 48 hours of production of proof of payment	80% of the cases	50%; 70%	83%; 84.8%	73%; 100%	100%; 100%
7	Reconnect supply of industrial consumers supplied at 230/400 V, if disconnected for non-payment of electricity charges as billed, within 24 hours of production of proof of payment	80% of the cases	81.40%; 86%	83%; 84.8%	73%; 100%	100%; 100%
8	Installation of correct meter within a year	40% of cases of unmetered connection	13.67%; 22%	56%; 25.1%	91%; 39%	19%; 4%
9	Replacement of faulty meters where meters are installed	40%	29%; 12%	12%; 25.1%	11%; 20%	30%; 39%
10	Arrange to test the meter belonging to the consumer within 15 working days of receipt of necessary testing fees from the consumers	60% of the cases	97.60%; 80%	97.50%; 98.8%	100%; 100%	100%; 100%

Note: \* Quality of Service in DISTCOs in 2000-01



### **Exit of AES consortium from CESCO management**

Soon after privatization, the CESCO management created a separate management cadre with conditions of services very much different from those in the CESCO Officers Service Regulation. These officers were given substantially higher salaries and perks and also the discretion to give large bonuses, reduce emoluments, and terminate services. Most of those recruited to this cadre (55 out of 72) were outsiders and some of them were just in their early thirties with very little distribution experience. Existing CESCO officers (transferred from GRIDCO) with long years of experience were to work under them. The morale and discipline of the employees suffered in the process.

CESCO also defaulted in meeting some contractual obligations. For example, in August 2000, they exhausted the cash accommodation of 174 crore rupees provided by GRIDCO; but failed to bring additional funds on their own to meet further shortfalls.

GRIDCO and CESCO had signed an escrow agreement on 11.07.2000 whereby any cash received towards payment of any receivables of CESCO were to be deposited by CESCO in the CESCO escrow account to be maintained by the escrow agent at the Bhubaneswar branch within 48 hours and were not to be used for any other purpose. Operationalisation of this escrow mechanism as per this agreement was also not achieved and CESCO started defaulting payments to GRIDCO for power purchase. As a result GRIDCO started defaulting in its escrow obligation to OPGC. This in turn led to OPGC reducing power supply to GRIDCO. The government tried to sort out the matter through discussions but did not succeed. GRIDCO then obtained an interim order from the High Court restraining OPGC from imposing power cuts. GRIDCO also moved the OERC in the matter and the latter directed CESCO in April 2001 (Case No.31/2001), to abide by their contractual commitments. Seeing little progress GRIDCO again approached the OERC in July 2001. When this case was being heard, GRIDCO got information that CESCO had bypassed the escrow mechanism by diverting 18.59 crore rupees. The OERC was then moved requesting criminal action against CESCO. At that stage, the government intervened and held discussions with GRIDCO and CESCO. Thereafter GRIDCO decided not to pursue the case further and petitioned OERC accordingly. OERC took a lenient view and closed the case in July 2001. The Commission only warned that if any breach of the contract entered into between GRIDCO and CESCO was brought to the Commission's notice in future, then it would be compelled to take penal action against CESCO.

Around this time AES was also having some problems with the OPGC where they had a 49% share-holding. The employee unrest there had led the GoO to invoke provisions of the Orissa Essential Services (Maintenance) Act, 1998 prohibiting strikes in all establishments in the state dealing with generation, transmission, and distribution of electricity. AES also could not increase its share holding in OPGC by another 2% as was proposed while taking over CESCO.

All these events led to the consortium losing interest in CESCO and in July 2001 the AES sought GRIDCO's permission to sell its shares either to a third partner or at a negotiated price to GRIDCO. This was against the Shareholders Agreement (which required a minimum lock-in period of 5 years before disposing shares) and hence was not agreed to. The chairman of AES nevertheless made it clear to the government that they were not interested in continuing with the management of CESCO. This was followed by the resignation of the managing director and other functional directors of CESCO in July 2001. They were replaced by a technical director and four other non-executive directors; but this team had no instructions to operate bank accounts. In-house billing and collection were also affected since the corporate offices were locked up. The new MD was also replaced in September 2001.

In the mean time the employees of CESCO started getting restive since the CESCO board refused to make any provision for paying salaries. The system restoration work that was in progress following heavy rains and floods in July 2001 also suffered. The GRIDCO Board feared that if this situation were allowed to continue it would result in disruption of power supplies to the CESCO area, and approached OERC. In August 2001, CESCO was also alleged to have contravened certain conditions and requirements of the Orissa Distribution and Retail Supply Licence, 1999. These included a reluctance by CESCO to take steps for the procurement of adequate power, failing to take prompt and effective steps in the matter of billing and collection of revenue, defaulting in disbursement of the pay and allowances of its employees, and failing to repair and restore distribution system and other assets damaged by the super cyclone and floods within its licenced area.

OERC in its order of 24 August 2001 gave directions for vesting the management of CESCO in a CEO (Chief Executive Officer), and requested the GoO to forward a list of suitable names from which one would be selected by the Commission to take over the management and control of CESCO. Accordingly, GoO nominated Sri Suresh Chandra Mohapatra, IAS and Sri Pradeep Jena, IAS. The Commission selected Mohapatra and directed that with immediate effect the management and control of the undertaking of CESCO with all its assets, interests and rights would vest with Shri Suresh Chandra Mohapatra who would function under the supervision of the OERC and would send periodical reports to the Commission as it directs.

### **International experience in distribution privatization**

Electric utilities in most developed and developing countries are traditionally government owned. In USA utilities were largely private investor-owned. The electricity supply business was considered a natural monopoly and therefore kept primarily in the public sector. The institution of independent regulatory commissions was evolved in the early part of the twentieth century in USA to regulate private investor-owned utilities. The restructuring of utilities followed by privatization and/or introduction of gradual or phased open access in distribution is a relatively recent phenomenon, that began in the late 1980s.

Several countries have undertaken reforms and privatization. The underlying reasons for change have been different in different countries while some trends have been common. The major drivers for change in developed countries, such as the UK and USA, have generally been changed political and economic thinking. It was felt that objectives of efficiency, lower price levels and better service to the consumer could be achieved by treating generation as an activity that could be undertaken competitively and therefore left to market forces. The wires business of transmission and distribution only need to be seen as naturally monopolistic.

Accordingly, the consumers would benefit through efficiency gains from deregulation and competition in generation and supply and the network for transmission and distribution should provide non-discriminatory open access with the transmission and distribution tariffs regulated.

UK was a pioneer in unbundling its government-owned vertically integrated utility and privatizing it and introducing generation to continuous competition through a spot market and a power pool. In USA, which is a very large federal country, the situation varies across states. California attempted to replicate the UK approach. In developing countries such as Latin America and South East Asia poor performance and public sector financial constraints have been the drivers for change. While in developed countries, the availability and quality of supply was not an issue, developing countries were facing increasing demand supply gaps. Private sector investment was found necessary for upgrading existing system and for financing additional capacities. While the conditions prevailing in the power sector in Europe and USA were different from those in India, the Indian situation may be found to be closer to some of the Latin American and South East Asian countries.

There have been more than 70 electricity distribution privatizations over 1992/1999 of which about half have been in Latin America. An in-house survey from the IFC/WB estimated that during 1992/1999, 12 developing countries privatized their distribution in different forms through 74 transactions valued at 38 billion dollars.

## PRIVATIZATION OF DISTRIBUTION NETWORKS 1992/99

Country	Number of sales	Dates	Total customers	Sale amount (- 10 <sup>6</sup> dollars)	Sale amount present value (- 10 <sup>6</sup> dollars)	Proceeds (PV) (\$mil)	Adjusted proceeds (PV) (* 10 <sup>2</sup> dollars)	Adjusted enterprise value (PV)
Argentina	18	Sep 92- Jun 98	6,416.00	2816.00	3134.00	3412.00	3097.00	4894.00
Brazil	17	Jul 95- Sept 98	25871.00	18141.00	19041.00	20784.00	20205.00	36780.00
Peru	9	Jul 94 - Nov 98	2066.00	604.00	665.00	665.00	665.00	1315.00
Hungary	6		4965.00	1100.00	1230.00	1230.00	1230.00	2618.00
Australia	5		1990.00	6257.00	6888.00	6888.00	6888.00	8224.00
India	4	Apr 99 -Sep 99	1320.00	37.00	38.00	1113.00	113.00	222.00
El Salvador	3	Jan 98	883.00	586.00	611.00	611.00	611.00	769.00
Colombia	3	May 97 - Aug 98	2890.00	1953.00	2041.00	2672.00	2672.00	4857.00
Bolivia	2	Aug 95 - Dec 95	397.00	116.00	128.00	142.00	142.00	144.00
Dominican Rep	2	Apr 99- Sep 99	812.000	321.000	325.00	349.00	349.00	698.00
Guatemala	2	Jul 98 -Jan 99	1114.00	621.00	638.00	689.00	689.00	861.00
Panama	2	Sep 98	454.00	302.00	309.00	309.00	309.00	606.00
Georgia	1	Nov 98	370.00	26.00	26.00	84.00	84.00	113.00
<b>Totals</b>	<b>74</b>	<b>Sep 92- Sep 99</b>	<b>50549.00</b>	<b>35050.00</b>	<b>37950.00</b>	<b>37055.00</b>	<b>37055.00</b>	<b>62102.00</b>

Further, another IFC/ World Bank (WB) study reports that energy losses in distribution significantly declined within 2–6 years following privatization in Argentina, Chile, and Peru. Accordingly, an increasing number of governments from the developing/developed countries are actively encouraging and seeking private sector participation in their power distribution operations.

As an example, we can look at the Argentinian experience, which has been accepted as being successful. By the late 1980s, the electricity sector in Argentina was confronted with severe supply and financial problems arising from an inadequate and confusing legal/institutional framework, poor tariff policies, heavy debt burdens, reliance on contribution of the federal (central) government, physical deterioration of facilities due to inadequate maintenance and upgradation, and lack of consistent planning.

The GoA (Government of Argentina) launched a substantial restructuring and privatization programme in 1991. Essential elements of the power sector reform included implementing tariffs necessary to recover costs, providing a new regulatory framework under which generation, transmission and distribution functions were separated and initiating privatization of state-owned agencies. The restructuring process in the country also saw the establishment of an independent regulatory body and finally the creation of a wholesale electricity market. Privatization commenced in 1992 with the sale of state-owned assets in generation and distribution. Most of the initial privatizations resulted in the private sector owning at least 51% of the assets, the GoA holding was reduced to less than 10% through further sale to international private players. Further, the bidding was done on the basis of multi-year T&D loss reduction.

A good example of a distribution company success story is Edenor, one of the three distribution companies initially privatized in the Buenos Aires area. Edenor has a service area of 4,400 km with a serviceable population of about 7 million people. The situation of the company at the time of takeover by private sector was dismal. Total energy losses were about 30% with frequent

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power interruptions, a de-motivated workforce, an oversized payroll, widespread internal corruption, social and political problems with users in poor neighbourhoods (50, 000 families), and low customer satisfaction.

The private company initiated a change in the corporate culture of the organization by partial employee reduction after negotiations with the unions, introducing performance evaluations, implementing new systems (for administrations, billing, collection, customer management etc. ) and tackling internal corruption strictly. A big challenge for the company was dealing with non-paying customers and illegal users in poor neighbourhoods. It successfully managed to change 'illegal users' 'to consumers'. This, coupled with an effective regulatory framework, ensured that the company could turn around its operations successfully.

Edenor managed to reduce energy losses from about 30% in 1992 to 11% in 1998. The total workforce was reduced from over 6,300 employees in 1992 to less than 3,000 in 1998. Operating costs were brought down by 50% in the same period. The frequency of interruptions decreased by more than 65% over five years.

It should be noted that although the market structure and regulatory framework in Argentina were well conceived and implemented, they were viewed with suspicion by the public in the initial years of the privatization programme in 1992/93. However, after the transition period had passed and positive results started showing, the mood turned positive. Also, selling off state assets in Argentina was not totally cost-free for the government. In order to enhance the success of the restructuring and privatization programme, the GoA agreed to retain some of the debt from the state assets. This debt associated with privatization was offset partially by the subsequent influx of foreign investment. Further, it should be assumed that the overall debt of the government would have been much higher without the privatization process, which reduced losses and brought about efficiency in the system.

### **Observations from international experience**

The unbundling of generation, transmission, and distribution into separate entities is a general trend in most countries including several developing ones. Unbundling has helped introduce competition in various segments of the power industry and has facilitated the privatization process. Following privatization, in Argentina wholesale electricity prices fell about 60% from the pre-privatization level of 50 dollars per mega watt-hour in August 1992.

Considerable preparatory work needs to be carried out prior to reforms. Argentina had to attract foreign players since the poorly developed capital market did not present alternatives, given the size of the investments to be made by the private sector. Also, there was a shortage of domestic operators with enough experience and financial strength. Preparation was done in two areas viz. conceptualizing a dynamic approach for private sector participation and result-oriented marketing to potential entities. Business houses that could form viable individual commercial entities were identified. Detailed information on technical, commercial administrative, economic, and accounting aspects was prepared and incorporated in the tender documents. The whole process was guided by a philosophy of transparency, in order to satisfy the needs of public opinion, legislative requirements, and expectations of potential

investors. Investor uncertainty manifests itself as reduced asset valuations and bids. These countries have used the most effective way of reducing uncertainty, which is through information-sharing.

The degree of private sector participation varies across countries. Typically, the ownership in generation and distribution was transferred to private players in a phased manner through a reduction in government stake. Transmission had remained a monopoly in most countries, mainly in the public sector. A significant point to note is that South East Asian countries have not experienced the fundamental restructuring seen in Latin American and European countries. Generally, the pressure to expand generation capacity in order to improve availability of supply has meant that South East Asian countries have focussed on generation first and then on distribution. This has led to slower progress in the power sector as a whole, as in India.

The extent of competition also varies across countries. To regulate monopolies (including transmission companies, distribution companies having served area monopolies and for upcoming generation projects/companies), an independent regulator has always been seen as a necessity. In cases where there has been a stable consistent, credible, and independent regulatory framework, privatization has been very successful e.g. Argentina and Peru.

Countries which have addressed employee concerns better, have had a greater level of success with distribution privatization e.g. Hungary and Argentina. Governments have addressed this challenge in many ways. Some of the mechanisms that have been employed are training programmes, severance benefits, service contracts for organizing outsourcing arrangements with former employees, ownership programmes including the provision of shares at deep discounts, and the placement of privatization proceeds into a fund providing support for displaced workers.

International experience could at the most, serve as a guideline. In totality it may not be fully relevant as the conditions in India could be significantly different from those in these countries.

Source: Distribution Policy Committee Report, Ministry of Power, Government of India, March 2002

### **The Kanungo Committee Report: Summary of findings and recommendations**

Encouraged by the Government of India, assisted by the World Bank, and supported with grants from the Government of UK (DFID), Orissa took the initiative and became the first state to reform its electricity industry. The Orissa Electricity Reform Act, setting out the basic framework of the reform, enacted in 1995 came into force from 1 April 1996. The principal objectives of the reform were the following;

- (a) Restructuring the electricity industry for rationalization of generation, transmission, distribution, and supply of electricity.
- (b) Development of the industry in an efficient, economic, and competitive manner.
- (c) To provide for avenues for participation in the industry of private entrepreneurs, attract private investment, and reduce the need for government funding of the electricity sector.
- (d) To improve the quality of service to the consumer.
- (e) To enhance operational efficiency and reduce losses.
- (f) To provide a transparent mechanism for development and regulation of the industry, including tariff fixation and dispute settlement, through an independent, statutory body; the Orissa Electricity Regulatory Commission.
- (g) To contribute to economic growth of the state by ensuring superior electricity supply.
- (h) To create opportunities for increasingly rewarding employment for technical personnel and providing a stable environment for career development in the electricity sector.

Objectives at (a),(c) and (f) seem to have been achieved satisfactorily but the others have yet to be realised.

OERC has done pioneering work in our country in the establishment of a regulatory mechanism for the electricity industry. The Reform Act which has given the Commission a wide mandate, requires it to act effectively and independently. OERC's working in the last few years, however, has not been free from problems. To avoid these, we make the following recommendations.

- 1 To ensure that the Commission is fully functional at all times, the government must appoint commissioners promptly. Action for filling up vacancies should start early so that recommendations of the selection committee are available to the government at least two weeks before the vacancy occurs. In the event an appointment or selection is stayed by a court, prompt action should be taken to have it vacated by moving a higher court or a larger bench. Further, no one should be considered for appointment unless

there is a clear possibility of his serving for five years. To attract persons of ability, integrity, and standing, wide publicity should be given while inviting nominations for commissioners.

2. Budgetary allocations for the Commission should be adequate. Ordinarily, the government should not apply any budgetary cuts as long as the amount proposed by the Commission is within the limit of the licence fees received. Accounting regulation for the Commission should be settled forthwith and budgeted outlays placed in a banking account at the disposal of the Commission for incurring expenditure in accordance with the accounting regulation, without further reference to the government.

3. The Commission should institute regular systems of monitoring to ensure that the prescribed standards of performance are actually adhered to in the industry.

4. The government and the Commission should have purposeful inter-action on a wide range of issues of monitoring, problem solving, planning and development of the state's power sector. For exchange of information and discussion on administrative matters of mutual interest, the government should interact with the Commission's secretary. There should also be a system of meetings with the Commissioners, at least once a year, taken at an appropriately high level to discuss and settle matters involving important issues of policy.

5. The reforms were conceptualized under the guidance of the World Bank and the road map for implementation was set out in its Staff Appraisal Report (SAR). The assumptions in the SAR of growth in the demand for power in the state was highly ambitious, in terms of totals and composition. The demand for industrial power (EHT supply) which, subsidises domestic demand (LT supply), was grossly underrealized while domestic and commercial demand with high losses grew fast. T&D losses which were excessively high, and were targeted for substantial reduction, could not be brought down. Billing and collection efficiency under the privatised distribution companies were (DISTCOs) far from improving, actually worsened and theft of electricity continued unabated.

6. The reform scheme was further vitiated by sharp, upvaluation of assets at the time of transfer to the utilities. This led to a steep increase in the cost of power. Unrealistic assumptions that GRIDCO would become profit-earning from 1999/98 led to the abrupt withdrawal of the subsidy by the state government from 1996/97. There has been considerable increase in the average tariff at a cumulative rate of 15.5% annually over the last 9 years without any perceptible improvement in customer service. The cross subsidy has also been brought down, particularly in the post-reform period, thereby casting a heavier burden on domestic consumers.

7. Unabated increase in tariffs without a perceptible reduction in techno-commercial losses or improvement in customer service has led to growing public discontent against reform. This situation has worsened because of spiralling increase in costs and the deteriorating health of the utilities. The DISTCOs and GRIDCO have been rendered utterly unviable as a result of their inability to reduce T&D losses, control rampant misuse and theft of electricity and contain costs. DISTCOs are unable to pay salaries to their employees without defaulting on payment to GRIDCO towards purchase of

power. GRIDCO also is unable to recover costs and is incurring heavy debts to finance losses year after year. In this situation, the generating companies are also facing problems of inadequate cash realization. The situation has become so critical that the private sector partner in one of the DISTCOs, AES, has abandoned the management of CESCO which is now being managed by a CEO appointed by the Regulatory Authority. We recommend that the CEO attends to CESCO the whole time.

8 The key to the revival of the sector lies in improving efficiency and bringing down costs. By efficiency improvement not only can customer services be geared up but T&D losses, currently at an unacceptably high level, can be brought down substantially. The reform scheme sought to address the problem of T&D losses through (a) capital investment to strengthen the transmission and distribution system so as to reduce technical losses, and (b) privatization of distribution to bring in better management skills and practices for enforcement of accountability to reduce commercial loss. Neither of these has succeeded so far.

9 Large capital investments have been made but not a single project has been completed despite considerable time overruns. The delays in most cases for want of forest clearance, land availability or right of way. Since none of the projects has been commissioned, no benefit has been realized from the investments worth more than 600 crore rupees out of funds borrowed from the World Bank carrying heavy debt servicing liabilities. Efforts need to be intensified to complete and commission the on-going works. No new work should be contracted until the majority of the on-going works is completed. With the commissioning of these works, there should be a significant improvement in system reliability and reduction of technical losses which would benefit impact on cost reduction.

10 As far as the massive commercial losses are concerned, the results achieved over the last five years are insignificant. T&D losses which were 46.94% in 1995/96 as shown by the Audit are now 46.63% as reported by the utilities themselves. The loss is even more staggering in the LT segment at 68%. The DISTCOs, in their projections, have proposed very little loss reduction. The rate of loss reduction that needs to be attempted and achieved in the next five years must not be less than an average of 5% which, in our view, is well within reach. Attainment of the goal would, however, call for determined, comprehensive, and relentless effort. The following are some suggestions in this regard.

A concerted drive to remove illegal connections (such as hooking) and effective measures to convert them into regular connections followed up by systematic billing and collection of energy charges.

Should the DISTCOs wish police escort for carrying out special drives to prevent unauthorised use of electricity, over and above the comfort of the Chief Secretary's circular to DMs and SPs asking for prompt intervention in the event of violence by anti-social elements, the Government should make available to the companies the requisite support on payment of costs.

100% consumer metering within a year and immediate metering at the low voltage terminals of step down transformers should be provided so that supplies into HT & LT systems can be quantified for purpose of proper energy accounting which is practically missing.

13 A major cause of sharp increase in the cost of power was steep revaluation of assets at the time of transfer to GRIDCO. It called for substantially higher provision for depreciation as well as return on capital. Neither of these could be met because of a shortfall in revenue. In these circumstances it would be worthwhile keeping the revaluation in abeyance till the system is brought to balance. In fact there is a case for setting aside the revaluation of OHPC which is expected to be profitable in the years to come. In addition to this, the state government may agree to allow a moratorium on debt servicing to the state except the amounts in respect of loans from the World Bank which the state government would need to pay to the Centre. After applying these correctives and also taking credit for T&D loss reduction at an average rate of 5% per year, the revenue gap at the existing retail tariff would show a decline but would still be substantial. The unavoidable revenue gaps would need to be financed from sources other than debt. Since the state government themselves are passing through severe financial stress, it may not be realistic to ask them to make a sacrifice over and above what has been suggested already.

12 An exercise has been carried out to estimate the annual shortfall on a cash-flow basis without a efficiency tariff hike but assuming that of the DISTCOs collection would progressively improve from the present level of 76% to reach 95% by the year 2005/06 instead of ending up with a collection efficiency of 84% proposed by them. With a tariff hike of 18% in 2005 the entire cash deficit would disappear and the year 2005/06 would witness both an operational profit as well as a marginal cash surplus. The sector as a whole would turn around in 2005/06. The consumers could be called upon to pay higher tariffs at that stage because by then the utilities are expected to have shown evidence of their concern for and efficiency in T&D loss reduction and improvement of customer service; not otherwise.

13 To bring the reforms back on the rails, the World Bank and the DFID who helped Orissa initially, and hopefully have retained their interest in the reform, should come forward with a suitable package to fill the revenue gap in the intervening years. Without this interim financing (estimated at 3240 crore rupees) there seems hardly any prospect of the reform coming to fruition. The government of India should not only persuade them to do so but also extend a helping hand in sharing the responsibility of interim financing of the revenue gap.

14 Once a decision is taken on interim financing and its apportionment, the Distcos and GRIDCO may be pinned down to specific performance parameters by desegregating the proposed T&D loss reduction DISTCO-wise.

15 In the prevailing run-down state of GRIDCO and DISTCOS, no durable rehabilitation is possible without interim financing of unavoidable losses. However, it needs to be emphasized that no amount of support from outside would succeed unless the utilities conduct themselves with greater sense of responsibility. Privatization was seen as a means to improve the performance of the DISTCOs. The private sector partners need to bear in mind their crucial role which can not be performed satisfactorily unless they face the tasks as a challenge and an opportunity and take the industry forward in the true spirit of partnership for mutual benefit.

16 The private promoters of the DISTCOs neither brought superior management skills nor did they arrange financial support even by way of working capital for the companies which were in dire need of capital, working capital in particular. Instead of using the good offices of BSES to secure working capital in terms of Clause 8.1 of the Shareholders Agreement for the three DISTCOs under their management, the DISTCOs have persistently defaulted in payment to GRIDCO towards purchase of power. The outstanding overdues of GRIDCO as on 30 September 2001 against these three DISTCOs is 680.72 crore rupees including bonds issued by them in lieu of cash payments. So far as the other distribution company CESCO is concerned, the situation is worse. AES, the private sector partner never fulfilled its commitment to bring working capital. They were allowed to pile up unpaid power purchase bills amounting to 403 crore rupees by time they walked away in August 2001. Now that AES have abandoned CESCO, GRIDCO seems to be left with hardly any other option except exploring a legal remedy. As far as BSES-managed DISTCOs are concerned, the attitude of deliberate default in payment to GRIDCO must end. BSES should make all efforts to bring in working capital in terms of the Shareholders Agreement.

17 The system of escrow put in place to secure regular payments to GRIDCO towards power purchase has not worked. With the package of financial relief recommended by us along with enforcement of the provisions of the Shareholders Agreement, the escrow mechanism should be made to work and strictly enforced.

18 There is an urgent need to develop trust and goodwill between the employees and the management. The vital role of the employees and their associations in building up the industry needs to be taken more seriously. While firm action against known miscreants is necessary to enforce discipline and accountability this can not be done without skillful handling of situations and willingness to mitigate genuine grievances. A specific matter in this connection relates to pensionary benefits. Employees apparently have found that the pension scheme preferred by them, and also adopted by the companies, has turned out to be disadvantageous, particularly for those who came over from the government in a higher age group. In a matter like this neither the present employers nor the government should take any rigid stand. The effort should be to find a solution which may not even be difficult to reach. Likewise, there is an apprehension that the liabilities of Government/GRIDCO towards the Pension Trust may not have been assessed correctly. This is a matter of actuarial calculation, which may affect the viability of the Pension Funds, so there should be no reluctance to take a fresh look at the estimates.

19 Orissa is richly endowed with natural resources, and now has the additional advantage of surplus power. This combination needs to be exploited to accelerate industrialization of the state through vigorous marketing of power by offering more competitive rates. By selling surplus power to industries, even at tariffs lower than prescribed by the OERC, not only would the state benefit from industrialization, but the DISTCOs themselves would also stand to gain as long as they recovered costs at the margin. The tariffs fixed by OERC should be treated as the ceiling in each category, and utilities should have the freedom to supply power at lower rates in exercise of their commercial judgement.

20 With restructuring and privatization, there is a much greater need now for rigorous enforcement of safety norms in the electricity industry. However, care needs to be taken to see that there is no mindless expansion of the Electrical Inspectorate. Services of chartered engineers, under a strict system of empanelment and penalty in the event of misconduct, may be utilized for the purpose of supplementing human resources of a slim, well-structured Inspectorate.

21 The services of local consultants as well as highly-rated consulting firms of international repute were used extensively in the preparation of the blueprint of reform, and to assist the utilities in developing internal systems of operation management, financial control, technical services, contract management, project implementation etc. The cost incurred so far is a staggering 306 crore rupees. However, judging by the fate of the reforms and the state of the utilities it is clear that the utilities, for whose benefit the consultants were engaged, did not assimilate much of their advice. Instead of developing an inner strength with the assistance of consultants, they tended to be excessively dependent on them leading to a near-atrophy of organizational strength. We suggest that this practice which weakens organizations rather than strengthening them and demotivates employees instead of improving their skill and confidence, should end as soon as possible.

22 Close attention should be given to strengthening the managerial competence of GRIDCO which is not only financially sick but also organizationally very weak. The following recommendations are made in this connection.

- The senior management of GRIDCO should be selected on the basis of merit and appointed for a fixed term of 3/5 years.
- The State Load Dispatch Center (SLDC) and its commercial counterpart the energy-billing centre should be provided with the necessary staff whose skills should be substantially honed and upgraded by regular training.
- GRIDCO's Project Management Unit (PMU) should take over the responsibility of all capital works irrespective of the source of funding. It should also monitor capital works executed by the distribution companies in addition to managing and monitoring GRIDCO's own works.

23 The entire power sector needs top management of a high calibre just as it requires an efficient workforce motivated to further the interest of the industry. The task before the management is daunting. Appointments to the Boards of Directors of all the utilities need to be reviewed to ensure that professionals including administrators with competence, vision, and commitment may enrich the utilities at the top. The prevailing system of part time appointments to key positions in the sector, including the Chief Executive Officer of OHPC should end. The Chief Executive Officers of the DISTCOs should be stationed at their respective headquarters.

24 The Committee did not get evidence of any innovative practice introduced in the management of the privatized DISTCOs. However, in some of the DISTCO areas, an experiment is in progress to involve village communities in streamlining power supply in rural areas. While the results seem to be encouraging, the exercise currently being conducted by consultants can succeed in the long run and over large areas only if the programme is implemented by DISTCO officials themselves.

25 It is recognized that Regulatory Commissions need to lay down norms for tariff determination which would enable the utilities to have a clear idea of the range in which tariffs may move over a reasonable period. A multi-year tariff regime is therefore being advocated by experts. The OERC has also laid down norms in certain areas though much more needs to be done. But no purposeful result can be achieved in the matter of multi-year tariffs unless there is a reasonable financial balance. Serious efforts are required to provide financial balance to the sector before multi-year tariffs can become a reality.

26 Another idea often advocated by experts is multi-buyer model of power trading. Here again, attainment of financial balance is an essential pre-requisite to provide a basis for competition through various models of multi-buyer systems as distinct from the single-buyer model adopted by Orissa as well as other states which have embarked on reforms. In the prevailing situation of GRIDCO's near-bankruptcy and disarray in the functioning of DISTCOs, the sector should be spared any further trauma. Meanwhile, GRIDCO needs to strengthen itself to develop the ability and skill to handle the power trading function, which calls for, among other things, prompt exercise of commercial judgement. Urgent attention should be paid to develop this within the organization. It would be of advantage to develop within GRIDCO a well-functioning trading unit which may eventually be turned into an independent trading organization as a step towards bringing in a competitive regime that would provide the consumer the opportunity to choose the source of his power supply.

27 Rural electrification seems to have unintentionally, become the worst casualty of the reform process. With the restructuring of OSEB, and privatization of DISTCOs, the rural electrification wing of OSEB was disbanded and it was left to the DISTCOs to carry on with schemes that were in the pipeline. Since the activity is not attractive commercially, the DISTCOs cannot be expected to be very enthusiastic about rural electrification. The interest of DISTCOs has further slackened because even the modest rural electrification work done by them has not been paid for inspite of the fact that an amount of 23 crore rupees of capital subsidy due was certified by the OERC several months ago. No fresh scheme of rural electrification seems to have been proposed for funding support of agencies like REC, nor any scheme drawn up for the purpose. Another regrettable feature is the utter lack of concern for the productive use of electricity in rural development through agriculture pumping. In terms of agricultural demand for power among states, Orissa is practically at the bottom. What is worse is that agricultural demand for power in the state has gone down from a meagre 6% in 1992/93 to a dismal 3% in 1999/00, compared with the national average of 30%. No single department of the state government is entrusted with the administrative responsibility to plan, promote, and monitor growth and press for rural electrification for the development of irrigation pumping which is vital for rural development. Under a high priority national plan, all villages are required to be electrified by March 2007. For a state like Orissa, with 40% of the population from weaker sections of scheduled castes and scheduled tribes living in remote areas, the headway to be made is large. The Kutir-Jyoti programme needs to be pursued with vigour. It must however be ensured that the benefits of the subsidized electricity supply under this programme flow to the targeted beneficiaries. The goal is unlikely to be reached unless determined efforts are made and effective machinery is put in place for planning, execution, and monitoring rural electrification projects. The vacuum caused by abolition of the

rural electrification wing of the OSEB needs to be filled up and an alternative system created. The following recommendations are made in this connection.

- A Rural Electrification Planning Organization (REPO) should be set up under the government to provide focus and direction to this vital programme, to prepare specific schemes, pose them to funding agencies and over-see utilization of the funds procured.
- REPO should have under it four Rural Electrification Planning Units (REPU), each corresponding to a DISTCO with which it would need to work in close coordination. These units would draw up, detailed schemes of rural electrification.
- Prioritization of villages for electrification should be done by REPUs in consultation with the Collector of the concerned district.
- Execution of the works would be the responsibility of the concerned DISTCOs.
- REPUs would need to monitor the execution and report completion of schemes and the expenditure incurred thereon to the Collector of the district and the state REPO.
- On the basis of the Collectors' certificates of satisfactory completion, the state government should promptly settle subsidy payments admissible to DISTCOs.
- Government would need to provide DISTCOs with a capital subsidy; revenue requirements would, in normal course, be considered by OERC as a part of the tariff exercise.

28 Our recommendations would help rehabilitate the utilities, bring stability, and promote growth of the power sector only if they are implemented as a package and their implementation is managed and monitored closely. The reforms adopted by Orissa may have been flawed, but mid-course corrections could have been successfully applied much earlier, and at less cost to the economy, had the reforms been managed approximately. The Committee's recommendations for putting the reform back on the rails would succeed only if the need for reform management is recognized and a system is put in place by the government, for regular monitoring, coordination and mid-course correction. It is interesting to know that of all the major parameters of reform laid down in the SAR, one of the few that proved realistic was tariffs. Retail tariffs have been fairly close to the SAR assumption in the first two years and substantially higher since 1998/99. Thus, consumers have not failed to provide support; they have made ample sacrifices for a of better quality of service, which has eluded them so far.

29 Power sector reforms would succeed if the utilities bring in efficiency, cut costs, reduce losses, and ensure greater consumer satisfaction. It would also require strong enforcement to ensure that consumers of electricity pay for its use. All sections of society, particularly those, in a position to influence public opinion, have the responsibility to provide the requisite support. Revival of the power sector would depend to a large extent on how fast a consensus is built in this vital area.

30 The state's power sector is now on the brink of a crisis. It is high time all agencies: the state government, the central government, the World Bank and the DFID, got together and took a holistic view of what can be done by each to rescue the reforms. If electricity reform fails in Orissa, it would have an adverse impact on reforms all over the country. What has taken place in the electricity industry of Orissa is only restructuring, privatization and

### Chronology of events in Orissa power sector reforms

November 1993	Chief Minister of Orissa confirms the State Government's commitment to power sector reforms
April 1995	GRIDCO and OHPC incorporated under Companies Act, 1956
January 1996	Orissa Electricity Reforms Act, 1995 is notified in Official Gazette
April 1996	Reform Act comes into force GRIDCO takes over T&D business from OSEB OHPC takes hydro projects from OSEB & DoE
August 1996	OERC becomes operational
October 1996	Management contract awarded to BSES in respect of central zone
April 1997	OERC issues licences to GRIDCO Management contract to BSES terminated
November 1997	Chief Minister of Orissa announces the privatization of 4 DISTCOs GRIDCO incorporated four wholly-owned subsidiary companies
November 1998	The four distribution subsidiary companies become operational
Jan – April 1999	OERC issues separate transmission (to GRIDCO) and distribution (to 4 DISTCOs) licences
April 1999	BSES takes over WESCO, NESCO and SOUTHCO
September 1999	AES consortium takes over CESCO
August 2001	Following AES pullout, OERC vests management of CESCO in a chief executive officer

establishment of a Regulatory Commission. The real reform, which brings in its wake benefits to consumers, strength to the industry, and growth for the economy has yet to come.

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## Abbreviation and acronyms

BSES	Bombay Suburban Electricity Supply Limited
CEA	Central Electricity Authority
CEO	Chief Executive Officer
CESCO	Central Electricity Supply Company
DFID	Department for International Development
DISTCOs	Distribution Companies
DOA	Distribution Operation Agreement
DoE	Department of Energy
DSM	Demand Side Management
DVB	Delhi Vidyut Board
E(S) Act 1948	Electricity (Supply) Act 1948
EREB	Eastern Region Electricity Board
GoI	Government of India
GoO	Government of Orissa
GRIDCO	Grid Corporation of Orissa
HRD	Human Resource Development
ICB	International Competitive Bidding
IM	Information Memorandum
NESCO	North-eastern Electricity Supply Company
ODA	Overseas Development Administration
OER Act 1995	Orissa Electricity Reform Act 1995
OERC	Orissa Electricity Regulatory Commission
OHPC	Orissa Hydro Power Corporation
OPGC	Orissa Power Generation Corporation
OSEB	Orissa State Electricity Board
PFC	Power Finance Corporation
PMGY	Prime Minister Gramina Yojna
PPAs	Power Purchase Agreements
R&M	Renovation & Moderation
REPO	Rural Electrification Planning Organization
REPU	Rural Electrification Planning Unit
RFP	Request for Proposal
RFQ	Request for Qualification
SAR	Staff Appraisal Report
SBM	Single Buyer Model
SDP	State Domestic Product
SOUTHCO	Southern Electricity Supply Company
VEC	Village Electrification Committee
VRS	Voluntary Retirement Scheme
WB	The World Bank
WESCO	Western Electricity Supply Company



# **Assignment**



## **Group Work: Implementation of electricity reforms**

Socio- economic profile of State 'X' and data on the operational and financial performance of the State Electricity Board are attached.

You are required to work out a reform and restructuring strategy keeping in view the provisions of the Electricity Act 2003.

You may form 3 groups and each group may focus primarily on one aspect as given below. (Overlaps may also be taken into account)

<b>Groups</b>	<b>Topics</b>
1.	Increasing access and quality of supply and service
2.	Tariff Rationalization
3.	Promotion of competition

Each group will have access one set of the following additional reading material

1. Electricity Act 2003
2. Draft Electricity Policy (30.06.2004)
3. Tariff Policy (as contained in the report of the task force)
4. Consultation paper of CERC for "Introducing competition in generation of electricity" (August 2004)
5. Privatisation of electricity distribution in Orissa



# **Presentations**





# Power Sector Reforms in India

**K. Ramanathan**  
Distinguished Fellow, TERI

IAS Training Programme on Infrastructure Deregulation  
11 October 2004

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# Outline of Presentation

- An overview of the Indian power sector
- Evolution and progress of Power Sector Reforms (PSR) in India
- Tasks and challenges ahead

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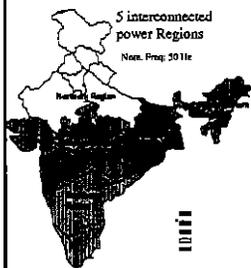
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# Indian Power Sector: Overview



Installed capacity (Utilities) : 110 GW  
 Mix (%) T : 70; H: 25; N: 2.5; W: 2.5  
 Ownership (%) Public: 90 Private: 10  
 Per-capita consumption : 567 kWh  
 Access : 55% (Rural : 44%)  
 T&D Network : 500,000 ckm  
 (Interconnections with Bhutan & Nepal)  
 Highest voltage : 765 kV AC, 500 kV DC  
 Non-utility Gen : 20+ GW; 64+ BU

Projected growth 2011-12  $\Rightarrow$  Demand : 157 GW (975 BU)  
 Capacity additions planned : 90 GW

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## Objectives

The Act seeks “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, rationalization of tariffs, ensuring transparent policies, constitution of Central Electricity Authority and Regulatory Commissions, establishment of Appellate Tribunal and for matters connected therewith or incidental thereto”

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## Some Key Features of the Act

- The Central Government to prepare a National Electricity Policy in consultation with State Governments (Section 3)
- Thrust to complete the rural electrification and provide for management of rural distribution by Panchayats, Cooperative Societies, non-Government organizations, franchisees etc.(Section 4,5&6)
- Provision for licence free generation and distribution in the rural areas. (Section 14)
- Generation being delicensed and captive generation being freely permitted. Hydro Projects would, however, need clearance from the Central Electricity Authority. (Section 7,8 & 9)

Contd ...

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## Some Key Features of the Act

- Transmission utility at the central as well as State level, to be a Government company - with responsibility for planned and coordinated development of transmission network (Section 38&39)
- Provision for private licensees in transmission and entry in distribution through an independent network (Section 14)
- Open access in transmission from the outset (Section 38-40)
- Open access in distribution to be introduced in phases with surcharge for current level of cross subsidy to be gradually phased out along with cross subsidies and obligation to supply. SERCs to frame regulations within one year regarding phasing of open access. (Section 42)

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## Some Key Features of the Act <sup>100</sup>

- Distribution licensees would be free to undertake generation and generating companies would be free to take up distribution businesses (Sections 7,12)
- The State Electricity Regulatory Commission is a mandatory requirement. (Section 82)
- Provisions for payment of subsidy through budget (Section 65)
- Trading recognized as a distinct activity with the Regulatory Commissions authorized to fix ceilings on trading margins, if necessary (Section 12, 79 & 86)

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## Some Key Features of the Act <sup>100</sup>

- Provisions for reorganization of SEBs (Section 131 & 172)
- Metering of all electricity supplied made mandatory (Section 55)
- An Appellate Tribunal to hear appeals against the decision of the CERC and SERCs (Section 111)
- Provisions relating to theft of electricity made more stringent (Section 135-150)
- Provisions safeguarding consumer interests. (Sections 57-59, 166) Ombudsman scheme (Section 42) for consumers grievance redressal.

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## Other Reform Initiatives <sup>100</sup>

APDRP: 100% metering, energy audit, better HT/LT ratio, replacement of DTs, IT solutions, etc. ⇨ An investment plus incentive based program

Energy Conservation Act: Focus on supply side and demand side efficiency improvements ⇨ A high value legislation

REST Mission: Electrification of 10 m households through decentralised distributed generation systems ⇨ Focus on rural electrification

Frequency-linked Availability Based Tariff (ABT) ⇨ Promotion of generator efficiencies and grid discipline

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## Progress of Reforms

### Some good news

- SERCs constituted/ notified in 23/29 states
- Statutory requirement of unbundling & corporatisation of SEBs met by 9 states; given extension up to 1 year
- Distribution privatised in Orissa (1999), Delhi (2002)  
-different approaches- Micro-privatisation in many states
- Substantial improvements in metering & energy accounting; reduction in losses in 10 States; improved frequency profiles; QoSS standards in place in most states
- Tripartite agreement for securitisation of receivables
- Rating system for monitoring progress on reforms introduced

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## The Rating Exercise

- An annual exercise for reviewing the performance of different States in reforming the power sector
- Creation of a healthy competition among States

### Criteria

Generation	
Transmission	

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## Progress of Reforms

### Some not so good news

- Revenues still cover only about 70% of cost of supply  $\Rightarrow$  High dependence on Government subsidy
- Limited progress on tariff rationalisation  $\Rightarrow$  Agricultural tariff a sensitive issue
- Private sector participation much below expectation
- Distribution privatisation: Poor investor response in the two States; only marginal improvements in QOSS, exit of one company in Orissa  $\Rightarrow$  States looking for alternate models
- Limited progress in rural electrification  $\Rightarrow$  Access to rural households still limited to about 44%

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## Major Tasks & Challenges

- Formulation of policies & regulations required as per the Act  
(Challenging issues: subsidies & cross subsidies, competition & market development, promotion of renewables, environmental aspects, etc.)
- Choosing proper model for restructuring of SEBs including transition strategy
- Improving supply side and demand side energy efficiencies
- Improving effectiveness of regulatory commissions
- Increasing access of electricity and quality of supply
- Promoting private investment
- Reforms in related sectors like coal, petroleum, gas, railways, etc

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# Distributed generation for rural electrification

Training Program for IAS Officers on "Infrastructure Deregulation"

Akanksha Chaurey  
TERI

October 11, 2004



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## Structure of the presentation

Distributed Generation

▼ *Concept and its relevance*

▼ *Context- The EA 2003, Draft National Electricity Policy*

Challenges confronting the reforms process- Ethiopia

Missionary Electrification Development Plan- Philippines



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## Power for All

▼ One of the six components of the PMGY- *to achieve human development at the village level*

▼ One lakh villages, one crore households (*AREP and Kutir Jyoyi*), RVE, REST



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## Understanding rural electrification

- ▼ My village is not recognized as a revenue village, so I am expected to pay more than my neighbour
- ▼ I pay for what I do not get
- ▼ I am deprived of electricity because my village is inside the protected forest
- ▼ I am willing to pay for the alternative *sour urja* system, but where do I get it from?
- ▼ I invested in the alternative system but now after a few years, it is just a white elephant




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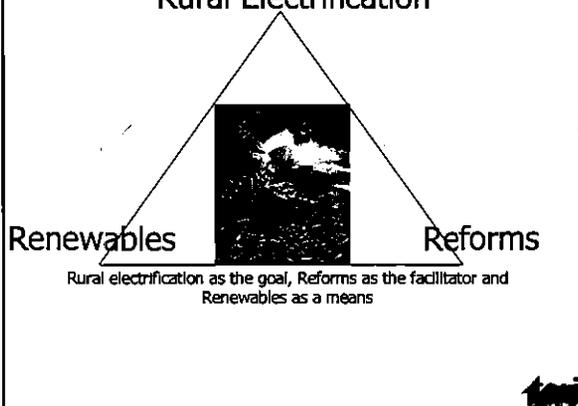
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## Rural Electrification




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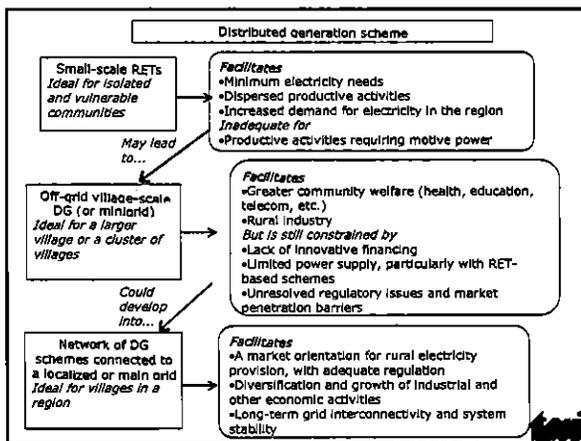
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*The Central government is required to notify....*

*in consultation with the State governments*

▼ Section 4: A National Policy permitting stand-alone systems (including those based on RE sources and non-conventional sources of energy) for rural areas

*in consultation with the State governments and SERCs*

▼ Section 5: A National Policy for rural electrification and for bulk purchase of power and management of local distribution in rural areas through Panchayat Institutions, Users' association, Co-op societies, NGOs or franchisees



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*it would work towards...*

*empowering the rural population to choose and decide on their power supply options*

*how?*

Persons setting up new projects and /or extending existing infrastructure for composite schemes of generation and distribution, are exempt from licensing and licensee related obligations



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**Section 13:**

The Appropriate Commission may, on the recommendations, of the Appropriate Government, in accordance with the national policy formulated under section 5 and in public interest, direct, by notification that subject to such conditions and restrictions, if any, and for such period or periods, as may be specified in the notification, the provisions of section 12 shall not apply to any local authority, Panchayat Institution, users' association, co-operative societies, nongovernmental organizations, or franchisees

**Section 12:**

No persons shall  
(a) transmit electricity; or  
(b) distribute electricity; or  
(c) undertake trading in electricity,  
unless he is authorised to do so by a licence issued under section 14, or is exempt under section 13.



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*it would facilitate implementation*

*how?*

The District Electricity Committees to be constituted under Section 166 (5) may also be expeditiously constituted by the State Governments to facilitate project preparation and execution and take a proactive role for expeditious rural electrification in the district



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### Regulatory Commissions

To promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee



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The Appropriate Commission shall, subject to the provisions of this Act, specify the terms and conditions for the determination of tariff, and in doing so, shall be guided by the following, namely:-

*e) the promotion of co-generation and generation of electricity from renewable sources of energy;*



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## Draft National Electricity Policy

### Aims at

- ▼ Access to electricity- all households in next five years
- ▼ Supply of reliable and quality power on international standards
- ▼ Minimum lifeline consumption of 1 unit/day
- ▼ Protection of consumers' interests



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## Draft National Electricity Policy

### Addresses

- ▼ Technology development and R&D (large power companies should set aside a part of their profit for R&D, establishment of a major Technology Centre to address technology development issues)
- ▼ Cogeneration and Renewable Energy Sources (Commission may determine appropriate differential in prices to promote...)
- ▼ Protection of consumer interests and quality standards (Reliability Index of supply of power to consumers should be indicated by the distribution licensee)



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## One lakh villages one crore houses- *guidelines*

- ▼To cover all un-electrified villages; projects based on grid extension or distributed generation eligible for subsidy
- ▼USO to all consumers on demand as per the tariff proposal agreed between the beneficiaries and the RESP
- ▼RESP to act outside the purview of SERC for purpose of tariff determination
- ▼ About 40% capital subsidy; linked to sustained delivery of services for 15 years
- ▼DECs to facilitate project preparation and execution

### RVE

- ▼Exclusively for remote villages using renewables
- ▼90% capital subsidy



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## Ethiopia- Challenges confronting the regulatory process

Rural electrification does not feature explicitly either in legal or regulatory frameworks or in the mandates, duties and responsibilities of EEPCO (Ethiopian Electric Power Corporation) and ERA (Electricity Regulatory Agency)

- Indications that a part of the rural population is willing and able to pay for the higher charges
- technical and managerial skills available outside the utility for setting up rural power supply systems, but equipment not available in local market
- cooperation and help of EEPCO are indispensable, but no government policy directing EEPCO to render the assistance

*SEI Climate and Energy Programme Report 2004-03*



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## Philippines- Missionary Electrification Development Plan

Electric Power Industry Reform Act of 2001\* or "EPIRA," and its Implementing Rules and Regulations (IRR) mandated the Department of Energy (DOE) to prepare a rolling five-year Missionary Electrification Development Plan (MEDP) in conjunction with the National Power Corporation-Small Power Utilities Group (NPC-SPUG) and the National Electrification Administration (NEA)

- Support the GOP objective of achieving 100% electrification at the barangay level by 2006;
- Minimize the amounts required to be drawn from the UC and optimize the scope and number of projects to be undertaken;
- Become an Instrument of Poverty Alleviation; and
- Rationalize and de-politicize the selection and allocation of funds from the UC



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## But why are we discussing all this?



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Thomas Edison, inventor of the electric light bulb once said:

"The housewife of the future will give less attention to the home because the house will need less. She will be rather a domestic engineer than a domestic labourer, with the greatest of all handmaidens (*i.e. electricity*) at her service. This and other mechanical forces will so revolutionalise the woman's world that a larger portion of a woman's energy will be conserved for use in broader, more constructive fields."



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Thank you



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## Electricity Deregulation - Issues & Concerns

V Raghuraman  
Senior Advisor - Energy  
Confederation of Indian Industry

**CII**

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### Regulation- Issues & Concerns

- In the presence of imperfections, such as existence of natural monopolies, market may fail to yield independently efficient competitive pricing solutions
- In such cases, intervention by a third party, such as regulatory body may be required to establish prices that are
  - *quasi-efficient*
  - *but often required to serve certain social objectives*

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### Regulation- Issues & Concerns

- In most countries of Eastern Europe and the CIS, process of electricity tariff determination *per se* strictly controlled by regulators
- The main obstacle of the price regulation is the *information asymmetry* between the regulator and regulated firm

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### **Regulation- Issues & Concerns**

- Hence, it is desirable to move to a competitive structure so that less reliance needs to be placed on the imperfect mechanism of regulation.
- **Regulation, thus seen to be a temporary measure and may be designed to create an enabling environment towards a competitive structure**

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### **Regulation- Issues & Concerns**

- **Ideology of market reform, often equated with deregulation, liberalization or privatization seems to have gone out of window with California, ENRON & Brazil**
- **Experiences show that ideology of free markets in energy services is not sufficient**
- **Careful market design and effective regulatory regimes are also essential.**

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### **Deregulation**

- **Deregulation in the power industry works well only when there is over-capacity**
- **Deregulation in the electricity sector removes price controls and openly encourages market entry**
- **Developed countries like Norway, Sweden, Finland, UK and New Zealand, electricity business has been opened for competition**

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### Deregulation

- In a regulated market, there is little need for hedging electricity price risk because of the deterministic nature of prices
- The physical nature of electricity does not allow a true electricity spot market
- Electricity pools are a substitute for such spot markets.

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### Deregulation

- Pool purchasing prices and supply contracts are set by auction some time in advance of physical delivery.
- Pool selling prices are established by adding the cost of imbalance, load curve related charges and charges for ancillary services to the pool-purchasing prices.
- Retail electricity companies, large consumers and entrants are increasing their use of electricity derivatives to hedge against the price volatility in deregulated era

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### Deregulation

- The nature of electricity and the behavior of electricity prices differs from that of other commodity markets since
  - electricity is a non-storable good and
  - there have been significant variations of demand (and price) within a day, between the days and among the months.

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### Deregulation

- Since electricity demand is highly inelastic and weather- dependent, electricity and weather derivative markets have been established at various locations in the USA and Europe.
- The recent experience in California has emphasized the importance of such markets.

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### Indian Power Sector

- Indian power sector needs special attention to propel the economic growth
- Root problem in the power sector is the declining financial viability of the SEBs
- Rationalisation of tariffs perhaps the most important pre-requisite to turn around the sector from 'bankruptcy to bankability'

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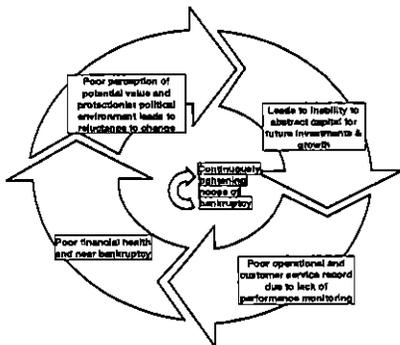
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### SEBs ARE IN A VISCIOUS CYCLE OF UNDERPERFORMANCE

CONCEPTUAL



Source: Press searches and McKinsey analysis

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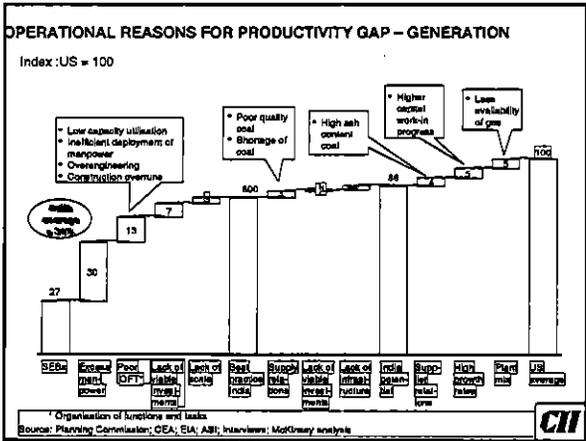
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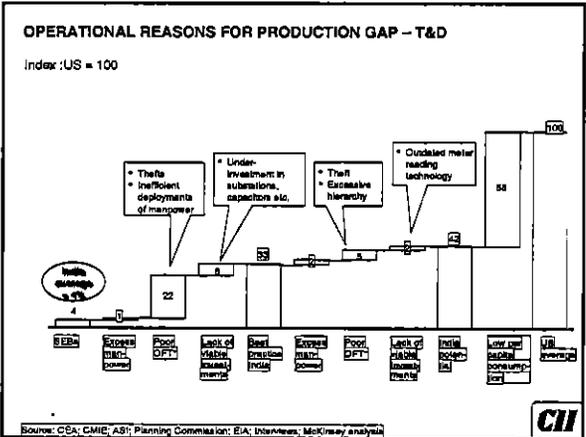
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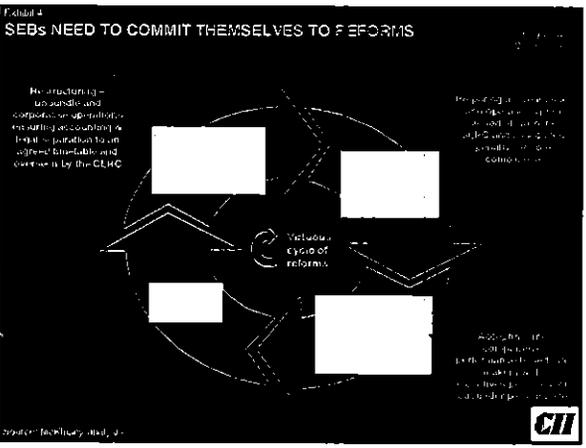
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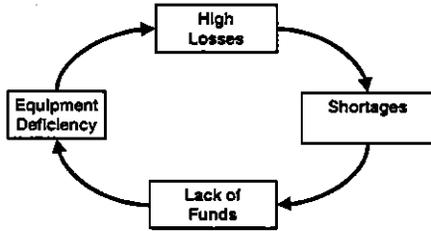
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**Break the Vicious Circle by taking steps leading to a Virtuous Cycle.**



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### **Indian Power Sector**

- Reforms in Indian Power Sector are underway and regulatory commissions have been set up to determine tariffs based on economic rationale in order to promote competition, investment and efficiency in the resource starved power sector
- However, tariff orders issued by SERCs are often being unimplemented due to vested political interests.

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### **Indian Power Sector**

- Most of the Eurasian countries are in transition phase like India
- However, in the Indian context with the reforms in the nascent stage, the experience of Eurasian countries will be more appropriate.

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### Indian Power Sector

- A review of the tariff structure of these countries revealed that the
  - transmission and distribution tariffs in India could adopt rate of return or RPI – X methods
- A rational tariff policy needs to be evolved to make Indian power sector perform

**CI**

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### Indian Power Sector

- A multi-year tariff regime, where the guidelines, rules and method for determining tariff are well established would be beneficial
  - in minimizing risk and
  - building confidence for the investors

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### Indian Power Sector

- It also helps to promote efficiency and for consumers, improvement in efficiency translates into more cost-effective tariff.
  - Example: UK & Argentina
- Full reimbursement of the amount of technical T & D losses should be done through the tariffs

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**CII - ORG-Marg. Study on  
Consumers Views on Power Supply**

***Main Findings***

- Most of the consumers are ready to pay higher tariff for better quality of supply of power
- Subsidizing agricultural tariff has not been able to satisfy consumers, cost-effective tariff in return for improvised service is preferred
- Although consumers are in favour of tariff rationalization, their awareness towards the impact of tariff rationalization and privatization still poor.

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**Electricity Act, 2003**

- New Electricity Act (EA) based on the principles of
  - promoting competition
  - protecting consumers' interests
  - providing power to all
  - rationalization of tariffs and
  - optimal utilization of indigenous resources like coal, natural gas, hydro, nuclear and renewables

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**The EA, 2003 Could Enable the Virtuous  
Cycle of Reforms**

- The Act Compliments CII theme - *Competitiveness of India Inc.*
  - Consolidated legislation - easier to administer
  - Provides freedom to buy and Sell
  - Several progressive features, promotes economics in preference to command & control structure
  - Strengthens the hands of utilities and regulators to promote law and order
  - Provides enabling framework to turn-around the power sector

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**Six national policies on the anvil**

- National Electricity Policy and Plan
- National Policy on stand alone systems for rural areas and non-conventional energy systems
- National Policy on Rural Electrification
- Open Access Framework
- Power Market development and
- National Tariff Policy



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***CERC's Order on Terms and Conditions for Electricity Tariff***

- CERC has announced 'Terms and Conditions for Electricity Tariff' for the Five - Year period beginning April 1, 2004.
- The regulator lowered the rate of return on investment in power projects from 16 to 14 percent
- However, the cost of all future power projects in generation, transmission and distribution would be set through tariff-based competitive bidding process.



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***CERC's Order on Terms and Conditions for Electricity Tariff***

- In line with the recommendation of a task force under a member of the Planning Commission, the debt-equity ratio for all power projects has been pegged at 70:30
- The regulator has also increased the performance benchmark of thermal generating stations from PLF of 77 to 80 percent and
- The rate of incentive has been increased to 25 paise per unit to existing 21.5 paise.



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### High points in the power sector

- Electricity Act enacted
- Following enactment of the Act, CERC's order on
  - ✓ Terms & conditions for of tariff
  - ✓ Open access regulations
  - ✓ Inter-state trading regulations
- Financial closure of substantial amount of IPP projects
- APDRP success in few states.
- Inter state links to augment power transfer within region & enhancement to power trading

**CII**

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### High points in the power sector

- ABT implemented; substantial improvement of voltage & frequency profiles
- 100% feeder metering achieved in ten States
- 100% consumer metering achieved in seven States
- Anti power theft legislation enacted in six States
- Reduction of PPA of generation from Rs 3.5 per unit in mid-90s to Rs 2.25 per unit

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### High points in the power sector

- Investments in the power sector surged 16.2 per cent and accounted for a third of the total project investment as of March 2004
- Serious domestic private enterprises showing interest on power sector
- In May 2003, power scrip gains over 10 percent and has since outperformed BSE index

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### Major Disappointments

- Review of Electricity Act
- Delay in roll of
  - ✓ National Electricity Policy
  - ✓ National Tariff policy
  - ✓ National policy for Renewable Energy & Stand Alone Systems
- More time to states for unbundling/reorganizing SEBs
- Announcement of supplying free power to agricultural consumers by Tamil Nadu, Andhra Pradesh and Maharashtra



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### Major Disappointments

- Lack of acceleration on hydro capacity addition and distribution reforms
- Perceived lack of independence and autonomy of State Electricity Regulatory Commissions
- Current revenues of state electric utilities cover only 70 per cent of their total costs, which represents a drop of 10 per cent from the level in the early 1990s.
- Though 12 States have reported loss reduction of around Rs. 11,000 Crs during 2002-03, the rate of return in the state power sector is estimated to be a negative 29% in 2004-05



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### Electricity Act, 2003 *To Sum Up..*

- The Act is a win-win situation for the sector
- The success in implementation of the legislation pivots on:
  - good governance
  - involvement & expertise of the stakeholders
  - maturity, foresight and independence of regulators



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### Gas Issues

- Recent gas discoveries in the K-G Basin definitely restructure the future energy mix and reduce import dependence
- Demand for gas in power sector increasing significantly
- Many issues remain to be decided in advance keeping considerations of economy and security in mind, like
  - Gas import through pipelines

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### Gas Issues (Contd.)

- As yet no clear provisions to regulate the import of LNG
- Present formula for gas pricing does not take account of domestic & international market forces
- Debate on GAIL's monopolistic power on gas pipeline
- Need for a gas regulator
- Question of uniform rate of indirect taxation over the country as a whole needs to be resolved
- Pricing must ideally be left to market forces or to the regulator

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### Other Issues

- Indian energy sector has been structurally handled by five different ministries and power, for example, is a concurrent subject of both center and states.
- Although reforms in the energy sector are underway, the pace of reform are different in the sub-sectors viz. power, coal, oil, gas and renewables.

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**Other Issues (Contd.)**

- **In this regard, it is important to explore the possibilities whether all these sub-sectors can be co-ordinated by a single regulatory framework to determine optimal fuel mix and tariffs.**
- **In India, demand projections often found to be over-estimated. For long term demand projection, review needs to be done in a regular interval after incorporating factual information.**



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Thank you



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**Regulatory Effectiveness- Electricity Sector: Efficiency improvement and tariff rebalancing**

Vivek Sharma, Area Convenor, Regulatory Policy, TERI. Email: vsharma@teri.res.in

Training Program for IAS Officers on "Infrastructure Deregulation"



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**Structure of discussion**

- Introduction
  - Need for regulatory reform
- Regulatory Process: Transparency
- Regulatory approach
- Issue of compliance
- Regulatory effectiveness



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**Need for Regulatory reforms**

- IPPs policy 1991
  - Utilities don't have money to pay IPPs
- 1995: Utilities financial condition has to be improved
  - depoliticise through independent regulator
  - Transparency & accountability
  - Reduction in T&D losses
  - Bring Operational efficiency
  - Tariff reforms



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## T&D losses & collection inefficiency: Prior Reforms

- Pre reform- Under reporting of losses
- T&D losses ranging 40-50%
- Collection efficiency ranging 70-80%
- High among other countries
  - China (10%), Thailand (10%), Taiwan (7%), Argentina (12%)
- Annual loss of Rs 100 billion ( in 1997)



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## Poor tariff structure

- Tariff provides only 70% of the cost of supply
- Non-transparent, political tariff
- Underpricing
  - Misuse of energy - example of agricultural tariff
    - Free (or underpriced) electricity-> misuse of electricity (pumps) -> wastage of water-> declining water tables -> more HP pumps -> distortion in cropping pattern



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## Poor tariff structure

- Cross subsidy
  - High tariff for commercial and industrial consumers
  - Industries moving towards own generation
  - Decreasing sales to industrial consumers
  - Bad for economy
  - In other countries Industrial tariff is far lower than domestic tariff
- No distinction between the peak and off peak tariff
  - Grid failures



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## Regulatory reform

- The Electricity Regulatory Commission Act 1998
- 22 SERCs Constituted
  - 34 Tariff orders issued
  - QOS regulation issued
- Efficiency targets lead down in the tariff orders
  - Reduction of T&D losses
  - Incentive for reduction in operational and technical efficiency
- Tariff rebalancing



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## Regulatory process



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## Regulatory Process

- Transparent
- Process is more consultative
- Tariff determination process
  - Filing of the tariff petition
  - Public Notice
  - Sharing of information with the public
  - Public hearing and cross questioning with the Utility
  - Judgement by the SERC and issuing of order



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## Public participation

No. of objections submitted In written

	2000-01	2001-02	2002-03
Maharashtra	468	533	NA
Karnataka	232	NA	9312
AP	78	89	135
Haryana	12	31	8
MP		780	1501
UP	84	104	25

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## Public participation

- Varied level of public participation
  - Increased public awareness: Consumer advocacy in Karnataka
  - Impact of proposed tariff
- Varied composition of public participation
  - Steep hike proposed in tariff of a particular category
  - Lack of consumer awareness

[Redacted]

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## Timeliness of Tariff Orders

	Date of filing	Months taken	Date of filing	Months taken
Karnataka	6-Jul-00	6	26-Nov-01	5
Andhra Pradesh	6-Apr-00	2	30-Dec-00	3
Haryana	31-Dec-99	12	31-Mar-01	4
Maharashtra	4-May-99	12	15-Mar-01	8
Madhya Pradesh	7-Apr-01	5	20-May-02	6
Uttar Pradesh	31-Dec-99	7	22-Jan-01	7
Average		7		5.5

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**Reasons for delay in issuing the order**

- Data insufficiency in the filing
- Non-compliance with information formats
- Non-compliance with directives
- Additional data requirement after objections



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**Regulatory approach**



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- Regulatory approach towards
  - Agricultural consumption estimates & T&D losses
  - Operational efficiency
- Initiatives undertaken



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## T&D loss approach & methodology

AP	Extra high tension loss study conducted Use of proxy measure in terms of efficiency gains
Karnataka	Separate study undertaken in urban areas Transmission & distribution losses assessed separately Unmetered consumption through sample metering
Haryana	Individual estimation of Transmission & Distribution losses
Maharashtra	Sample energy auditing and accounting
Orissa	Pilot study by taking sample of feeders
MP	Limited sample study to verify agriculture consumption
Haryana	Limited sample study to verify agriculture consumption
Delhi	AT&C approach
Punjab	Sample metering to verify agricultural consumption
Gujarat	Separate transmission and distribution losses estimated. Metering at feeder level to estimate agricultural demand

## T & D losses

	Utility's estimate	Commission's estimate	Approved	Actual
Karnataka	35.62	24	31	35.5
AP	8.5	6.65	6.65	6.65
Haryana	38.56	40.76	40.76	47.71
MP	51	47.17	42.88	49
Maharashtra	27.5	29	26.89	39.4
UP	36.5	36.5	36.5	41.4
Orissa	49.24	35	35	51.02
Punjab	25.5	27.52	25.52	
Gujarat	21	29	29	29

## T & D losses

- Approach in setting targets of reduction not uniform across states
  - High targets by some States- Karnataka, Maharashtra, UP
  - Approved targets more than the proposed – Haryana, Gujarat, Punjab
  - No targets fixed at all - AP
  - Multi Year Targets - UP, Maharashtra, Karnataka, Delhi

## Approach towards Operational efficiency



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## Power purchase and generation cost

- Management of generation cost
  - MSED directed to conduct a detailed study of the coal procurement process, supply, use of coal and accounting methods, through independent consultants
    - Study would enable better understanding of system of coal procurement, the occurrence and the extent of transit losses
  - GEB conducted coal inventory and boiler efficiency study
- Power procurement approach
  - Almost all the States are following merit order dispatch



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## PPA vs. Merit order dispatch

- UP
  - TANDA power purchase is restricted to the highest cost station of NTPC.
  - Harduagen] cost restricted.
- Karnataka
  - The Commission disallowed pass through of increased fixed cost by TBPC
  - Dispute resolution mechanism mentioned in the PPA not exercised by the utility
- AP
  - BPL case: Later PLF and other norms increased



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## SERC on depreciation

- Punjab:
  - Utility proposed average depreciation rate of 6.63%
  - On scrutiny
    - Capitalization of hydel assets which attracts lesser depreciation rates, also, past depreciation on transmission assets was included
    - Depreciation rate of 5.23% was only allowed
- Himachal Pradesh:
  - Utility proposed average depreciation rate of 2.5% as no fixed asset register available
  - On scrutiny
    - Hydroelectric plant for machinery part is 3-4%, for transformers is 7.84%
    - Accordingly depreciation rate allowed 4%



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## SERC on depreciation

- Haryana
  - 2000-01
    - No Fixed Asset Register (FAR) available
    - Cost allowed at the rate of 8.38%
  - 2001-02
    - FAR was provided
    - Cost allowed at weighted average rate of 7.51%



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## Bad debts

	Revenue
Orissa	2.50%
Delhi	2%
Madhya Pradesh	2%
Maharashtra	1.70%



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**Initiatives undertaken**

- Monitoring not documented
- Ongoing reforms

Issue of micro management



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■ **Andhra Pradesh**

- 50% discount allowed on energy charge in metered agriculture
  - ISI marked pumpset
  - Friction less foot valve
  - Capacitor of adequate rating
- Provision of graded incentives that grows with load factor
- "Voluntary Disclosure Scheme"- 50% discount allowed to regularize the unauthorized additional load disclosed voluntarily by the consumers.

■ **UP**

- Benchmarking: DEA approach
- Circle wise collection efficiency



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■ **Karnataka**

- Creation of responsibility centres to control T&D losses
- Publish the list of defaulters
- Creation of 'Creamy layer of IP sets' to target the subsidies better
- Separate target (15%) of distribution losses for cities with population > 50,000

■ **Himachal Pradesh**

- Winter surcharge to reflect the higher cost of supply

■ **Orissa**

- With and without corrective



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- **Maharashtra**
  - Reliability charge
  - Hold the concerned employees responsible for the excessive T & D losses in concerned zones
  - Losses equally shared with the consumer
- **Delhi**
  - AT&C losses
  - Sharing of revenue

– AP, Karnataka, Maharashtra and Haryana - Incentives introduced in terms of lower tariffs for metering agriculture




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Issue of compliance




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**Regulatory Directives**

	Directives	Followed
Karnataka	23	14
Maharashtra	27	20
MP	23	16
AP	28	21
Haryana	52	12
UP	18	4




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Status of compliance: Orissa

	Extent of Compliance			
	(Rs Crore)			
GRIDCO 1997-98	Commission	Actuals	Difference	% deviation
T&D losses	35.00%	49.24%	14.24%	40.69%
Collection Efficiency		79.92%		
Revenue Requirement	1450.50	1787.98	337.48	23.27%
Power Purchase Cost	883.98	1199.83	315.85	35.73%
Employees Cost	214.34	266.73	52.39	24.44%
Bad debts	12.60	39.53	26.93	213.73%
Depreciation	128.02	141.86	13.84	10.85%
Interest Charges	114.30	72.44	(41.86)	-36.62%

Deviation from OERC approved figures

% deviation	1997-98	1998-99	1999-00	2000-01	2001-02
T&D losses	40.69%	45.77%	34.00%	37.94%	13.23%
Collection Efficiency					
Revenue Requirement	23.27%	9.10%	22.11%	27.99%	21.78%
Power Purchase Cost	35.73%	14.35%	10.82%	25.21%	5.01%
Employees Cost	24.44%	4.65%	18.54%	9.64%	12.78%
Bad debts	213.73%	39.22%	262.70%	63.34%	98.19%
Depreciation	10.65%	1.57%	-38.66%	5.39%	58.14%
Interest Charges	-36.62%	36.40%	135.27%	203.89%	33.96%

Aggregate Revenue requirement:  
Status of compliance - AP

Item	FY01		FY02		FY03	
	Approved figure	Actual figure	Approved figure	Actual figure	Approved figure	Actual figure
Power purchase (MU)	42829		48818	49791	39529	
Sales (MU)	27,838	27,183	27,891	28,327	28,309	31,277.08
Revenue from Sale (Rs.Cr)	8238.21	8924	8250	8341	8433	
Transmission loss (%)	4.5	8.92	8.5	8.18		
T&D loss (%)	33.4	33.9	32.3	31.48	28.4	27.58
Efficiency Gain (Rs.Cr)	500	300	801	91	300	
Power purchase cost	8825.81	8888	8717.80	7288.3	7154	7584.9
Employee cost (Rs.Cr)	819.82	487.12	448.48	448.48	480.88	490.88
Depreciation (Rs.Cr)	381.3	245.82	348.75	348.75	508.89	508.88
Interest charges (Rs.Cr)	510.87	220.86	442.88	442.88	411.42	411.42
Non tariff income (Rs.Cr)	457.87	321	333.43	410.43		
Metered billing (%)	44	40				

## Cross cutting concerns

- Lack of information base
  - Resource and time extensive exercises
- Targets set on the basis of provisional account
- Uncontrollable factors
- Investment v/s efficiency improvement
  - UP, Karnataka
- Public v/s private set up
  - Political support to reforms



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## *Regulatory effectiveness*



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## Regulatory effectiveness

- T&D losses
  - Metering
- Employee Productivity
- Tariff rationalisation
  - Tariff design
  - Cross subsidy
- Budgetary support



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## T&D losses

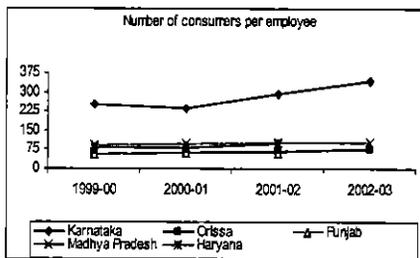
	Prior Reforms*	1999-00	2000-01	2001-02	2002-03	2003-04**
Andhra Pradesh	15.30	35.20	33.90	31.46	26.84	24.63
-APCPDCL			44.33	35.01	23.00	19.19
Karnataka	18.90	38.00	35.50	34.10	31.68	29.41
Haryana		48.96	47.67	44.52		
Maharashtra	15.30	29.00	39.40	33.2*		
Uttar Pradesh	22.60	41.55	41.40	38.76	33.60	
Madhya Pradesh			47.17	49.00		
Orissa	23.60	46.90	46.90	50.50		
Punjab				27.52	25.61	

\*\*Commission Approved, \*1994-95 (Source- Planning Commission SEB Annual report)

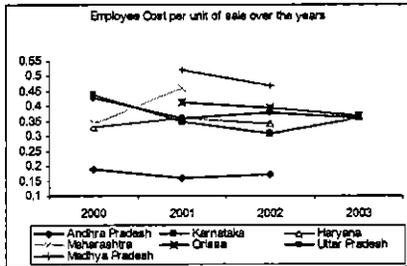
## Metering status

	Prior Reforms*	1999-00	2000-01	2001-02	2002-03
<b>Madhya Pradesh</b>					
Percentage of unmetered agriculture sales	91.27%	91.93%	88.06%	90.90%	91.02%
Percentage of agricultural consumers unmetered	87.82%	89.04%	92.70%	90.58%	87.07%
<b>Orissa</b>					
Percentage of agricultural consumers unmetered		41.80%	31.42%	31.08%	26.80%
<b>Karnataka</b>					
Percentage of unmetered agriculture sales	89.77%	99.73%	99.73%	99.74%	99.71%
Percentage of agricultural consumers unmetered			99.75%	99.71%	99.82%
<b>AP</b>					
% metered Sales	38.89%	38.05%	42.96%	43.44%	48.26%

## Employee Productivity



## Employee Productivity




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## Tariff rationalization

- In terms of design (consolidation of categories / slabs)
  - Reduction/Increase in number of categories/slabs
- In terms of rates
  - % of cost recovery through approved tariff
  - Convergence Index

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## SERC on rationalization of categories

- Decrease in number of categories across the state
- Number of slabs: Mixed approach
  - Maharashtra – decrease in slabs in domestic and agricultural categories
  - HP – all slabs have been done away with in commercial category, decrease in slabs in case of industry

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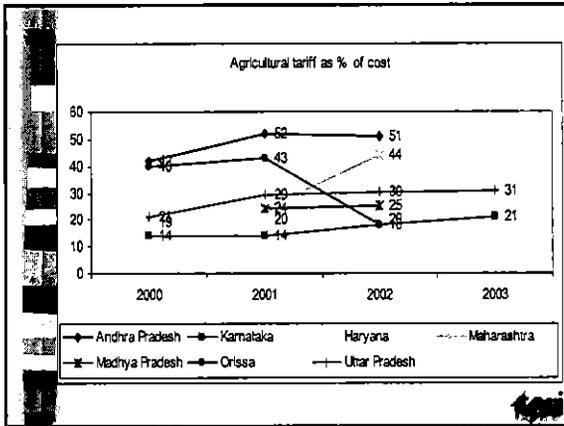
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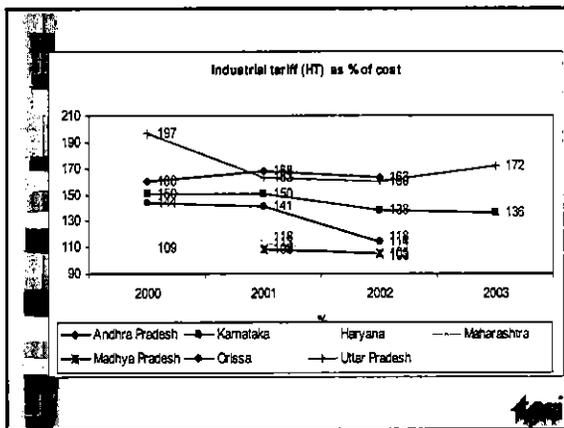
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### Rate rationalization

- Reduction in cross subsidy
- Convergence index based on average revenue

$$C.I = \sqrt{\frac{\sum [(AR_c/OA_r) - 1]^2 S_c}{\sum S_c}}$$

where: CI – Convergence Index      AR<sub>c</sub> – Average realization  
 S<sub>c</sub> – Sales from each category      OA – Overall average revenue

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## Convergence Index

	1999-00	2000-01	2001-02	2002-03	2003-04
Maharashtra		0.6059	0.3526		
Karnataka	1.1922	0.5677		0.3580	0.3789
Haryana	0.8283	0.5000	0.3565		
MP		0.6683	0.5501		
Orissa (SOUTHCO)	0.0536	0.0671			
UP	0.6400	0.5684	0.4556	0.4111	
AP	0.9686	0.4986	0.4954	0.5585	0.5506
Punjab			0.1799	0.0280	

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## Subsidy- Budgetary support (Rs.Crore)

	1999-00	2000-01	2001-02	2002-03	2003-04
Maharashtra		750			
Karnataka	670	769	1246	1872	1534
Haryana		613	763	815	
MP	0.53	313.12	279.45	1675.5	915.69
Orissa	Nil	Nil	Nil	Nil	Nil
UP		790	950	850	
AP		1626	1561	1509	
Punjab				950	

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## Conclusions and lessons

- Separation of generation, transmission and distribution cost (register)
- Base line data needs to be improved through various studies
  - T&D loss estimates, Demand figures, other costs

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■ Establishing Regulatory Information Management System (RIMS)

- International experience: FERC
- Develop database and library of performance of other utilities, regulatory orders to know how other utilities are undertaking efficiency improvements




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Government support

	Anti Theft Law	Subsidy Policy	Remarks
Karnataka	Important	Most important	Political support towards reforms and universal metering
Punjab	Most important	Most important	
MP	Most important	Most important	Compliance with regulatory process
Orissa	Most important	Most important	Law and Order support
Haryana	Least Important	Most important	ATL not a deterrent, separate court be established for quick action
Maharashtra	Most important	important	Reference of Mumbai Police Act

	Anti Theft Law	Subsidy Policy	Remarks
Karnataka	Least Satisfied	Satisfied	Least Satisfied
Punjab	Least Satisfied	Satisfied	
MP	Satisfied	Least Satisfied	Least Satisfied
Orissa	Least Satisfied	Least Satisfied	Least Satisfied
Haryana	Least Satisfied	Satisfied	
Maharashtra	Least Satisfied	Satisfied	

Source: Questionnaire circulated




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Thank You




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*Using an innovative method for awarding franchise rights, states can entice more effective private investment in highways.*

# A New Approach to Private Roads

BY EDUARDO ENGEL  
Yale University

RONALD FISCHER AND ALEXANDER GALETOVIC  
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**D**URING MOST OF THE TWENTIETH century, highways, tunnels, and bridges were viewed as public goods that government must provide. By the end of the century, however, chronic budgetary problems had led governments to allow some participation of private firms in financing, building, and operating infrastructure projects. For example, worldwide private investment in transport infrastructure went from almost nothing before 1990 to \$10 billion in 1990-91 and almost \$30 billion in 1997-98. Massive projects like the Second Severn Bridge in Great Britain, the Guangzhou-Shenzhen highway in China, or the 1,000 miles of upgraded Panamerican Highway in Chile have been financed and are being operated by private firms. Even in the United States, cash-strapped Orange County, Calif., resorted to private funding and operation when it was unable to provide for needed expansion of the Riverside Freeway in the early 1990s.

In light of those trends, it is remarkable that only two private toll roads were built in the United States during the twentieth century: the Dulles Greenway in Virginia and Orange County's State Route 91 Express Lanes. That contrasts with the early days of the United States; beginning in the 1790s and continuing throughout the nineteenth century, more than 2,000 companies financed, built, and operated toll roads with a com-

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bined extension of more than 10,000 miles in 1821.

Are there any advantages to privatizing roads? Before comparing private and public provision of transport infrastructure, it is useful to clarify what is meant by those terms. Under public provision, the government designs, finances, and operates the infrastructure project. Private firms may participate in the building stage and may even be selected in competitive auctions. But once the facility is built, the government operates and maintains it. Taxpayers pay construction costs and, even when users pay tolls, the revenues are not directly related to construction costs. By contrast, when roads are privatized, a concessionaire finances, builds, and maintains the facility. The franchise owner collects tolls until the concession term ends, and the facility is transferred to the government — usually 20 to 30 years later. Such Build-Operate-and-Transfer (BOT) contracts can be awarded either through direct negotiations between the transit authority and an interested firm or through a competitive auction for the right to franchise a well-defined project.

Road privatization offers many potential benefits, including:

- ▣ No need for new taxes to finance the BOT projects.
- ▣ Having the same firm in charge of construction and maintenance provides better incentives to build a road that lasts longer.
- ▣ Private firms usually are better at managing and more efficient than state-owned companies.
- ▣ Cost-based tolls are easier to justify to the public when infrastructure providers are private.
- ▣ Those who benefit from the infrastructure pay for it.



■ In stark contrast to public provision, the BOT scheme uses the market mechanism instead of central planning to screen projects, which reduces the probability of white elephants.

Unfortunately, the advantages of private highways are not automatic. For example, in the early 1970s, France awarded four concessions, three of which went bankrupt after the oil shock and were bailed out by the government. Around the

same time, several of the 12 highway franchises in Spain had higher costs than anticipated, while traffic was much lower than expected. Three highways went bankrupt and the remaining contracts required renegotiation. More recently, the "private" Mexican highway concession program cost Mexican taxpayers more than \$8 billion after renegotiation of the initial contracts.

Those examples illustrate a common experience: Most private infrastructure concession contracts are renegotiated. J.

Luis Guasch examined more than 1,000 concession contracts awarded during the 1990s in Latin America and found that, within three years, terms had been changed substantially in over 60 percent of the contracts.

The frequency of renegotiation is troubling because the contractual changes often are not desirable. In some cases, renegotiations allow governments to expropriate concessionaires after they have sunk their investments. In other cases, concessionaires renegotiate contracts in order to shift losses to taxpayers. The renegotiations thus void the public benefits of private highways by limiting investors' risk of loss, diminishing franchisees' incentives to be efficient and cautious in assessing project profitability, and advantaging firms with political connections.

Many of the problems with traditional highway concessions result from a combination of a front-loaded investment and substantial uncertainty about demand for the road. To resolve those problems, we propose a new type of auction that allows more flexibility to changing conditions, which will reduce the necessity of renegotiation.

#### DEMSETZ AUCTIONS

Many highway projects, including the two cases in the United States, were awarded through negotiations between a firm and a transit authority. There is an alternative, proposed by economist Harold Demsetz, that is particularly suited for highway concessions. In a "Demsetz auction," firms compete for the franchise in a process that seeks to emulate competition. In the words of Edwin Chadwick, who proposed a precursor to Demsetz's idea in 1859, competition for the field substitutes for competition in the field. For example, a BOT highway project in Chile usually is awarded to the firm that makes a bid





that charges the lowest toll to use the road. If tolls equal average costs, no excess (monopoly) profits will be earned. Thus, if competition among bidders is sufficiently strong, the toll set by the lowest bid will equal average cost and eliminate any monopoly profits. Consequently, the projects will be run as efficiently as if highways were competitive, even though they are local monopolies.

**Uncertainty** But while a competitive auction is necessary to produce good outcomes, the Demsetz format, by itself, appears unable to resolve contemporary roadway concession problems because of demand uncertainty and large initial capital costs.

To understand why that appears to be the case, consider the experience of the Dulles Greenway. Investors underestimated how much users disliked paying tolls, and initial revenues were much lower than forecasted. Two independent consulting companies had predicted that in 1996, with an average toll of \$1.75, there would be a daily flow of 35,000 vehicles. But by March 1996, the average number of vehicles per day was only 8,500. What is more, investors did not count on the state of Virginia later widening the congested Route 7, which serves as a free alternate. After Greenway tolls were lowered to \$1.00, ridership increased to 23,000, which was still far below predictions. Bonds that were issued to finance the project were renegotiated and investors wrote off their equity. More recently, the highway's prospects have improved because the alternative free roads have become congested. Senior bonds received a stable rating from Moody's and Fitch Ratings in 1999 and 2000.

Also consider the experience of Orange County's Route 91 Express Lanes — a 10-mile privately owned toll road, running from Anaheim to Riverside, that lies in the middle of the congested Riverside Freeway. Motorists can use the private lanes to get relief from congestion by paying up to \$8 for a round trip. The concessionaire can increase tolls freely in order to relieve congestion, and they have been hiked seven times in five years. With 33,000 daily trips, the express lanes are close to congestion at peak time and the franchise is a financial success. Yet users of the freeway experience enormous congestion. Expansion is difficult because cash-strapped Orange County accepted a clause in the toll-road franchise contract that prevents any expansion in capacity until 2035.

Both examples demonstrate that demand-side risk (upside and downside) is a characteristic of private highways. The standard concession contract exacerbates that risk because it lasts a fixed number of years. A few bad years at the beginning of the franchise may not leave enough time with normal traffic flows to recover the initial investment. Conversely, a heavily used highway may bring the franchisee excessive revenue over the life of the BOT contract.

#### **PVR AUCTIONS**

The problems created by fixed-term franchises have an obvious solution: Franchise contracts should be lengthened whenever demand initially is sluggish or shortened when demand is higher than expected. Can such a contract be implemented

without giving discretionary power to regulators?

We advocate what we call a Present-Value-of-Revenues (PVR) franchise. A PVR franchise solves the time uncertainty of the revenue stream and has some additional attractive features. In a PVR auction:

- The regulator sets a maximum toll.
- The firm that wins the contract is the one that bids the least present value of toll revenue that it will receive over the life of the contract.
- The franchise ends when the present value of toll revenue equals the franchise holder's bid.
- Toll revenue is discounted at a predetermined rate specified in the contract. The rate should be a good estimate of the loan rate faced by franchise holders.

Under the PVR design, the state conducts its franchise auction in a manner similar to a standard Demsetz auction except that bidders compete on the present value of revenue they would like to obtain from the project.

Great Britain was probably the first nation to use a contract similar to PVR. Both the Queen Elizabeth II Bridge on the Thames River and the Second Severn bridges on the Severn estuary were franchised for a variable term. The franchises will last until toll collections pay off the debt issued to finance the bridges and are predicted to do so several years before the maximum franchise period. Chile was the first country to use an outright PVR auction. In February of 1998, a franchise to improve the Santiago-Valparaíso highway was assigned in a PVR auction.

**Advantages** PVR franchise contracts are superior to traditional private franchise agreements because they reduce risk by incorporating the possibility of adaptation to shocks into the basic contractual framework. The major disadvantage of PVR contracts is that their risk-reduction features can make the franchise holder indifferent toward customer service and other demand-enhancement activities. Thus, PVR auctions should be used only for certain types of public infrastructure.

**Risk reduction** A PVR contract reduces risk: When demand is less than expected, the franchise period is longer, while the period is shorter if demand is unexpectedly high. Assuming that the project is profitable in the long run so that repayment eventually can occur, all demand-side risks have been eliminated. Even if that assumption does not hold and the project never collects enough revenues to equal the present value bid by the franchise holder, the revenue will still be larger than would have been collected by a franchise holder under a traditional fixed-term contract. PVR also reduces risk by placing the decision of whether to invest in a project in private hands. Private bidders are more likely than traditional transportation agencies to avoid projects with little possibility of paying for themselves.

PVR franchises should attract investors at lower interest rates than traditional Demsetz franchises. Toll revenues are the same under both, but the franchise term is variable under PVR.



If demand is low, the franchise holder of a Demsetz-awarded contract may default; in contrast, a PVR concession is extended until toll revenue equals the bid, which rules out default. Of course, under PVR, the bondholders do not know when they will be repaid, but that is less costly than not being paid at all.

**Adaptation and flexibility** PVR franchises allow adaptation to changing circumstances that cannot be made easily to contracts awarded in standard fixed-term Demsetz auctions. Consider again California's Route 91 Express Lanes. As traffic has increased on the freeway, the congestion tolls in the private lanes have increased. The California Department of Transportation (Caltrans) would like to widen the freeway in order to accommodate the increased traffic. But it is hampered by the contract it signed with the owner of the express lanes, which prevents Orange County from raising the capac-

as to the sensitivity of traffic to prices, the resulting tolls are likely to be incorrect — either so low that they create congestion or so high that the highway is underutilized. One possibility is to allow fees to respond directly to congestion so they are never too low. But the result can be monopoly pricing, as in the case of the Orange County 91 Express Lanes.

Under PVR, transit authorities could include toll flexibility in the PVR auction contract. The guiding principle of the PVR franchise is to allow the winning bidder always to collect its required present value. In order to induce the franchise holder to accept toll flexibility, however, the contract has to recognize that lower tolls not only increase the time required to earn the desired revenue, but also increase traffic and therefore increase maintenance costs.

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## PVR franchises allow adaptation to changing circumstances that cannot be made easily to contracts awarded in standard fixed-term Demsetz auctions.

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ity of the Riverside Freeway without the franchise holder's consent. Given the experience of the Dulles Greenway (low demand because a free alternative road was widened), the Route 91 provision was reasonable at the time the contract was signed. But under current conditions, it allows the franchisee to price congestion as a monopolist.

Within the PVR framework, a solution to the problem is to include an option to buy out the franchise at the difference between the initial present-value bid and the present value of the revenue already received. That solves the problem of widening a highway in response to increased congestion because, after buying back the franchise, the transit authority can set up another PVR auction for operation of the tollway that would take into account the new, wider freeway as competition. As a numerical example, assume that the owners of the Route 91 Express Lanes had asked for \$160 million in present value terms on the \$130 million investment. Suppose they had already collected \$65 million. Then, according to the PVR scheme, the Orange County Transportation Authority could have bought them out for \$95 million, which is exactly what the owners would have obtained if the franchise had run to term. But because the existing franchise is not PVR and does not have a buyout provision, Caltrans has considered negotiations to buy out the private operator, only to encounter buyout prices as high as \$274 million. Specifying a fair buyout price with a fixed term franchise is much harder than with a PVR franchise.

Another feature of the PVR auction is more flexibility in setting tolls. Under Demsetz, bidders typically compete on the lowest fixed toll they can set. The problem is that, unless traffic forecasters are unusually fortunate in their estimates

Because maintenance costs are roughly proportional to road usage, the original PVR contract could be specified so that the revenue target is net of maintenance costs. With that adjustment, the only effect of a change in tolls is a change in the total operational costs over the length of the contract — costs that are predictable and represent a minor fraction of total costs. PVR franchises then allow the transit authority to change tolls to the efficient level without harming the franchise holder. Of course, a lower limit must be set for tolls because, otherwise, the franchise holder might never obtain the revenue stipulated in the winning bid.

**Opportunism** The efficient flexibility provided by the PVR method reduces the likelihood of opportunistic behavior. Requests to alter traditional franchise contracts often reflect opportunistic behavior by one of the parties. For example, the government could try to expropriate the franchise holder (a regulatory taking) or, alternatively, the franchise holder may pressure the transit authority to change the conditions of the contract at the expense of the public.

Traditional contracts are renegotiated by extending the length of the franchise, increasing tolls, or providing a government transfer. Extending the franchise term with a PVR contract is not possible because, by definition, the term is variable. Increasing tolls is ineffective because it shortens the franchise term without increasing overall income. Government transfers are not logically impossible under PVR but, because the franchise holder cannot claim that it will receive less toll revenue than expected, a government transfer would be difficult to rationalize to the public.

Consider Mexico, where the franchise procedure awarded concessions to the firm that consented to build the road



and operate it for the shortest time period. The result was highway tolls as high as \$35. Because parallel (although congested) freeways were available, the toll highways had little traffic. The government was pressured into bailing out the franchises (and the banks that lent to them), at a cost of at least \$8 billion.

Fixed-term franchises often obtain government loan guarantees. Guarantees weaken the market test that privatization is supposed to provide and escape the usual scrutiny that accompanies specific appropriations in the budget. PVR schemes reduce the need for guarantees because the risk to investors is much smaller. For example, when the Chilean government used PVR to auction the Santiago-Valparaíso highway, it did not have to offer guarantees, in contrast to previous highway franchises using traditional fixed-term auctions.

**Caveat** While PVR schemes have a big advantage in terms of reduced risk, the downside is that the franchise holder has no incentive to increase demand for the infrastructure project because any action that increases demand will shorten the term of the franchise. Projects earn their income regardless of efforts of the franchise holder. By contrast, demand-increasing investments are more attractive under fixed term franchise. That suggests that the PVR method is applicable only in cases in which demand does not respond to the actions of the franchise holder. Bridges, tunnels, water reservoirs, and roads are examples for which PVR seems appropriate because, other than maintenance (for which standards can be set and checked fairly easily), the franchise holder can do little to increase demand. On the other hand, PVR would be inappropriate for projects for which service quality is essential and demand responds to performance — seaports, airports, and public utilities. In those cases, a traditional Demsetz auction on minimum price seems more appropriate. In some cases, an infrastructure project can be unbundled into separate parts, with different responses to demand-enhancing activities. For example, an airport franchise can be divided into a PVR-auctioned franchise for the landing strip and franchises for all other services that would be awarded via a standard auction.

### CONCLUSION

Private highway franchises can lead to large improvements in infrastructure provision. But the experience accumulated so far suggests improvements are necessary. We suggest a variation to the classic Demsetz auction, which awards the franchise to the bidder that asks for the lowest toll. Our proposal is that firms compete on the basis of the minimum toll revenue (in present value terms) requested by bidders — a PVR auction.

This modified Demsetz auction has a number of advantages: It reduces risk and thus lowers the return required by bidders. It reduces the need for guarantees and the scope for opportunistic renegotiations. Moreover, the franchise is flexible because it can incorporate a buyout option that leaves both parties satisfied, so that widening the road itself or allowing free competitors to widen the road in response to increased traffic

is not an issue. In addition, the transit authority can adjust the tolls in response to changed conditions without harming the franchise holder.

The PVR auction solves most of the common problems that occur with highway franchises. In particular, the serious problems encountered by both private highway franchises currently operating in the United States would have been avoided with a PVR contract.

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- ◊ *Privatization and Regulation of Transport Infrastructure*, edited by Antonio Estache and Ginés de Rus. Washington, D.C.: The World Bank, 2000.
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## Chairman's Statement

Last year, reviewing the first five years of IDFC, I had said that the law of the farm dictates much in life. We need to think carefully about the crops we want, prepare the ground, sow the seeds, water, protect and nurture the plants and only then we can reap the rewards. I also said we have a long way to go. Looking to this year's harvest, I think we have done some of farming well and travelled a bit along the path. This year we increased disbursements by 185% and approvals by almost 150% while posting a strong growth in profits. Our efforts have started yielding dividends for the country in general and your Company in particular.

When IDFC was established in 1997, power projects meant Independent Power Projects (iPPs) like Dabhol, cellular service cost Rs. 16 per minute, four lane divided carriageways were a rare sight, the only private port operator was P&O in Jawaharlal Nehru Port Trust (JNPT) and the only water project being conceptualised in the private sector was in Tirupur. How different the situation is today in some sectors - but, unfortunately, how similar too in others.

Telecom has undoubtedly been a real game changer. A service once considered the preserve of the few is now definitely of the masses. At current rates of growth, the number of wireless subscribers will exceed the traditional wired subscribers by the end of the year. Our teledensity has more than tripled; from less than 2 to over 7 today. The sector has attracted funds from non-traditional foreign investment sources, such as Hong Kong and Singapore, from established business houses in India such as Tata and Reliance and has bred new entrepreneurs such as Bharti. Many factors have played a part in this outcome, but perhaps the most important was an

enlightened government policy and light-handed consultative regulation that addressed early missteps relatively quickly. First by introducing revenue-sharing in the New Telecom Policy (NTP) in 1999; then the introduction of competition and forbearance on tariff regulation by Telecom Regulatory Authority of India (TRAI) and finally the introduction of a unified access licensing regime and resolution of the Wireless in Local Loop (WLL) issue late last year. A remaining discordant note is the restriction on foreign investment. Telecom shows us what can happen if the forces of private participation are unleashed in a competitive environment nurtured by a supportive government policy that focuses not only on revenues for the budget but also service to the consumer.

IDFC was fortunate to be an active participant in this revolution. We were privileged to be part of the evolution of policy in the sector at almost every turn, for example, through providing inputs into the formulation of the NTP in 1999 and to the Group of Ministers on Telecom Matters in 2003. We were also the first to support new entrants to the sector, through debt and equity, and in providing financing to consolidate and expand the networks. Telecom, both this year and cumulatively, accounts for the largest share of our disbursements; its share constrained only by our prudential norms.

Another success story that is not as widely reported is that of ports. While we accepted the need to develop new ports at select locations, the early years saw us push hard to focus the policy on getting more out of our existing ports by involving the private sector, improving their connectivity to the rest of the transport network, converting old bulk berths to container terminals and modifying



policy to permit new entrants. Today, our major ports are being linked to the Golden Quadrilateral through National Highways Authority of India's port connectivity project; major port trusts have awarded concessions for container terminals to global port majors such as P&O (JNPT and Chennai) and PSA (Tuticorin) and new international players are entering, viz., Dubai Port Authority in Cochin where it has emerged as the highest bidder, and Maersk in JNPT and Pipavav. New domestic entrants have also emerged, such as Concor in JNPT and J.M Baxi in Visakhapatnam. Simultaneously, some strategically located new ports, such as Mundra, promoted by the Adani group, where P&O have just invested in a container terminal and Pipavav, where Maersk is taking over from Seaking, have thrived too. Today, after many years, our port capacity exceeds our demand, even though our trade has been rising sharply. Even publicly operated port terminals have risen to the challenge of private operators and improved their efficiency by multiples. Ports are another success story for competition and supportive government policy.

IDFC has been fully involved in all these developments, from developing the model concession agreements for major port trusts, managing the bid process in Cochin and financing new development in Visakhapatnam.

Ports and Telecom are blessed in one aspect. They have consumers who are willing and able to pay, who perceive value in the services provided. There are other sectors where this is a problem, such as electricity and urban infrastructure, which I turn to later. But there are situations where extracting the full payment may not be good public policy. Roads

meant not to relieve congestion but to foster the spread of economic development by improving connectivity in those regions are a good example. A blind application of "the user pays" principle, through tolls that recover full cost, in projects with large positive externalities can slow down the rate at which the population can absorb benefits.

Today, India is on a road building spree - be it the ubiquitous National Highways Development Project (NHDP), or the Pradhan Mantri's Gram Sadak Yojana (PMGSY) or the many State road initiatives made possible by the fuel cess and the mechanism of the Central Road Fund, which makes resources available to the states. IDFC was privileged to be the Secretariat to the Prime Minister's Task Force on Infrastructure that conceptualised this boom in road building and has since financed a number of private sector road projects across the country. It is equally gratifying to note that many other road projects that were appraised and sanctioned approvals by IDFC have received financing from banks.

But integrated logistics is not just roads and ports. IDFC is also intimately involved with Ministry of Civil Aviation's Committee on a road map for the civil aviation sector - to make air transport affordable and enhance air connectivity across various regions of the country. The Government has reduced excise duty on aviation turbine fuel, abolished the Inland Air Travel Tax and invited Expressions of Interest for private participation for modernising Delhi and Mumbai airports. Similarly, following its participation in the Expert Group on Indian Railways, IDFC is now playing a major role in the National Rail Vikas Yojana, to enhance the competitiveness of India's rail network. We have also financed container parks,



pipeline networks, logistics providers and India's largest private airline, Jet Airways. The India Development Fund, managed by IDFC Asset Management Company Limited, is now looking at investing in a major cold chain network spread across the country. What is even more heartening is the manner in which a number of these transportation projects are attracting finance from the commercial banks. This is truly one sector where capital is being led to infrastructure projects.

However, many of these initiatives, laudable as they are, still do not have an effective mechanism to provide for maintenance. The neglect of maintenance has been the Achilles heel of our transport network. It was in order to address this and to ensure that the benefits of private participation were not limited to sectors with user payment mechanisms that IDFC developed a performance based payment system for the procurement of services that has popularly been called the annuity scheme. It ensures that the Government gets value for money, by making payments conditional on maintenance. No maintenance, no payment. Mind you, this is not a maintenance contract. No payment means that the private investor does not recover his initial investment in building the facility, a big risk that provides a big incentive for him to maintain it. Today, the concept, originally used for parts of the Golden Quadrilateral, is being adapted for use in urban road networks, the first contract having already been awarded in Kerala with the help of iDeck, an IDFC associate company. It is perhaps time to compare the experience of the annuity projects with other projects on the NHDP to see whether we should expand it substantially.

In rural roads too, IDFC has tried to push for greater

community involvement to ensure maintenance. Recently, we were fortunate to be able to structure an MoU, between the Ministry of Rural Development, the Government of Maharashtra and the Warana Cooperative, to rehabilitate and maintain 1,000 kilometres of rural roads in three districts of the State, with performance based payments by the Government and significant investment by the Cooperative. This opens up a whole new way of looking at investment in this area.

IDFC's new initiatives in tourism, healthcare and education have given us reason for both celebration and concern. Celebration because we have already begun to lend to hospitals, hotels and schools. Concern because, given the framework conditions in these sectors, we do not yet see investments that will bring broad based value to the consumer in the manner of telecom, ports and roads. Yes, we will have a few more hotels, but there is little progress on delivering a visitor experience. We will have a few more large hospitals but the overwhelming majority of our population still suffers from lack of awareness and access to decent healthcare. We will have a few more schools but illiteracy and dropouts still loom large. Last year I had argued that these areas could benefit substantially from public private partnerships. We have made little progress since.

Let me now turn to electricity and urban infrastructure.

In 1997, the buzzwords in power were IPPs and escrows. IPP after IPP were sanctioned loans, but little disbursement took place as State Electricity Boards (SEBs) failed to demonstrate "escrowable capacity" to the financial institutions. For IDFC, this was not an option that was available. Locked as we



were into the financing of private infrastructure, keeping the IPPs at bay was not an option. Our need was to make the IPPs financeable and we quickly realised that the only way to do that was to attack the revenue generation end by reforming electricity distribution. Escrows were not going to cut it. Instead, we espoused distribution reform, especially the privatisation of distribution in urban areas as the single biggest step to grow investment in the power sector. We pushed for removing the monopoly of the SEB, for allowing generators to access consumers. We said funding would not require escrows if financiers could see customers.

Today, we are beginning to see the light at the end of the tunnel. The privatisation of distribution in Delhi and the recent initiatives in Gujarat are hopeful signs, as, to a limited extent, is the increase in commercial outlook of the SEBs subsequent to the implementation of the Accelerated Power Development and Reform Programme (APDRP) incentive scheme. Here too, IDFC was privileged to be intensively involved in the work of the Expert Committee on State-specific Reforms, which structured APDRP with emphasis on incentivising states to pursue commercial viability. IDFC is a major financier of private electricity distribution, having supported projects in Surat, Ahmedabad and Delhi. Even in generation, the opening up of the wires has made lenders take a different view on the viability of projects. Gas based plants in Andhra Pradesh have been financed not just because they have a creditworthy buyer; but also because the projects generate competitive low cost power that, in a regime of open access, can be sold to someone, somewhere on the national grid if their contracted buyer fails to pay. The same is the story for hydroelectric plants in Uttaranchal.

IDFC is financing generation projects in both States. We are also a major lender to Powerlinks, a joint venture between Tata Power and Powergrid, the first private electricity transmission project.

However, I do not see rapid progress until there is more reform at the distribution end. Lately, there have been efforts to take us back to the days of escrow and guaranteed purchase by public sector companies. This would stymie the growth of a commercially viable power sector just as it is beginning to happen and retard the emergence of viable distribution companies.

There is finally some attention being given to urban infrastructure. The Urban Reform Incentive Fund has brought some awareness of the need for urban reform to the states. IDFC and its associates are working with cities like Delhi and Bangalore to implement solid waste management concessions and develop sanitary landfill sites. We are also working with them to explore alternative solutions for urban transportation. It is my belief that urban residents are more than willing to pay the full cost for reliable water supply - the challenge is to structure projects that deliver reliable supply and are bankable.

Bringing change in electricity and urban infrastructure is a cause that needs to be espoused at the state and municipal levels, unlike telecom, ports and roads, where one had to work with the Central Government to demonstrate the efficacy of alternative paradigms. It will require sustained action from all interested stakeholders to achieve this goal.

The Special Economic Zones (SEZs) also offer a major financing opportunity. We had long argued





that the SEZs needed to consolidate and leverage our existing economic growth centres. The Mumbai Integrated SEZ is one such attempt that IDFC is currently appraising.

Has the tide turned? The answer is, no. There is much unfinished work to ensure that investment in infrastructure does not just grow, but also grows in a sustainable manner. For this more and more investment must come under frameworks such as those described above, where the environment is competitive and government policy is supportive. There will also be honest but misguided pressures to take us back to a comfortable but unsustainable past and we must work to address them. Finally, as projects become more viable and other financiers become more willing to lend, IDFC will have to compete even more fiercely in the marketplace, as is happening even today. Even as we fulfil our mission of leading private capital to commercially viable infrastructure, we must constantly focus on ensuring that we maintain a significant presence and retain commercial viability.

### **Conclusion**

As I stand today, I can confidently say that IDFC has made a decent beginning in fulfilling its challenging mandate. It has come of age as an organisation with a mission and a place of its own. Its growing

asset book is testimony to the commercial viability of private infrastructure. Policymakers have come to value our unbiased advice in helping them make better decisions. This is a tribute both to the idea of IDFC and to the people who have made it happen. On behalf of the IDFC family, I would like to thank all those who believed in the idea and extended their whole-hearted support. I would especially like to thank our employees for their contribution. All of them should be proud of their participation in the success of the institution.

Finally, I would personally like to acknowledge the significant contribution of Nasser Munjee - a blue-blooded visionary - in successfully translating the "idea" of IDFC into a thriving organisation with uncompromising professionalism and integrity. Given Nasser's intensive involvement with IDFC during its formative stages and subsequently as MD & CEO, all of us at IDFC will miss him; in my own case it is particularly poignant since Nasser has been a valued colleague for 25 years.

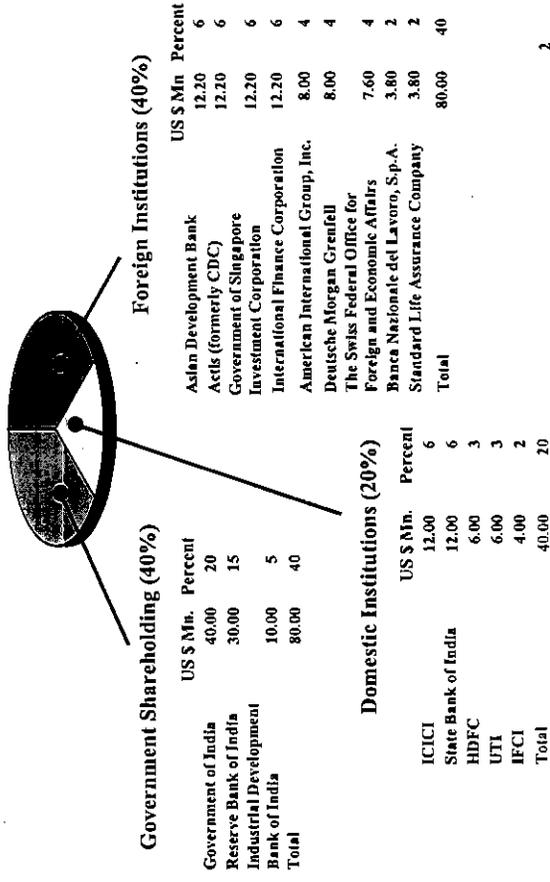
I look forward to the next year in anticipation of greater challenges and brighter performance.

**Deepak Parekh**  
*Chairman*



## Infrastructure Deregulation

Partha Mukhopadhyay



## IDFC – The Track Record

(Rs. Crore)	Power	Telecom	Transport	Others
<b>Disbursements*</b> (Rs. 6,878 cr.)	1989	3302	1368	219
<b>Approvals*</b> (Rs. 18,187 cr.)	7618	5265	4159	1144
<b>Innovations in Framework conditions</b>	Focus on Distribution	Push for free entry	'Annuity' road model	Management of solid waste
	Non-escrow financing of IPPs	Unified Licensing Regime	Revenue share in port contracts	ROMT contracts for urban roads

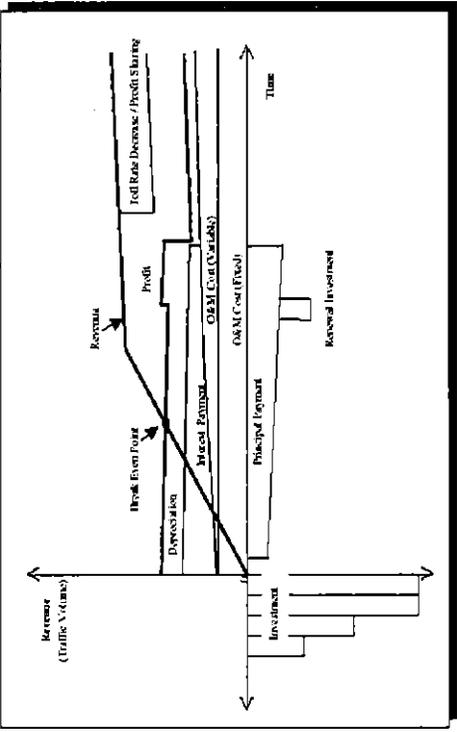
\*as of March 31, 2004

When IDFC was established in 1997, power projects meant IPPs like Dabhol, cellular service cost Rs. 16 per minute, four lane divided carriageways were a rare sight, the only private port operator was P&O in JNPT and the only water project being conceptualised in the private sector was in Tirupur.

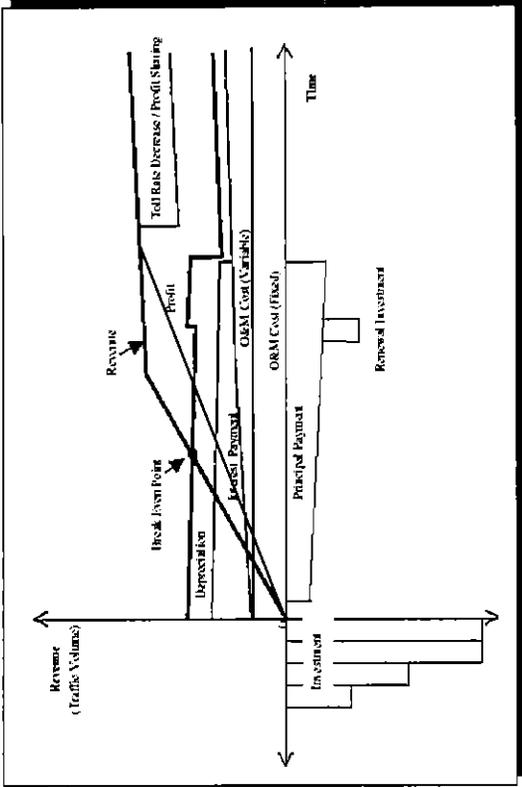
## East West Corridor Project



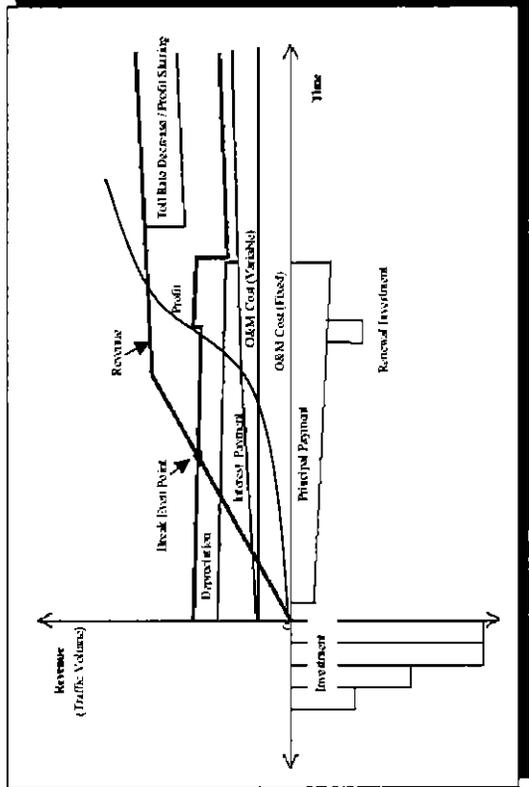
# Project Economics of the East-West Corridor



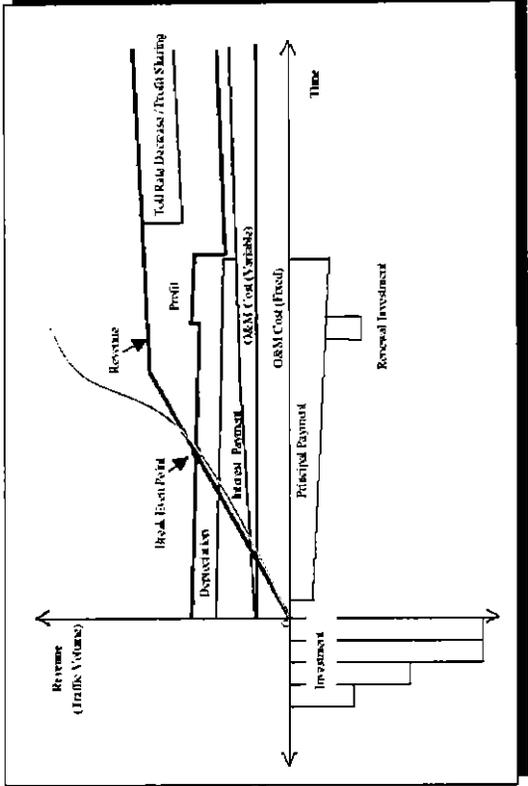
# Project Economics of the East-West Corridor



# Project Economics of the East-West Corridor



# Project Economics of the East-West Corridor





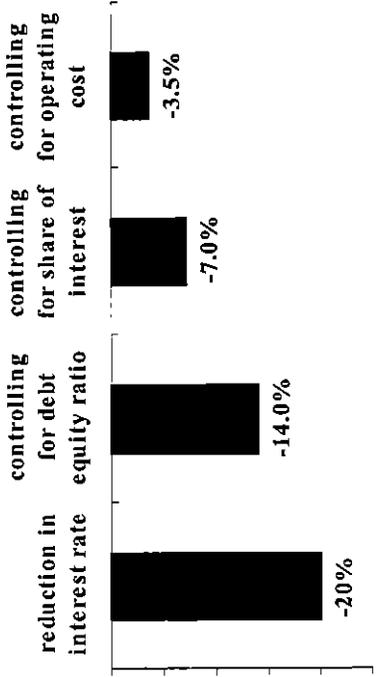
### Present Value of Revenue Auction

- **The Bid Parameter is a discounted PV of gross revenue**
  - Concession ends when collections equal bid
    - Revenue is relatively easy to monitor
  - Makes any required renegotiation more transparent
- **Uncertainty in traffic is transformed into uncertainty about duration of the concession**
  - This type of risk (similar to an asset-liability mismatch) can be handled more easily by lenders
- **Can be used with both actual and shadow tolls**
- **Enables traffic dependence to mitigate governance problems in project selection**

### Risk Allocation in Road Contracts

Risk Type	Direct Toll	Shadow Toll	Shadow LPVR	"Annuity"	Fix Price EPC	BoQ Civil Works
Toll Collection	Yes	No	No	No	No	No
Traffic	Yes	Yes	No	No	No	No
Revenue	Yes	Yes	Yes	No	No	No
Maintenance	Yes	Yes	Yes	Yes	No	No
Construction	Yes	Yes	Yes	Yes	Yes	No
Performance Monitoring	Market Based	Output Based	Output Based	Output Based	Input Based	Input Based

### Impact of Interest Rate Reduction on Tariff



### Does a Lower Interest Rate Help?



## Isn't Government the Least Expensive?

**Additions to Cost**  
Risk Premium

**Benefits**  
Lower Cost From Efficiency

Example	
Public Sector ROI	8%
Private Sector WACC	13.7%
(Debt @ 11% 70: 30 Equity @ 20%)	
Cost	100
Required Return	95
	108

- A 5% reduction in project cost (efficiency) by the private sector is enough to overcome the higher financing cost!

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## Isn't Private Infrastructure Expensive?

**Additions to Cost**  
Risk Premium

**Benefits**  
Lower Cost From Efficiency

Example	
Public Sector ROI	8%
Private Sector WACC	13.7%
(Debt @ 11% 70: 30 Equity @ 20%)	
Cost	105.3
Required Return	113.7
	113.7

- A 5.3% cost overrun (increase in actual project cost) in the public sector is enough to overcome the private sector disadvantage of higher financing cost!

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## The Cheapest Power is Hydro Power?



## The Face-Off

	Hydroelectric	Gas-Fired
Capital Cost per MW	Rs. 6 crore	Rs. 3.5 crore
Capital Recovery	Rs. 0.83 crore	Rs. 0.49 crore
PLF	45%	80%
Capital Charge per unit	Rs. 2.10	Rs. 0.69
Operating Cost	--	Rs. 1.40
<b>Total Cost per unit</b>	<b>Rs. 2.10</b>	<b>Rs. 2.09</b>

October 12, 2004

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## Summing-up: Framework to induce private sector investments

### The Objective

- **What framework can we provide to induce the private sector to make investments needed to provide efficient service to the end user?**
  - Investments decided by the investor, driven by the market, i.e. the consumer
- **Private investor has a stronger case for state support if it makes investments determined by the State**
  - Hence, extricate the State from making commercial decisions wherever possible
  - Government changes from a planner, financier and manager to a facilitator and regulator

October 12, 2004

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### The Private Service Provider

#### S/he wants it all

- Monopoly rights
- Full pricing freedom
- State support for any social obligations

#### S/he needs only

- Support for initial risk mitigation: can be pre-defined
- Stable environment, i.e. regulatory and policy framework
- State support for any social obligations

October 12, 2004

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**Telecom**

High Urban Growth  
Confusion in Spectrum  
Rural Growth still low

**Power**

Inverted sequence – continues?  
What is the price of open access?  
How to electrify villages?

**Telecom**

**Power**

**Urban**

Price of waste mismanagement  
State Grants or own revenues?  
User fees or property taxes?

**Urban**

**Roads**

Focus on construction but service?  
Combined contracts a necessity  
Who will manage rural roads?

**Ports**

Inter/intra port competition?  
Port connectivity  
Coastal Shipping / Inland water

**Roads**

**Ports**

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**For Us to think through!**

**There is No pre-packaged answer !**



## Restructuring options in the Water Sector

Training Programme for IAS Officers on  
"Infrastructure Deregulation"

12 October 2004



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## Objectives of Regulation

- To ensure sustainable development of water resources and provide reliable, good quality services equitably
- Effected at 3 levels:
  - *Resource*
    - Efficiency
    - Equity
  - *Delivery*
    - Infrastructure
    - Effectiveness (access, quality, reliability etc.)
  - *Consumption (Conservation)*



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## Forms of Regulation

- **Administrative regulation**
  - *Govt. is regulator and provider of service*
  - *Ensures universal service obligation*
- **Economic regulation**
  - *Promote viability of the sector*
  - *Alignment of costs and revenues*
  - *Market-driven approach v/s USO*
  - *Does exist though limited application and not based on sound economic principles*



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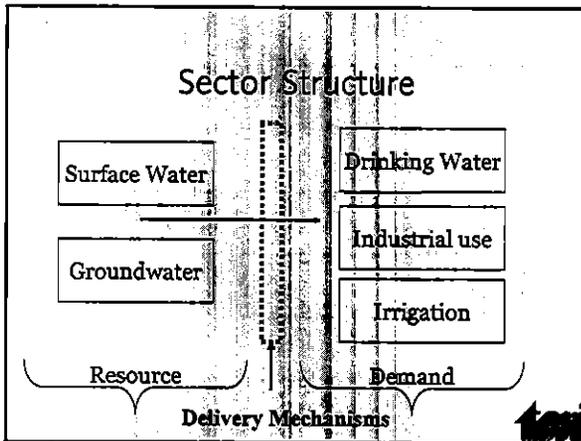
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- ### Existing Situation - Resources
- Property rights loosely defined
  - Non-existent pricing
  - Falling water tables
  - Quality inadequately addressed

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- ### Existing Situation - Delivery
- Water services traditionally provided by Governments
    - Politically sensitive sector
    - Large sunk costs with long investment recovery periods
    - Significant health costs
    - Universal service obligation (?)

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## Existing Situation - Consumption

- Inadequate and unreliable supply
- Inadequate database on access and coverage
- Quality not assured
- Distorted pricing regime
- Inefficient use
- High incidence of leakages  
– Transmission losses

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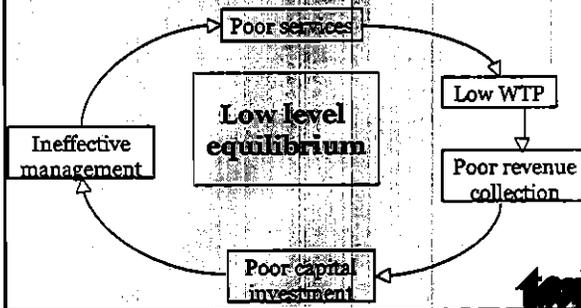
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## Sector Assessment



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## Case study - Gujarat

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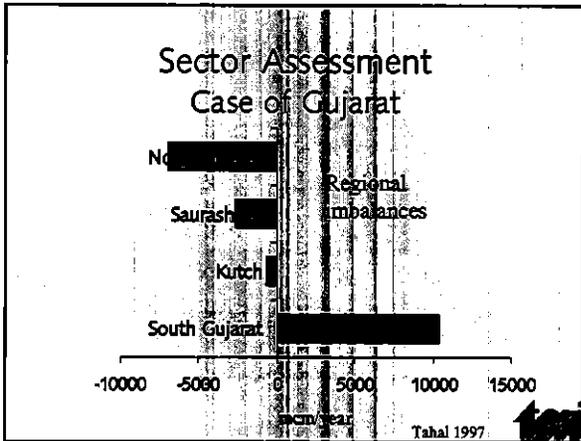
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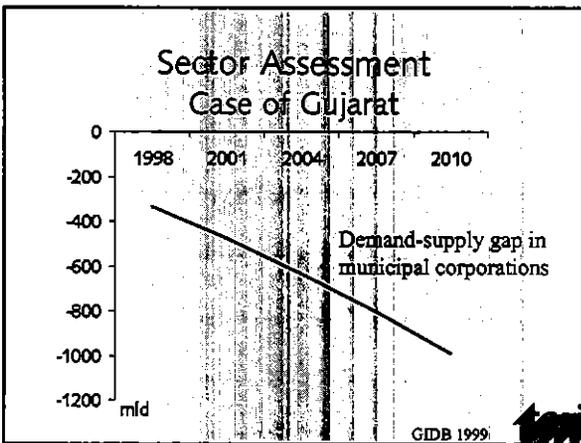
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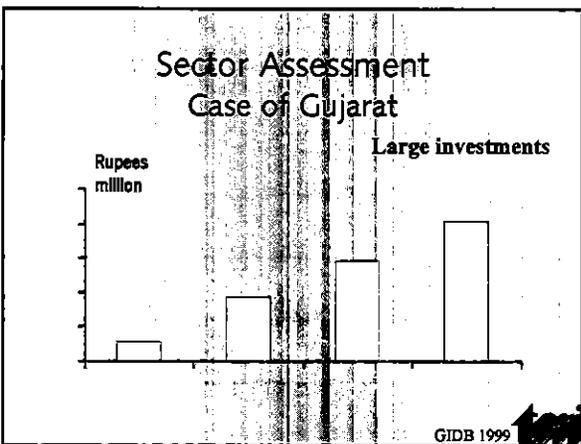
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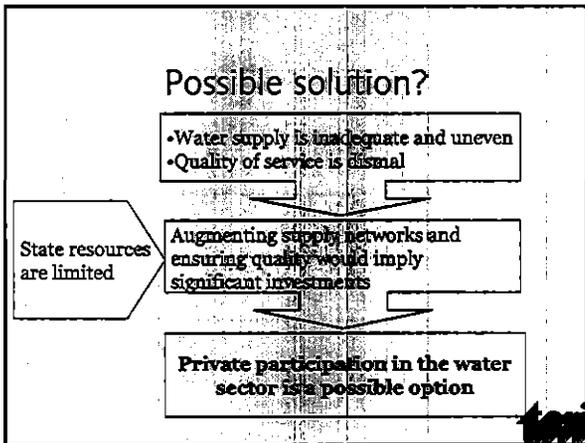
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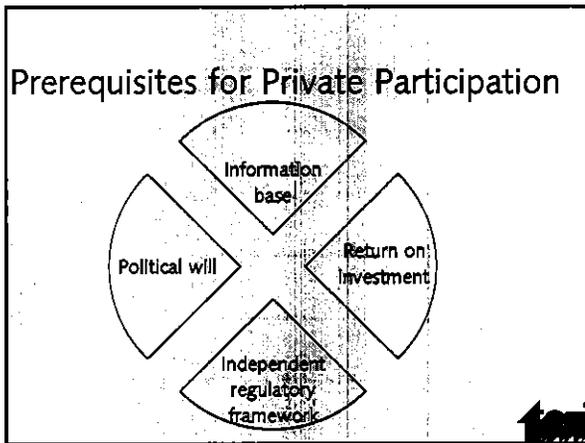
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### However...

- Water supply is a natural monopoly
  - Especially transmission & distribution
- Water has strong universal service obligation
  - Implications for water tariff
- Health & sanitation aspects

Thus a strong regulatory presence is necessary

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## Regulatory Issues

- Government regulation inadequate
- Would an independent regulation system be acceptable?
- How many regulators?
  - Resource & supply
  - Each state?
  - Each city? Or System?

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## Regulatory Issues

- Functions
  - Pricing
  - Efficiency
  - Quality (?)
  - Competition (?)
  - Universal service
  - Dispute resolution (?)
  - Accountability

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## PSP & Regulation Indian Experience

- Very little PSP in the water sector
- Service and management contracts
- PSP only in discrete functions

### Chennai

- Private operation of treatment plants and pumping stations
- Regulatory functions carried out by the board

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**PSP & Regulation  
Indian Experience**

**Tirupur project**

- Leading textile industry township
- Poor infrastructure, including water supply, telecom, roads, etc
- To develop the infrastructure, including water supply, NTADCL formed
- Currently the project is only for the water supply and sewerage



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**PSP & Regulation  
Indian Experience**

**Tirupur project...**

- BOOT format CA
  - Build water transmission system
  - Distribution to industries, en route villages, and Tirupur Municipality
  - Build sewerage collection system
- 20% ROR on capital, net of taxes
- 30 year concession period, extendable



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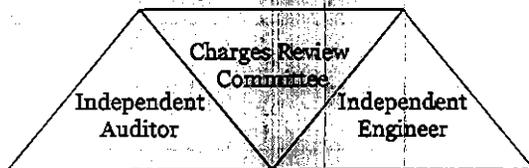
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**PSP & Regulation  
Indian Experience**

**Tirupur project...**

Regulatory framework conceptualized within the agreement



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**PSP & Regulation**  
**International Experience**

**England and Wales**  
**Privatization**

Pre 1989

- 10 regional water authorities
- 29 private companies

1989

- 10 water authorities privatized
- Govt eventually sells its shares in public sector water companies



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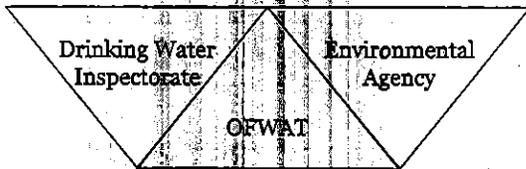
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**PSP & Regulation**  
**International Experience**  
**England and Wales...**  
**Regulatory framework**



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**PSP & Regulation**  
**International Experience**  
**Chile**

**Privatization**

1989: principles for granting concessions

- Existing companies issued concessions in line with the terms & conditions under the new law
- Concessions were transferable
- Could be differentiated into production, distribution, treatment, etc

1990 : Govt authorized to sell its shares in public sector water companies



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**PSP & Regulation  
International Experience  
Chile...**

**Independent regulation**

1990: *Superintendent of Water & Sewerage Services*

- Setting of tariff (formula laid down in the law)
- Setting and enforcing water quality standards
- Licensing (includes setting of USO area)
- Power to impose sanctions



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**Regulatory initiatives in India**

**Maharashtra**

**Sukathankar committee**

- *Improved operation of existing systems*
- *For improved performance*
  - Institutional reform
  - Tariff restructuring
- *Creating competitive environment*
  - *regulatory framework*
- *Roadmap for PSP*
- *Regulation of groundwater*



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**Regulatory initiatives in India**

**Maharashtra...**

**Core group**

- *Prepare a roadmap for PSP*
- *MJP, FIRE, IDFC, IL&FS, SBI Caps*
- *Part of Sukathankar Committee*
- *Develop political consensus*
- *Twin track approach*
  - Project development at the city level
  - Develop policy framework in the state



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## Way forward

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## Way Forward

- **Tariff regulation**
  - *Direct Regulation: Bulk tariff, transmission tariff*
  - *Indirect Regulation: Retail tariff*
    - Regulation through guidelines
- **Quality standards**
  - *Quality of service*
  - *Water quality standards(?)*



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## Way Forward

- **New agreements**
  - *Licensing*
    - Terms & conditions for new agreements
  - *Compliance monitoring*
    - Monitor implementation of agreements
- **Dispute settlement**
  - *Adjudication on disputes*



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## Regulatory issues

- 74th Amendment
  - Can local bodies permit PSP?
  - Is it possible to have a regulator independent of the local body?
- Regulation of sourcing, transmission, distribution
  - bulk tariff - retail tariff

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## On Tariff Regulation

### Issues in the current water tariff regime

- No linkage with consumption
  - Does not promote efficient use
- Independent of cost of supply
  - No signal to utility to reduce costs
- Independent of quality
  - No signal to utility to improve service

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## Directions for change; objectives of tariff policy

- Promote efficiency and economy
  - Cover only reasonable costs
  - Reward efficiency
- Secure viability & promote investment
  - Ensure recovery of capital
- Reflect cost of supply
  - Subsidies should be explicit
- Tariff on the basis of consumption
  - Metering

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Thank You

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**Telecom deregulation**  
*Its impact on sector development and consumer satisfaction*

Satnam Singh

October 13, 2004

Training Programme on Infrastructure Deregulation 

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**Telecommunications as in 1990**

- Monopoly of DoT
- Poor state of India's telecom
  - Tele density - 0.8
  - Penetration mainly in urban and metropolitan areas
  - Rural coverage - 24%
  - Not easily available
  - Long waiting list
  - Breakdowns
  - Unavailability of value added services

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**Laws governing the sector**

**The Indian Telegraph Act, 1885**

- Act was enacted at a time when the primary function in communication services was delivery of telegraph messages
- Gave exclusive powers to the Central Government to establish, maintain and provide telecommunications services

**The Indian Wireless Telegraphy Act, 1933**

- Regulate the possession of wireless telegraphy apparatus
- Makes the possession of prescribed types of telegraph wires an offense

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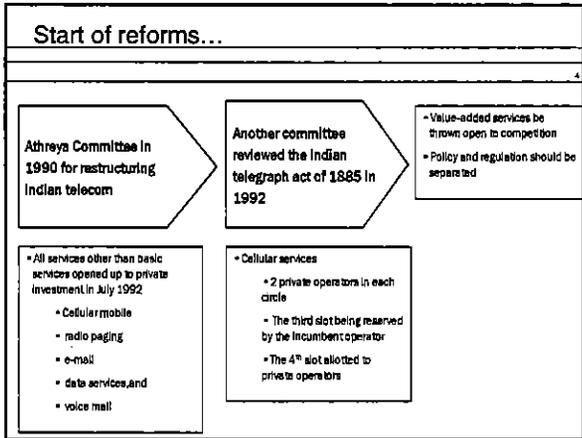
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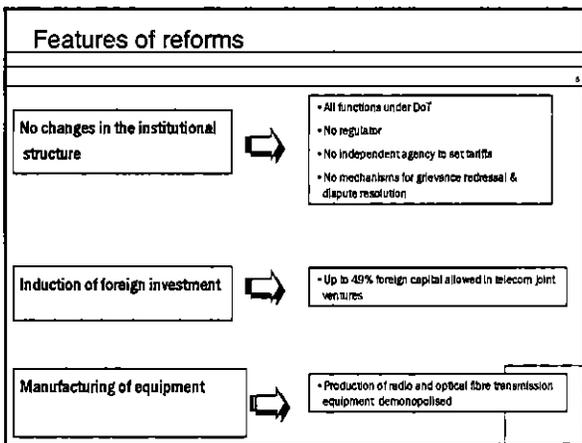
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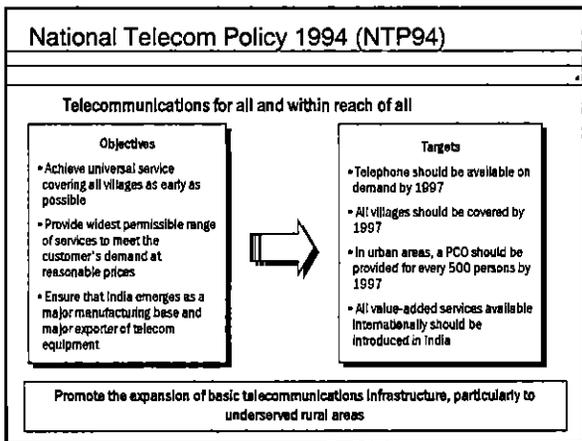
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## National Telecom Policy 1994

- Additional resources of more than Rs.23,000 crores required
- Suitable arrangements would be made to
  - Protect and promote the interests of consumer
  - Ensure fair competition



- Generated significant interest among established foreign carriers and service providers intent on entering the Indian market

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## Limitations of NTP 94

- Unrealistic targets
- Did not define how goals of universal access were to be achieved
- DoT itself was empowered with implementing the policy
- Policy did not specify the implementation details. Terms and conditions of licenses, evaluation of bids, etc. were left to the DoT
- New technologies, rapid growth and the worldwide trends ushering competition brought out the limitations of the NTP 1994

Policy was not able to meet some of its main objectives

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## Regulatory reforms

### The need for a regulator...

- One of the biggest impediments to the success of NTP 94 was the lack of an effective and autonomous regulatory authority, with clear lines of jurisdiction, for implementing the telecom policy
- Incumbent was a part of the policy-making apparatus of the Govt. This did not instill confidence in private investors
- Disputes between the private sector operators and DoT

The Telecom Regulatory Authority of India was set up in January 1997

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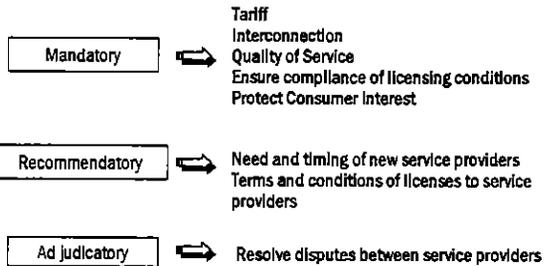
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## Functions of the TRAI



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## Decision making process followed by TRAI

- Increased transparency and public participation in the decision making process
  - Consultative approach by the regulator
  - Consultation paper on the subject/issue issued and comments are invited from stakeholders. Open house hearings are conducted thereafter.
  - Opportunity for operators to present their views
  - Increased awareness & access to information
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## The problems...

- Lack of clarity on how TRAI could execute its functions
- DoT challenged TRAI's authority on some issues in court
- TRAI had no jurisdiction over DoT - the largest operator in the country
- TRAI's attempts at tariffs rebalancing were rejected by DoT
- DoT also challenged TRAI's authority to question the Government's prerogative to set tariffs
- Growing number of cases in court between TRAI, the private operators & the DoT

The Government issued an ordinance to replace the existing TRAI, which was dissolved

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### The new TRAI

- TRAI was reconstituted in 2000 through an ordinance
- TRAI Act 1997 was amended
- The Dispute settlement function was taken away from TRAI



- Mandatory for the government to seek recommendations of TRAI on issues like need and timing of new service providers, and terms and conditions that should apply to them.
- Recommendations not binding on the government.
- TRAI's orders on tariffs, and terms and conditions of interconnectivity would be binding

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### Dispute settlement

**Telecom Disputes Settlement and Appellate Tribunal**

- A separate dispute settlement and appellate body set up following amendment to TRAI Act
- Tribunal has been set up to adjudicate any dispute between
  - a licensor and a licensee
  - service providers, and
  - a service provider and a group of consumers.
- It also hears and dispose off any appeals against decisions of the TRAI.

**TDSAT rulings can be challenged in Supreme Court**

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### National Telecom Policy (NTP 99)

**Objectives**

- Encourage development of telecommunications facilities in remote, hilly and tribal areas
- Create a modern and efficient telecom infrastructure
- Convert VPTs into Public Teleinfo centres wherever possible
- Strengthen R&D
- Enable Indian telecom companies to become truly global players

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**National Telecom Policy (NTP 99)**

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**Targets**

- Telephone on demand by the year 2002
- Teledensity of 7 by the year 2005
- Increase rural teledensity to 4 by the year 2010
- Achieve telecom coverage of all villages by the year 2002

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**New Telecom Policy (NTP 99)**

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<p><b>Commitments of the Policy</b></p> <ul style="list-style-type: none"> <li>• Corporatize operations of DoT</li> <li>• No limit on number of fixed operators</li> <li>• Open up NLD from 1 Jan 2000</li> <li>• To open up ILD by April 2002</li> <li>• To ensure Interconnection</li> <li>• To move to revenue sharing</li> <li>• To strengthen the regulator</li> </ul>	<p><b>Resolution of problems of existing operators</b></p> <ul style="list-style-type: none"> <li>• Migration scheme announced in July 1999</li> <li>• New licensing regime : a one-time Entry Fee and percentage share of revenue as license fee</li> <li>• Existing licensees to pay same percentage share of revenue as annual license fee, as applicable to new licensee(s) in the same area</li> </ul>
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**Universal Service Obligations (USO)**

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<p><b>What is USO?</b></p>	➔	<p>Provision of access to all people for certain basic telecom services at affordable and reasonable prices</p>
<p><b>Targets of NTP99 for USO</b></p>	➔	<ul style="list-style-type: none"> <li>• Provide voice and low speed data service to the balance 2.9 lakh uncovered villages in the country by the year 2002</li> <li>• Achieve internet access to all district head quarters by the year 2000</li> </ul>
<p><b>Implementation of USO as per NTP 99</b></p>	➔	<ul style="list-style-type: none"> <li>• Raising of resources through a 'Universal Access Levy'</li> <li>• Levy to be a percentage of revenue earned by all operators under various licenses</li> <li>• Implementation of USO to be undertaken by all fixed service providers</li> </ul>

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## Implementation of USO

- USO Fund created in 2002-03 to enable the provision of services in unserved areas
- Receipts from universal access levy credited in this fund
- Implementation of USO and administration of the Fund entrusted to an administrator, called Administrator - Universal Service Fund
- Administrator is under the DoT
- Implementation of USO divided into two streams
  - Provision of VPTs and upgradation of existing VPTs into PTICs
  - Provision of household telephones in net high cost areas

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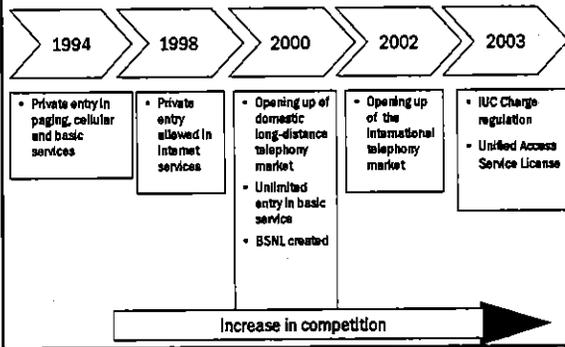
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## The competitive scenario



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## THE BENEFITS

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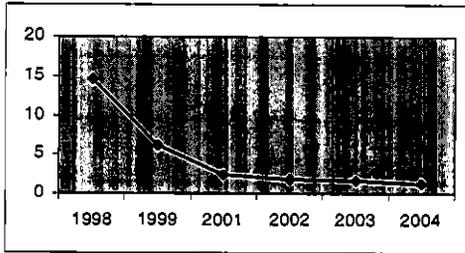
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### Fall in mobile tariffs

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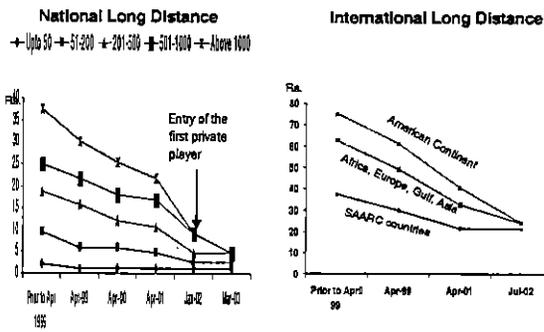
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### Fall in tariffs

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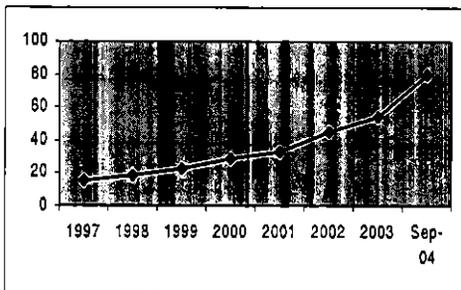
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### Subscriber growth & Tele-density

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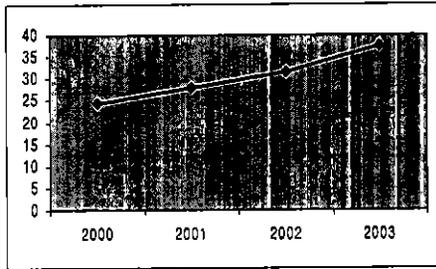
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### Impact on market (NLD)



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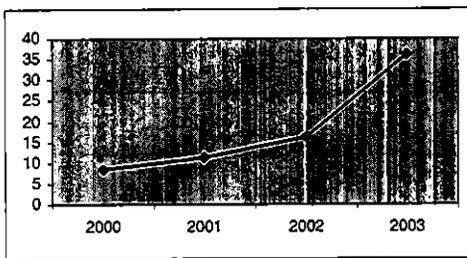
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### Impact on market (ILD)



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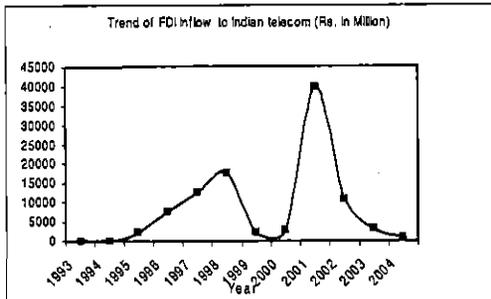
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### FDI



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### Quality of Service

- Norms of network performance laid down by the regulator
  - Basic service
  - Cellular service
  - Dial up and leased line internet access service
  - VOIP based international long distance
- Quarterly surveys carried out for monitoring compliance with norms
- Results published through release of a bulletin by TRAI
- Summarized QoS report also available on the website of TRAI

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### Quality of Service

- The latest survey results point out
  - Improvement
    - Provision of new telephones
    - Fault incidences, and
    - Fault repaired by next working day
  - Deterioration
    - Metering and billing

Competition skewed towards price than quality of service

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### Quality of service

- Regulatory approach
  - Build quality consciousness and competition among the service providers through publication of results
  - No imposition of penalties / financial compensation to consumers
- Too many network parameters
  - 18 for basic service
  - 17 for cellular service

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**Tariff**

- Tariff re-balancing initiated in 1999 through TFO,1999
- Considerable fall in NLD and ILD rates
- Proportionate increase in monthly rentals and local call rates yet to happen
- Tariff forbearance except for fixed line service in rural areas
- Cross subsidy continues in the form of Access Deficit Charge (ADC)
- ADC to be phased out in 3-5 years.

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**Some major issues**

- Ensuring timely interconnection
- Check on anti-competitive practices
- Universal service (quantity and quality)
- Availability of spectrum
- Large scale investments required (\$ 69 billion to achieve 15% tele density)

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**Thank You**

Satnam Singh  
Area Convenor & Research Associate  
Telecommunications Group  
sskalra@teri.res.in

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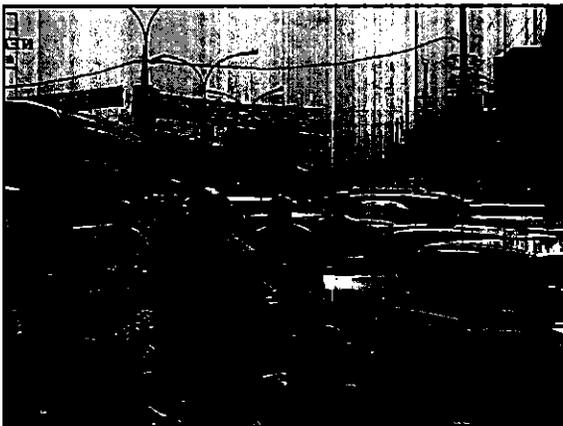


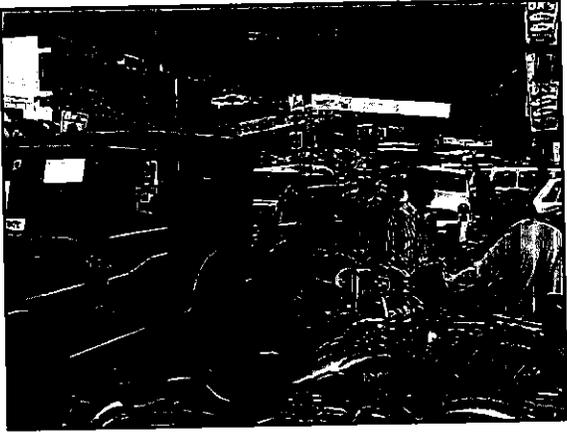
# Restructuring options in Urban Transport

By  
O.P. Agarwal

## Outline

- Quick overview of the sector
- Functions required and existing situation
- Theoretical models
- Suggestions





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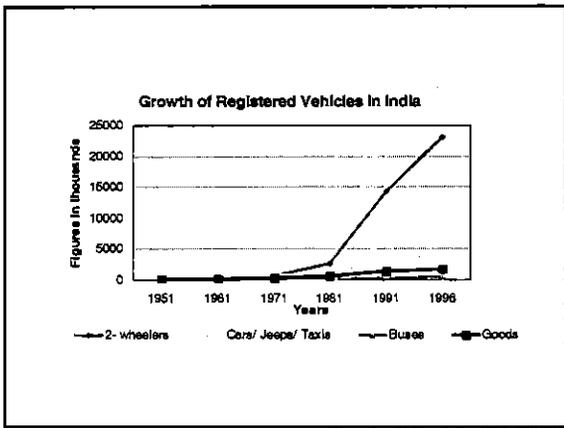
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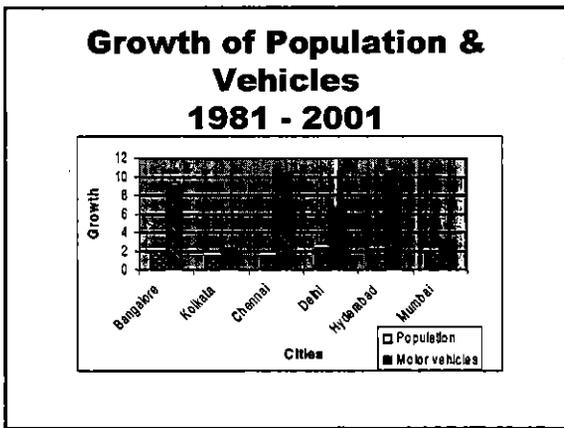
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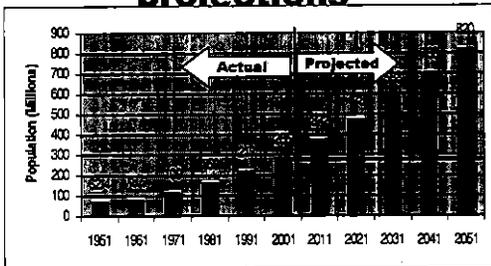
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## Urban population & projections




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## Concerns with governance

- Institutional orphan
- Present legislative frameworks do not take cognizance of the growing problems of city transport
- Inadequate attention to public transport

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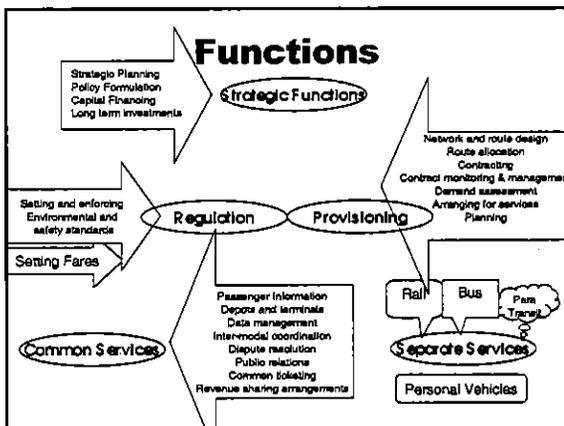
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## Strategic Functions

### Today

- No institutional mechanism for coordinated planning
- Multiple agencies with little coordination between them
- No forum where they can plan and take decisions for coordinated action

### Suggested

**Unified Metropolitan Transport Authority**

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## Regulation

### Today

- Standards for road safety and emissions set under MV Act
- Safety standards for rail operations set and monitored under Indian Railways Act
- Enforced by Traffic Police and Transport department
- Fares for road transport decided by Transport Department based on local pulls and pressures
- Fares for rail transport decided by Indian Railways on country-wide pulls and pressures

### Suggested

- Safety and environment regulation as it is
- Fares to be decided by an independent regulator
- Scientific and transparent formulation to be developed for periodic fare revisions

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## Provisioning

### Today

- STC decides routes and network for its own services
- Private operations and routes based on application for permits and grant of the permits for specific routes
- Indian Railways decides on EMU and ring rail services
- DMRC will decide on MRTS services
- No structured procurement system, based on a prior assessment of demand

### Suggested

#### Several models possible

- A special cell or a directorate to set up under the transport department for provisioning
- STC could take over this role if it stops being an operator
- Independent regulator could take this up
- A separate body only for provisioning

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## Common Services

### Today

- No common passenger information system
- STC owns and operates terminals and depots
- Private operators use STC terminals
- Indian Railways owns and manages rail infrastructure
- DMRC will own and manage MRTS infrastructure
- Dispute resolution through lengthy judicial mechanism
- No mechanism for common ticketing and sharing of revenues

### Suggested

#### Several models possible

- A separate entity to provide common services and monitor use of common infrastructure
- Provisioning agency could take this up
- STC could take this up if no conflict of interest

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## Separate Services

### Today

- Bus services by
  - STC – own & hired buses
  - Private stage carriages
  - Private contract carriages
- Rail based services by Indian Railways or separate body
- Para transit by respective associations

### Suggested

- Bus services
  - Partially by STC
  - Partially by a structured induction of the private sector on contracted terms
- Several premium services through contracted private operations
- Rail services by a separate body under city authority
- Coordinated scheduling by provisioning agency

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Thank You

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## IAS Training Programme

### Presentation on “Oil & Gas deregulation issues”

by  
R K Batra  
Distinguished Fellow, TERI

*Thursday, 14 October 2004*

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#### Oil and gas sector at a glance

- Oil
  - Indigenous crude oil production - 33 MMT (30%)
  - Crude oil imports - 90 MMT
  - R/P Ratio - 22 years
  - No. of refineries - 18
  - Refinery capacity - 125 MMTPA
  - Domestic sales of petro.products - 106 MMT
- Gas
  - Domestic sales (Supply constraint) - 70 MMSCMD
  - Domestic supply - 70 MMSCMD
  - R/P Ratio - 30 years
  - Sector offtake
    - Power (41%)
    - Fertiliser (32%)
    - Others (27%)

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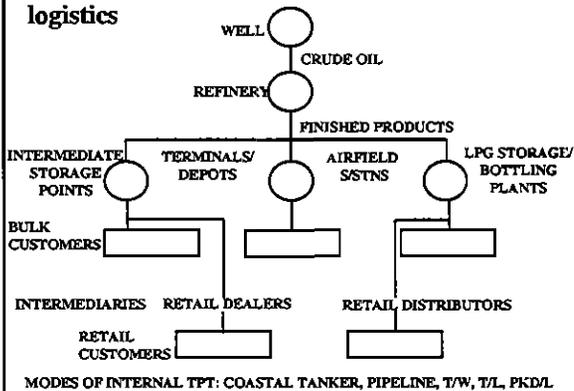
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#### Petroleum products - distribution/marketing logistics




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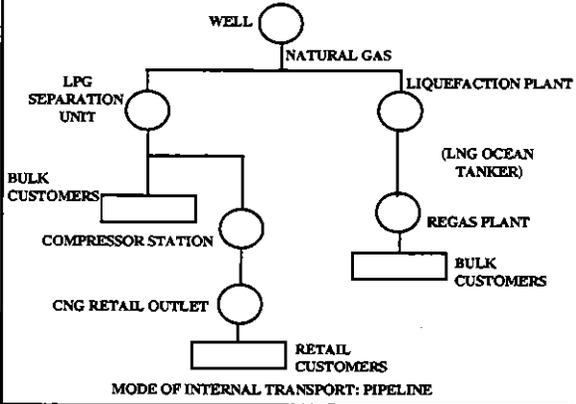
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### Natural gas-distribution/ marketing logistics




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### Activity chart of major government Oil & Gas companies in India

	ONGC	OIL	IOC	BPCL	HPCL	GAIL	GSPC
Exploration & Production	✓	✓	✓	✓	✓	✓	✓
Refining	✓	✓	✓	✓	✓		
Transmission of petroleum products by pipeline						✓	
Marketing petroleum products	To enter		✓	✓	✓		
Transmission of gas by pipeline	✓					✓	✓
LNG Terminal			✓	✓	✓	✓	
Marketing gas	✓		✓	✓	✓	✓	✓
Marketing gas as CNG			✓	✓	✓	✓	

✓ Last five years

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### Activity chart of major private Oil & Gas companies in India

	RELIANCE	BRITISH GAS	SHELL	CAIRN ENERGY	ESSAR
Exploration & Production	✓	✓		✓	✓
Refining	✓				To enter
Transmission of petroleum products by pipeline	To enter				
Marketing ipt fuels	✓		To enter		✓
Transmission of gas by pipeline	To enter				
LNG Terminal			To enter		
Marketing gas	✓	✓	To enter		
Marketing gas as CNG		✓			

✓ Last five years

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**Policies that the Central Government will need to lay down post deregulation April 2002**

- Export/Import policies for crude/petroleum products
- Policy on Strategic Petroleum Reserve (SPR) and mandatory stock holding by companies
- Fiscal policies e.g.
  - Concessions on LNG terminals/LNG imports
  - LPG & Kerosene subsidies
  - Tax benefits/protection to refineries
- Shipping policy – Indian flag vessels
- Policy on quality/specifications of petroleum products

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**Freedoms applicable to Oil & Gas companies starting April 2002**

- To set up refineries, product terminals, depots, LPG bottling plants, retail outlets at locations of their choice
- To import crude oils of their choice and decide on the crude mix
- To use derivatives and hedging instruments for import of crude oils
- To decide on the refinery production pattern

Contd....

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**Freedoms applicable to Oil & Gas companies starting April 2002**

- To export and import petroleum products
- To charter ships for import/export/coastal movement
- To lay all crude oil and certain products pipelines
- To appoint dealers and distributors of their choice
- To decide on marketing margins and dealer commissions

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**Restrictions/obligations applicable to Oil & Gas companies starting April 2002**

- To price ex-refinery products on the basis of import parity
- Govt. oil companies to sell LPG & Kerosene (PDS) absorbing part of the subsidy.
- Govt. gas companies: To sell domestic natural gas at administered prices. Transportation charges for HBJ pipeline as fixed by Government
- Private companies wishing to market transportation fuels to invest Rs.2000 crores in non-marketing infrastructure (E&P, refineries, pipelines, LNG terminals etc.)
- To obtain authorization from the Regulator in specified areas

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**Oil & Gas Regulation in India**

**Rationale for regulation**

- Forces of competition generally protect interests of consumers
- Where competition is weak or absent: Competition law
- Where natural monopoly especially network industries: more specialized economic regulation necessary
- Pipelines are generally regarded as natural monopolies

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**Natural monopoly**

A situation in which it would be either impossible or very expensive to have more than one supplier, so that there is for practical purposes no possibility of competition; the best examples of natural monopoly are to be found in network industries such as gas, electricity, water and transport.

1 x 48" pipeline can be built with the same quantity of steel as 2 x 24" pipelines (assuming equal thickness) but will have twice the capacity.

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### Regulatory structure in the Oil & Gas Industry

- Various regulatory structures considered. Finally decided that
  - E & P activities to be regulated by DG Hydrocarbons
  - Other downstream activities covering both liquid and gaseous petroleum products to be regulated by a Petroleum Regulatory Board

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### The Petroleum Regulatory Board Bill, 2002\* (as introduced in Lok Sabha on 6th May 2002)

Presentation focuses on operational aspects of Bill

- Marketing of petroleum products
- LNG terminals
- "Common Carrier" pipelines
- Powers of Central Government

\* To be reintroduced in 2004/5 Winter Session after incorporating Standing Committee recommendations.

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### Marketing of petroleum products

#### 1. Functions of the Board

- Authorise entities to market notified petroleum products
- Oversee Marketing Service Obligations: Set up marketing infra-structure. Open retail outlets in remote areas. Maintain minimum stocks.
- Ensure adequate availability and equitable distribution
- Oversee existing agreements for sharing of products and infrastructure (2 years).
- Monitor prices and take corrective measures to prevent profiteering by the entities

Contd.....

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**Marketing of petroleum products**

- Maintain a data bank on activities
- Ensure new retail outlets and LPG/Kerosene distributors do not “affect” existing network in any manner (2 years).
- Oversee Retail Service Obligations: Dealers and distributors to maintain supplies during specified working hours. Specified quality and quantity. Display of maximum retail prices

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**LNG terminals**

**1. Definition**

*(TERI's own as not given in the Bill):* A terminal for receipt and storage of liquefied natural gas (LNG) and its regasification.

**2. Functions of the Board**

- Authorise entities to establish and operate LNG terminals;
- Public hearing before authorisation
- Already established LNG terminal deemed to be authorised.

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**“Common Carrier” pipelines**

**1. Definition**

“Common carrier”: Pipelines for transportation of petroleum products by more than one entity as the Board may declare or authorise from time to time .....but does not include pipelines laid to supply -

- i) petroleum products to a specific consumer, or
- ii) crude oil.

Contd...

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**“Common Carrier” pipelines**

**2. Functions of the Board**

- Authorise entities to lay, build, operate or expand a common carrier: Public hearing
- Declare pipelines as common carrier;
- Regulate access. Fair trade and competition amongst entities: Authorised entity has right of first use.
- Regulate transportation rates.

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**Powers of Central Government**

**1. Policy Directives**

- The Central Government may, from time to time issue policy directives to the Board in writing and such policy directives shall be binding upon the Board
- The Board shall be given an opportunity of expressing its views
- The decision of the Central Government whether a question is one of policy or not shall be final

Contd...

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**Powers of Central Government**

**2. In the event of war, natural calamity, strike, industrial unrest etc.**

- The Central Government may, for a limited period, take over the control and management of an entity
- The affected entities shall be given an opportunity of hearing before issuing orders

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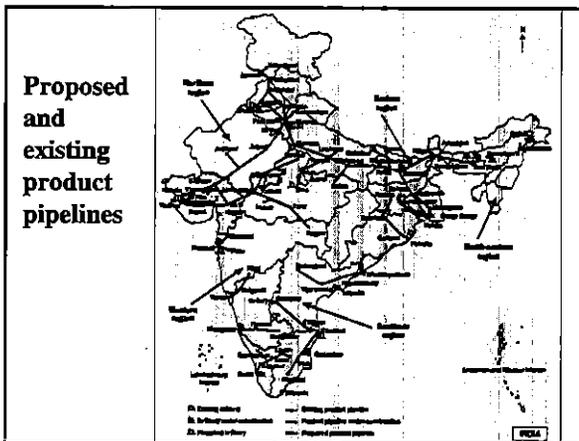
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**Petroleum Product Pipelines Policy on Common Carrier principle**

(Notification tabled in Lok Sabha on 5.12.2002)

1. No restrictions on grant of right of user (ROU) in land for:
  - Crude oil pipelines
  - Product pipelines from refineries upto 300 km.
  - Dedicated customer pipeline from refinery or terminal
2. For other pipelines, proposal to be published inviting others to take capacity in pipeline (upto 25% extra capacity) on mutually agreed terms and conditions. Tariff as per control orders or regulations in force.

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**Transmission of gas by pipeline: Natural monopoly?**

- Yes. Hence need for regulation
- Draft Policy for development of Gas Pipeline Network(2003)**
- Master Plan for network
  - Authorization to transmitter to lay pipeline: Regulator to publish plan and invite objections and participation. Spare capacity 25%
  - Common carrier principle
  - GAIL as transmitter until otherwise decided
  - Govt. interim regulator
  - Circulated for comments

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**Competitive market for gas?**

- Gas to gas competition: ONGC/OIL vs. PSC vs. NELP vs. LNG vs. Imported piped gas in future
- Gas & others : vs. Naphtha (power, fertilizer, petchem.)  
vs. domestic coal (power)  
vs imported coal (power/steel)  
vs. MS/HSD (as CNG)
- Light-handed regulation

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**Thank you**

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# **Infrastructure Deregulation**

## **Coal Sector**

### **Issues and Challenges**

S K Chand  
October 2004

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## **Sectoral Interdependence**

### **Power**

- ✂ More than 75% of coal is consumed by power sector
- ✂ About 60% of power is generated by coal-fired plants

### **Rail**

- ✂ Coal is the major revenue earner for railways, almost 50%
- ✂ Railways carry 53% of the coal traffic

2

## **Interdependence.....**

- ✘ It is obvious that coal, rail and power are totally dependent on each other
- ✘ One without the other two cannot survive
- ✘ However, reforms in these three sectors have not been synchronized

3

## **Deregulation in Power Sector**

Though power sector is

- ✘ Getting unbundled
- ✘ Allows private participation
- ✘ Has independent regulator
- ✘ Is at 'arm's length' from the ministry
- ✘ Provides level playing field
- ✘ Open and transparent tariff setting
- ✘ And much more

4

## **Rail and Coal Sectors**

- ✧ Remain Government monopolies
- ✧ Minimal reforms
- ✧ Consumers like power sector have hardly any choice for
  - Sourcing coal
  - Mode of transport

5

## **Reforms in Indian Railways !**

- ✧ Governed by Railways Act 1989
- ✧ IR continues to be a government monopoly with minimal reforms, notwithstanding Rakesh Mohan Committee Report
- ✧ Freight rate rationalization is an urgent necessity
- ✧ Political compulsions!

6

## **Coal Sector Reforms**

- ✘ Captive mining allowed in private sector for power, steel, cement and coal washing
- ✘ A decade later, only four blocks out of 49 allotted produced only 8 MT in 03-04
- ✘ Price & distribution of all grades of coal totally deregulated (Jan 1st, 2000)
- ✘ Price decontrol in a monopoly doesn't make sense

7

## **Coal Sector Reforms**

- ✘ Distribution control removed
- ✘ Though the Coal Linkage Committee is still operative and decides 'who gets what from where'
- ✘ Colliery Control Order 1945 replaced by Colliery Control Order 2001
- ✘ Still certain controls remain

8

## Reforms in place

- ✂ License under Industries Development & Regulation Act, 1951 not required
  - ✂ Foreign investment in Indian companies engaged in captive coal mining allowed
  - ✂ Extent of equity participation to be decided by FIPB of CCFI
- There would be hardly any FI in coal sector

9

## New Initiatives (Wish list!)

- Amendment to Coal Mines (Nationalization) Act allowing commercial mining awaiting Parliament approval
- Legally enforceable (?) long term fuel supply agreement to be made mandatory
- Grading and pricing to be based on GCV in line with int'l practices
- Proposal for independent regulatory body (?)
- Coal and Lignite (Regulation & Development) Bill drafted

10



## **Coal may not remain the king for long**

The gap between demand and supply

✘ At the end of Tenth Plan 55.5 MT

✘ At the end of Eleventh Plan > 100 MT

**Domestic coal production may either**

✘ Plateau around 450 MT supporting 100,000 MW or

✘ Life of the mines get reduced to meet the growing demand

✘ Reforms in coal sector has started from the wrong end

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## **Thank You**

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# Reliance Energy Limited

Regulatory Meet - TERI

J.P. Chalasani, Director  
(Business Development)

14<sup>th</sup> October 2004

*Sanjay Chalasani*





## **In this presentation**

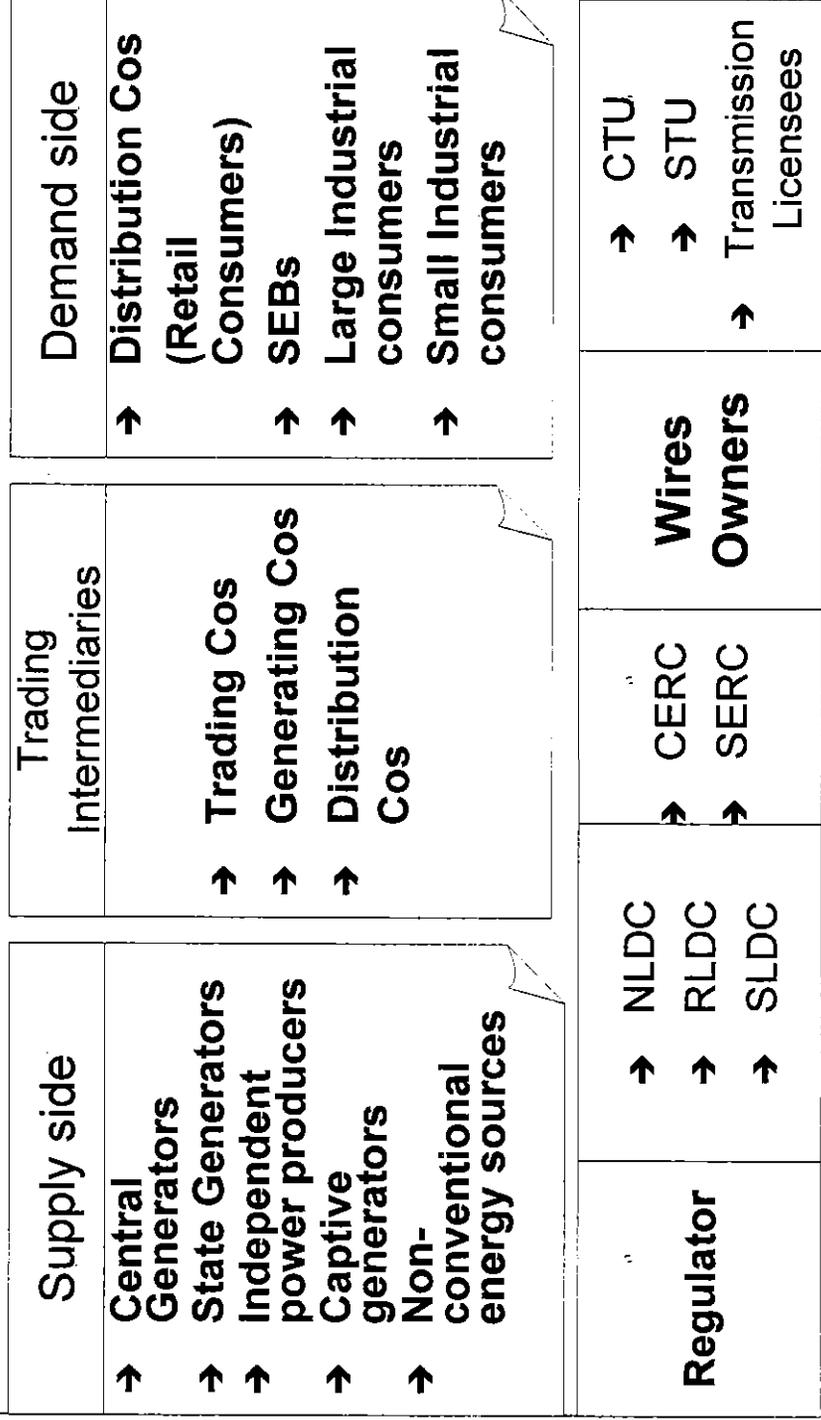
- **Indian Electricity Sector – an over view**
  - **Market Participants**
  - **Regulatory Linkages**
- **Evolution of Regulatory System**
- **Indian Power Sector – issues**
  - **Generation**
  - **Transmission**
  - **Trading**
  - **Distribution**





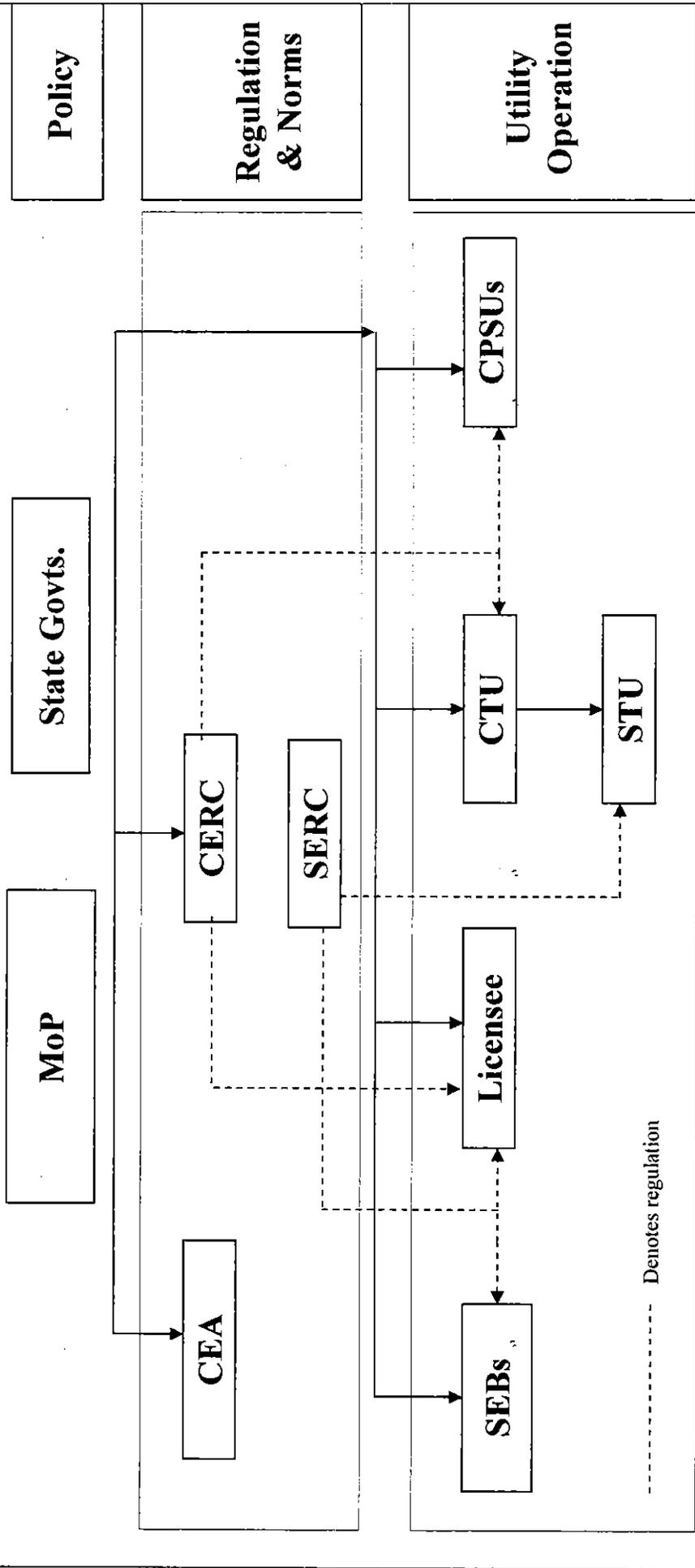
# Indian Electricity Market Participants

- The generation companies can obtain a trading license and carry on the trading activities.
- The large industrial consumers will be able to participate in the market only after appropriate regulator provides them the open access right
- The transmission companies will work as facilitators to provide non-discriminatory open access
- The respective Load Dispatch Centres (LDCs) will have jurisdiction to manage the grid discipline





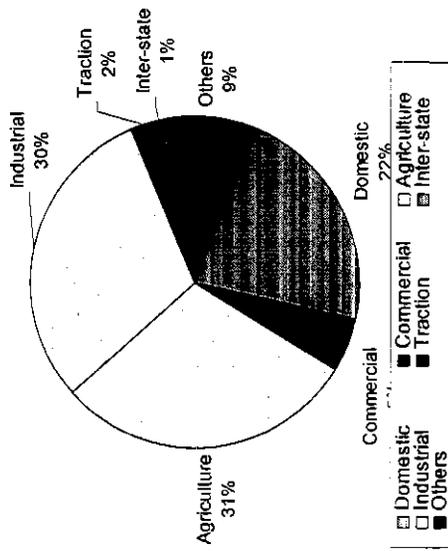
# Regulatory Framework



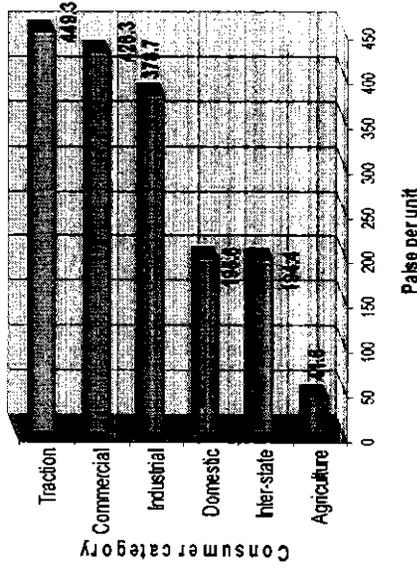


# Indian electricity industry – Snapshot

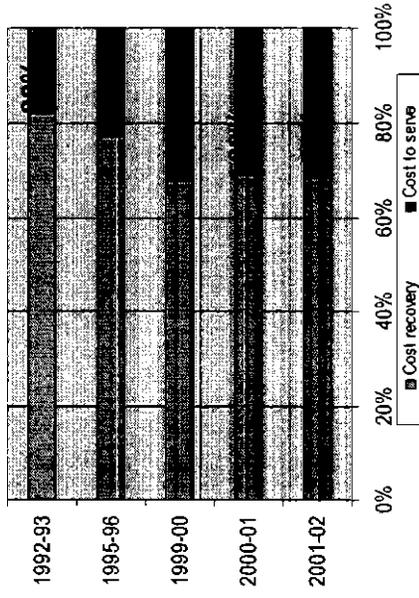
Consumption profile



Average revenue per unit



Average cost recovery rate



Source: Ministry of Power

Source: Planning Commission

Source: Planning Commission

All the statistics are of year 200-01

- The Domestic and Agricultural categories account for over 50% of power consumption in the country
- About 1/3rd of the total power consumption subsidizes the balance 2/3rd
- The cost recovery (as a % of cost to serve) has been declining over the years affecting utility finances





## Indian Electricity Sector

### Consumers

- Inadequate supply hours with poor quality
- Skewed tariff – cross subsidization amongst consumers
- Un-electrified areas

### Supplier

- Financial loss; Inadequate return
- Limited business opportunity

### Government

- Substantial Financial requirements for the sector (subsidy & subventions)
- Compromise with the other sector

### Private Investor

- Apprehension about the financial viability & Govt Policies

**Overall discontentment for all the stakeholders**





## Evolution of the sector

- ❑ Absence of commercial approach - distribution of electricity
  - ❑ Treatment of a “social commodity” rather than a “commercial product”
- ❑ Indian Electricity Act 1910 & Electricity (Supply) Act 1948
  - ❑ Primarily directed towards management of business of State Electricity Board
- ❑ Enactment of Reform Act – 1998
  - ❑ Brings in commercial discipline through regulatory principles
  - ❑ Creation of independent “technical body” for commercial issues
    - ❑ Determination of tariff and other related issues
- ❑ Enactment of Electricity Act 2003 – June 2003
  - ❑ Forward path for introduction of competition and market development
  - ❑ Overall objective of a commercially & financially viable sector





## Generation

- De-licensing of the generation business
- Hydel Plants still require approval from competent authorities
- Assignment of hydel plants – away from load centres
  - Selection of developers
- Generators supplying to more than one states
  - Tariff approval;
  - approval of the competitive bidding procedures
- Development of competition at “Bulk Supply Level”
- Limited steps undertaken
- Inadequate Payment Security Mechanism
- Unviable electricity value chain
- Principal concern for private sector
- Fuel Risk – uncontrollable for the generator
- Single largest cost component in the generation business
- Does not come under the purview of the Sector Regulators
- Integrated Regulator for energy sector – a probable solution





## Transmission

- Critical for Electricity Market Development
- Pricing mechanism
- Current practice of postage stamp – adverse to market development based on requirements
  - “Load centric” generating stations would not be competitive
  - “Pit Head” stations would not be helpful for grid stabilization
- Assignment of “Transmission Network”
- Capital Intensive – inadequate investments in the past
- Transmission Open access
- Critical for effecting competition





## Trading

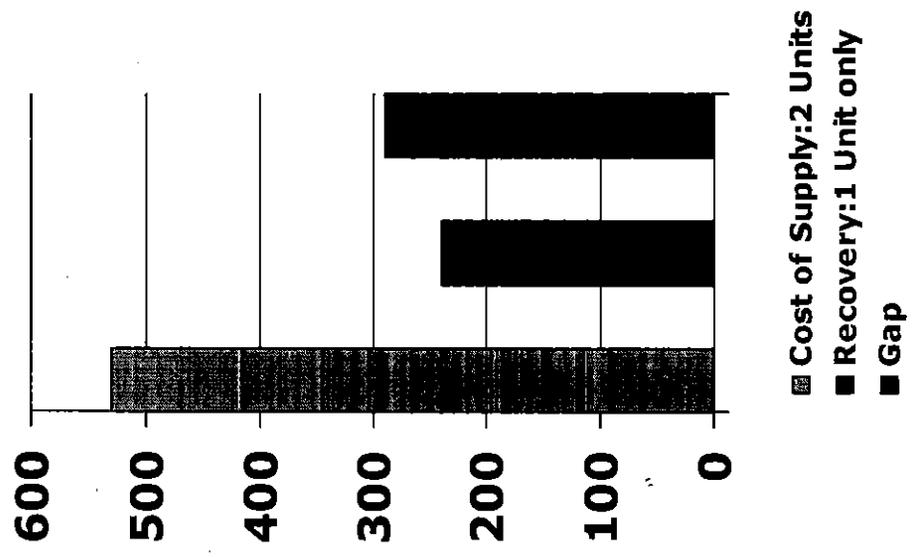
- Trading activities – till now a concept limited to “matching”
- Inadequate infrastructure & regulation
- Development of power exchange
- Transparent trading activities
- Development of advanced market – combination of long-term and pooled mechanism
- Settlement mechanism





# Distribution

- Inadequate cost coverage
  - Pilferage
  - Inadequate metering
  - Socio-economic issues
- Skewed tariff – cross subsidy between consumers
- High technical losses – inadequate capital investments
- Subsidy administration
  - Role of regulators – micro manage or automatic determination
  - Targeting mechanism





## Distribution

- Efficient Distribution system – an ideal end objective
- Requires a “transition period” for conversion from present state to a self sustaining system
- Transition financing requirement
  - Not a factor of ownership – private or public
  - Duration of “Transition period” is critical
  - Accountability for achievement of efficiency targets
- Open access - for retail consumers
- Prospective OA consumers – critical for balancing the financial viability of the supplier
- Cross-subsidy calculation – a debatable mechanism
- Competition is preferred at the “Bulk Supply” level first
  - Maximization of benefits to the end consumers





## Expectation – Role of Regulators

- ❑ Introduction of competition – transparent and level playing
- ❑ Equal opportunity to the Investor
  - ❑ Non-discrimination amongst Govt. and private participants
- ❑ Overall development of the sector
- ❑ Balancing act between interest of consumers & investors
- ❑ Defining the role of key players
  - ❑ Co-ordination with Govt and Govt controlled entities
- ❑ Long term regulatory contracts
- ❑ Multi year frameworks for policies and principles
- ❑ Consistency in approach and methodologies
  - ❑ Similar approach & methodologies – across states
- ❑ Integrated Regulator – for related sector
- ❑ Electricity, oil & natural gas – energy sector



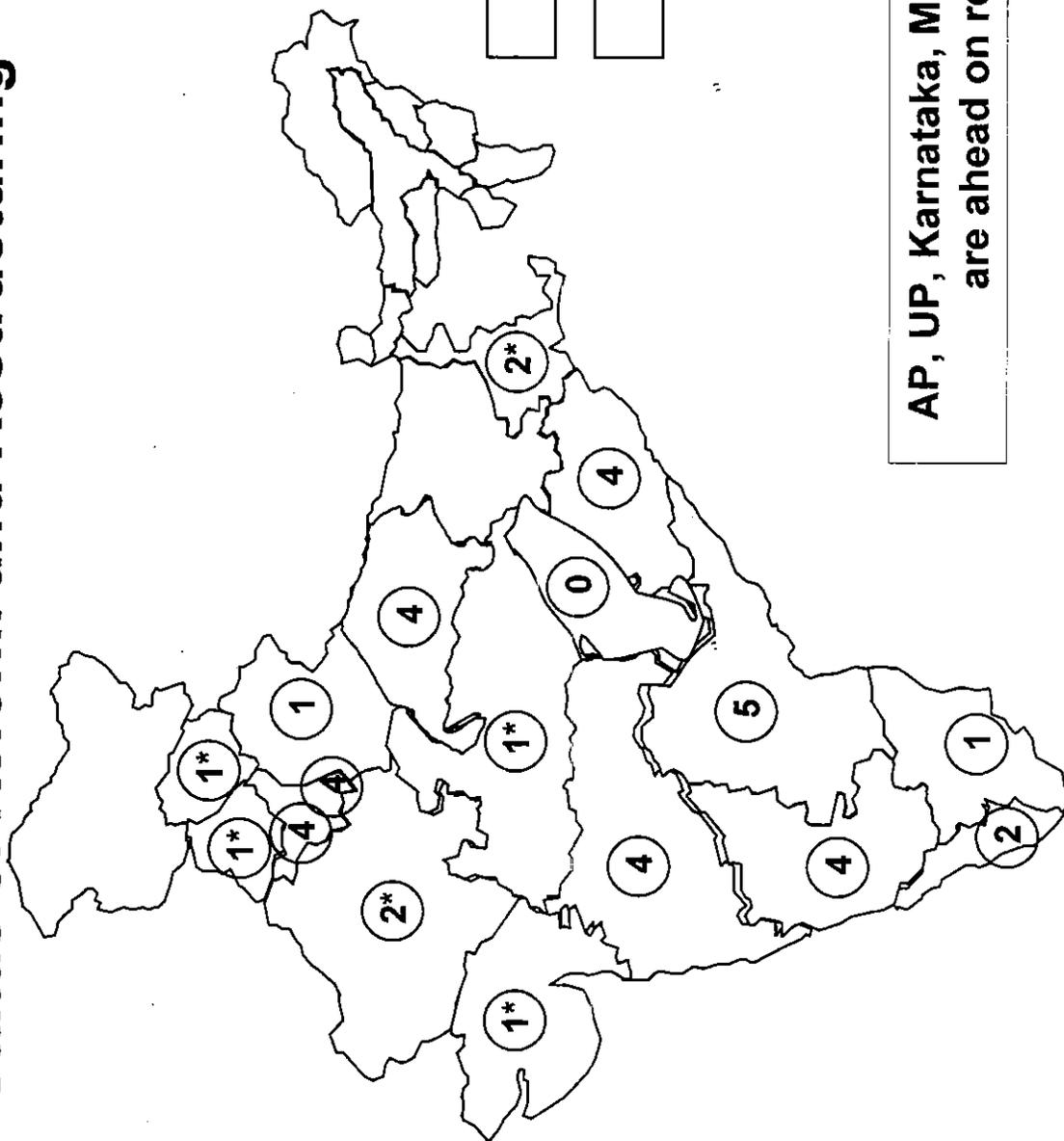


# Reform in electricity sector





# Status of Reform and Restructuring



With ERC and restructured



With ERC but restructuring yet to happen

\* Indicates irregular filing

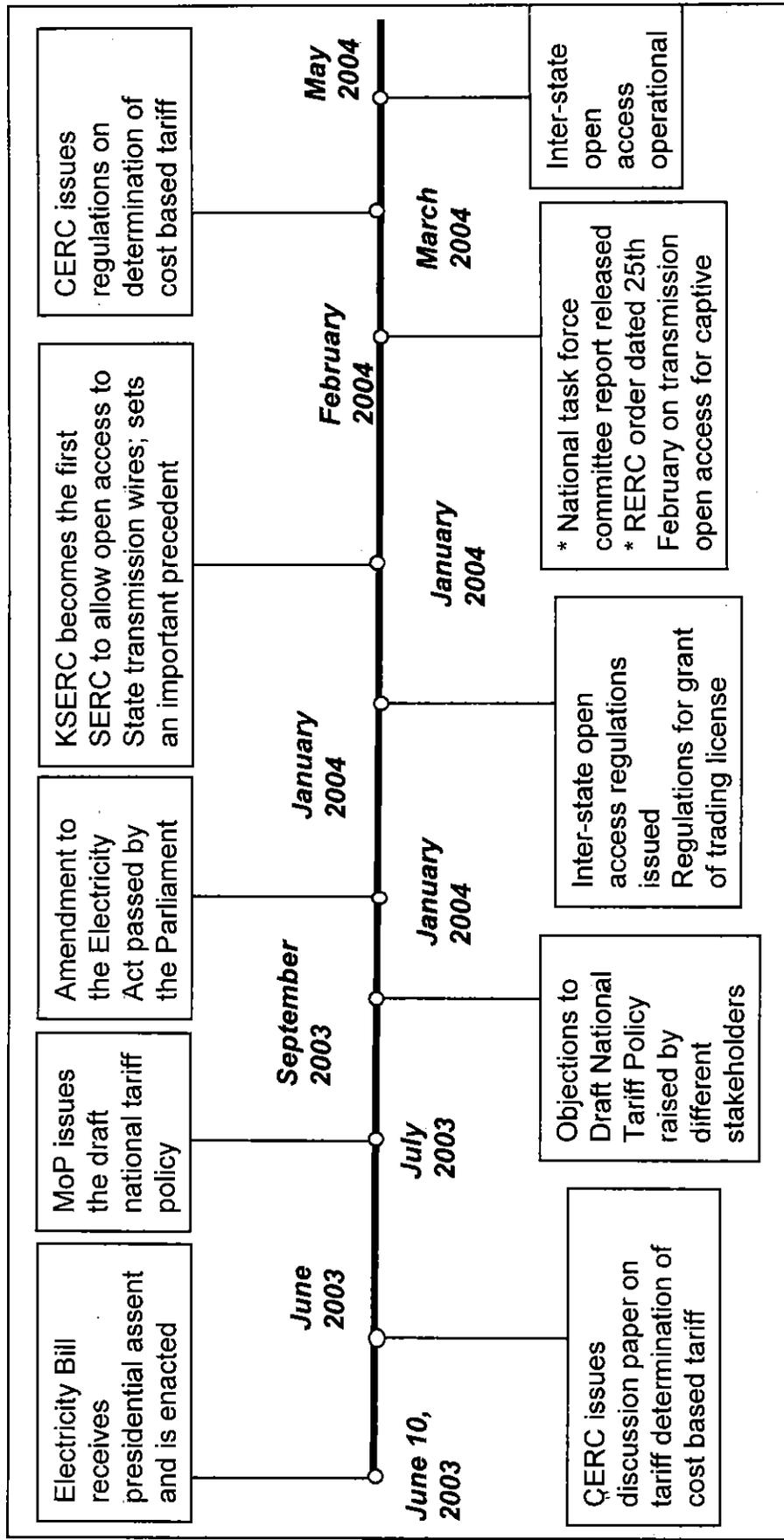
Number indicates tariff orders.

**AP, UP, Karnataka, Maharashtra, Haryana, Orissa are ahead on reform & restructuring**





# Key recent developments

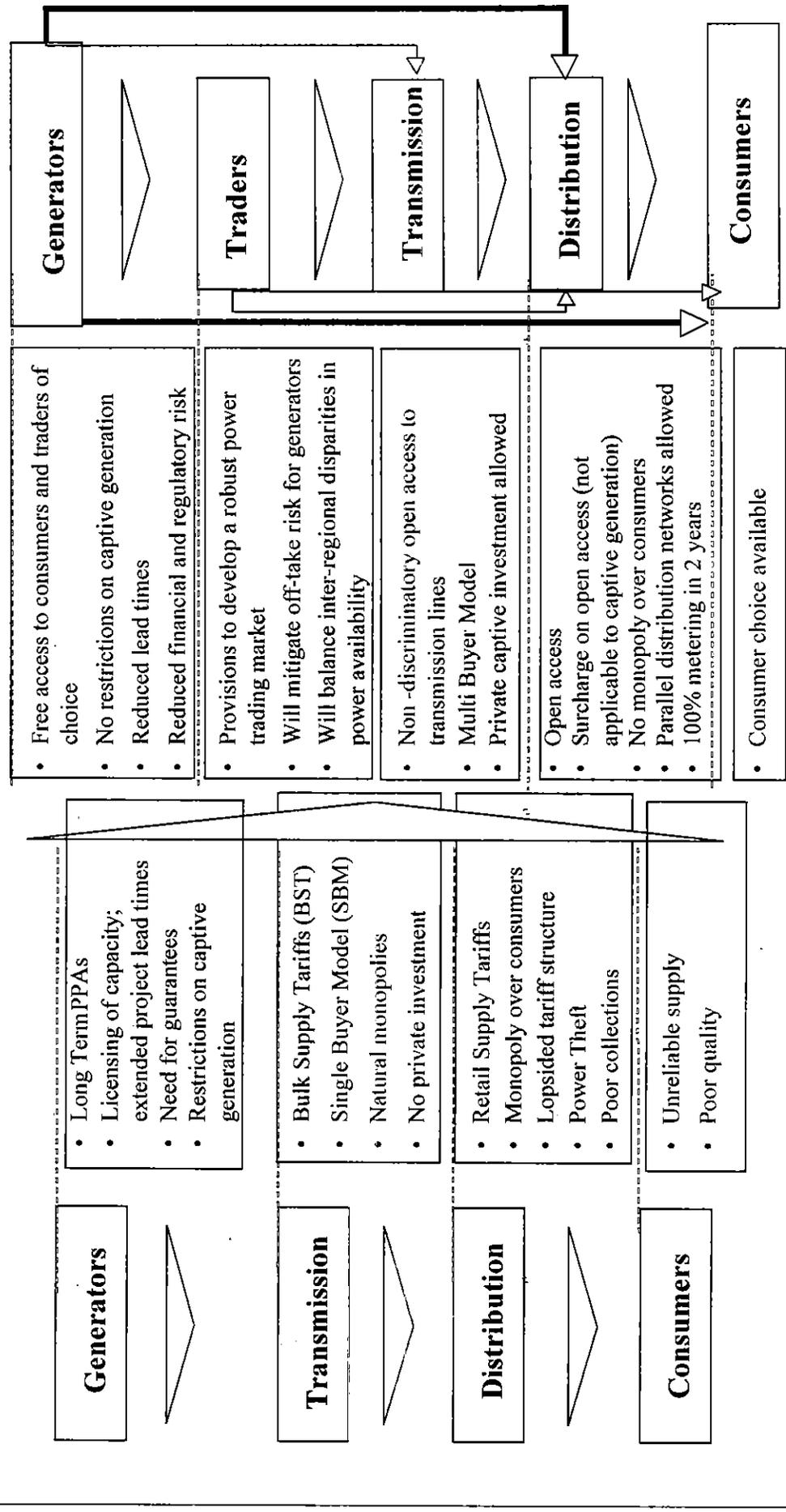


Various SERCs are in the process of developing regulations envisaged in the act: Terms & conditions of licensees, intra-state open access, balancing markets, consumer level open access, etc.





# Impact on industry structure, EA, 2003





# Independent regulation and government: need for harmony

J L Bajaj  
Distinguished Fellow, TERI

14 October 2004

## Rationale for independent regulation

- Regulation represents a new division of powers
  - Policy formulation from implementation
- Created by government to rectify its own failure to
  - provide credible assurances to investors
  - protect consumers
  - improve efficiencies
  - ensure transparency

## Neither fish nor fowl

- The fourth arm of the state
- Exercises powers of other three arms
- Yet different from the others

## The independence issue

What is independence?

- An arm's length relationship with political authorities
- An arm's length relationship with regulated firms, other private interests and consumers
- The attributes of organizational autonomy

## The independence issue

Why is independence necessary?

- To protect consumers from abuse by firms with significant market power
- To protect investors from arbitrary or opportunistic action by government
- To improve efficiencies and quality

## The independence issue

- How is independence secured?
- Clear legal mandate - scope and duties clearly specified
- Criteria for appointment, objective selection procedure, and fixed tenure
- Procedure for removal
- Financial autonomy

## The accountability issue

- Independence does not mean lack of accountability
- Ministerial accountability to Parliament - how does the regulator fit in
- Access to utilities - citizens rights?
- Case for accountability

## Accountable to whom?

- Parliament, judiciary, and stakeholders
- And how
  - Parliamentary and external scrutiny
  - Transparency
  - Consultation
  - Judicial review

## What is the regulator's mandate?

### UK

- Primary: Ensure adequacy of supply; maintain supplier's ability to finance growth; promote competition
- Secondary: Protect consumer interests; promote efficiency and economy; safety and environment; and address the needs of the vulnerable

## What is the regulator's mandate?

### Sri Lanka

- Ensure provision of reliable and adequate telecom services
- Promote competition
- Protect consumer interests
- Promote rapid and sustained development of telecom

## What is the regulator's mandate?

India

- Regulatory and recommendatory functions
- Regulatory functions include prescribing service standards and ensuring compliance of USO

## The regulator's mandate

- Ambiguity in allocation of powers and responsibilities
- Difficulty in delineation (UK, Sri Lanka and India)
- Includes equity issues, consumer interests and sector growth
- Government's role has changed; not diminished

## Government's interface with regulator

- Appointment of regulator
  - practices in US, UK, Sri Lanka and India
- Budget control
  - practices in USA
  - budget and expenditure approvals in India

## Influence on industry structure and development

- Licensing
- Competition issues
- Mergers and takeovers
- Fuel policy, spectrum allocation etc.
- Equity issues

## Power to issue directives

- Provisions in UK, Canada and India
- Directives restricted to policy issues

## Rationale for directives

- Public interest and public policy
- Government best judge

## Power to issue directives - not absolute

- Conform to the objectives of the legislation
- Must relate to policy
- Test of legitimate expectation
- Conform with natural justice

## Should regulator be consulted?

- Practices in UK, yes and disclosed
- Canada - at two stages
- India - yes and no

## Should a third party arbitrate?

- Provisions in OERA and APERA
- Is it appropriate?

- The Indian experience
- The March 1999 directive to TRAI

## Green paper (1998) in UK

- Statutory guidance on social, welfare and environment issues
- Full consultation
- Specific legislation to implement policies with significant financial implications

## Common objectives

- Sector development
- Improvements in efficiency, quality, safety and environment
- Protection of consumer interests
- USO

## Need for harmony

- Consult but make consultation Public
- Recognise government's concerns but act independently

**Infrastructure De-regulation  
on October 15, 2004 New Delhi  
by TERI**

*A PRESENTATION BY  
VS AILAWADI- IAS (Retd.)  
Former Chairman ERC & Independent  
Regulatory Analyst*

- Establishment of independent regulatory, legal and institutional changes are necessary for the infrastructure sector reforms.
- Experience of Latin American countries clearly demonstrated that sound regulations and legal changes impacted on the progress of reforms in electricity and telecom sectors.
- The experience of Chile, Bolivia, Argentina and Brazil underlined the need for credible legal framework for the regulation.

- The important feature of the reforms in the Telecom & Electricity sectors is the creation of Regulatory Bodies and its developments and experience.
  - ❖ The last decade has seen the paradigm shift for independent regulatory framework.
  - ❖ Policy initiatives for attracting private investments in infrastructure.
  - ❖ Promoting competition in telecom and power sector and developments in regulatory process.
  - ❖ The New Electricity Reform Act, 03 & new Focus.

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- Difference in the organizational structure, scope, functions and responsibilities of the regulatory bodies.
- This comes from difference in approach in recasting the regulatory and policy functions due to sector reform goals / objectives.
- However, broad consensus on the establishment of independent regulatory bodies for investors confidence and to promote market like competition.

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4

- The policy making rests with the Government or Legislature. How it is articulated will depend on the nature and scope provided for in the statute.
- The need for certain measure of details in the policy arises from giving predictability and encouragement for growth of the sector.
- The regulatory process is expected to des implement objectives of the policy and provide detailed rules and procedures.
- The boundaries between policy making and regulating often pose conflict and controversy.

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- The main objectives of Infrastructure Sector reforms are :-
  - attracting investments
  - removing inefficiencies
  - promoting conditions for competition
  - providing services at affordable/competitive prices
  - protecting interest of consumers
- Investors predictable regulatory approach and creating leveling playing field viz., Telecom sector reforms.
- In Power Sector obstacles in regulatory process to address more complex issues e.g. tariffs, subsidies, inefficiencies etc.
- Investors confidence on regulatory approach is low resulting negligible investment by private sector.

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- In the telecom infrastructure NTP 1999 introduced competition both in Basic and Mobile Services.
- TRAI facilitated the process of competition by combining features of regulation and deregulation.
- Unified Access Service Regime improved level playing field.
- The impact of deregulation and competition factors in falling prices and increased subscriber base. (86.8 million)
- Both Cellular and CDMA growth staggering (42.9 million in September'04.)
- In China the growth jumped from 40 million in 1999 to 200+ in 2002.
- Competition and price reduction have fueled growth in both countries in telecom infrastructure growth.

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- The experience shows that regulatory agencies will have to deal with situations where the outcome of regulatory process may be influenced by:
  - Changes in policy
  - Use of informal channels by Governments or industry organizations
- The process of appeal as provided in the statute may lead to review of regulatory decisions and need for policy alteration.

Contd.../-

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8

- So long as the process of integrity, transparency and participative the outcome on such issues will appear fair.
- The regulatory bodies have to work within a political & legal systems.
- To be free of political intervention and lobbying by the industry and interest groups is a difficult challenge.

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- The sound regulatory management process requires
  - policy making with its broad framework
  - giving full delegation for implementation and interpretation of policy objectives to the regulatory bodies
  - provision of review
  - appellate relief.
- The Govt. has important obligation in the success of regulatory management. It will strengthen the regulatory process chooses to refrain or communicate its views through formal channels.

Contd...../-

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10

- It is now recognized that in the infrastructure sector the interests of all stakeholders protected within the above institutional framework.
- In ultimate test it is transparency and consistency of regulatory process which will provide confidence and credibility.

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11

***THANK YOU***

October 15, 2004

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