Training Module on Infrastructure Deregulation

Prepared for **Department of Personnel and Training, Government of India**

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Training module on “Infrastructure deregulation”

Aims of the training module

- Facilitate development of the infrastructure sector through capacity building of the state officials at middle level.
- Sensitize the State level officials on the infrastructure reforms and the new regulatory environment
- Train the target groups so that they can actively participate in the process of carrying forward infrastructure reforms, and contribute in shaping up a desired state of infrastructure services.
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Objectives of the training module

- Develop an understanding of the key forces leading to commercialization of infrastructure services.
- Equip target group with the drivers for independent regulation in infrastructure sectors.
- Inculcate in the target group the concept of sector-specific infrastructure regulators operating in the country.
- Sensitize the participants on various compelling issues inflicting the infrastructure sectors.
- Develop practical insight through case studies.

Methodology

- Lecture
- Group discussion
- Role-play

Course contents of the module

Unit – I	Conceptual framework – Infrastructure: concept, role in the economic development, reasons of commercialisation and related issues. – Regulation of infrastructure sectors – concept, rationale, tenets, scope, regulatory reforms and their effect, regulation in pre reform and post reform scenario in India.
Unit – II	Electricity deregulation in India: Historical review of electricity sector, issues and factors leading to reforms, reform initiatives including regulatory reforms and overview of independent regulation in various states.
Unit – III	Reforms in urban services: History of urban services, various reform measures, regulatory reforms and experience of private sector participation in urban services.
Unit – IV	Telecommunications deregulation in India: Historical review of telecommunications policy, challenges leading to and introduction of private sector participation, initiatives undertaken by the government & the regulator and a review of competition in the sector.
Unit – V	Redefining the role of Government in the context of independent regulation.

Structure of the module

The manual is structured in accordance with day-wise programme. The programme of each day is further divided into different sessions. In the manual, each session contains three parts, in the first part objectives, method and guidelines to the facilitator are mentioned; the second part contains the slides of presentation to be used by the facilitator, and third contains the related reading material. All the points mentioned in the slides can be referred from the reading material related to that session.

Day wise break up of training module on "Infrastructure deregulation "

Day 1	
0930-1030	Registration, Informal interaction with the participants & introduction to the course
Session I (1030-1130hrs)	Conceptual framework – Infrastructure services
(1130-1200hrs)	Tea break
Session II (1200-1300hrs)	Conceptual framework – Regulation
(1300-1400hrs)	Lunch
Session III (1400-1445hrs)	Issues in infrastructure sectors & the role of government
Session IV (1445-1530hrs)	Issues in infrastructure sectors & the role of government (contd…)
(1530-1600hrs)	Tea break
Session V (1600-1730hrs)	Orissa power sector reforms
Day 2	
Session I (0930-1100hrs)	Regulatory reforms
(1100-1130hrs)	Tea break
Session II (1130-1300hrs)	Introduction to the Electricity sector
(1300-1400hrs)	Lunch
Session III (1400-1530hrs)	Reforms in the Electricity sector
(1530-1600hrs)	Tea break
Session IV (1600-1730hrs)	Orissa power sector reforms (contd…)
Day 3	
Session I (0930-1100hrs)	Evaluation of some regulatory decisions in electricity sector
(1100-1130hrs)	Tea break
Session II (1130-1230hrs)	Stakeholder perspective on independent regulation – I
Session III (1230-1330hrs)	Stakeholder perspective on independent regulation – II

(1330-1430hrs)	Lunch
Session IV (1430-1530hrs)	Stakeholder perspective on independent regulation – III
(1530-1600hrs)	Tea break
Session V (1600-1730hrs)	Orissa power sector reforms (contd…)
Day 4	
Session I (0930-1100hrs)	Reforms in urban services
(1100-1130hrs)	Tea break
Session II (1130-1300hrs)	Telecom deregulation – Privatization and regulation
(1300-1400hrs)	Lunch
Session III (1400-1530hrs)	Telecom deregulation – Competition
(1530-1600hrs)	Tea break
Session IV (1600-1645hrs)	Is private sector participation a panacea for the problems in an infrastructure sector?
Session V (1645-1730hrs)	Orissa power sector reforms (contd…)
Day 5	
Session I (0930-1030hrs)	Changing role of Government in new regulatory framework
(1030-1100hrs)	Tea break
Session II (1100-1300hrs)	Presentation and discussion on Orissa power sector reforms
(1300-1400hrs)	Lunch
Session III (1400-1430hrs)	Evaluation of and feedback of the programme

DAY ONE

The objective of first day's programme is to create awareness among the participants on the basic concepts on infrastructure services and regulation.

Informal interaction between the participants & facilitator would make the programme more interactive, and create a friendly atmosphere so as to have maximum involvement from the participants.

Introduction to the course should cover the aim and objectives of the training module. Besides, it should also highlight the contents of the course and various activities that would be conducted during the course of entire programme.

Session I

Conceptual framework – Infrastructure services:

Objectives

- To enhance the knowledge base of participants on the basic concepts of infrastructure and its importance to the economy.
- To enable them to understand how these services are different from other services.
- Sensitize them on the issues in infrastructure service.
- Enhance the understanding of participants on the rationale for commercialization and privatization of infrastructure services.

Method

Lecture and discussion

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Form an idea of the level of knowledge on theexisting with the participants by asking them few basic questions in the beginning like, What do you mean by infrastructure services, What is commercialization and why do we need commercialization, or privatization etc.
- Elaborate and discuss the main issues in infrastructure services such as pricing and subsidies.
- Ensure that sufficient time is given to the participants to comment, raise issues/questions, and clarify doubts.
- Conclude by emphasizing the role of infrastructure, giving the reasons leading to commercialization of infrastructure services, and mentioning in brief, the rationale for regulation of such services.

Session II

Conceptual framework – Regulation

Objectives

- To develop an understanding of the concept of regulation and the theoretical rationale behind regulatory intervention.
- To understand the goal that regulation aims to attain.
- To enable the participants to analyze the intervention of regulation in infrastructure markets.
- To make them aware of the tenets of regulation.

Method

Lecture and discussion

Guidelines to the facilitator

- Use OHP/LCD for presentation and distribute handouts of the slides before presentation.
- Sufficient time should be given in the end for answering the queries of participants.
- The concluding remarks should underlie the principles of regulation that are sought to achieve the desired aim.

Session – III

Identification of key issues facing the infrastructure sectors and the role of government in the reform process

Objectives

- Involvement of the participants in the programme
- To initiate a process of brainstorming to identify areas of concern in infrastructure sectors and the role of government in this regard.
- To enhance interaction between the participants

Method

Group discussion

- Divide all the participants into groups of four to five.
- Designate a rapporteur from among the group. The rapporteur will co-ordinate the discussion, and will also note the findings emanating from discussion. These findings will be presented in the next session.
- The discussion would revolve around the following topics:
  - What are the key issues affecting infrastructure sectors?
  - What should be the role of government?

Guidelines to the facilitator

- Distribute rough pads, OHP transparencies, and the required stationery to each group.
- Inform the rapporteur of each group to assimilate the findings of discussion by making few slides that would take 10 to 15 minutes to present.
- The rapporteur can present it alone or can also take the help of his / her group members.
- Explain that the exercise does not aim to assess their knowledge, and the participants should express a frank opinion on the subject.

Session – IV

Issues related to infrastructure sectors and the role of government in the reform process.

Objectives

- To further the level of interaction between various groups
- To develop an understanding of the sector-specific issues and possible solutions.
- To enable the participants to understand the role of the government and regulatory agencies in the reform process.

Method

Groupwork (presentation)

Guidelines to the facilitator

- Provide opportunity to the participants for seeking clarifications, raising queries or commenting.
- Ensure that the presentation does not overrun on time.

Session – V

Orissa power sector reforms – Case study

Objectives of the exercise

- To inculcate practical understanding of the sector reforms through the case study.
- To develop understanding among the participants regarding various forces that led to power sector reforms in Orissa
- To build awareness of the participants on the process adopted, and on the strategy for restructuring and privatization
- Consolidate the concept of independent regulation and its role in the reform process.
- To familiarize with the post privatisation scenario.

Objectives of the session

- To kickstart the exercise and initiate a brainstorming series on the subject.
- To enable the participants to examine the case study and test its replicability in other states.

Method

- Lecture and Groupwork
  - For groupwork, form four teams of the participants to represent the following stakeholders:
    - Private Operator
    - Regulator
    - Government
    - Consumer forums

Guidelines to the facilitator

- Use OHP/LCD for the presenting the case study.
- Outline the entire schedule of the exercise;
  - Each group would be required to answer three questions (Find annexed the Discussion themes for Orissa case study)
  - Each day the last session is allocated for the case study.
  - The first four sessions including Day One's session are allocated for group work. Besides group work in the coming three sessions, answers to the question announced in the previous session would be submitted, next question would be announced, and clarifications/queries of the groups would be sorted. The last day session (fifth session) would be

allocated for group presentations. The time of each presentation would be fixed taking into account the total number of hours and the no. of groups.

- Announce that any one of the team members would be requested to present the findings on the last day, and a particular team member would not be designated in advance for the same.
- Ensure that answers to the questions are received in time.
- Emphasize the importance of teamwork and reinforce an equal level of participation by the team members.
- Present an overview of the sector reforms carried out by Orissa in 15 minutes. Explain in essence; the context of reform, the process of privatisation, the post privatisation scenario and the outcome of reforms undertaken.
- Announce the first question of the case study.
- Ensure sufficient time for the participants to seek clarifications or to suggest changes in the conduct of case study.
- Facilitate the discussion by participating in each team during the group work.

Discussion Themes for Orissa case study

Group A: Private Operator

How was the process of restructuring and privatisation managed in Orissa?

Critically examine the regulatory / legal framework and the different stages in the privatization of the distribution business.

How should the process of privatisation be managed? Keeping in mind the Orissa precedent, formulate best practice guidelines for the following:

(a) methodology of asset revaluation

(b) employee issues

(c) reconciling subsidy and cross-subsidy with tariff rationalization objective

Group B: Regulator

Based on the Orissa experience, what do you think is the role of an independent regulator in a restructured sector?

Do you think independent regulation is an improvement on regulation by the government? Justify your answer.

How can the regulator ensure a win-win situation – guarantee a fair return to the utility and ensure that consumers pay a fair price?

Group C: Government

What was the role of the Orissa government in the reform process?

Do you think the government discharged its obligations in a responsible manner especially in discharging social objective of rural electrification and provision for subsidy?

What should the role of the government be during- and post-restructuring?

Group D: Consumer forums

Do you think there was lack of consumer involvement during the reform process? Justify your answer.

Please comment on consumer perception about rural electrification and the role of consumer in eliminating theft & pilferage?
What should be the role of consumer both during the reform process and post reform? Also comment, in privatised scenario the role of regulator and government to provide electricity at subsidised tariff to few consumer groups?

DAY TWO

Regulatory reforms

Session – I

Objectives

- To familiarise the participants with the effects of regulatory reforms worldwide.
- To enable the participants to assess the shortcomings of erstwhile regulatory scenario in India.
- To understand the compelling issues that lead to regulatory changes in India.
- To develop an understanding of the need for independent regulation in India.
- To familiarise them with the framework of existing regulatory agencies in India.

Method

Lecture and Discussion

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Adequate time for clarifications sought and for making comments by the participants.
- Highlight the inadequacies/fallacies of pre reform regulatory structure that hampered the development of infrastructure services.
- Conclude by driving home the idea that regulation is not a substitute to competition. The job of a regulatory agency is to facilitate the development of market from monopoly to competition.

Session – II

Introduction to Electricity sector

Objectives

- To build awareness among the participants on the past and current status of electricity sector.
- To familiarize with the crises affecting the sector at the macro as well as micro level.
- To sensitize the participants on the implications of widespread institutional maladies.

Method

Lecture and discussion

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Allow the participants to interact with the facilitator in order to get their queries answered.
- Provide an overview of the institutional as well as the legal set up in electricity sector before and after the reforms.
- Highlight that consumers have to pay cost based tariff for the sustainability of the sector.

Session – III

Reforms in the Electricity sector – structural and regulatory reforms, need for private sector participation in generation, Enron and Delhi case studies.

Objectives

- To develop an understanding of the need for restructuring the electricity sector.
- To analyze the difference made by the institution of independent electricity regulators.
- To familiarize the participants with the powers and limitations of independent electricity regulatory commissions.
- To sensitize the participants on the co-operation of all stakeholders for sustainable development of electricity sector

Method

Lecture and discussion

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Ensure sufficient time for discussion.
- Tabulate and explain the reforms undertaken temporally.

Session – IV

Orissa power sector reforms (contd…)

Objectives

- To enhance analytical skills of the participants.
- To enable them to assess the adequacy and desirability of reforms implemented.
- To develop an understanding of the current issues and set forth possible solutions.

Method

Groupwork

Guidelines to the facilitator

- Ensure that answers to the first question are received in time.
- Introduce the second question and answer queries of the participants.
- Facilitate the discussion by participating in each team during the group work.

DAY THREE

Session I

Evaluation of some regulatory decisions in electricity sector

Objectives

- To analyze the decisions undertaken by the State electricity regulators in India.
- To enable them to compare the various parameters or norms adopted by the Regulators to bring efficiency in the sector.
- Enable the participants to understand the rationale of decisions undertaken.

Method

Lecture and discussion

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Ensure that the participants have opportunities to raise issues, queries or comment.
- Facilitate a critical analysis by the participants of the regulatory decisions presented.
- Explain the legal enactment and its effect at the ground level.

Session – II

Stakeholder perspective on independent regulation – I

Objectives

- To build awareness on the operations of a regulatory agency.
- To examine the process adopted by the Regulatory Commissions before issuing an order.
- Assess the extent to which the concerns of various stakeholders are taken into account in a regulatory decision.

Method

A representative of regulatory agency at the level of Chairman / Member / Secretary would be requested to deliver a lecture on the functioning of independent regulator. This would be followed by a discussion.

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Ensure sufficient time for discussion and clarifications.

Session – III

Stakeholder perspective on independent regulation – II

Objectives

- To generate awareness on the problems and challenges faced by a regulated entity.
- To understand the perspective of the service providers as far as electricity regulation is concerned, and to discuss various issues in this regard.
- To highlight the expectations of a regulated entity from independent regulation

Method

A representative of regulated entity such as SEB, Transmission company, Distribution company would be appointed to deliver a lecture on deregulation scenario and the role of independent regulation. This would be followed by a discussion.

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Ensure sufficient time for discussion and clarifications.

Session – IV

Stakeholder perspective on independent regulation – III

Objectives

- To build an awareness of the contemporary consumer issues.
- To highlight the role of consumer association/consumers in regulatory decisions
- To highlight the expectations of consumers from independent regulators.

Method

A representative of consumer association would be appointed to deliver a lecture on the related consumer issues and perceptions towards infrastructure deregulation. This would be followed by a discussion.

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Ensure sufficient time for discussion and clarifications.
- Emphasize the importance of consumers as a stakeholder in the process of deregulation.

Session – V

Orissa power sector reforms (contd…)

Method

Groupwork

Guidelines to the facilitator

- Ensure that answers to the second question are received in time.
- Introduce the third question and answer queries of the participants.
- Facilitate the discussion by participating in each team during the group work.

DAY FOUR

Session-I

Reforms in urban services

Objectives

- Sensitize the participants on the current status of urban services and of regulation in this context.
- Develop an understanding of the issues and remedies in urban services sector.
- Examine the role of private sector in the provision of water services

Method

Lecture and discussion

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Ensure that the participants have opportunities to raise issues, queries or comment.
- Highlight the landmark decisions undertaken by the regulators.

Session – II

The session would cover ‘privatization’ and ‘regulation’ aspects of telecom deregulation.

Objectives

- To enhance the knowledge base of participants by reviewing the institutional set up that governed the telecom sector.
- Examine the process of commercialization and privatization temporally.
- To enable the participants to understand the policy & regulatory initiatives in shaping up competitive markets for telecom services.

Method

Lecture and discussion

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Ensure that the participants get opportunities to interact with the facilitator.
- Highlight that privatization is not the panacea for every problem but it could be an optimal solution provided an efficient regulatory framework is in place.
- List the various regulatory/policy changes temporally and present a brief review of the same.

Session – III

The session covers the 'competition' aspect of Telecom deregulation

Objectives

- To analyze the impact of sector liberalization by reviewing the indicators of competition.
- To familiarize the participants with the current state of telecommunication services.
- Highlight the benefits accrued on account of the telecom sector reforms.

Method

Lecture and Discussion

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Ensure the participants have sufficient time to clarify their doubts and raise issues/queries.
- Tabulate the various indicators of competition, and their corresponding figures.
- Sum up the presentation by drawing a comparison between the state of telecommunications before reforms and after reforms.

Session – IV

Is private sector participation a panacea for problems in an infrastructure sector?

Objectives

- Identify and examine issues related to the infrastructure sector mentioned in the case study.
- To analyse the impact of these issues on various stakeholders.
- Brainstorm to find solutions that address such issues.

Method

Role play

Guidelines to the facilitator

- Distribute copies of the case study.
- Form groups to represent the identified stakeholders in the case study.
- Allot one hour for discussion within each group to answer the following questions:
    - How can you contribute in addressing the issues reflected in the case study?
    - What are your expectations from other stakeholders?
- Facilitate a role-play discussion, wherein a representative or two from each group answer and question the relevant issues.
- Sum up the discussion by consolidating the group discussion and presenting the main points.

Session – V

Orissa power sector reforms (contd…)

Method

Groupwork

Guidelines to the facilitator

- Ensure that answers to the third question are received in time.
- Announce the schedule of presentations slated for the next day.
- Facilitate the discussion by participating in each team during the group work.

DAY FIVE

Session – I

Changing role of Government in new regulatory framework

Objectives

- To develop an understanding on the new regulatory environment and the changing role of government from a service provider to a facilitator

Method

Lecture and discussion

Guidelines to the facilitator

- Use OHP/LCD for the presentation and distribute handouts of the slides before presentation.
- Ensure that the participants have opportunities to raise issues, queries or comment.
- Facilitate discussion on the importance of the role of government in building institutions and systems that facilitate the development of infrastructure industries.

Session II

Presentation and discussion on Orissa power sector reforms

Objectives

- To raise issues and possible solutions from the perspective of each stakeholder

Method

Groupwork (presentation)

Guidelines to the facilitator

- Allow each group to make presentation for 10 minutes, followed by 10 minutes of discussion.
- Focus on the various loopholes in the reform process adopted in Orissa

Session III

Evaluation of presentations and feedback of the programme.

In this session, best presentation would be selected. Also, the participants will be asked to give their feedback in terms of the academic and other aspects of the programme. This may be done through an evaluation form.

Infrastructure –conceptual framework

Infrastructure is generally defined as the physical framework of facilities through which goods and services are provided to the public.[a] Infrastructure covers a wide spectrum of services: transport, electricity, telecommunications, port handling facilities, water supply and sewage disposal, urban mass transport systems, irrigation, medical, educational and other primary services. In fact, infrastructure may be divided into two categories, economic infrastructure and social infrastructure depending upon the nature of service. Economic infrastructure includes public utilities such as electricity, gas, telecommunications, water supply, sanitation & sewerage, solid waste collection and disposal, public works such as dam and canal works for irrigation, and roads
transport sectors such as railways, urban transport, ports and waterways, and airports
Social infrastructure often encompasses education and healthcare.

Each infrastructure sector is unique with regard to its economics, regulation, administration, level of technology and degree of commercialization. Whereas certain services like telecommunications can be provided on strictly commercial principles, others like water cannot operate in the same fashion. Water is a basic necessity and is essential for survival, therefore, it is expected to be provided on non-exclusive basis to all.

There are certain characteristics of infrastructure services that differentiate them from the conventional goods and services available for consumption. It is these characteristics that make management of such services an involved activity. Infrastructure services generally have the following characteristics:

Highly capital-intensive: The magnitude of investment required to provide such services efficiently is very large. A World Bank study has estimated that developing countries as a whole invest about 4 percent of their Gross Domestic Product (GDP) per year in physical infrastructure facilities.[b] Future investment needs are expected to be much higher because of demand created by economic growth, rising population and rapid urbanization. In fact, the need for investment in infrastructure rises exponentially with economic growth rate.

[a] The India Infrastructure Report, Policy imperatives for growth and welfare, Volume II (1996)

[b] The India Infrastructure Report, Policy imperatives for growth and welfare, Volume II (1996)

According to another World Bank estimate, East Asian economies have steadily increased infrastructure investment in absolute terms and as a proportion of GDP, which had been a major factor in their economic growth[a].

Generation of externalities: Infrastructure services are 'public' in nature in the sense that they are generally publicly available and also exhibit significant positive externalities. An illustration of positive externality is public lighting, which benefits all the citizens. The consumption of public lighting by one citizen has no effect on the consumption by another. It is also difficult to exclude anyone from the benefit and hence to charge for it from those who do benefit. The only way in which such exclusion is possible is to restrict entry into the areas where public lighting is provided, but this is neither practically feasible nor desirable. As a consequence, public lighting is characteristically provided by public authorities and is generally financed by some form of tax revenues.

Essential for social welfare: Water, electricity, sanitation, and transport are public services that should be available to all the citizens. Provision of clean drinking water reduces disease, and thereby improves productivity and reduces health costs. The extension of lighting to all homes, for example, enhances the ability of children to study, and its denial because of inability to pay, would not only harm the individual affected but also the economy as a whole because of the reduced availability of an educated labour force. Provision of adequate electricity and transport facilities is undeniably an important ingredient of socio-economic development.

Price-cost mismatch: It is difficult to price an infrastructure service to cover its full costs. The greater the element of public good and the difficulty of exclusion, as been the case with public lighting, the higher is the likelihood that the service would be provided by the public sector and financed by some form of tax revenues. The price-cost mismatch has been the main rationale for the public provision of infrastructure services.

On the basis of these characteristics, infrastructure projects can be classified as follows:

1) Open Access projects: Those from which people cannot be easily excluded, such as water supply and intracity flyovers.

2) Limited Access projects: Typically those that can be provided on the basis of a person's ability to pay such as a telephone service.

Because of the nature of 'public goods', infrastructure services have generally been provided by the State. Public provision of such services existed in many countries for most of the 20th century. The private sector's increasing interest in infrastructure provision on a commercial basis is only a recent

[a] The India Infrastructure Report, Policy imperatives for growth and welfare, Volume II (1996)

phenomenon. This new wave of private participation actually began in the 1970s when the US deregulated natural gas, power and airlines. During the 1980s, Chile, New Zealand and the UK implemented far-reaching deregulation and privatization of almost all infrastructure sectors. Whereas the circumstances and motivations inducing privatization differ from country to country, there are five basic factors driving the overall commercialization of infrastructure services across the world

1) Massive Investment needs: As already highlighted, funds required to finance infrastructure projects are immense. The State faces limitation with respect to infrastructure investment, as it has to fund other social programmes also, therefore, there exists a vast scope with regard to investment in infrastructure. Under-investment in the sector triggers bottlenecks that hamper the overall economic growth of the country. Future investment needs are projected to be much higher because of rapid industrialization & urbanization, to make up for past inadequate investment and of the high economic growth rates. As resources with the government are limited, outlays on infrastructure projects cannot be enhanced simultaneously with the social programmes. The only solution is to turn increasingly towards alternative sources including private financing.

2) Managerial constraints in the public sector: Efficiency of investment has assumed new importance in the context of fiscal prudence and there is a greater demand of accountability in public expenditures. There is a little connection between the cost of funds and the return on investment when infrastructure facilities are provided by the State. Consequently, there is little accountability. Often, public sector entities are not good at responding to consumer needs owing to rigidities in their management structures, the necessity to follow government set rules and regulations, and inappropriate incentive structures. Thus a demand has arisen for commercialization of infrastructure in order to inject greater efficiency.

3) Changes in technology: Technology changes have made it possible to unbundle infrastructure services especially telecommunications. For example, different firms can provide different telecommunication services such as international, domestic long distance, local services and other value-added services. It has, therefore, been possible to introduce competition, particularly in long distance services, which used to be a natural monopoly. In power sector also, it is feasible to separate generation from transmission and distribution, and allow competition in some segments. In general, greater opportunity for unbundling services enables increasing introduction of competition, and therefore, the participation of private sector.

4) Globalisation: The quality, reliability and cost of infrastructure are prime considerations of transnational corporations planning to locate new

investments. These are key factors in the ability of countries to compete in international trade. To compete for FDI, to facilitate exports and to improve their overall competitiveness, East Asian economies improved the quality and variety of infrastructure services. Many countries see greater involvement of the private sector within a competitive environment as a tool to improve efficiency both of investments and operations in infrastructure services. Globalization of world trade has arisen not only from the liberalization of trade policies but also from major advances in communication and transport facilities. The ability of developing countries to provide the infrastructure services essential for modern logistics (the combination of purchasing, production and marketing functions) management will increasingly determine their ability to compete for export markets and FDI.

5) New dynamism in World Capital Markets: The 1990s have seen the re-emergence of both domestic and global capital markets, which can be accessed relatively easily by private firms, institutions and governments. Investments in infrastructure projects with private participation in developing countries have risen by more than four times during the period 1985 to 1999[a]. In India, gross private capital flows have increased from 0.8% of GDP in 1990 to 3% in 2000[b]. Thus, the private sector now has access to the kind of resources needed for infrastructure investment.

Notwithstanding the rationale for commercialization of infrastructure services the social dimensions of infrastructure cannot be ignored. In poor countries in particular, the State bears a responsibility to provide the impoverished adequate access to basic services such as health, education, water supply, sanitation and sewerage. Whereas it is clear that there must be a greater degree of private participation in the provision of infrastructure, the Government will always retain a strong role in direct provision in areas not amenable to appropriate financing and user charges. Moreover, given the continuing monopolistic elements in most infrastructure services, there is a need to provide a level playing field by positioning an independent regulatory framework, which will protect interests of investors, on one hand, and protect consumers from monopolistic exploitation on the other.

Role of infrastructure in economic development of the country

Infrastructure represents the ‘wheels’ of economic activity. Telecommunications, electricity and water are used in the production process of nearly every sector, and transport is an input for every commodity. These

[a] World Development Report 2002
[b] World Development Indicators 2002

services are central to the activities of households and to economic production and their improvement enhances welfare and stimulates economic growth. Providing these services to meet the demands of businesses, households and other users is one of the major challenges of economic development.

Some cross-national studies highlight that there is a significant positive correlation between infrastructure and economic growth. While total infrastructure increases by 1 per cent with each 1 per cent increase in per capita GDP; household access to safe water increases by 0.3 per cent, roads increase by 0.8 per cent, power by 1.5 per cent, and telecommunications by 1.7 per cent[a]. This relationship highlights the potential of infrastructure in promoting not only economic but also social development of the country.

Infrastructure services are demanded not only for their direct consumption but also for raising the productivity of users. They help in the modernization and diversification of production. For developing countries wishing to compete in global markets, not just any kind of telecommunications and transport infrastructure will do. The growth of telecommunications and its applied services facilitate modernization of business processes and improvement of efficiency levels. During the 1980s, the proportion of shoes, garments and handicraft exports shipped by air from northern India increased five times because land and ocean transport systems were no longer able to meet demanding delivery requirements. [b] Availability of power allows substantial improvements in workers' productivity (for example, in the transition from foot-powered to electrically powered sewing). A higher quality of water and sanitation is required to shift from production of raw agricultural commodities to processed foods.

The benefits of good infrastructure are more conspicuous in the case of rural areas. Infrastructure is important for ensuring that growth is consistent with poverty reduction. To the extent that poor can be identified as those who are unable to consume a basic quantity of clean water and who are subject to unsanitary surroundings, with extremely limited mobility or communications, access to these basic infrastructure facilities could enhance their welfare. Different infrastructure sectors have different effects on improving the quality of life and reducing poverty. Clean water has the most obvious and direct consumption benefit. Access to transport and irrigation can contribute to higher and more stable incomes. Lower transport costs increases farmers' access to markets and modern irrigation methods lead to higher yields. The construction and maintenance of some infrastructure, especially roads and waterworks can contribute to poverty reduction by providing direct employment. An important

[a] World Development Report 1994
[b] World Development Report 1994

ingredient in China's success with rural enterprise has been a minimum package of transport, telecommunications, and power at the village level. Rural enterprises in China now employ a significant proportion of the labour force and produce more than a third of national output. According to a survey conducted in Bangladesh, villages classified as 'most developed' in terms of access to transport infrastructure were better off than the 'less developed' villages – in terms of agricultural production, income and labour demand and health[a].

However, provision of infrastructure services alone does not generate sustained increases in economic growth. The economic impact of infrastructure investment varies not only by sector but also by its design, location and timeliness. The effectiveness of infrastructure investment – whether it provides the kind of services valued by users – depends on characteristics such as quality, quantity and reliability. Finally, the efficiency with which infrastructure services are provided is also a key to realizing potential returns. All these factors demand a sound policy regulatory framework that can stimulate investments through enabling channels and facilitate efficient provisioning.

Issues in infrastructure services – subsidies and pricing

Subsidies

"Few public policies are as unpopular in theory and popular in practice as subsidies. The very word can make economists shudder and taxpayers fume, turn the poor into cynics and enrage environmentalists."
David Matin Roodman, The Natural Wealth of Nations

The phenomenon of subsidy is universal and has existed across all the countries without an exception. It is linked more with the infrastructure services, for these services are essential in nature. A product is subsidised when the costs incurred in supplying it are not fully recovered from the revenue generated by selling it, and the government generally covers the deficit. There are two types of subsidy:

- Direct subsidy
- Cross subsidy

Direct subsidy occurs where the funds to meet the shortfall are provided from outside the industry, generally through tax revenues. For instance, subsidy on fertilizer is of direct nature. However, cross subsidy occurs where the funds to cover the shortfall are provided from within the industry; one segment of consumers is charged a price that is below cost and charging other set of consumers a different price finances the deficit. For instance, in

[a] World Development Report 1994

telecommunications, the tariff of fixed line telephony is cross-subsidized by the tariff of long distance telephony. Another example of cross subsidy is subsidisation of the agriculture consumers by commercial & industrial consumers in the electricity sector. Cross subsidies are difficult to estimate, for there are many shared and common costs between the cross-subsidizing products. This is more likely the case in infrastructure sectors. For instance, common costs like employee costs, corporate overheads are difficult to allocate between local calls and long distance calls or say in electricity, between agriculture and industrial consumers. What portion of the employee costs or corporate overheads is allocated to local calls and what to the long distance?

Direct subsidy is a "purer" subsidy because the resources are generally raised from tax revenues and the exact amount of subsidy is explicitly quantified. The provision of direct subsidy is determined more on political than economic grounds. Such a provision is justified if it meets the desired social objectives otherwise scarce economic resources which are diverted towards such provisions could be employed for more productive purposes like building roads, schools and hospitals. A cross subsidy is implicit in nature as it is managed through resources generated within the industry, without any provision from tax revenues. However, whereas it may be administratively and politically easier to maintain subsidies from internal cross-subsidies, same is not the case with direct subsidies.

In theoretical terms, subsidy is generally justified on grounds of equity. It is granted to encourage use of infrastructure facilities by poor sections of the society who have a low level of income. The need for some form of income redistribution and relief for the poorest is essentially the rationale for granting subsidies. Kerosene oil is subsidised by the government to enable its consumption by poor who use it as a domestic fuel.

However, the effect of subsidies depends on whether the target groups consume the product at all, and if so how much of it. Its imperative to identify the target groups to make the subsidies effective. The indicators used for identifying such target groups are usually susceptible to imperfections. These imperfections have been classified as errors of exclusion and inclusion.[a] Errors of exclusion occur when the target group is not reached; for instance, in India, subsidized kerosene, a source of energy for poor households, is diverted to adulterate the transport fuel so that neither the kerosene nor its associated benefits reached the poor. Errors of inclusion arise when subsidy benefits the groups that are not targeted. In Indonesia, kerosene subsidies benefited mainly middle and high-income groups, rather than the poor for whom they were designed. The

[a] Barnes and Halpern (2000)

subsidized electricity tariffs in India benefits most of the population than selectively benefiting the deserving poor.

Although classified into two, errors of exclusion and inclusion occur simultaneously in most of the subsidy schemes. Most obviously, subsidies for telecommunications users are of little benefit to the majority of poor rural households, who do not make use of telecommunications facilities, while benefits accrue to the better off who do use them. It's rare to come across a poor person with a telephone in his house. As for electricity, 60% of the rural houses in India are not connected. Even in urban areas, 20% of the urban households do not have a power connection, illegal or legal. Around half the households even in urban areas do not have a tap in their homes. So the poor definitely do not benefit from the subsidies given in the provision of urban water supply.[a]

The Government has to spend a lot to maintain the provision of subsidies. Quite a high proportion of its revenue goes into the funding of subsidies. For instance in 1999-2000, expenditure on subsidies formed 13 per cent of the net revenue receipts of the Central government. The amount of major subsidies has been increasing continuously. The direct subsidy that is usually taken into account is the amount sanctioned by the Government. However, in addition, there are implicit subsidies because full costs of the subsidised service are not considered. This is especially so when the amount of subsidy is determined at a price that was set in the past and does not reflect the inflationary impact.

The issue of subsidy in the context of infrastructure reforms is intricate, given the social and political compulsions of the Government. Since infrastructure services like electricity, water are essential in nature, it is generally expected that the Government provide these at affordable prices. The affordable prices set are generally below the costs of supply and the deficit is met through subsidies. Whereas Government likes to maintain subsidies, infrastructure reforms impel different implications on subsidies. These reforms involve minimising subsidies over a period of time while aligning the price with cost. Unless prices are aligned with costs it is difficult to induce private sector to invest. And competition, which essentially comes with private sector participation, could not be generated in the absence of price re-balancing.

However, in a scenario of private entry and competition, it is commonly perceived that private entities tend to focus on high-income consumers, therefore people with low-income might be neglected. Also, given higher costs of providing infrastructure facilities and lower purchasing power in rural areas, these areas might remain unconnected in an environment of private entry and

[a] Rakesh Mohan, Tariff reform and regulation, Transition to a liberalized environment: experiences and issues in regulation (1999) pages 63-66, Editors: Leena Srivastava and S K Sarkar,TERI

competition. This is generally the premise that has continued the grant of subsidies in the post-reform scenario. Moreover, once the grant is sanctioned it becomes politically difficult to withdraw it. A constant provision of subsidy inflates its amount because the subsidised price is not increased to reflect the increasing costs. This price increase is avoided again due to widespread populism and affordability concerns.

The rationale for subsidy, as mentioned before, is to make the product or service affordable for the poor. Given low per capita and economic inequalities in the country, such a rationale stands justified. However it is essential to examine the extent to which the subsidy has really benefited the targeted population.

An effective policy has to be designed by the Government so that the provision of subsidy flows to the really deserving segments. A mechanism to meet such an objective is Universal Service Obligation (USO) framework. In USO, a proportion of license fee or annual revenues of the service providers is diverted towards an independent fund. This fund is managed by a government agency. The agency allocates these funds to the service providers operating in rural areas. Such a mechanism is relatively more transparent and effective. Initiatives are being taken in the telecom sector to put in place such a mechanism to increase the rural tele-density.

Pricing

Economic pricing of infrastructure services is essential to sustain their growth and development. This essentially means that prices should be fixed in a way that enables the producer to earn a reasonable rate of return over its investments besides of course recovering the costs deployed to produce the service, and the consumers in effect pays a cost-reflective price. A sufficient return incentivises further investment into the sector and cost reflective pricing ensures economically efficient outcomes. There was hardly any transparency in tariff determination of infrastructure services until independent regulators came into existence. Rationalisation of prices by aligning them with costs is utmost important and much of the regulatory action is witnessed in this function only. Infrastructure services are priced below their cost for economic as well as non-economic reasons. The economic reason is that since provision of such a service usually costs huge investments, price that recovers the total cost could render the service unaffordable and discourage its consumption. This factor coupled with the ‘need-based’ nature of these services usually leads to price determination that is unreflective of the true costs involved. However, it is the non-economic rationale that dominates over the economic one. Political compulsions and widespread populism tend to influence price towards a below cost level, which in turn has numerous ramifications.

The degree of efficiency attained during the production process also influences the price. Price would be lower if the service is produced as efficiently as possible. Transmission and Distribution losses in the power sector are higher in some states as compared to others; such a difference tends to impact the relative cost of supply. For instance, the T&D loss in Tamil Nadu is 16.5 per cent (2000-01) whereas in Orissa it is about 50%.[a] Keeping other factors constant, the per unit cost in Tamil Nadu is bound to be lower than in Orissa.

It is generally accepted that tariff determination should promote efficiency in the supply of service. Uneconomic pricing propels inefficient usage of the service and generates allocative inefficiencies. For instance, in telecommunications, whereas pricing long distance calls significantly above their costs discourages consumption of such services, pricing local calls below cost encourages consumption beyond the level at which local calls can be economically provided.[b]

Below-cost pricing hinders full cost recovery and in effect impedes the viability of service providers. At a juncture, when the aggregate commercial losses of the State Electricity Boards are to the tune of Rs 24000 crore[c], a sustainable provision of electricity is not possible without making these Boards viable by aligning price with the costs. Below cost pricing results in insufficient cash flows, which cripple the service providers in making necessary investments in the sector. Price-cost mismatch undeniably remains an important reason for under-investments in infrastructure industries. Such a practice also deters the infusion of fresh capital into the sector, for investors require an adequate level of return to ensure sustenance in the market. Most of the foreign direct investments in power sector didn't shape up due to price distortions besides the prevailing operational inefficiencies in the industry.

Below cost pricing could also lead to depletion of natural resources and impel environmental costs. For instance, in states with free electricity to the farmers, the level of watertable has gone down drastically due to continuous running of the tube-wells. An absence of water charge has compounded the problem all the more. Price ought to reflect the scarcity of resource to ensure sustainable usage and development of the resources.

In theory, as highlighted in the previous section, fixing a below-cost price for infrastructure services is justified on grounds of equity. However in practice, such a fixation does not yield the desired results. There are still many villages

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[a] Annual Report (2001-2002) on the working of State Electricity Boards and Electricity departments

[b] Price regulation, Telecommunications Regulation Handbook (Edited by Hank Intven and McCarthy Tetrault)

[c] Annual Report (2001-2002) on the working of State Electricity Boards and Electricity departments

that remain unconnected with respect to roads, telephone and electricity. Even where access to such services is available, poor don't avail them or consume in low quantities due to the inadequate level of purchasing power. Thus, the benefits of below-cost prices are skewed toward the consumers that can afford cost reflected prices but ultimately pay below-cost prices.

Efficient pricing fulfils financial requirement and promotes efficiency. Besides, it also promotes competition in the industry. Unless price induces cost recovery, introducing competition would remain paperwork only. Private entrepreneurs operate on commercial principles and do not resort to pricing that does not recover their costs. Private entry, which is vital for competition would not be induced unless distortions in pricing are eliminated.

Regulation – conceptual framework

Regulation means a process that is prescribed by laws to direct some decisions of firms in the industry in the public interest.

Regulation may also be defined as the diverse set of instruments by which governments set requirements on enterprises and citizens. Regulations include laws, formal and informal orders and subordinate rules issued by all levels of government, and rules issued by non-governmental or self-regulatory bodies to whom governments have delegated regulatory powers. Regulations can be categorized into the following[a]:

Economic regulation: When the Government intervenes directly in market decisions such as pricing, competition, market entry, or exit; it is called economic regulation. For instance, in electricity, the price is not determined independently by the firms providing electricity supply. There are regulatory guidelines that have to be followed by firms to determine the price. Another form of economic regulation is when the Government stipulates the number of players that are allowed to operate in an industry. For instance, in cellular services segment of the telecom sector, the Government has allowed only four players to operate in each circle. By putting a cap on the number of players, the Government indirectly influences the extent of competition. There are entry conditions, especially in infrastructure sectors, which have to be fulfilled before a firm can start operating in the market. For instance, in oil sector, marketing rights are made available to a company which invests or proposes to invest Rs. 2000 crore in exploration and production, refining, pipelines, or terminals. Similarly, there are conditions that have to be met by the firm before it stops providing services.

Social regulation: Social regulation essentially means regulation in sectors such as health, education, environment etc. Regulation of these sectors is important because their development is in larger public interest. In education, for instance, there are some policy guidelines that have to be followed before one can open a school. In environment, there are emission norms that have to be complied with in order to check the rising level of air pollution.

Administrative regulation: Regulation that involves paperwork and administrative formalities through which governments collect information and intervene in individual economic decisions.

Few terms related to regulation

[a] This manual mainly deals in Economic regulation

Regulatory reforms

Regulatory reforms refer to such changes, which improve the regulatory quality by enhancing the performance, cost effectiveness, or legal quality of regulation and related governmental formalities. It would also mean revision of a single regulation, the scrapping and rebuilding of an entirely regulatory regime and its institutions, or improvement of processes for making regulations and managing reform.[a] Broadly, it refers to amendment in laws and institutions to make them conducive for development of the sector. Setting up an independent body for regulating purposes or resetting the existing regulatory framework also comes under the purview of regulatory reforms. In India, sectors like electricity, telecommunications, ports are currently undergoing regulatory reforms. Regulations governing these sectors are being changed to suit the changing economic scenario and meet the development challenges pertaining to each sector.

Deregulation

Deregulation means unshackling the industry from regulation, whatsoever. However, according to the OECD framework on regulation, it refers to complete or partial elimination of regulation in a sector to improve economic performance. It is an ideal state of market, free from 'tight fist' form of regulation. A deregulated scenario is generally marked by a fair degree of competition in the market. A state of competition exists when there are many service providers in the market, there are virtually no barriers for a firm to enter into and exit the market, and the prices are reflective of the true costs. Attaining a state of deregulation in any sector is a major challenge facing the developing countries. Deregulation requires amending old laws and changing institutional structures, which are politically difficult. Privatisation, which is an essential part of deregulation, is difficult to push through in a situation marred with vested interests. The recent fracas over the disinvestment of State owned PSUs that attracted a lot of political attention testifies the challenge in implementation of economic reforms. Not only starting the process of deregulation but also administering the transition to deregulation is difficult. The telecom sector is classic example in this context. From the time of setting up of the regulator in 1997 till date the telecom sector in India has witnessed many controversies.

In a situation where populism prevails over economic sense, deregulating sectors warrant an independent governance set up, which will minimise the scope of political interference. Although ideal in theory, this state is difficult to attain as some form of regulation always exist, especially in critical sectors like electricity, water etc.

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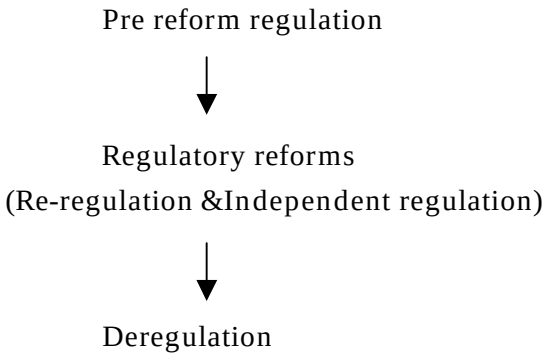
[a] The OECD Report on Regulatory Reform, Synthesis (1998)

The following flow-chart highlights temporal dimension of the term regulation in India



Pre-reform regulation, in general, refers to the form of regulation that existed prior to economic reforms wherein the Government was the policy maker as well as the regulator, and the process of regulation was identified with a 'command and control' approach. In this period, infrastructure was an exclusive domain of the Government, and only Government owned enterprises provided infrastructure services.

Regulatory reforms in India that started in early 90s encompassed revision of the existing laws and setting up of independent regulators. Legislative changes allowed private entry in many sectors. Independent regulators were set up to facilitate the movement from monopoly towards competition. The UK privatization programme that entailed selling off government entities and allowing private entry in many sectors was followed by extensive regulatory reforms. Regulation was not eliminated in the process of privatization, instead it was made amenable to the changing scenario.

Deregulation is identified with a state of light-handed regulation. The scope of regulation in such a state is to monitor and intervene only when the market gets into a deadlock over an issue. Infrastructure sectors in India are still in the phase of regulatory reforms and a minor degree of deregulation has been attained in few sectors.

Rationale for regulation

The fundamental reason of regulation is to prevent or minimize the effects of market failure. Market failure is defined as a situation when firms operating in the market fail to achieve overall welfare of the society. For instance, a situation wherein firms only cater to high-income categories or a situation wherein the market produces the good / service at a price that's too high as compared to the costs. The 'public good' nature of infrastructure services makes them

susceptible to market failure. It is the possibility of market failure that necessitates a regulatory intervention in line with the welfare objectives.

The following situations in an economy describe the existence of market failure:

Monopoly power: Monopoly refers to a market structure where there is a single producer and a large number of buyers. There are many reasons for such a market structure. In case of infrastructure services, there are inherent features of such services like economies of scale, immobility of assets, or legal barriers to entry that a monopoly market structure becomes a natural corollary. Economies of scale arise when the cost of producing good or service declines as the volume of production increases. In the absence of competition, the monopolist restricts output to less than the optimal level and raises the price more than the competitive level, thereby reducing welfare of the society. A more liberal definition of monopoly would cover more than one producer but the market structure is highly concentrated in the hands of few and price & output are the same as in the case of single producer. For instance, in telecom sector, Bharat Sanchar Nigam Limited (BSNL) has a virtual monopoly in the fixed-line segment. Over 90% of the market is catered to by BSNL. Similarly in the distribution segment of electricity, there is hardly any player other than the State Electricity Board (SEB).

Presence of monopoly is the main reason for regulating such services, because absence of regulation could lead to abuse of monopoly power, which includes poor quality of service, higher prices, underdeveloped market, unmet demand etc. A regulated monopolist would serve better the interests of consumers and producers than an unregulated one.

Asymmetry of information: It refers to a situation where the information delivered to the consumer, while he makes a purchase decision, is inadequate. Information asymmetry exists because the producer, of course, is aware of all the information related to the product but the consumer is not. The producer does not pass the full information or at least the critical part of it, to the consumer. The information gap can be minimized if there is a suitable regulation. The guidelines mentioned on the package of drugs is an example where a regulation aims to bridge the information asymmetry.

Externalities: An externality may be defined as impact on a party due to a transaction executed by another party, where the former is not involved in the transaction. For instance, a steel plant dumps effluent in a river that causes irrigation water downstream to become unsuitable for use. For the steel producer it is an externality, for it is not paying the true cost of waste disposal. For the farmer, using the same water for irrigation purpose, the externality is negative, for the water may affect the yield. Regulation is expected to minimize

the externalities and correct such market failure. Environment regulation is an example of such regulation.

Goal of regulation

"The purpose of regulation is to ensure socially desirable outcomes when competition cannot be relied upon to achieve them. Regulation replaces the invisible hand of competition with direct intervention – with a visible hand so to speak"[a]

Regulation of economic activities is the second best solution, the first being competition. Competition puts a downward pressure on costs and thereby leads to lower prices. Quality of service improves in a situation where firms try to gain extra market share. Lower prices make the service affordable for more consumers and therefore investments are increased to cater to the increasing consumer base. The rate of adopting latest technologies is also higher in case of a competitive market. Competition, by lowering prices enable more and more people to avail the services provided and thereby is in larger public interest. The Government interventions in market are minimised in case of competition. Owing to all these benefits of competition, infrastructure markets are regulated to move towards a state of competition.

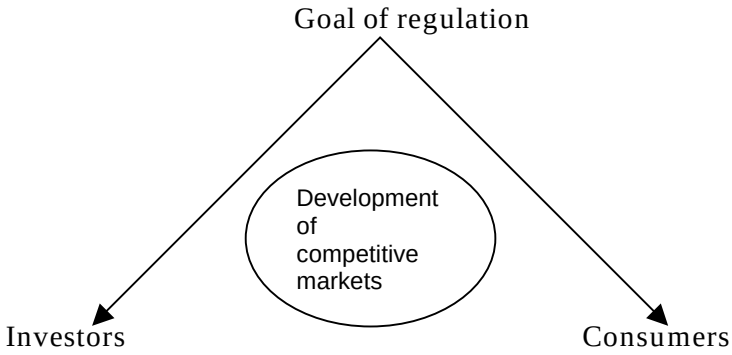
In principle, the interaction between competition and regulation may be explained with the help of the following matrix:

Competition	Regulation: low	Regulation: high
high	**high-low** Desirable (II)	**high-high** Undesirable (I)
low	**low-low** Undesirable (III)	**low-high** Desirable (IV)

The matrix emphasizes that regulation should be minimal when the degree of competition in an industry is high (Quadrant II). This stage of the market calls for a light-handed regulation, which ensures that competition is conducive for long-term development of the industry. It is not desirable to have a highly

[a] Train K E (1991), Optimal Regulation: The Economic Theory of Natural Monopoly

regulated market structure when the competition is fairly adequate to cater to the public interest. Unwarranted regulatory intervention at such a stage endangers investment climate that might be detrimental to the long-term growth of market. However, a relatively higher regulatory intervention is required when the degree of competition is low (Quadrant IV), for low competition without regulatory safeguards endangers public interest.



In developing countries like India, infrastructure services, which were monopolized until a decade ago, are now being thrown open to competition. Regulatory interventions are sought especially during this transition. This is so because conflicts between the stakeholders tend to arise more during the transition period. The interests of various stakeholders have to be taken account of in order to regulate effectively. In this context, the goal of regulation is to balance the consumers' interest as well as investors' interest while ensuring development of the sector. The ultimate aim of regulation is competition because competition leads to the desired economic and social outcomes. As long as the market is competitive, firms, very likely, don't charge much above their marginal cost (cost of producing an additional unit of service). This leads to lower prices in the market. In order to remain competitive, firms attempt to enhance their efficiency and bring their costs down. The gains made on account of lower costs are shared with the consumers in the form of lower prices. In this way cost savings are passed on to the consumers in competitive scenario, which is very unlikely the case in a monopoly set up. The cost-reducing effect of competition is sometimes accompanied with a deterioration of quality of service. The regulator has to make a constant vigil on this aspect too, along with promoting competition.

Tenets of regulation

The basic tenets of regulation are discussed under the following broad categories:

Scope

Autonomy

Accountability
Powers

Scope

With respect to the scope of regulation, the following may be noted:
(i) It varies across sectors and countries, and
(ii) It is not static.

(i) There are no uniform guidelines for regulatory functions; in general, these include entry / exit of players, tariff setting, dispute settlement, licensing, USO framework etc. For instance, regulators in the telecom industry in UK and Philippines can issue licenses and allocate frequency whereas regulators in Australia and Canada cannot. The functions of telecom regulator in India are different from that of its counterpart in the United States. Electricity regulators in Pakistan, Maine (USA), and Australia have the power to grant licenses whereas the regulator in Israel does not.

Within a country also, the regulatory functions differ from sector to sector. The scope of telecom regulation in India is different from that of electricity regulation. Whereas the telecom regulator sets tariff in few services and advises the government on the timing of entry of operators, licensing conditions, technical capability etc., the central electricity regulator regulates tariff and interstate transmission of power.

(ii) The scope of regulation need not be permanent. It should vary in accordance with the market dynamics. As highlighted before, a regulator's job is to facilitate development of the market from a monopolistic structure to a competitive one. The functions mandated during the monopoly period may not remain valid in a competitive market. For instance, tariff setting function of the regulator would be redundant once the market is competitive enough to ensure a fair deal to the consumers. A prudent approach to regulation calls for a constant evaluation of competition and other parameters in the market, and revise regulations accordingly.

In sum, the scope of regulation, in general covers the following:
Regulation of tariff: Tariff is and has been the most important area of regulation. The need-based nature of infrastructure services requires tariff regulation from a consumer's perspective. The high costs involved in their provision require tariff regulation to taken into account the investor's interest.
Ensuring the quality of service: Quality of service is an important aspect, for infrastructure is not only used for end consumption but it also acts as an intermediate good / service in almost all the industries.
Improving efficiency and productivity: Regulation is important to enhance the efficiency levels of the firms. An important reason for regulatory reforms in the

electricity sector is to bring down the T&D losses. T&D losses are the losses that are incurred by the SEB on account of technical inefficiencies and because of theft and un-metered consumption of electricity. These losses are very high in degree. In some states they are as high as 40-45%. Bringing down these losses is important to ensure viability of the SEBs and sustainable provision of electricity.

Protection of consumer interest: Regulation is put in place in order to ensure that the consumers get a fair deal and they pay in commensurate with the quality of service. Regulation checks that the consumers are not fleeced and overcharged. A consultative form of regulatory process wherein the consumers are involved in determining the tariff or quality of service parameters helps in protecting consumers' interest.

Ensuring fair competition in the sector: Owing to the benefits of competition, which have been highlighted before, promoting fair and equitable competition becomes a natural corollary of the regulatory domain.

Speedy resolution of disputes between different players: The rising of disputes between the various stakeholders during the transition period is inevitable. A third party mediation in the form of separate regulator helps in speedy resolution of these disputes.

Prevent cartelization: Cartelization refers to a situation when the firms operating in a market collude with each other to determine the market outcome. This outcome could be in terms of creation of artificial scarcity of the product thereby driving up the price, or it could be in terms of jointly deciding to hike the price. Cartelization therefore is not in the public interest and its incidence has to be prevented through effective regulation.

Autonomy

An important ingredient of a well-functioning regulatory body is the degree of autonomy given to it. The autonomy of regulator has to be guaranteed by law and should not be left to the discretion of the executive. The executive refers to the political party in power. The law should ensure that the regulator is able to perform its role independently of government approvals and should have full freedom to exercise its powers. Ideally, the regulator and the executive should work in close co-ordination, for better governance. There are national priorities to be adhered by the executive, which might restrict the autonomy of regulator. However, the executive must consult the regulator on such priorities so as to avoid confrontation at a later period. Moreover, a regular interface between the regulator and the executive would result in a relatively consensual policy framework. A genuine autonomy can only be achieved through a regulatory framework that provides for:

- Clear qualification criteria for the regulators, prescribed appointment process and prescribed tenure.
- Clear description of the powers of the regulators as well as that of the government.
- Sufficient legal authority
- Allowing the regulators to hire best available expertise, and incur expenditure without having to obtain government approval.
- Autonomous funding which is not subjected to a budgetary process

Accountability

The regulator should be sufficiently independent but at the same time accountable. The regulatory rules and procedures should be clearly specified so that the regulatory decisions can be monitored and challenged if need be. Legislative scrutiny of the regulator's working, transparency in decision making through open hearing and easy access to proceedings, effective appellate bodies, external scrutiny of the regulator's conduct, regulator's removal criteria, etc. are some measures to ensure accountability.

Powers

For an efficient discharge of its functions, a regulator should have the authority to access information and documentation, call for evidence, and compel attendance in the proceedings. Also, a regulator without any teeth will not be able to ensure the compliance of its orders. The penal provisions must be stiff and should also be made uniformly applicable across service providers. Regulator should also have the authority to issue directions while discharging its functions. Any violation of its directions should be adequately punishable.

Electricity Sector

Introduction

Electricity constitutes one of the key infrastructural inputs for socio-economic development. The interdependence of economic development and growth in electricity sector is well documented in literature, though the direction of the relation is still debated. Thus for a developing country like India, the electricity sector is one of the key focus areas in the development process. The increasing dependence on power in India, is evident from increasing electricity intensity in various sectors. In tandem with this trend, per capita electricity consumption in the country has increased more than twenty folds, from a mere 15.6 kWh in 1950 to the current level of 374 kWh. Despite this, per capita electricity consumption in India is 6 times lower than world average and 20 times lower than that of high income countries (WDR, 2000). There are also huge inter-regional and interstate disparities within the country- while per capita consumption in Delhi is as high as 500 kWh, it is as low as 80kWh in the north eastern states. Urban-rural inequalities are even starker. With economic growth and social development, bridging these disparities, coupled with the rise in population, power consumption in the country will rise several folds in the future. At the same time, high T&D loss and inefficiencies in the system have made the sector financially unviable and fiscal capability is also inadequate to meet the growing demand of electricity. In order to bring in efficiencies and investments, the Government opened up the sector in 1991, followed by setting up of independent regulatory bodies.

The chapter begins with a broad overview of the power sector as it exists till 1990s, highlighting its concerns and issues followed by discussion on various reform initiatives, policy shifts in favor of distribution reforms, setting up of independent regulatory bodies in states and a snapshot and comparison of various regulatory orders.

Background

Structure of the Industry

The structure of the power supply industry has evolved considerably post independence. Pre independence, the electricity industry, governed by the *Indian Electricity Act, 1910*- which (along with amendments in 1956) provides for participation of private industry in generation and supply of electricity- comprised a large number of independent private / Municipal electricity utilities. In 1950, about 63% of the installed capacity in the utilities were in the private sector and about 37% in the public sector.

During post Independence era, vide the *Electricity (Supply) Act, 1948,* (with various amendments) and *Industrial Policy Resolution, 1956,* private participation progressively diminished and the sector gradually assumed its current form of vertically integrated statewide public sector utilities (State Electricity Boards, or SEBs). The E (S) Act, 1948 also created the Central Electricity Authority (CEA) to plan and formulate power policy at the national level, to serve as a National Regulatory Body and to promote techno-economic efficient generation and integrated transmission system. Therefore, till 1990s, the electricity industry in India has been regulated and owned by various government agencies and organizations. The role and participation of the private sector was limited and confined to specific areas of small jurisdiction and consumer base. The government, through the authority conferred on it by different laws, had taken upon itself the role of the developer, promoter, and regulator of electricity.

Further, unlike in telecom sector, the subject of electricity is covered under the concurrent list in the Constitution of India, implying that both the central government and the state governments have the power to legislate the sector.

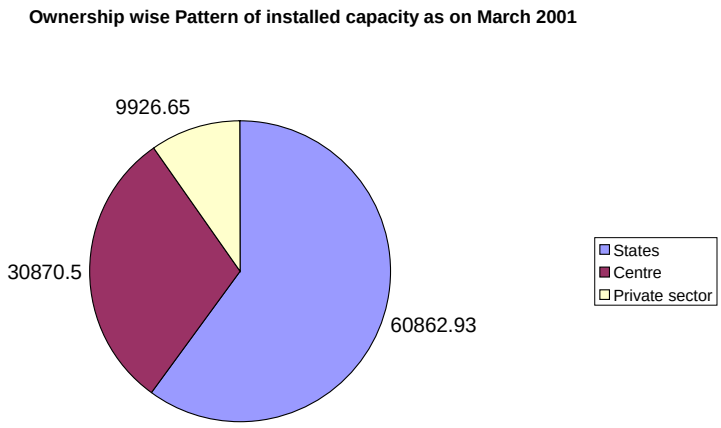
At the centre level, various plans have allocated certain amount in power sector from total plan outlay. Specifically, Fifth Plan (1974-79) onwards, the centre got involved in a big way in the generation and transmission of power, taking upon itself the responsibility of setting up large power projects to develop the coal and hydro electric resources of the country to supplement the efforts at the State level for meeting the country's power requirements. The NTPC (National Thermal Power Corporation) and NHPC (National Hydro Power Corporation), were set up for this purpose in 1975. Other noteworthy developments in the sector include establishment of Rural Electrification Corporation (1969) to address rural sector concerns, Power Finance Corporation

(1986) to provide financial support to the SEBs, and Power Grid Corporation primarily to integrate the five regional grids into a unified national system.

Growth of the sector

The electric power industry in India has registered significant progress since the inception of the economic planning process in 1951. The sector has been allocated 15-20% of the total public sector outlay in every plan period. In line with this, installed capacity has grown from about 1362 MW in 1947 to about 101630 MW as on March, 2001. Out of total generation capacity, 59.87% is owned by the States, 30.37% by the Centre and 9.76% by the private sector as shown in the Figure XX.

Figure XX



Rural infrastructure development too, has received due emphasis. As on 2000-01, 508 077 villages have been electrified out of 587 258 villages (provided by the CEA). Table XX below shows the growth of the power sector post independence.

Table XX Growth of Indian Power Sector

	1950	2000-01
Installed Capacity (MW)	1362	101630

Per Capita Consumption (kWh)	15	374
Transmission and distribution lines (Million Km)	0.03	5.5
Villages Electrified (Million)	0	0.58
Pumpsets Energized (Million)	0.02	11.9*

Source: TEDDY 2001-02 *For the year 1998-99

Issues and reform initiatives

Despite the growth in physical infrastructure, the power sector in the country is plagued by severe financial constraints that have in turn led to functional inefficiencies and shortages. At the beginning of the Ninth Plan, there was a peak shortage of 18%, and energy shortage of 11.5% on all India basis. The Ninth plan envisaged an additional capacity of 40245 MW, where as, only 19119 MW of capacity was added during the implementation of ninth plan. Even in the scenario where the Ninth Plan targets[a] were achieved, the country nevertheless would have faced a peak deficit of 11.6% and energy deficit of 1.4%. During 2000-01, the peak power shortage was 13%, while energy shortage was 7.8%.

Further, the financial performance of Boards is severely distressed, the annual commercial losses of SEBs, excluding the state government subsidy, were 87700 million rupees in 1995-96. The main factors responsible for the under performance of the sector are as follows:

1. Poor financial condition of the SEBs due to (a) unremunerative tariff structure- domestic/agricultural consumption, which accounts for almost 50% of the total, is highly subsidized (b) poor billing and collections (c) the industrial sector, the major contributor to revenues of SEBs, moving out of the grid due to poor quality of power and large cross-subsidization of residential and agricultural consumption (d) high and unaccounted T&D losses (e) high and inefficient employee and other costs in the system
2. High T&D losses, in turn are due to (a) pilferage and theft of electricity (b) Weak and inadequate sub-transmission and distribution systems (c)

[a] The Ninth Plan targeted a capacity addition of 40,245 MW (hydro- 9820 MW; thermal - 29 545 MW; and nuclear 880 MW). Of this, the share of the central government has been put at 29.6% that of the state government is 26.7%, and the rest (43.7%) is to be contributed by the private sector.

large scale rural electrification programme involving long LT lines (d) Inadequate investment for upgradation and maintenance

3. Financial constraints have led to poor plant maintenance, adversely affecting plant availability and system efficiency.
4. Generation resources are seriously insufficient on an installed capacity basis and there is lack of right kind of capacity to meet demand. The share of hydel power, which provides peak time support to the power system has declined significantly, adversely affecting the performance of thermal plants in some regions.
5. Lack of adequate transmission capacity for linking the various regions.

Apart from above factors, the structure of electricity industry itself has inherited certain loopholes. The traditional structure of the electricity industry was based on the economic theory that power plants production and delivery are natural monopolies, and that large centralized power plants were the most efficient and inexpensive means of producing electric power and delivering it to the customers. Large power generating plants, integrated with transmission and distribution systems will achieve economies of scale and consequently will lower the operating cost. Because of the monopoly structure, the Central and State government regulations were developed to control operating procedures, prices, and entry to the industry in order to protect consumers from potential monopolistic abuses.

Severe financial losses have led to the almost total inability of these utilities to self-financed improvements. Utilities also borrowed heavily and aggravated their losses. So the lack of internally generated funds and inability of the government to provide funds have resulted in severe shortages of capital and expanding generating capacity. The situation further aggravated with SEBs inability to meet rising demand supply gap due to declining technical performance. The SEBs were plagued with performance inefficiencies, like low plant utilisation, large transmission and distribution losses, non-standard voltages and frequencies, frequency load shedding, and brownouts (power cut in small area) and blackouts (power cut in a wider area).

Last but most important, the fundamental reason for mounting financial losses and inefficiencies of SEBs was contorted tariff structure. The tariff

determination process was totally non-transparent and distorted, that had cascading effect, not only, on the overall health of the sector, but also, on the economy as a whole. The subsequent section would pin-point two fundamental problems plaguing the sector.

T&D losses and collection inefficiency

The T&D losses are quite high in India compared to many other countries. Until 1990s, T&D losses accounted for nearly 22% of the total electricity available. However, after the initiation of reforms & restructuring process, the reforming states started reporting higher T&D losses. It is stated that the utilities are now able to make estimates of T&D lossses in the power system, which were earlier partly camouflaged as agricultural consumption. It should be noted here that the utilities on an average, bill about 50-60% of electricity sold and about 70-80% of these bills actually being collected (Planning Commission). This number is high in comparison to corresponding figures ranging from 6 percent to 11 percent in developed countries but also in comparison to developing countries. China loses about 10 per cent, Thailand about 10 percent, Taiwan about 7 per cent and Argentina no more than 12 per cent. High T&D loss has led to an annual financial loss of about 100 billion rupees, equivalent to a negative rate of return of 17%. What is more disappointing is the deterioration that has taken place even during the period 1992–97 when the private power policy was in action. The annual loss increased from 47 billion rupees to 100 billion rupees; the rate of return reduced from -12.7% to -17.9%; and the tariff coverage of cost of supply reduced from 82.2% to 78.9%. In essence it was realised that the private power policy for generation projects would not succeed unless it was preceded by extensive reforms of the distribution business. We would discuss this in the later sections.

Factors Responsible for Excessive T&D Losses

The main factors responsible for the high T&D losses in the Indian power systems are broadly classified in the following categories.

Financial

There has been a general lack of appreciation amongst the planners about the importance of providing adequate T&D facilities to match with the additional generation capacity being inducted in the power system. The fund allocations for the transmission and distribution systems during the various Five-year plans have not been made on a rational basis but on the vague assumption that some sort of patchwork in the existing transmission and distribution network would some how meet the requirements. According to the report of the Rajadhyaksha Committee on Power appointed by GoI in 1978, for the development of a well-balanced power system it is considered desirable to have investments in the generation and T&D sectors in the ratio of 1:1. From a study pattern of investment on these two sectors, it is seen that barring First plan (1951-56) when provision for generation, and T&D was in the ratio of 1:1.26, the ratio of investments in T&D has consistently declined to the level of 1:1.88 per cent over the years.

For implementing any programme for reduction of losses to lower levels, say 18 per cent by the end of Tenth Plan (2006-07) as recommended by CEA in their Report on Perspective of National Power Development, additional funds would have to be made available to the utilities to enable them to undertake necessary system improvement works.

Administrative

Although the Indian Electricity Act has recently been amended to make theft of electricity a cognizable offence, it has been reported by the utilities that due to certain legal loopholes in regard to corresponding provision in the Indian Penal Code, the percentage of successful prosecutions has been very few. They have pointed out the necessity for taking remedial measures for plugging these legal loopholes. In a majority of cases involving theft of electricity, connivance of the staff of the utilities can not be ruled out. Moreover, the state electricity boards are currently ill equipped to detect this theft, much less prevent it. The utilities should therefore formulate suitable transfer policies to counter the possibility of distribution staff developing vested interests. Utilities also need to review their policy of flat-rate power supply to some categories of consumers, which encourages wastage of electricity. Possibly even if power is supplied on flat-rate

basis, electricity meters could be provided for energy accounting purposes. Also, the un-metered supply of electricity, particularly to agricultural consumers, makes it difficult to measure precisely the amount of power sold to the agricultural sector and the electricity lost in distribution. The unaccounted electricity provided to the agriculture sector is currently included with distribution loss, thus further inflating the T&D loss figure.

Impact of T&D losses

The impact of the excessive T&D losses in the Indian power system is two fold. First, this is resulting in under-utilization of the total energy that is being generated, which is unpardonable considering the large energy shortages that country is facing. The situation is further aggravated due to the fact that financial resources crunch is coming in the way of inducting additional generating capacities to the required extent. Secondly, the energy wasted due to excessive T&D losses is required to be compensated by setting up new generating stations (in all probability fossil fuel based thermal) with attendant environmental degradation problems due to emission of green house gases. Additional funds would have to be provided to the utilities to reinforce their weak distribution system. The poor state of SEB finances, however, does not give the boards much leeway in this respect.

Tariff structure

The above framework has been in existence for the last 50 years. Though the industry has expanded from about 1500 MW to about 90 000 MW of generation capacity, the system still suffers from substantial shortages. Despite 50 years of existence the economic status of the power industry remains very poor. A large part of the industry is not only financially weak to provide for any growth but is also unable to sustain a reasonable level of service to consumers. The pricing mechanism has led to a situation that, on an average for the whole country, tariff provides for only about 78% of the cost of supply. Besides till 1995, the pricing method used by most utilities in the Indian electricity industry is the cost-plus method. The regulatory mechanism for setting electricity tariffs is

outlined in Schedule VI of the Electricity (Supply) Act, 1948. The cost-plus approach starts with the identification of costs which include the fixed costs related to capacity, the variable costs related to fuel, and other customer related costs. Then these costs are allocated as 'equitably' as possible among consumers through the tariff structure.

The guiding principles for retail tariffs were usually financial and social. Usually the policy makers would like the level of tariffs to be such that it meets certain financial criteria and the structure to be, in some sense, fair without penalizing certain groups arbitrarily. However, tariffs have evolved in an ad hoc manner in the past 30 years. Electricity tariffs have been used and are currently being used to meet several financial, political, and social objectives. The cumulative effect of such forces has created a complex web of tariffs in most states of India.

Typically, electricity prices in India are less than the cost of electricity production (average cost) and substantially less than the cost to build and operate a new power plant (marginal cost). During the financial year 1996/97 the average realization was about Rs 1.49/kWh while the cost of supply was about Rs 1.86/kWh. Compounding the problem of underpricing is the high level of T&D loss and poor collection rate from farmers and domestic consumers. Electricity prices are also low in India compared to utilities in a number of other Asian countries.

Underpricing of electricity is a serious issue in India's power sector. Underpricing encourages consumers to place little value on saving energy. In many states, electricity to the agricultural sector is not only underpriced but actually distributed free (for example, in the states of Punjab and Tamil Nadu till 2001). Most states follow a flat-rate tariff structure for their agricultural consumers where farmers are charged on the horsepower of their irrigation pumps and not on the actual electricity consumed. Subsidies[a] for agriculture also create excess demand for electricity and provide disincentives for investments in conservation. More importantly, high demand makes power supplies unreliable, forcing consumers to maintain back-up generators, which results in macroeconomic distortions due to overcapitalization in the economy.

[a] The amount of subsidy provided to sectors such as domestic and agricultural was Rs 202099 million in year 1996-97

Not only this, the provision of subsidies discourages energy conservation, leading to inefficient use of natural resources. For instance, in case of agriculture, the result is inefficient use of farm water, over extraction of water, declining water tables and distortions in crop choices. This not only degraded a very vital natural resource but also has long term effects for the agriculture sector.

Further, the average tariff for the domestic and agricultural consumers is less than the average cost of supply whereas for the commercial and industrial categories is more than the average cost of supply. The impact of this cross-subsidized tariff structure has been that states are gradually losing their attractiveness to retain industries. This is reflected in the decreasing share of industrial consumption in the sale of electricity in these States. This is obviously a reason for concern not only for the power sector but also for the economy as a whole. There is therefore a need to reverse the trend of using commercial and industrial consumers to cross subsidise other sectors, and to move towards tariff that reflect the cost of supply that would in turn promote efficient and economic investment and consumption.

Till the introduction of the regulatory reforms, the above-mentioned aspects were not recognised and acted upon while determining tariff. Further, the latter process had been non-transparent and closed-door exercise, complied with inadequate data and skills, and in general based on political compulsions.

Need for reforms

Poor fiscal health and lack of capability to invest in the sector compelled government to look for private sector participation. Reforms were initiated by the central government in 1991, when it introduced the policy to liberalize the sector and promote private investments in the sector. This policy focused initially on the generation side of the business. Its main objective was to add generation capacity in a short time frame through private capital by making the sector attractive for investments. Since then, a series of further measures have been initiated by the government to expand and refine the policy for the sector. Amendments were introduced in the Indian Electricity Act, 1910 and the Electricity (Supply) Act, 1948 to facilitate the process. These are discussed in brief in Annex 1.

Generation reform

The landmark amendment that facilitated the private sector participation in generation business was 1991 amendment to 1910 Act and the 1948 Act. Under this, the 1910 Act and the 1948 Act were amended by the introduction of significant changes. These included a provision for the grant of supply license for an enhanced period under the 1910 Act and the introduction of the concept of the generating company as distinct from the licensee and the board. In the meantime, the industrial policy was also changed to allow private enterprises in generation and distribution of electricity.

Government policy also allowed for higher debt capital, higher allowance of depreciation charges, and recovery of fixed cost including post tax return on an equity of 16 per cent. Subsequently, the governments followed a competitive bidding route for future projects instead of the erstwhile MoU/LoI route. A further sop by way of payment security comfort was envisaged through counter-guarantees.

However, the response to this policy was inadequate[a] — for instance, of the large number of private participants that showed interest in setting up

[a]In October 1991, the central government took up eight fast-track power projects. Of these, one was the Enron Power Project (engaged in setting up a 2184 MW generation plant in Maharashtra), while the other seven fast-track projects were to be taken up by multi-national power companies such as Daewoo, China Light, Cogentrix Energy, EDF, National

generation projects, very few have actually been able to arrange finance for their projects.

The Enron experience related to private investment in generation business is explained in Annex 2.

Shift in policy and Development in legislation on regulation

Shift in Policy

As discussed in the earlier section it was realised that the private power policy for generation projects would not succeed unless it was preceded by extensive reforms of the distribution business. Unless the industry provides a strong base of commercial working at the point of sale of electricity, it would be futile to expect huge capital investments in generation, transmission, and distribution projects and other related inputs like fuel, transportation, etc. Also, if there was doubt regarding servicing of the capital investment, investors would be lukewarm despite the most attractive rate of return in the policy.

Further, it was recognized that fundamental organizational changes would have to be effected to restore financial viability of the sector, as the existing vertically integrated monopolies[a] were not in a position to improve their performance. It was also felt that privatisation of electricity services was not possible given the existing structure of the sector. Like the State Electricity Boards tottering on the brink of bankruptcy, private investment was not forthcoming in the generation as the SEBs was in no position to pay for the power purchases (this was one of the fundamental reason for failure of earlier policy).

Hence the need of restructuring the current electricity sector was felt. The goal of restructuring was to increase transparency and accountability, viability of industry, facilitate private sector participation and to promote a competitive market. The idea was to bring about a change in the role of the government, from that of a service provider to that of a policymaker and the need for an independent & transparent regulator was felt. The responsibility for ensuring

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Power, STCMC etc. Later on, some backed out, while others faced delays in clearance, re-negotiation of contracts, and even opted for unilateral abrogation of the project.

[a] Where sole one entity is responsible for generation, transmission and distribution of electricity

efficient operations of the industry will gradually shift towards an independent regulator, and the government will continue to be responsible for long-term planning, and legislation and evaluation of sector performance.

Regulatory reform and legislation

In 1996, the central government, along with the state governments, decided on the Common Minimum National Action Plan. The objectives of the plan were to initiate steps required to improve the performance of the sector at the central and state level in a time-bound manner. Setting up the CERC (Central Electricity Regulatory Commission) and the SERCs (state electricity regulatory commissions) was a key element of this plan.

The central government passed the legislation enabling the setting up of independent and autonomous regulatory bodies at the central and the state levels in July 1998. This is a significant step towards restructuring the electricity industry in India and is expected to provide an environment conducive to the dynamic growth of the industry. The regulatory bodies are expected to promote competition, efficiency, and economy in consumption of electricity and in investments for the development of the sector.

The Act provides for the establishment of the CERC to regulate the tariff of the central generating companies and other generating companies in case of a composite scheme for generation and sale of electricity to two or more states and to regulate the interstate transmission of electricity, including the tariff payable to them.

The Act also makes provisions for the establishment of a state electricity regulatory commission as an option (not as a mandate) to the state governments. The state government can establish such a state commission in terms of the Act for the purposes of determining the tariff / charges payable for the intrastate transmission and supply of electricity. The state commission will also regulate the working of the licensees and others involved in the electricity industry in the state. The functions of the CERC are outlined below.

- To regulate the tariff of generating companies owned or controlled by the central government.
- To regulate the tariff of generating companies other than those owned or controlled by the central government specified in the act, if such generating

companies enter into or otherwise have a composite scheme for generation and sale of electricity in more than one state.

- To regulate the interstate transmission of energy including tariff of the transmission utilities.
- To promote competition, efficiency, and economy in the activities of the electricity industry.
- To aid and advise the central government in the formulation of tariff policy which shall
  - be fair to the consumers
  - facilitate mobilization of adequate resources for the power sector
  - associate with the environmental regulatory agencies to develop appropriate policies and procedures for environmental regulation of the power sector
  - arbitrate or adjudicate upon disputes involving generating companies or transmission utilities in regard to matters connected with the above-mentioned clauses
  - frame guidelines in matters relating to electricity tariff
  - aid and advise the central government on any other matter referred to the central commission by that government.

The enactment of the Electricity Regulatory Commissions Act, 1998 and the establishment of the CERC are positive steps. There are, however, a number of other measures, especially at the state level, which need to be initiated urgently to provide a comprehensive solution for restructuring the power sector. The ERC Act has facilitated the setting up of state electricity regulatory commissions and many states have set up the same following this route. The states, however, also need to consider the option of enacting a reform bill to facilitate comprehensive reform, i.e., restructuring, unbundling, and corporatization of the vertically-integrated SEB and related aspects.

Broadly, the functions and power of SERC as envisaged in the ERC Act 1998, and as mandated by there own reform Act is outlined below:

- Setting retail tariffs;
- 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;

- Promotion of competition
- Creation of environment for private sector participation and,
- Co-ordination with environmental regulatory agencies and to evolve policies and procedures for appropriate environmental regulation of the electricity sector and utilities in the state.

In all, need for independent regulation was recognised to determine the power tariff, to make decision making process more transparent and consultative, to balance the interests of various consumers, to ensure financial viability of the electricity industry, to provide a level playing field to the private sector considering that most of the incumbent operators were either government owned companies or government departments.

Restructuring of the sector and status of reform in electricity sector

As discussed in the earlier section that the ERC Act 1998, has paved the way for regulatory reforms in India. Till now, 21 state electricity regulatory commissions have been established and many have issued tariff orders. Some have been created through specific legislation and others through enabling provisions in the ERC Act, 1998. Some of the states are discussed below:

Orissa

Orissa was the first state to initiate power sector reforms in the country with the enactment of the Orissa Electricity Reform Act in 1995. Significant progress has been achieved since then. The OSEB (Orissa State Electricity Board) was dissolved and unbundled as part of the reform programme. The generation business has been hived off into two corporations, i.e., the OPGC (Orissa Power Generation Corporation) which took over the thermal plants of the erstwhile OSEB and the Orissa Hydro Power Corporation which took over the hydro plants. The transmission and the distribution businesses were entrusted to GRIDCO (Grid Corporation of Orissa Limited), which is the successor organization of the OSEB. The distribution business has been divided into four zones and is privatized in 1998/99. (Detail case study on Orissa power sector reforms would be discussed separately)

Further, the OERC (Orissa Electricity Regulatory Commission) was established in 1996 as a part of the reform process. The powers and functions of the regulatory commission include issue of licences, enforcement of licences and regulation of licensees, promotion of economic efficiency and safety in transmission, distribution, and use, regulation of bulk supply and retail supply tariffs, collection of data and forecasting, and promotion of competition.

Haryana

The Haryana Electricity Reform Act was passed in 1998 and the Haryana Electricity Regulatory Commission was enacted according to the provisions contained therein on 17 August 1998. At the same time, the Haryana Electricity Board was unbundled and the generation, transmission, and distribution businesses were corporatized under separate activities. Two distribution zones were formed. It is proposed that the east zone would be privatized, with the government of Haryana retaining equity participation.

Haryana has followed the Orissa model with secondary changes. The privatization of the distribution business at the first stage is limited to one of the two zones. This will provide an opportunity for comparison of performance of a private operator with the state owned utility.

Gujarat

The Government of Gujarat initiated the reform programme in 1997. The principal components of the programme involved setting up an independent regulatory commission to restructure the GEB (Gujarat Electricity Board), modernize and upgrade the distribution system, and clear the backlog of connections for the agriculture sector. The state government has established the Gujarat Electricity Regulatory Commission in November 1998. This process, however, will not provide a mechanism for restructuring the GEB. The state is thus considering separate state legislation providing for a comprehensive reform programme.

In contrast to the Orissa model which is also being followed by AP, etc, states such as Rajasthan, Tamil Nadu, and Kerala follows a different model: in the initial stage, distribution circles of SEBs are hived off into profit centres with full autonomy. In UP, a further different approach is attempted wherein private

sector participation is limited to specific cities in order to avoid risks for dividing the states into zones on inequitable basis. West Bengal is reportedly following a significantly different structure whereby all the distribution in the rural areas is handed over by the board to a new organization called the State Rural Electrification Development Corporation. This organization is expected to be structured as rural cooperatives buying power from the SEBs and managing their affairs at a local level. A number of different structures and variations within structures are being undertaken in different states. (Box 1).

Box 1: Snapshot of reform

1) Uttar Pradesh
Generation companies:
UPRVUNL : Uttar Pradesh Rajya Vidyut Utpadhan LImited (Thermal)
UPJVNL: Uttar Pradesh Jal Vidyout Nigam Limited (Hydro)
Distribution company: UPPCL (both transmission and distribution company), KESCO & NPCL (Urban areas)
NESCO- Privatised
KESCO- Privatisation process started in 1999 but is not successful till now
2) Orissa
Generation company OHPC: Orissa Hydro power Corporation limited
OPGC: Orissa Power generarion corporation limited
Transmission company: GENCO
Distribution company (privatised): WESCO, NESCO, SOUTHCO, NESCO
3) Andhra Pradesh
Generation company: APGENCO (Andhra Pradesh Generation corporatrion limited)
Both hydel and thermal plants comes under this company.
Transmission company: APTRANSCO (Transmission corporation of Andhra Prades LImited)
Distribution company: APEPDCL, APCPDCL, APNPDCL, APSPDCL (Southern Power Distribution company of Andhra Pradesh)
4) Rajasthan
Generation company: RVUN: Rajasthan Vidyut Utpadan Nigam
Transmission company: Rajasthan Rajya Vidyut Prasaran Nigam Limited(RRVPN)
Distribution company: AVVNL, JVVNL, JOVVNL
5) Haryana
Generation company: Haryana Power generation corporation limited (HPGCL)
Both hydel and thermal plants comes under this company.
Transmission company: Haryana Vidyut Prasaran Nigam Limited

Going a step ahead, Orissa was the first state to privatise its distribution in 1999, followed by the Delhi experience in 2002. The Delhi privatization exercise was structured to overcome some of the concerns arising out of the Orissa privatization attempt. The brief description of Delhi experience is explained in Annex III.

Annexure I

Brief description of legislation guiding the power sector

The Indian Electricity Act, 1910

The Indian Electricity Act, 1910 (hereafter, the 1910 Act) was passed by the Legislative Council on 18 March 1910 and came into force with effect from 1 January 1911. It deals with the supply and use of electricity and is applicable to the whole of India except the state of Jammu and Kashmir. The 1910 Act deals with the grant of licences to persons who wish to engage in the business of supply or transmission of energy and also for approval to non-licensees to undertake transmission, supply, and use of energy. The 1910 Act has five parts. Part I deals with the preliminaries including definitions. Part II deals with the grant of licences for supply of energy and matters related thereto including the performance and functioning of the licensees. Part II A deals with licensing of transmission. Part III deals with the supply, transmission, and use of energy by non-licensees. Part IV deals with general matters including those concerning the use of electricity by institutions such as railways, aerodromes, the constitution of advisory boards, etc.

The Electricity (Supply) Act, 1948

After Independence, the Government of India enacted the Electricity (Supply) Act, 1948 (hereafter, the 1948 Act), which came into force on 10 September 1948. The 1948 Act came into force to provide for the rationalization of the production and supply of electricity and for taking measures conducive to electrical development.

The 1948 Act aimed to ensure coordinated development of electricity in India on a regional basis. The government felt that this was a matter of increasing importance for post-war reconstruction and development. Further, it was also felt that the absence of a coordinated system, in which generation is concentrated in the most efficient units and bulk supply of energy centralized under the direction and control of one authority, was another reason that was impeding the healthy and economical growth of electrical development in the country. It was also apparent that if the benefits of electricity are to be extended

to semi-urban and rural areas in the most efficient and economical manner consistent with the needs of an entire region, the area of development must transcend the geographical limits of a municipality, a cantonment board, or a notified area committee, as the case may be.

It was therefore necessary that the appropriate governments should be vested with the necessary legislative powers to link together under one control electrical development in contiguous areas by the establishment of what is generally known as the 'grid system'. It was under these circumstances that the 1948 Act passed to facilitate the establishment of this system in newly licensed areas and to control the operations of existing licensees so as to secure fully coordinated development.

The government felt that it is not possible to legislate for this purpose within the framework of the 1910 Act, which was conceived for a very different purpose. Thus, on the broad lines of the Electricity (Supply) Act, 1926 in force in the United Kingdom, an appropriate legislation which will enable provincial governments to set up suitable organizations to work out 'grid schemes' within the territorial limits of the province was enacted.

The 1948 Act is divided into seven chapters and has nine schedules. Chapter I deals with the preliminaries including definitions. Chapter II deals with the constitution and functions of the CEA (Central Electricity Authority). Chapter III deals with the SEBs. Chapter IV deals with the powers and duties of the SEBs. Chapter V deals with the working and trading, etc., of the SEBs. Chapter VI deals with the SEBs' functions, accounts, and audit. Chapter VII deals with the miscellaneous provisions.

The SEBs came to be established in various states pursuant to a mandate contained in Section 5 of the 1948 Act. The CEA was constituted to develop sound, adequate, and uniform national power policies to coordinate the activities of planning agencies in relation to the control and utilization of national power resources.

The Indian Electricity Rules, 1956

The Indian Electricity Rules, 1956 were issued in the exercise of the power under the 1910 Act (Section 37) providing for procedural aspects such as obtaining of licences and for matters such as the general safety requirements,

the general conditions relating to the supply and use of electricity and matters connected with the electric supply lines, overhead lines, electric traction, etc.

Amendments in the 1910 Act and the 1948 Act

The 1910 Act and the 1948 Act were amended from time to time to take care of the changing circumstances and requirements. The principal amendments have been the 1956, 1959, and 1991 amendments.

1956 Amendment

Section 57 of the 1948 Act was amended. The amended Section 57 provided for calculation of licensee's charges to customers in accordance with the provisions of Schedule VI to 1948 Act. Schedule VI provided in detail the financial principles and their application in calculating the licensee's charges. The intention has been to give a reasonable rate of return to the licensee but at the same time to ensure that if there is a windfall, a substantial part of the excess amount is ploughed back to the benefit of the consumers and upgradation of the system.

1959 Amendment

The 1910 Act was amended to make provisions relating to consumer benefits, exercise stricter control over licensees, provide for inspection of electric works, and installation of the central government.

1991 Amendment

In 1991 (pursuant to the liberalized economic policies of the government) the 1910 Act and the 1948 Act were amended by the introduction of significant changes. These included a provision for the grant of supply licence for an enhanced period under the 1910 Act (30 + 20 years) and the introduction of the concept of the generating company as distinct from the licensee and the board. The object of these amendments was to provide for greater participation of the

private sector in the generation of electricity and also to make supply licences attractive by enhancing the duration of the licences. In the meantime the industrial policy was also changed to allow private enterprises in generation and distribution of electricity.

Annexure II

Brief description of Enron experience in power generation

Controversy over Enron's Dabhol power project in Maharashtra has raged since April 1992 when Houston-based Enron was invited to bid for a power project. The PPA signed in 1993 between the DPC (Dabhol Power Company) and MSEB (Maharashtra State Electricity Board) for 2015 MW power projects, is basically a take-or-pay power purchase agreement backed by a credible security package including a letter of credit, escrow of MSEB's cash flows, guarantee from the Government of Maharashtra and a counter guarantee from the Government of India. These coupled with a credible security package, were designed to mitigate the power off take risk and payment risk. Fuel risk, and exchange rate risk were also to be mitigated, as fluctuations in fuel price and exchange rate were to be passed on to the consumers. The idea behind providing these incentives was to mitigate the different kinds of risk and give positive signals to the potential foreign investors.

In June 1995, the new government in Maharashtra scrapped the project alleging high costs and corruption. In the same year the project was renegotiated by the group appointed by Government of Maharastra (GOM) and a report on this was submitted. This report has been severely criticised by the Godbole Committee[a] on the ground that the assumption made by the

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a The Committee headed by Dr. Madhav Godbole (Ex Chairman MSEB) was set up by the

renegotiating group is questionable. First, demand has been lower than anticipated, resulting in low despatch. Second, the rupee has depreciated consistently and now stands at Rs. 46.7 to the dollar as compared to Rs32 assumed by the group. Even at the time of the renegotiations the dollar value was Rs36. Thirdly, the fuel price assumed was erroneous, like the price of oil today is around $26 barrel (and had gone as high as $35 per barrel last year) as opposed to $ 13 per barrel assumed by the group. Due to these assumptions the tariff was assumed to be Rs.1.89 per unit, while the actual average tariff was Rs.4.67 per unit.

Nonetheless, the Phase I (for 744 MW) became operational in May 1999. The MSEB soon realized that it was not in a position to off take power at 90% PLF, while according to the PPA, the board was obliged to pay the fixed cost. The MSEB defaulted on its payment in October 2000 due to poor financial condition and lack of demand (as compared to estimates). Following contractual provisions, the DPC tried to operate the escrow account and invoke the state and central guarantees, but these were not honoured. The DPC issued an arbitration notice to the Central Government to collect previous bills and also invoked the political *force majeure* clause for non-fulfilment of its obligations under the contract. However, in 2001 Enron major has withdrawn its share from the Dabhol Power Corporation.

Government of India for reviewing the state energy sector and the impact of independent power projects.

Annexure III

Brief description of Delhi Distribution Privatisation Experience

The blueprint of DVB restructuring and privatisation was envisaged in the strategy paper issued by the Government of NCT of Delhi in February 1999. Subsequently, Delhi Electricity Regulatory Commission was set up on March 3, 1999 under the Electricity Regulatory Commission Act, 1998 (Central legislation). Later, Delhi Electricity Reform bill was passed by the Delhi Assembly and got the Presidential assent on March 11 2001.

In the meantime, DVB submitted five year tariff principles to DERC, intended to facilitate the reform process, along with the Annual Revenue Requirement (ARR) for the year 2001-02. However, DERC issued tariff order on May 23, 2001 fixing ARR for the year 2001-02, but not approving five year tariff principles.

Subsequently, as a part of reform process, the DVB was restructured and split up into six companies. The notification dated November 20, 2001 and November 22, 2002 laid down the principles and policy direction for transfer scheme and privatisation of distribution companies. Following this, the Delhi distribution business was handed over to private companies on July 1, 2002. (See annex 3 for the chronology of events relating to Delhi restructuring and privatisation of distribution).

Various components of restructuring and privatisation plan, the policy direction issued by the Government of Delhi are discussed below.

Base line data- AT& C Loss

A methodology for arriving at the losses in the distribution business was devised as per the policy direction laid down by the Government of Delhi[a], which is named as Aggregate Technical and Commercial (AT&C losses). The AT&C loss can be determined by the following formula:

AT&C Loss % = 1 - [billing in units / inputs in units * collection in rupees / billing in rupees]

[a] On November 22, 2001

In simple terms, AT&C losses can be expressed as the difference between units realised and units input into the DISCOM as a ratio of units input into the DISCOM. It appears that this principle of measuring losses appears to be better step than the usual practice of taking the T&D loss number and ignoring the problem of erroneous billing and collection inefficiency.

According to the policy direction, bulk supply tariff petition was submitted and the DERC approved the opening level AT&C losses, as shown in the following table.

Table : Opening Levels of AT&C Loss

DISCOM	Opening Level of AT&C Loss
CEDEDCL	57.2%
NNWDDCL	48.1%
SWDEDCL	48.1%
ALL DISCOMs	50.7%

Financial restructuring plan

Valuation of assets

Opinions vary as to what could be the best methods for valuation of assets of a public entity. The traditional method of valuation of assets is however based on utility's book value using discounted cash flow method. On the contrary, DVB has used a business valuation method in this regard. The assets were valued by assuming that the electricity business will become self sustaining within five years of privatisation, there is no retail tariff shocks to the consumers, and the support from the Government of Delhi for funding initial losses of about Rs.3450 crores is guaranteed. This was intended to avoid problems that arose due to revaluation of assets in the case of Orissa.

Bidding process and inventive for investors

As per the policy guidelines, competitive bidding was to done on the AT&C loss reduction levels, whereas in Orissa the bidder was selected based on the highest offer for 51% face value of the share. In Delhi the criteria for selection was

maximum reduction in AT&C losses over a 5-year period above the minimum level specified by the Government. Accordingly, the Government of Delhi decided on the minimum reduction targets. However, on the date of opening of bids only two bids were received, both offering AT&C loss reduction much lower than the targets set by the Government. As these bids were not satisfactory, a core committee consisting of senior officers negotiated an agreement. The minimum AT&C loss reduction targets set by the Government, the original bids received and the revised negotiated and accepted bids are given in the table below:

Table: Year-wise Percentage Reduction in AT&C losses proposed by the Government and the revised negotiated reduction

	2002-03		2003-04		2004-05		2005-06		2006-07	
	Min	Rvsd	Min	Rvsd	Min	Rvsd	Min	Rvsd	Min	Rvsd
Central East (BSES)	1.50	0.75	5.0	1.75	5.00	4.00	5.00	5.50	4.25	5.00
South West (BSES)	1.25	0.55	5.0	1.55	4.50	3.30	4.50	4.25	4.00	5.60
North-North West (TATA)	1.50	0.50	5.00	2.25	4.50	4.50	4.25	5.50	4.00	4.25

Total AT&C loss reduction targets for the period 2002-03 to 2006-07 (figures in percentage)

DISCOM	Minimum	Original Bid	Revised Bid
Central East	20.75	14.00	17.00
South West	19.25	13.35	17.00
North North- West	19.25	13.50	17.00

As an incentive to the private players, on any additional reduction[a] (i.e. beyond the Government reduction targets) the utilities will retain 50% of the additional revenue realised, the remaining being passed on the consumers as a rebate on tariffs. Also the investor will get assured 16% return on the issued and paid up capital and free reserves till the end of 2006-07 subject to all expenses as permitted by the DERC.

Transition support by Government

In sharp contrast to Orissa, the Government of Delhi will make available to the Transmission Company an amount of up to approximately, Rs. 3450 crores during the period 2002-03 to 2006-07 as to bridge the gap between its revenue requirement and the bulk supply price which it may receive from the distribution licensees. It is expected that the distribution companies would be in a position to achieve a turn around during this period and would become self-sustaining.

The Delhi privatisation is structured to overcome some of the concerns arising out from previous experiences. It is expected that it would reduce the tariff uncertainty by fixing a loss curve to be used by the regulator in setting tariffs and the Government provides transition support through subsidy.

a On the other hand, if the actual AT&C loss reduction of a DISCOM is worse than the AT&C loss reduction level quoted in the bid, the entire short-fall on account of the same shall be borne by the DISCOM. In the event the actual AT&C loss of a DISCOM is worse than the minimum AT&C loss reduction level stipulated by the Government but better than the loss reduction level quoted in the bid, the entire additional revenue from such better performance shall be counted for the purpose of tariff fixation.

Regulatory Reforms

Effects of regulatory reforms: An ex-post review of regulatory reforms

It is not feasible to trace out the exact effects of regulatory reform on the economy or the industry in which the reforms had been carried out. This is because of the fact that regulation does not operate in isolation, and plays an important role in a broader framework of economic policy. There are many other factors that combined with effective regulation enhance economic performance. Regulatory reforms have costs as well as benefits. Whereas costs could be in the form of job losses in a particular sector, benefits could include enhanced productivity and lower prices. The approach in assessing the effects of regulatory reforms should not be straitjacketed by a sector or impact on a stakeholder. It is vital to scrutinize the spillover linkages resorting to an economy-wide approach, for the effects are often diffused and widespread across the sectors.

An outline of the effects of regulatory reform is mentioned as below:

- Regulatory reforms increase productivity, lower prices and eliminate shortages:

Estimated effects of regulatory reform:

(Percentage change relative to baseline)

	United States	Japan	Germany	France	United Kingdom
Partial effects					
Labour productivity	0.5	2.6	3.5	2.3	2.0
Capital productivity	0.5	4.3	1.3	3.3	1.4
Total factor productivity	0.5	3.0	2.8	2.7	1.8
Business sector employment	0.0	-1.0	-0.4	-0.4	-0.5
Wages	0.0	0.0	-0.1	0.0	0.0
GDP price level	-0.3	-2.1	-1.3	-1.4	-1.2
Economy wide effects					
GDP	0.9	5.6	4.9	4.8	3.5
Unemployment	0.0	0.0	0.0	0.0	0.0
Employment	0.1	0.0	0.0	0.0	0.0
Real wages	0.8	3.4	4.1	3.9	2.5

Source: The OECD report on regulatory reform, Volume II, Thematic studies (1998)

In Europe, labour productivity growth in manufacturing sectors doubled because of the introduction of regulatory reforms. Road haulage industries in the U.S. and the U.K. witnessed an increase in capital productivity of around 50 per cent after relaxation of out-dated operational controls.

Price reductions after elimination of economic regulation
(Price reductions may be in part attributable to factors other than regulatory reform)

Sector		Price reductions in real terms (percent)
Road transport	Germany	30
	Mexico	25
	France	20
	United States	19
Airlines	United Kingdom	33
	United States	33
	Spain	30
	Australia	20
Electricity	Norway (spot market)	18-26
	United Kingdom	9-15
	Japan	5
Financial services	United Kingdom	70
	United States	30-62
Telecommunications	Finland	66
	United Kingdom	63
	Japan	41
	Mexico	21
	Korea	10-30

Source: The OECD report on regulatory reform, Synthesis (1998)

In air transport in the U.S., real fares dropped by a third between 1976 and 1993, more than half of this decline is attributed to deregulation. Following airline liberalization in 1993, 800 new licenses were issued in Europe, and more people are using lower-cost economy fares. Similarly in telecommunications, demonopolization helped lowering the average prices for telephone services by 63 per cent in the UK and 41 per cent in Japan, which had helped, increase the subscriber base substantially.

- Regulatory reform has stimulated innovation and consumer choice: Telecommunications sector has witnessed some landmark innovations such as mobile telephony, broadband, Internet access. These innovations have revolutionized business processes and other economic activities. In fact, Internet has integrated the whole world into a single global village. These innovations have come to the fore much more quickly in competitive markets than in monopolies. Privatization of building approvals in Australia opened a government monopoly to qualified and insured private services.

Consumer services have improved through reductions in approval times and more choice.

- Dynamic economies will create jobs, but jobs can be lost in individual sectors:
  In Japan and Finland, reform has produced net job gains in telecommunications, due to large output increases, though jobs were lost in the dominant operators. In the U.S., jobs in the traditional telecommunications sector are at the same level today as before reform, but jobs in related information and copyright industries grew from 3 million in 1977 to 5.9 million in 1994. Elimination of further telecommunication restrictions is expected to add 3.6 million new jobs over ten years.
  Reform of the airline industry in the U.S. led to initial job losses, but by 1996 total employment had increased by close to 80 per cent over initial levels as output soared in response to lower fares.

- Maintaining universal access to essential services by offsetting measures:
  Germany in its 1996 telecommunication law and New Zealand in utility sectors have judged that, as a general rule, competitive markets will provide universal services of adequate quality without government intervention. In France, consumers of airline and telecommunication services are taxed and transparent funds established to subsidize service obligations. In Norway, subsidized air travel services are auctioned every three years to the company willing to operate the routes with the lowest subsidy; this competition has considerably reduced costs.

Regulation in India

Pre reform period

As mentioned earlier the Government of India not only owned and provided the services associated with infrastructure sectors but also regulated the same. The erstwhile legislation conferred the Government with regulatory powers. The Indian Telegraph Act, 1885 established Department of Telecommunications (DoT) which performed the role of service provider, policy maker and also of the regulator until TRAI was established as an independent regulator for telecommunications in 1997. In power sector, the Central government, state governments and Central Electricity Authority (CEA) were the regulators under the Electricity Supply Act, 1948 & the Indian Electricity Act, 1910 until a central level and state level regulatory commissions were established. Similarly the central government, the Director General (shipping) and state governments regulated the port sector under the Major Port Trusts Act, 1963, Merchants

Shipping Act, 1958 and Dock Workers Act, 1986. The rationale for such a regulatory backdrop was that infrastructure can best be provided by state monopolies and the monopolies have to be regulated to safeguard public interests.

A historical snapshot of regulation in India

Sector	Legislation	Regulator
Telecommunications	The Indian Telegraph Act,1885	Department of Telecommunications
Power	Electricity Supply Act, 1948 & Indian Electricity Act, 1910	Central government, State governments & Central Electricity Authority (CEA)
Ports	Major Port Trusts Act,1963 Merchants Shipping Act, 1958 & Dock Workers Act, 1986	Central government, The Director General (shipping) & The state governments
Water Supply & Environment	Water (Prevention and Control of Pollution) Cess Rules, 1978	Central Government, State governments
Roads & bridges	National Highways Act,1956 Tolls Act,1851 Amendments to the Highways Act,1995 & various state amendments	Central Government, State governments

These legislations are old, enacted in the past century or during the early years of the present century; e.g. the Toll Act in 1851, the Indian Electricity Act in 1910. These were based on the premise that the government would set up infrastructure projects. Entry of private operators or public-private partnerships was not envisaged during the enactment of these legislations, therefore these have not been described in them. The objectives and reasons for these legislations are not conducive for privatization. Regulation in such a scenario proved ineffective, for provider as well as regulator was the same entity and there wasn't a clear distinction between the roles of two.

The overall legal framework, with multiplicity of regulations resulted in multiplicity of government agencies that introduced delays and uncertainties at every stage of an infrastructure project. There was no common legislation that could govern the setting up and development of an infrastructure project by laying down all the procedures and parameters. To set up an infrastructure project an investor had to go through an unending process of approvals.

Regulation in the pre reform period, in essence, is characterized by the following shortcomings:

- It endowed the service providers with unlimited discretionary powers.
- It resulted in operational inefficiencies and poor quality of service.

- It lacked transparency in the decision making process and was unable to enforce accountability.
- It created high barriers to entry and flow of private capital in the sector was limited.
- Sectors were marred with financial mismanagement.
- Lack of protection of consumer interest, non-competitive prices and limited consumer choice.

These shortcomings along with increasing feasibility of infrastructure to be efficiently provided with a competitive market structure paved the way for regulatory reforms in India, which are discussed as under.

Need for regulatory reforms

Prior to economic liberalisation, the Government in general provided and regulated the services in infrastructure sectors. Such an exclusive provision by the Government existed across many countries. The phenomenon of Government monopolisation has deficiencies as well as virtues. Unavailability of services, poor service standards, lower investments in the sector are some deficiencies witnessed in the past. However, social objectives like affordable pricing, services for all including the poor; are upheld the most. A substitute or complement to governmental provision could be private provision, where only private business, singly or jointly, offer services for consumption. It was viewed that if provision of these services is left entirely to private entities with complete non-intervention of the Government and complete deregulation, it might lead to non-adherence of the usual social objectives.

Regulatory reforms were initiated to put in place a framework that regards the Government and the markets as complementary. These reforms view that for public private partnership both the stakeholders (the Government and the business entities) have a role to play. Whereas the business entities would provide services, the Government would gradually shift to the role of a facilitator and overseer. These reforms were undertaken in order to transform the role of Government from a producer to that of a facilitator that promotes competition. This facilitator is set up in the form of independent regulator.

State model
(provision of services by the Govt)

Market model
(provision of services by Pvt. sector)

Independent regulation
(Government as a facilitator promoting competition in the marketplace)

Various compulsions that led to the introduction of independent regulation worldwide applied equally to India. Till recently, governance in the infrastructure sector was based on the beliefs that only the public sector can provide the best services; that entry of the private sector should be restricted, if not altogether prevented; that public sector agencies serve the public interest best. There was no attempt to separate the role of the government as a service provider and as a policy maker. Further, sufficient importance was not given to considerations of efficiency, productivity, and consumer interests.

In the electricity sector, for instance, financial mismanagement was widespread in SEBs (State Electricity Boards); there were shortages of energy and peak power; the quality of service was poor; the high transmission and distribution losses were not sustainable; electricity prices did not reflect the costs of production and supply; and there were huge cross-subsidies. In the telecom sector, the tele-density (i.e. the number of telephone lines per 100 people) is less than two compared to the world average of over ten. Inadequate transport networks have led to higher transportation costs, which have adversely affected the international competitiveness of the Indian economy. In the ports sector, the mismatch between the existing capacity and the demand for traffic resulted in berthing delays, longer ship turnaround times, and low productivity of labour and equipment.

Against this backdrop, the need for additional investment and efficiency improvement was recognised. The existing regulations were reformed in order to eliminate Government monopoly and allow private entities. It was envisaged that entry of private entities would lead to increase in market size, more choice of services for the consumers and with sufficient competition lower prices. Despite possibilities of competition coming through the entry of private players, the market structure in infrastructure services tend to retain the monopolistic element. Government, therefore, had to continue to protect consumer interests. At the same time, it has to provide a level playing field to the new investors. Level playing field exists when there is parity in the rules and regulations for all the service providers. The provision of level playing field is important because of the presence of State owned monopolies that have been operating for a long period of time. With Government continuing to be the service provider, it was natural that there should be an independent and outside regulator, remaining equidistant from all service providers, including the Government. Further, the Government is also less equipped to respond to the complex and dynamic changes in infrastructure sectors, as it does not have the requisite expertise. These considerations provided a sound rationale for independent regulation. Several benefits are likely to accrue out of a ‘rational and even-handed’ regulation, which include

- building consumer trust and confidence,

- establishing better avenues for communication between the regulated utility and stakeholders (most often, it is the regulatory agency that fosters such dialogue through technical conferences, symposia, open hearings, etc.),
- ensuring a fair rate of return to the utility,
- just and reasonable rates for the consumer,
- and encouraging better standards for delivery of services.

Regulation revisited – post reform period

Development of infrastructure services entails regulatory changes in a positive direction. A significant headway has been made in this respect. Many old laws have been done away with and many have been reformed to suit the changing conditions. In essence, the reformed policy and regulatory framework allows private entry and enables governance of infrastructure services through independent regulation.

The post reform regulatory scenario is discussed in three parts:

1) Introduction of private sector participation in the economy
2) Creation of independent regulators
3) Overview of regulatory actions on various issues

1) Introduction of private sector participation in the economy

Economic liberalization of the Indian economy started in 1991, consequently many sectors were thrown open to private sector participation. Among infrastructure sectors, telecommunications and power were gradually privatized.

In telecom, private investment was permitted in the manufacture of telephone equipment in 1991. Value added services are thrown open for private investment from the year 1992 onwards. The National Telecom Policy was announced in 1994, which reiterated the government's commitment to further liberalize the sector.

In power, the guidelines of 1991 allowed entry of private sector in the generation of power. This was followed by several policy initiatives that aimed to attract and facilitate private investment in the sector.

In ports, private sector participation by way of leasing port facilities was permitted in 1994 and investment in creation of new facilities in the existing ports or establishment of new ports in 1996.

However, the need to regulate entry objectively and to establish a regulatory framework based on which private investment could be forthcoming was not fully understood. Independent regulation was not contemplated as a part of the initial reform process in such sectors as telecom and power and was brought in much after the introduction of the sector reform process. Whereas the process of

privatization started in early 90s, independent regulators started setting up in late 90s. In the port sector, a decision to set up a tariff regulatory authority was announced as a part of the policy statement in 1996, although it was implemented only in 1997.

2) Creation of independent regulators

The government has set up independent regulatory agencies in key sectors such as telecom, power and ports to promote infrastructure development. These agencies are statutory bodies, which function in conformity with the policy objectives set out by the government. They are supposed to treat public as well as private sector service providers at par by maintaining an arms length relationship with the government. The basic feature of an independent regulatory agency is that it is neither an administrative body nor a real judicial entity. Since its decision making process has to be transparent, it differs from the usual administrative government department where the decision making process is closely guarded and usually opaque. It has to carefully balance the interests of different stakeholders while ensuring development of the sector. It differs from a judicial entity, for the judicial bodies apply rules/laws to the facts, and have nothing to do with delicate balancing of stakeholders' interests or development of the sector.

The functions of independent regulators ordinarily include tariff setting, recommendatory functions such as licensing, and advisory functions such as sector development or restructuring. The scope of these functions varies from sector to sector depending upon the development stage of sector and the extent of regulation being introduced or agreed upon. An overview of the legislative provisions, functional characteristics and responsibilities of the independent regulators formed till date has been summarized as follows:

TRAI

Telecom Regulatory Authority of India came into existence with the enactment of TRAI Act, 1997 in telecommunications. The Act mandates that the regulator shall ensure transparency while exercising its powers and discharging its functions. The Act was amended in 2000, following which, TRAI was stripped of its power to adjudicate disputes and the same was vested with the Telecom Disputes Settlement and Appellate Tribunal (TDSAT). The Appellate Tribunal has been given powers under the civil procedure code. Appeals against the orders of TRAI will now lie with the Appellate Tribunal and not with the High Court. Appeals against the Appellate rulings lie with the Supreme Court. In the present status, the proceedings of TRAI which were earlier deemed to be

judicial proceedings are no longer so, and it is only the Appellate Tribunal whose proceedings, are deemed to be judicial proceedings.

CERC and SERCs

Orissa was the first state to set up an independent regulatory commission in electricity sector. The Orissa Electricity Regulatory Commission (OERC) came into existence with the enactment of Orissa Reforms Act, 1995. Central Electricity Regulatory Commission and other State Electricity Regulatory Commissions have been set up with the enactment of ERC (Electricity Regulatory Commissions) Act, 1998. Whereas CERC (Central Electricity Regulatory Commission) is regulator at the central level SERCs (State Electricity Regulatory Commission) are state-level regulators. After Orissa, other states such as Haryana, Andhra Pradesh, Uttar Pradesh, Gujarat, Delhi, West Bengal, Karnataka, Tamil Nadu, Maharashtra and Madhya Pradesh too have followed suit. The ERC Act upholds that the commissions shall ensure transparency while exercising their power and discharging their functions.

TAMP

Tariff Authority for Major Ports came into existence with the enactment of PL (Port Laws)(Amendment) Act, 1997 in the port sector. The amendment does not have any specific provision on the decision-making process. The amendment, however, enables TAMP to regulate tariffs on the lines of a tariff commission.

The following tables list the functions and responsibilities of the regulatory commissions recently instituted:

Functional characteristics of regulatory bodies

Regulator	**Appointment and removal of commissioners**	**Funding**	**Consultative process**	**Appeal of decisions, relation to government policy**
Telecom Regulatory Authority of India	Seven commissioners. Chairman to be Supreme Court Justice or High Court Chief Justice. Appointment by the central government.	Currency funded through central government's budget. Provision to charge fees, establish Telecom Regulatory Authority of India	Article 11: The Authority shall ensure transparency. Consultative review on methodologies and proposals (such as recent tariff setting exercise)	High Court Central government decides whether its directives constitute policy

	Removal by the central government following recommendation of dismissal by Supreme Court	General fund to meet expenses		
Central Electricity Regulatory Commission	Five commissioner, including Chairman of CEA ex-officio. Selection committee established by the central government. Removal by the President of India, following recommendation of dismissal by the Supreme Court	Consolidated Fund of India	Central Advisory Committee. Article 37: Commission staff shall ensure transparency	High Court Central government decides whether its directives constitute policy
Orissa Electricity Regulatory Commission	Three commissioners (at least one with electrical engineering, and one with economics, accountancy, law, commerce, administration background) Selection committee constituted by the state government Removal by the state government, following report by the judge of the High Court of Orissa	State Consolidated Fund	Commission Advisory Committee. Public tariff hearings Consultative paper on tariff approach	High Court for appeal on question of law CEA resolves disputes between OERC and the state government over whether its directives constitutes policy or not.
State Electricity Regulatory Commission (following 1998 Act)	Three commissioners. Selection committee appointed by the state government.	State Consolidated Fund	State Advisory Committee Article 37:	High Court State government decides whether

	Removal by the governor, following recommendation of dismissal by the High Court		Commission shall ensure transparency	its directives constitute policy
Tariff Authority for Major Ports	Three commissioners (with backgrounds in port, economics, and finance, respectively) Appointed and removed by the central government	Central government, through Ministry of Surface Transport	Public tariff hearings, public consultations on tariff principles (although there are no specific legislative clauses relating to this).	Central government may require authority to charge certain rates. Central government can suspend authority on notification in the Official Gazette

Source: India: Country framework report for private participation in infrastructure (1999)

Responsibilities of regulatory bodies

Regulator	**Pricing**	**Licensing**	**Dispute resolution**	**Other**
Telecom Regulatory Authority of India	Notify tariffs for all telecommunications services. Regulate revenue sharing between service providers, and between technical aspects of interconnection	Recommend need, timing, and terms of new service providers. Recommend revocation of licence Ensure compliance of terms of licence	Settle disputes between service providers and between service providers and consumers	Ensure effective compliance with universal service obligations Advise the government on telecommunications Protect consumer interests. Facilitate competition and efficiency in the sector Maintain a register of interconnect agreements Monitor quality of service, conduct periodic surveys
Central Electricity Regulatory Commission	Generation: plant owned or controlled by the central government, or selling to more than one state Interstate transmission. Frame guidelines for tariff setting	Interstate transmission entities (under the Amendment to the 1948 Electricity Supply Act passed in 1998)	Settle disputes between generators and/or transmitters that come under CERC's tariff regulation purview	Promote competition, efficiency, and economy Associate with environmental agencies to develop environmental regulations for the sector.
Orissa Electricity Regulatory Commission	Regulation of prices charged by licensees	Licensing of entities involved in transmission and distribution of power Regulation of quality of service of licensees	Settle disputes between license holders	Promote efficiency, economy, and safety. Promote competition and progressively involve the private sector Collect relevant data, forecast demand, require licensees to formulate required plans in coordination with others
State Electricity	Determine rates for wholesale,	By notification of the state	By notification	Promote competition,

Regulatory Commission (following 1998 Act)	bulk, grid, and retail; use of transmission facilities Regulate power purchase and procurement, process of transmission, and distribution utilities for in-state sources	government Issue licenses. Regulate workings of license holders and exit and entry into industry. Require license holders to formulate plans for meeting state electricity needs, including power purchase schemes	of the state government. Settle disputes between license holders and utilities	efficiency, and economy By notification of the state government. Regulate investment approval in sector. Regulate operation of the power system. Set and enforce sector service and safety standards Promote privatization. Coordinate with environmental agencies to develop environmental standards

Tariff Authority for Major Ports	Set tariffs at all major ports, including private licensees at ports			

Source: India: Country framework report for private participation in infrastructure (1999)

3) Overview of regulatory actions on various issues:

Although a range of issues fall under the gamut of regulation but regulatory interventions have mainly been related to tariff determination and competition issues. In fact, whereas tariff has been the prime focus of all the regulators, competition related issues are being addressed only in the telecommunications sector. Quality of service is another important issue that is being addressed by the regulators. OERC, TRAI and TAMP have taken initiatives in this direction.

Tariff determination: Unlike other goods and services, determining tariff of an infrastructure service is complex. Economic as well as non-economic factors influence the determination of tariff. Regulatory changes aim to rationalize tariff and bring it in line with the costs if there is price-cost mismatch and cross subsidization of infrastructure services. For instance, the price of fixed line telecommunication service is below its cost whereas the price of long distance telecommunication service is above its cost. Independent regulators are expected to remove these anomalies and determine tariff that is cost-based and promotes sustainable development of the sector. Being one of the priority issues, tariff has witnessed a lot of regulatory action. The regulatory process being followed across the sectors in determining tariff is quite transparent and involves the participation of various stakeholders.

In electricity, for instance, the regulatory commission of Orissa follows the following steps in determining the tariff:

a) Filing of application and issue of notices
b) Information sharing and filing of objections
c) Public hearing and cross questioning
d) Judgements and order implementation

Further, there is a time limit for completion of the hearing process. The OERC is required to complete the process and pass the judgement within 90 days of the submission of all information by the utility.

The tariff design too has been rationalized in many states, In Maharashtra, the total number of LT (low-tension) categories has been brought down by three, and in UP by two. Under the new dispensation, time for completing the

entire tariff determination exercise since the filing of application is on an average less than six months across different state electricity regulators.

In telecommunications, the regulatory procedure for determining the tariff is consultative in nature. For instance, during the preparation of Tariff Order-1999 (TTO 99), TRAI followed an extensive consultation process with various stakeholders. It prepared two consultation papers on the subject, and obtained oral as well as written comments and conducted open house meetings with stakeholders for eliciting their opinions, before passing the orders.

In ports, TAMP enjoys power to act through a quasi-judicial process. It can hold hearings, can issue summons, and can also record evidence. The regulator has been deciding the rate cases of major ports through hearing mechanisms as well as consultative process for quite sometime.

Quality of service: Regulatory initiatives have been taken in this regard to ensure better customer satisfaction. For instance, OERC has set service standards that have to be adhered by the distribution utilities. These standards, if violated, attract penalties from the regulators following a due process. There are procedures laid down for redressal of grievances. Similarly, overall performance standards have been established for distribution and retail supply. Providing new connections to consumers, Reconnection of Supply, Installation of meters in unmetered connections, Replacement of meters, Testing of meters, Electrical Accidents are the parameters laid down by the regulator. Benchmarks have been set for each of these parameters against which the performance of the utility would be measured. For instance, utilities have to bring down voltage variations within declared limits within fifteen working days of complaint in 60 per cent of the cases.

TRAI issued a consultation paper on Quality of Service (QoS) in 1998. The paper laid down certain QoS parameters for application to providers of basic services, cellular services, pager services and internet services. About 48 QoS parameters for basic services, 37 for cellular services, 20 for pager services and 23 for internet services were proposed. The paper also laid down certain benchmarks on consumer facility, technical parameters, grades of service and quality connection. It also outlined a mechanism for complaint redressal through ombudsman mechanism. On the basis of extensive discussions, TRAI issued a regulation on Quality of Service of Basic and Cellular Mobile Telephone Services in July 2000. Some parameters that the regulation lays down for basic services are; Provision of a telephone after registration of demand, Fault incidences (No. of faults / 100 subscribers / month), Fault repair by next working day, Time taken to repair, Dial tone delay, Metering and billing credibility etc. Some parameters laid down for cellular service are; Faults cleared within 24 hours, Service access delay, Call drop rate, Percentage of

connections with good voice quality, Billing complaints per 100 bills issued, Percentage of billing complaints resolved within 4 weeks etc. The regulator has laid down performance benchmarks for these parameters. The Quality of Service of an operator would be judged against these benchmarks. The regulation now seeks to create conditions for consumer satisfaction by making known the QoS that the service provider is required to provide.

TAMP too has taken few initiatives in this regard. Its consultation paper of 1998 highlights that facilities extended by the service providers should be of good quality and they "must be efficiently done so that user is not required to pay extra for inefficiencies even if the payment is to be at approved rates". Further, it required that the Port Trusts "shall be required to set for themselves targets for improvements in levels of productivity, and TAMP must ensure a definite movement for realization of targets within a stipulated time". TAMP has also undertaken a detailed exercise for improving the quality of service.

A snapshot of regulatory activities

The following table provides a snapshot of regulatory activities:

Status of activities of India's regulatory commissions (RCs)

	Number of RCs			Number of RCs		Number of RCs that asked for efficiency improvements	Number of RCs with steps taken for competition
Sectors	Notified	Operational[a]	Number of RCs with tariff orders	With order / regulation on QoS[b]	With QoS with compensation		
Electricity	19	15	12	7	1[c]	10	4
Telecom	1	1	1	1	-	1	1
Ports	1	1	1	1	-	1	-
Gas[d] (Gujarat)	-	-	-	-	-	-	-

[a]RCs that at least passed a regulation; [b]Quality of service; [c]HPERC; [d]Gujarat Gas Act 2001 passed in April 2001
Source: S K Sarkar, K Deb, M Sundararaman; Regulatory reforms – progress thus far and challenges (2001)

Within a span of five years, TRAI has issued 31 consultation papers, 11 regulations, tariff orders with 23 amendments, 13 directives, and 25 recommendations[a]. Its recommendations to the Government include introduction of competition in national as well as international long distance

[a] Telecom Regulatory Authority of India, http://www.trai.gov.in

services, determination of terms and conditions of various licenses relating to GMPCS, radio paging service, cellular mobile service, fixed service providers, mobile connecting phone services, PMRTS, voice mail, steps for ensuring universal service obligations, etc. It has regulated tariffs, inter connection charges and revenue sharing, and quality of service. The tariff orders aim to link tariff to the costs and provide a level playing field in the market.

In the ports sector, an analysis of the orders passed by TAMP shows that other than tariff issues, the port regulator has taken steps in promoting competition, and improving efficiencies in a few cases. It should be noted that these latter functions were not mandated to TAMP under the legislation. In spite of this handicap, the regulator on its own has attempted to carry out these functions.

The regulators in electricity sector have mainly been active in tariff determination. Almost all the regulatory commissions that passed the tariff orders have taken steps to improve efficiency of the utilities. A few commissions have also addressed issues relating to quality of services and promoting competition.

Review of regulatory reforms in electricity sector

Initially, the main driving force to establish independent regulatory commissions is the need to rationalise consumer tariffs. In the various tariff orders, the State Regulatory Commissions have attempted to bring down inefficiency and rationalise the tariff structure. (Snapshot of various tariff orders can been seen in Annex IV & V). However, gradually the SERCs have given important decision on quality of service and supply (Annex VI). While taking these important decisions, the process adopted by these regulatory commissions was more transparent and consultative.

Regulatory process

As discussed in the Session 3 of Day II, the fundamental difference between the new type of governance and the past one is that now the decision making process is transparent. The legislation enacted has assured that the process adopted should be consultative in the nature. For instance, the Conduct of Business Regulation, 1996 of the electricity regulatory commission in Orissa incorporated various provisions for effective public participation and information sharing during the regulatory process. It further says that information, which are filed and available to the Commission, must be made available to all parties, and the stakeholders must be given an opportunity to comment on the filed application. For example, the tariff determination process initiated by the regulator has included various steps such as a) filing of an application and issue of notices, b) information sharing and filing of objections, c) public hearing and cross questioning, and d) judgements and order implementation. Further, there is a time limit for completion of the hearing process: the OERC is required to complete the process and pass a reasoned judgement within 90 days of the submission of all information by the utility.

The above steps have been meticulously followed in its tariff determination process in 1997: on receipt of the transmission company's (namely the GRIDCO's) filing an application for revision of its tariff for the year 1997/98, the general public was informed through newspaper about its proposal for the new rates and charges. Public were invited to peruse the details of the proposals in the regulator's office, and also, permitted to take copies of the proposal. Interested persons filed their objections to the Commission. Subsequently, another public notice was issued for the tariff hearing. 41 objectors expressed a desire for public hearing. Written objections were also received from additional 22 persons by the stipulated dates. The objectors raised vital issues having a bearing on transmission company's tariff proposal. The company was also

given an opportunity to reply to the issues raised by the objectors. The details of the tariff proposal, the salient features of the objections by various objectors, and various suggestions were, then, discussed with the commission advisory committee for its views and advice and a final order was passed by the commission, which was, thereafter, made public. Similarly, in the central sector the electricity regulator also adopted a similar approach while finalizing the electricity grid code, and the availability based tariff order, last year.

Tariff determination

Regulation of tariff is a complex task. Earlier, it used to be a closed door exercise, and was highly politicized. Now, the tariff setting process has been made apolitical, and expert bodies are mandated through legislation to regulate tariff of various services in accordance with the principles laid down in the legislation. Interestingly, this is the only area where the regulators have devoted most of their time, and have either passed the tariff orders or in the process of doing the same. Till know as many as 14 SERC has issued tariff orders with the objectives to improve efficiency by reducing T&D losses, by reducing cross subsidy, by encouraging incentive based mechanisms, and by ensuring sector sustainability by giving adequate and fair returns to the utilities, etc. The regulator looks into the utilities' administrative costs, allowable depreciation, etc during the tariff determination. In Orissa, the rate of return beyond a prescribed level has been linked to the additional efficiency gains. Further, the electricity regulator in Orissa is working on to formulate tariff policy to reflect cost, bring in level of incentive being built into the tariff design, further rationalize tariff by reducing the number of categories and grouping them on consideration of voltage supply rather than on user consideration, link tariff to performance and efficiency, enforce demand side management, ensure planning and implementation of a program for reducing transmission and distribution losses, and finally, formulate perspective plans for promotion of generation, transmission and supply of electricity.

At present, the tariff design has been rationalized for reducing number of slabs: in Himachal Pradesh, the total number of domestic slabs have been reduced to 3 (from 4), in Delhi, the total number of domestic slabs have been reduced to 4 (from 5), in Maharashtra, the total number of LT (low tension) categories was brought down by three, and in UP by two. Further, time- of- use tariffs have been more widely recognised and the HPERC and the WBERC provided for peak and off-peak tariff. The HPERC has also provided for a winter surcharge to reflect significantly higher cost of supply during winter months and is the first instance of seasonal tariff being approved by any commission. The idea of introducing time of use tariff is to flatten the load. For instance, normally the electricity is consumed in morning and evening hours.

Incentives have been introduced (specifically for industry) to consume electricity in off-peak hours (ie. when the demand for electricity is less). Similarly, penalties have been for consumption in peak hours.

There is reduction in cross subsidy in tariff structure, through decrease in high-tension tariff (primarily industrial consumers) and increase in low-tension tariff (primarily residential consumers). Table X compares the extent of reduction in cross-subsidy achieved in the orders issued by the SERCs of Himachal Pradesh, and West Bengal.

Table XX Reduction in cross subsidy (Paise/unit)

Regulator (Regulated entity)	High Tension Before	High Tension After	Low Tension Before	Low Tension After
WBERC (CESC)	118	116	89	91
HPERC (HPSEB)	104	103.8	63	77

WBERC- West Bengal Electricity Regulatory Commission; CESC - Calcutta Electric Supply Company
HPERC- Himachal Pradesh Electricity Regulatory Commission; HPSEB- Himachal Pradesh State Electricity Board
Source- Tariff Orders for 2001-02

In some cases, the Commissions have been enthusiastic in trying to reduce the subsidies. In Karnatake, for example, the commission has prescribed an elaborate criteria defining separate categories for agricultural consumers for those who either pay income tax, own four wheeled vehicles, telephones, tractors, or grow commercial crops such as tea and coffee. May be this scheme have several fallacies, it is still a step forward.

Quality of service

The new institutions have been given a mandate to regulate quality of services for better consumer satisfaction. They have undertaken certain initiatives. Orissa was the first state in 1998 to issue regulations on consumers right to information and standards of performance[a]. The regulations were issued under the power conferred to the Commission under Section 54 of the Orissa Electricity Reform Act, 1995. The Commission has also determined the overall performance standards that specify the level of performance which the licensee is expected to achieve. Andhra Pradesh Electricity Regulatory Commission has also issued regulations detailing the performance in connection with electricity

[a] Orissa Electricity Regulatory Commission (Consumers Right to Information and Standards of Performance) Regulations 1998.

supply (Regulation No 6)*a* and Consumer's Right to Information (Regulation No 7)*b*. The details for Orissa as well as Andhra Pradesh are provided in Annex VII. Other states such as Karnataka have issued draft regulations and invited comments thereon.

Himachal Pradesh Electricity Regulatory Commission in a recent tariff order is the first Commission to institute penalties for failure to meet the specified standards. The Commission directed the utility to propose service standards as a part of the annual tariff determination exercise. This was the first tariff determination exercise by the Commission following its establishment in January 2001. While the Commission accepted the standards proposed by the utility, it also imposed penalties for failure to meet the accecpted standards. The penalty at this stage are however meant in form of token compensation to consumers. The primary objectives are to inspire consumer confidence at one hand while leading to better compliance and bringing accountability in utility's functioning at the other.

A close examination would show that there are areas where further refinement is required. First, there is a need to streamline the grievance redressal procedure, as a consumer has to approach to various levels within a utility. Thus, the process of grievance redressal could be time consuming and cumbersome. Second, there is no provision to regularly monitor whether the time limits are adhered to. Third, a consumer cannot get automatic compensation from a distribution licensee for failure to adhere to the standards of service set except in the case of billing errors where there is a provision for waiver of interest charges.

Way ahead

Some of the initiatives which the regulators could take in facilitating sector reforms including promotion of investor confidence are discussed below:

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[a] Andhra Pradesh Electricity Regulatory Commission Standards of Performance Regulations August 2000.

[b] Andhra Pradesh Electricity Regulatory Commission Consumers Right to Information Regulations August 2000.

Minimizing risk perception in tariff determination

There is a perception among investors that the price-setting methodology employed by regulatory agencies is not conducive to long-term investments and the multi year tariff framework could reduce uncertainty in the long- term. The multi year framework would also reduce the number of times tariff proposals would have to be subject to political scrutiny and, therefore, the vulnerability of the tariff determination process to political and judicial proceedings.

The task for the Regulatory Commission would be to set clear long-term targets for efficiency improvements based on which the estimated revenue requirements of the utility would be allowed. The Commission would also have to ensure adequate and informed consumer participation and at the same time device mechanisms by which the utility remains accountable over the multi-year frame.

But the Regulators are hesitant to accept the multi-year framework on the grounds that sufficient data is not available to correctly set the initial level and benchmark improvements.

Developing consistent base line data

The other significant task ahead of the Regulatory Commission is to direct the board / licensee to improve the baseline data. For example, HPERC (Himachal Pradesh Electricity Commission) in its tariff order directed the board to provide separate accounts for generation, transmission and distribution. Further the Commission has directed the board to use scientific methods of accounting and provide reliable fixed asset register by the end of the year.

This kind of initiatives may help the Regulator in restructuring the board and in future privatisation process.

Promoting competitive environment

The reform legislation's stipulate promotion of competition as one of the mandatory functions of the Regulatory Commissions. Even Section 42 of the Electricity bill 2001(as tabled) highlights this role of the regulators. It gives discretion to the State Commission in specifying the extent of open access in successive phases and in determining the surcharge and wheeling charges. Also the State Commission shall have due regard to all relevant factors including cross subsidies, and operational constraints.

Here the regulator has to be cautious while framing the open access policy as it deals directly with developing a competitive market. This arrangement would allow independent power producers, captive generators and others to sell electricity to the high-tension high-tariff customers. The incumbent utility has to face competition and regulatory commission would have to pressurize

the utilities to improve efficiencies thereby reducing cost of supply. The challenge for the Regulatory Commission would be to ensure the financial viability of existing utilities.

Policy formulation

The regulators have also a role in overall development of the sector. They have also to advise the government on power policies. By judiciously exercising these roles, the regulators can influence the pace and path of restructuring. However to successfully perform such a role, the foremost need is a synergic relationship with the government without compromising on its independence.

Annexure IV

Snapshot of activities of Regulatory Commissions in India

CERC/SERCs - activity parameters

States	Operational	Tariff orders	QOS	Efficiency	Competition & Privatisation
Rajasthan	Yes	Yes	Yes	Yes	Yes
Tamil Nadu	Yes	No	No	No	No
Uttar Pradesh	Yes	Yes	No	Yes	Yes
Uttaranchal	Yes	No	No	No	No
Orissa	Yes	Yes	Yes	Yes	Yes
Maharashtra	Yes	Yes	No	Not much	Yes
Delhi	Yes	Yes	No	Yes	Yes
Haryana	Yes	Yes	Yes	Yes	No
Karnataka	Yes	Yes	Yes	Yes	Yes
Himachal Pradesh	Yes	Yes	Yes	Yes	Yes
Andhra Pradesh	Yes	Yes	Yes	Yes	Yes
Gujarat	Yes	Yes	In process	Yes	Yes
West Bengal	Yes	Yes	No	Yes	No
Punjab	Yes	Yes	No	Yes	No
Madhya Pradesh	Yes	Yes	No	Yes	Yes
Assam	Yes	No	No	No	No
Arunachal Pradesh	Yes	No	No	No	No
Goa	Yes	No	No	No	No
Kerala	Yes	Yes	No	Yes	No
CERC	Yes	Yes	Yes	Yes	Yes

Annexure V

Snapshot of Tariff orders issued by Regulatory Commissions in India

SERCs - Details on efficiency issues

Sl. No.		T&D loss %		Efficiency improvements		Quality of service
	States	Proposed	Approved	Productivity improvement The Commission order	Other	
1	UP/UPPCL	36.55%	36.55%	Employee cost reduced by 9%. Idea was to bring down to the national levels	No bad debt allowed, idea is to improve collection efficiency	No
2	Haryana	32.69%	21.69%	Reduction in Basic, DA, and other allowances from the proposed figure. Also cost of free electricity to employees included in the cost.	After restructuring no bad debts.	Yes, passed a regulation
3	Gujarat	21.00%	30.00%	10% reduction in the employee cost from the proposed figure because it is already high from the best standards	Decreased agricultural consumption because of which increase in T&D loss%	No
4	Mahrashtra	27.66%	26.88%	Reduction in employees cost by around 7% from the proposed figure by not allowing pay revision hike because hike is for the profitable organizations	Expense for concession to be granted to agriculture consumers has been disallowed.	No
5	Delhi	46.80%	46.80%	Little decrease in emp. Cost by not allowing over time	Commission asked for Moderate reduction in bad debts	No
6	Himachal Pradesh	18.96%	17.96%	Apart from giving direction on improving employees productivity, the Commission has reduced EC by 20%	Imposed penalty if quality of service is not followed by the	Yes

				from the proposed figure	Commission	
7	Andhra Pradesh	44.02%	44.02%	DA moderated, so reduction in employee cost	No bad debt allowed	Yes, passed a regulation
8	Orissa	39.16%	34%	Employee cost reduced. Allowed lesser increase	Allowed 2.5% of gross sales as bad debts against proposed 4%. Said to improve collection efficiency	Yes, passed a regulation
9	Rajasthan	32.45%	32.45%	Employee cost reduced, as more employees are retiring	No bad debt allowed	Yes
10	Karnataka	36.50%	31.00%	Not allowed free subsidized electricity to employees, bonus to employees and DA reduced	No bad debt allowed.	Yes, passed a regulation

Annexure VI

Performance Standards (APERC, Andhra Pradesh and OERC, Orissa)

Andhra Pradesh	Orissa
Consumer Rights 1) Access to approved codes, consumer rights statement, complaint handling procedure etc. 2) Make available, free of charge, the conditions of supply, consumers right statement, codes, complain handling procedure to all new connections. 3) Notice Prior to Disconnection 4) Notice Prior to Entry 5) Information for Re-classification of consumers 6) Notice of Scheduled Outages **Standards of performance** 1) Restoration of the power supply 2) Quality of power supply 3) Period of scheduled outages. 4) Complaints on meter 5) Application for new connection/additional load 6) Complaint on consumer's bill	**Consumer Information** 1) Information Prior to Disconnection 2) Information for Entry into Premises 3) Information for Re-classification of consumers 4) Notice of outages Standards of performance 1) Restoration of power supply 2) Quality of power supply 3) Period of scheduled outages 4) Application for new connection 5) Complaint on consumer's bills. **Overall performance standards** 1) Restoration of supply 2) Correction of voltage variation beyond the limits of declared voltage 3) Providing new connection to customers 4) Reconnection of supply 5) Installation of meters in un metered connections 6) Replacement of meters (applicable only where the meters are owned by the licensee) 7) Testing of meters (applicable only where the meters are owned by the consumer

	8) Electrical accidents

Is private sector participation a panacea for problems in an infrastructure sector?

Background

Mindat is currently the largest city in the state of Panakha with a population of 3.3 million in 1991 that has grown to 4.2 million in 2001 according to the Census of India. Mindat has displayed a population growth rate of 27.27% from 1991 to 2001 compared to the average growth rate of 32.25% of urban areas in the country during the same period. A leading industrial city, Mindat is also the commercial capital of the state. The municipal limits of the city encompass an area of approximately 192 sq.km. with an additional area of 78 sq.km. to be soon incorporated in municipal limits. It has been estimated that approximately 85% of the city lives within municipal limits. The city is divided into 5 zones for administrative purposes. Of these, the central zone, consisting primarily of the Old City, has the highest density of 360 people per hectare (ppH) and southern zone being the least dense with approximately 65 ppH.

Temperatures within the city range between 47ºC and 4ºC while relative humidity during summer varies between 64% and 73%. The average annual rainfall is around 750 mm, which is lower than the national annual average of 1150 mm. All of these contribute to excess heat and humidity leading to an above normal requirement of water.

Water supply sector – components

There are three main components of the water supply sector:

Bulk Supply: This involves laying down transmission lines from the actual water source to the treatment plants. It also includes construction and operationalisation of water treatment plants and pumping stations. Bulk supply primarily requires capital investment with lower order investment for operations and maintenance.

Surface water has been the primary source of water for MMC prior to 1997. The supply to the city from this source has been erratic with the total supply fluctuating between 486 million litres per day (MLD) in 1997 to 406 MLD in 1998 and 448 MLD in 1999. This translates into the fact that water supply to the city is

provided at an average of 120 litres per capita per day (lpcd). This average is lower than the standards set in the Urban Development Plan Formulation and Implementation (UDPFI) Guidelines, which states acceptable water supply level to be between 150 and 200 lpcd.

Since 1997, the second source of water for the city – ground water, has become the main source. It has been estimated that in 1997, 53% of water supplied to the city by MMC was through tubewells drawing underground water. It increased to 62% in 1999 owing to drought conditions. It must be noted here that all industrial establishments meet their water-related needs through privately owned tubewells from the groundwater. Moreover, there is no regulation on the draw-out of groundwater. There has been incessant tapping of the groundwater table causing the groundwater table to drop around 3 metres to 4.5 metres every year. This has serious repercussions on the quality of groundwater, for it leads to an increase in total dissolved solids (TDS) in the water table rendering water unfit for consumption and other economic activities not to mention the untold damage on the ecosystem. It has been estimated that demand for water in Mindat would be around 715 MLD to 1000 MLD in the year 2001. Given the projected demand, further depletion of groundwater is imminent that could have serious repercussions on the environment.

Transmission and Distribution: It includes pipe networks, construction of overhead and underground water storage tanks, and intermediate pumping stations. The distribution system consists of a network of cast iron pipes measuring approximately 2,175 km.

It has been estimated that transmission and distribution losses are as high as 20%. Though the proportion of water lost would recharge the ground water table to a certain extent, it must be realised that this 'lost' water has been value-added through the treatment accorded to it. The investment made towards its treatment is, therefore wasted.

This component requires lower order investment compared to that of bulk supply. Moreover, it is more profitable than the bulk supply making it attractive for private entry.

The third component involves *Billing* and *Revenue Collection* from users of this service. Revenue requirements for the sector are met, as mentioned earlier through the in-built water charge in property tax. None of the residential areas

is metered though they constitute 85% of the total urban area. Of the remaining 15%, only a portion of bulk commercial users is metered accounting for just 4% of the city.

Issues

There is no mechanism that would indicate the actual amount of water consumed by a user. The property tax formula does not take cognisance of this anomaly. Lack of a user charge that bills according to quantum of consumption encourages wastage thereby depleting the source.

The operation and maintenance expenditure is approximately Rs. 2.70 per 1000 litres. Water is currently charged at Rs. 1.60 per 1000 litres at places where it is metered while it is charged through the property tax mechanism in the remaining areas. It may be noted here that though 96% of the water supply is not metered, the percentage of water component in the property tax realises a large sum of revenue compared with the actual incurred expenditure. This generated revenue is higher than what would be generated if water were to be supplied at the rate applicable in places where water supply is metered. This should be avoided since it gives a false indication of the health of the sector, particularly, when it does not directly reflect the actual utilisation of the resource. Thus, while excess revenue may be generated, it is lack of awareness regarding scarcity of water, which is of concern.

Therefore it becomes even more important that user charge may be made an important component of the cost recovery mechanism. MMC ought to charge water directly on unit basis instead of charging it at a flat rate through the property tax route. A separate account needs to be maintained to monitor the actual water being consumed. Though MMC has displayed remarkable fiscal success it does not, in any manner, absolve the MMC of attempting to conserve this scarce resource.

Overall, growing water scarcity, transmission and distribution losses, ground water depletion, absence of user charge, rationalisation of tariffs, cross subsidisation etc are the main issues that are being confronted by MMC.

Reforms undertaken

Given the grim state of affairs concerning this sector, MMC looked for alternatives to improve the existing situation. Subsequently, it responded by introducing significant fiscal and management reforms. These reforms included:

- Improving the tax collection in octroi and implementing the new property tax regime. However, the new property tax still has no reflection of the quantum of water consumed while the water tax is still concealed in it.
- Introduction of a computerised double entry accounting system was done to minimise bookkeeping and other errors that were encountered during the earlier single-entry accounting system.
- The workforce and financial management of MMC were upgraded along with the preparation of a comprehensive capital management plan. This aided the MMC to obtain a credit rating from the Credit Rating Information Services of India Limited (CRISIL). This credit rating was required in order to tap the capital market for funds since capital markets can be accessed only in the case of commercially viable projects. Subsequently, MMC issued a municipal bond of Rs. 1,000 million in which 75% was raised through private placement and 25% was through a public offer. This was the first public issue from a municipal authority without a guarantee from the state government.

Project

MMC designed a major investment programme that would ensure 180 lpcd to the central zone and about 150 lpcd of water to the recently extended eastern area. This project, Renaissance, was mostly concerned with augmenting the bulk supply of water to Mindat. It was implemented as an emergency project, to bring an additional 300 MLD to the city, following the severe drought condition in August 1999.

This influx of 300 MLD is still less than the treatment plant capacity of 600 MLD causing it to work at 50% operational efficiency. The capital cost of this treatment plant is currently being distributed over the consumers of 300 MLD. If the entire 600 MLD water were to be provided for consumption, it would either lead to a reduction in tariffs (cost would be spread over 600 MLD instead

of 300 MLD) or lead to increased revenue for MMC (if the existing tariff structure continues).

80% of the estimated project cost was covered by Housing and Urban Development Corporation (HUDCO) loan and 20% by the bond proceeds. MMC fully utilised the bond proceeds to complete this project in its stipulated time of 130 days by March 2000. This project was implemented by MMC through many contracts. MMC worked in partnership with two private contractors to co-ordinate 32 subcontractors each involved in different components of the project.

This project was primarily aimed as a solution to the growing water scarcity afflicting the city. It was estimated that this augmentation of municipal water supply would lead to a reduction in the depletion of the groundwater table level. Aided by the financial and fiscal reforms, it was expected that the solution would be a long-term one. However, this does not appear so since the actual scarcity of the resource is still not reflected in either of the initiatives undertaken. Groundwater table is still under threat since no proactive measures have been taken towards this end. There has been no rationalisation of tariffs since the same property tax structure has being followed, albeit with some modifications. The CRISIL-rating of the municipality did help in crossing a major threshold for accessing capital markets. However, whether all municipalities will be able to follow suit is an important question, for MMC did generate a fiscal surplus, which facilitated raising debt easily.

It is evident that the initiatives taken by MMC have not resolved all the issues. They had addressed long-term problems with short-term solutions. This is an example where an MC has resorted to building its own capacity instead of exploring the possibility of introducing private sector participation.

Potential for private sector participation

Private sector participation may be an effective alternative that may be explored in the betterment of this sector. It would bring in the necessary investments into the sector. The water supply would be augmented, which would meet unforeseen scarcity of the like faced by MMC because of drought. Private sector operates on commercial principles, therefore water is most likely to be charged on per unit basis and the unmetered consumers would also be metered. Private

sector is better equipped and attitudinally resolved in this regard. Transmission and distribution losses would then be under constant check since losses are not billed to the users. Scarcity issue would also be addressed, as levying of water charge would discourage wastage. Telescoping of charge, which requires users to pay a higher charge as their consumption goes up in the slab, would also probably curb wastage of the resource. Water being a 'charged commodity' would no longer be concealed in the property tax and rationalisation of tariffs would also be effected.

Water supply sector – stakeholders

There are three direct stakeholder groups in this sector. The **first stakeholder** is the agency responsible for providing water to Mindat. This responsibility has been delegated to **Mindat Municipal Corporation** (MMC), which was created under the provisions of Mindat Provincial Municipal Corporations Act, 1949. According to this Act, MMC is solely responsible for the provision of water in adequate amounts at the right time and at reasonable rates to the **inhabitants of Mindat**, **the second stakeholder** group.

There are different economic segments in the population of Mindat with different levels of income. To make the levy on water services equitable, MMC worked out a tax system whereby water is provided to different segments at different costs. It is known that property values vary across different income groups. The tax system takes property value into account while determining the water charge. Water is charged as a percentage of the property tax, which is directly proportional to the value of property. In this way, water is supplied at a lower rate to the lower income groups and economically weaker sections of society. Consequently, cross-subsidisation of this resource is effectively achieved.

The **third stakeholder** group is **private sector**. The revenue generated by MMC is being turned over to the state government. To ensure equitable distribution of revenues across different regions, the state government is unable to allocate adequate funds to MMC despite that MMC had been generating a revenue surplus since 1994-95. The perpetual paucity of funds has disabled MMC to augment water supply in the city. To strengthen municipal corporations (MCs) and remove them from the control of state governments, the

Centre enacted 73rd and 74th Constitutional Amendment Act, 1993 (CAA1993). This act enables a MC to generate resources independently, say by accessing the capital market. MCs were also allowed to retain part of the revenues in lieu of services provided by them. The Act aimed to make MCs more independent and efficient.

However, there is a major drawback for MCs following the implementation of this act. It is in wake of the fact that most of the MCs are financially weak notwithstanding MMC being an exception in this regard. Consequently, they will have to look for alternatives to provide this service in the impending absence of state government support. One such alternative is private sector provision of services, which has thrown forward private sector as the third stakeholder group. It has been a viable alternative in many developed and developing countries given their superior accessibility to capital and human resources.

However, given the long history of public monopoly over water, private sector entry would trigger many ramifications that have to be fixed-up to make the entry successful. The level and form of private sector participation would be an important determinant; whether to allow participation in all the segments such as generation, transmission and distribution or operations are handled by the private sector while MC retains the ownership. Moreover, private sector is perceived to be profit-oriented and it might overlook the larger public interest. These along with other issues warrant an independent regulation of the sector, thereby creating another stakeholder, i.e. **regulator**.

Telecommunications deregulation - Indian experience

Section – I: Private Sector Participation in telecommunications

History of telecommunications policy in India – an outline

The most basic form of telecommunication, telephone was invented in 1881. It was only five years later, in 1886, that it was introduced in India by the British firms. For many years, military and governmental concerns rather than consumer issues or commercial factors drove the development of sector. By the time nation attained independence, there were 321 telephone exchanges and a tele-density of 0.25 phones per thousand of the population had been attained.[a] The state-led economic policies till mid 80s enabled the government to control & regulate the sector through ministry of Posts and Telegraph. The Department of Posts and Telegraph was governed by the Indian Telegraph Act 1885 and the Wireless Act, 1933.

Telephone was perceived to be a luxury rather than a basic infrastructure service and its provision was concentrated mainly in the urban and metropolitan areas. The quality of service was not adequate, prices were high and telephones were not easily available. The development of telecommunication services was an important concern for the government and a lot of public debates centered on the sector issues during mid 80s. During these debates, it was argued that technologies adopted in the posts and in the telecommunications are different and it would be better to bifurcate the Department of Posts and Telegraph into two separate departments so as to develop each sector in a focused manner. In 1985, the department was split up into the Department of Telecommunications (DoT) and the Department of Posts. The DoT was entrusted with the job of operator, regulator and licensor. Eventually, two more public organizations, MTNL and VSNL were created by the DoT. These companies were separate entities who had decision-making autonomy and access to public borrowings. Whereas MTNL took over the operations of Delhi and Bombay from DoT, VSNL took over the international

[a] Pradipta Bagchi, Telecommunications Reform and the state in India: The Contradiction of private control and government competition (2000)

telephony services. Creation of MTNL and VSNL was construed as initial step towards corporatisation of DoT.

A precursor to sector liberalization was the demonopolisation of telecom equipment manufacturing sector in 1985, allowing private firms to manufacture telephones. Center for the Development of Telematics (C-DOT) was set up with the goal of designing an indigenous digital telecommunications switch, whose manufacture would be licensed to private firms. In 1989, Telecom Commission was set up with a wide range of executive, administrative and financial powers to formulate & regulate policy and prepare the budget for DoT. There were a range of factors that contributed to the shaping up of sector policies including the outcome of General Agreement on Trade and Tariff (GATT). In essence, by the end of 1980s, public policy had accorded the sector a considerable priority. The entire policy making in line with the mantra "Telephone for all" aimed to increase tele-density by expanding telecommunication networks into the remote & unconnected areas and make telecom services more affordable.

Problems & challenges leading to private sector participation(PSP)

Before dwelling on the factors that triggered entry of private entrepreneurs in telecom manufactures and services, it would be of interest to outline the theory behind privatization and private sector participation. An ideal state for an industry is when it's truly competitive, catering to the interest of all stakeholders, irrespective of the ownership pattern of companies operating in the industry. That's to say, as long as the larger public interest is being taken care of, the institution owning the business, whether a private enterprise or the government, is not a matter of concern to the consumer. However, practically, it had been very difficult for the state owned companies to attain such a state whereas private ownership, in practice, tends to produce a superior level of efficiency. There are many factors attributed to relatively more efficient private sector; decision making autonomy, quick response to market conditions, incentives based management, quicker adoption of latest technologies, to name a few. The following factors are enumerated in this regard.

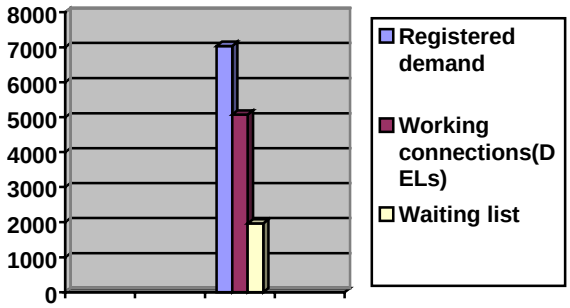
- Private ownership links incentives to performance of managers, leading to higher quality management.
- Capital markets subject privately owned firms to greater scrutiny and discipline than they do public enterprises.
- Private firms are subject to exit much more often than public enterprises.
- Politicians interfere less in the affairs of private than public firms.
- Private firms are supervised by self-interested board members and shareholders, and are thus more likely than public firms to use capital efficiently and to maintain it.

The factors leading to private sector participation in the Indian telecom sector have been discussed in two parts. The first part outlines a set of reasons that are common across various infrastructure sectors and are economy-wide. Prominent among them are shortage of capital, ballooning fiscal deficit and a low level of foreign exchange reserves that led to economic liberalization way back in 1990s. The structural changes happening elsewhere in the world were also affecting the Indian economy and its sectors. The technological advancements in various sectors and more so in the case of telecommunications resulted in deregulation of various sectors. A related set of such reasons has already been touched upon in the first Unit of this manual that discusses the factors leading to commercialization of infrastructure sectors. The second set of reasons outline factors related to telecommunications which led to private sector participation in this sector. These are mentioned as below:

Low teledensity: Tele-density is an indicator that highlights the penetration of telephone lines in a particular country. The level of teledensity at the start of privatization process was extremely low. In 1990-91, it was 0.60 per 100 persons.[a] Given the role of telecommunications in the economic development of a country, such a low level of teledensity was a national challenge to overcome with. Increasing the teledensity required huge investments, which the government was unable to provide. PSP was aimed to bring more investments into the sector and supplement the governmental efforts to increase the tele-density.

Monopoly market structure: DoT was the sole provider of telecommunication services prior to deregulation. It was a vertically integrated monopoly providing various telecom services. There was a huge demand supply gap that resulted in a long waiting list of subscribers. For example, in the year 1990-91, when the registered demand of telephone connections was 7034000, number of working connections was 5074000 and there was a waiting list of 1960000 subscribers.

[a] Jain, Rekha; A review of the Indian Telecom sector (India Infrastructure Report 2001)



Source: DoT

Poor quality of service: The level of service was not up to the mark. There were frequent breakdowns and complaints were not being attended to properly. Procuring a telephone connection was not an easy task. In fact, there was a significant amount of public outcry with regard to the inadequacy of the level of service.

Low rural connectivity: In 1991, only 1,40,000 out of 5,76,000 villages were connected.[a] Owing to low potential in the rural areas, average cost of providing a telephone line in a rural area was very high. Therefore massive investments were required to connect the rural areas. Private participation was perceived to be a vehicle to supplement governmental efforts to connect the rural areas.

Unavailability of value added services[b]: Basic telephony, predominantly was the only form of telecommunication service available to the consumers. The proportion of national outlay meant for telecommunications was inadequate to spread the basic telephony network, which was not available. Thus the provision of value added services was neglected.

Introduction of private sector participation

Although sector liberalization began earlier with private sector being allowed to manufacture customer premise equipment, the first blueprint of telecom reforms was formulated by a high powered committee in 1991. The committee recommended that value added services should be provided by the private sector and production of equipment be undertaken by both the private and public sectors. The Government invited private sector participation in a phased manner from the early nineties, initially for value added services such as Paging Services and Cellular Mobile Telephone Services (CMTS) and thereafter for Basic Telephone Services (BTS).

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[a] Jain, Rekha; A review of the Indian Telecom sector (India Infrastructure Report 2001)

[b] Value added services include cellular telephony, radio paging, e-mail, audio and video conferencing, V-SAT based corporate data networks, video text and voice mail.

Cellular services

The cellular mobile service being perceived to be lucrative led to an overwhelming response of the private sector operators for its licenses. The process of licensing began in 1994. Firstly, licenses were issued to two service providers in each metro. Later in 1995, the licenses were issued for other state circles again on duopoly basis (two service providers in each circle). The DoT reserved the option of being the third service provider in each circle. In 2001, licenses for the fourth cellular slot in each circle were issued. A method of competitive bidding has been followed throughout the process of licensing. In fact, a three stage bidding process was followed for the fourth slot to reject non-serious bidders and to check the financial ability of the service providers. The entry of MTNL and its aggressive pricing has started a round of price cuts and prices have fallen down quite significantly. It is viewed that the entry of fourth operator would lead to increased competition among the different players.

Basic services

With regards to restructuring in basic services, the entire country was divided into twenty circles and a private sector operator was supposed to be allocated license in each circle depending upon its financial and technical capabilities. It was envisaged that a private operator would co-exist and compete with the DoT in each circle. Permissible network technologies were specified and basic service providers were required to base their services on fibre optic cable and wireless in the local loop as far as possible. This is because these technologies are more efficient in providing basic services than the traditional copper wire. In 1996, licenses were allocated to Basic Operators in 6 state circles. Later in 2001, 25 new licenses were issued to three more Basic Operators allowing them, and also the existing Operators to provide limited mobility with the use of Wireless in Local Loop (WLL-M). With this round of licenses, the Government announced the move to allow unrestricted competition in this segment combined with very low entry fee.

Other services

Besides these two main telecommunication services, private sector entry was introduced in a host of other services too. Paging service and VSAT services were also liberalized and allowed for private sector participation.

Realizing the importance of Internet in the economic development, Government allowed private participation, dismantling the monopoly of VSNL,

in Internet services industry in 1998. The licensing was commenced with immediate effect. Over 400 private operators procured licenses to provide the service. Such an overwhelming response, in part, was received because of an absence of license fee and no restriction on the number of players in each circle. Private operators were also allowed to provide other value-added services such as e-mail, web page hosting, etc.

Another important change in the telecom sector took place in October 2000 when the Government corporatized the operations arm of the DoT. With this initiative, operations and policymaking have been segregated. The new corporate entity has been named as Bharat Sanchar Nigam Limited (BSNL) which will look after the provisioning of services. The DoT, however, would continue to frame the policy of telecommunications sector. The corporatization is viewed to be a precursor to privatize the State owned entity in future.

Having allowed private sector participation in various telecom services, the government took a leap forward in February' 2002 by selling 25% of its share in VSNL to a private entity. The sell-off is construed to be the beginning of privatizing the state-run telecom companies.

Section II: Regulation of telecommunications

This section covers the policy initiatives undertaken by the government and regulatory initiatives undertaken by the TRAI, which resulted in various developments in the telecom sector.

Policy initiatives undertaken by the government

Key milestones in this context are enumerated below:

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1984 Manufacturing of subscriber terminal equipment opened to private
sector.
1986    MTNL and VSNL created as corporations.
1991Telecom equipment manufacturing opened to private sector.
1992   Value added services sector opened for private competition.
1994Licences for radio paging (27 cities) issued.
1994New Telecom Policy announced.
1994Broad guidelines for private operator entry into basic services
announced.
1994          Licences for cellular mobiles for four metros issued.
1995Licences issued for cellular mobiles in 19 circles, excluding the
       four metros, on a duopoly basis.
1995Licences issued for second operator in basic services on a circle
basis.
1997The TRAI Act passed in Parliament.
1998Several value added services (VASs) including Internet available
       through private operators.
1999Announcement of National Telecom Policy.
2000   Amendment to the TRAI Act.
2000   Announcement of Domestic Long Distance Competition Policy.
2000Planned Corporatization of DoT.
2001Opening up the International Long Distance service to competition
2002Disinvestment of Videsh Sanchar Nigam Limited (VSNL)
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In shaping up the telecom sector, the Telecom policy, 1994 and the Telecom policy, 1999 played a vital role. In fact, they have been lauded as giving a framework for first generation and second generation of telecom reforms respectively.

Besides, the TRAI Act, 1997 is another important milestone in telecom reforms of India. The establishment of an independent regulator was meant to facilitate the development of market from a monopoly structure to a competitive one. The performance area of the TRAI has already been highlighted in the first Unit of this manual.

Telecom policy, 1994

Major objectives of the policy are as follows:[a]

- To have telecommunication for all and telecommunication within the reach of all. This means ensuring the availability of telephone on demand as early as possible.

[a] Department of Telecommunications, http://www.dotindia.com/ntp/ntp1994.htm

- To achieve universal service covering all villages as early as possible. The expression universal service implies provision of access to all people for certain basic telecom services at affordable and reasonable prices.
- To have quality of telecom services of world standard. Removal of consumer complaints, dispute resolution and public interface will receive special attention. The objective would also be to provide widest permissible range of services to meet the customer's demand at reasonable prices.
- Taking into account India's size and development, it is necessary to ensure that India emerges as a major manufacturing base and major exporter of telecom equipment.
- To protect the defence and security interests of the country.

The policy aimed to achieve the following targets:

- Telephone should be available on demand by 1997.
- All villages should be covered by 1997
- In the urban areas, a PCO should be provided for every 500 persons by 1997.
- All value-added services available internationally should be introduced in India to raise the telecom services in India to international standard well within the VIII Plan period, preferably by 1996.

A review

NTP 94 furthered the liberalization process by allowing private sector participation in basic services and in cellular services in non-metropolitan areas. However, the policy document envisages the fact that basic services would continue to be provided largely by a strong incumbent that faced little competition. Private participation was viewed as supplementing the incumbent’s efforts to expand telecommunication networks, instead of playing a major role. Long distance operations were to remain under the domain of the DoT as before. The policy outlined ambitious targets without assessing the scale of resources required to achieve them. Many implementation problems as regards private sector participation in telecom services were notified. In addition, the policy didn’t take into account the convergence of technologies and of markets that was taking place and thereby influencing the industry structure. The shortcomings of the policy didn’t lead to realization of the targets, finally paving the way for a fresh look at the policy framework.

Telecom policy, 1999

Objectives of the NTP 1999 are mentioned as below:[a]

- Availability of affordable and effective communications for the citizens is at the core of the vision and goal of the telecom policy.
- Strive to provide a balance between the provision of universal service to all uncovered areas, including the rural areas, and the provision of high-level services capable of meeting the needs of the country's economy;
- Encourage development of telecommunication facilities in remote, hilly and tribal areas of the country;
- Create a modern and efficient telecommunications infrastructure taking into account the convergence of IT, media, telecom and consumer electronics and thereby propel India into becoming an IT superpower;
- Convert PCO's, wherever justified, into Public Teleinfo centres having multimedia capability like ISDN services, remote database access, government and community information systems etc.
- Transform in a time bound manner, the telecommunications sector to a greater competitive environment in both urban and rural areas providing equal opportunities and level playing field for all players;
- Strengthen research and development efforts in the country and provide an impetus to build world-class manufacturing capabilities
- Achieve efficiency and transparency in spectrum management
- Protect the defence & security interests of the country
- Enable Indian Telecom Companies to become truly global players.

In line with the above objectives, the specific targets that NTP 1999 sought to achieve were:

- Make available telephone on demand by the year 2002 and sustain it thereafter so as to achieve a teledensity of 7 by the year 2005 and 15 by the year 2010
- Encourage development of telecom in rural areas making it more affordable by suitable tariff structure and making rural communication mandatory for all fixed service providers
- Increase rural teledensity from the current level of 0.4 to 4 by the year 2010 and provide reliable transmission media in all rural areas
- Achieve telecom coverage of all villages in the country and provide reliable media to all exchanges by the year 2002
- Provide Internet access to all district head quarters by the year 2000
- Provide high speed data and multimedia capability using technologies including ISDN to all towns with a population greater than 2 lac by the year 2002

[a] Department of Telecommunications, http://www.dotindia.com/ntp/ntpindex.htm

Review

India is a member of World trade Organization (WTO). India's WTO commitments require that international long distance service should be opened up by 2004. In this regard, the Government announced the end of monopoly of VSNL and open the service for private sector participation by 2002. National long distance was to be opened up for competition in 2001. A significant change was made in the licensing structure[a]. Private basic and cellular operators were allowed to migrate from fixed license fee regime to one time entry fee plus revenue sharing system(a portion of gross revenue of the service operator would be paid to the Government as licensee fee annually. The Government will fix this portion) Besides, licence period was extended from 10 to 20 years. Cellular and fixed basic services can now interconnect with all service providers in their own areas. The DoT was restructured into separate policy making and licensing units.

Review of regulatory procedures and initiatives undertaken by Telecom Regulatory Authority of India (TRAI)

TRAI came into existence by virtue of the TRAI Act, 1997. It is a statutory body created by law and its decisions can be challenged only in Telecom Dispute Settlement Appellate Tribunal (TDSAT). The TRAI Act, 1997 gave the powers of settling disputes between the service providers to the TRAI. However, later in 2000 an amendment to this Act divested TRAI of these powers and a separate Tribunal, TDSAT was created to settle the disputes. The functions and responsibilities of TRAI have been elaborated in the first Unit. A brief review of the regulatory procedures adopted and the initiatives undertaken by TRAI is presented as follows.

Since its establishment, TRAI has taken a number of initiatives pertaining to tariff, quality of service and interconnection. Interconnection means the physical linking of telecom networks used by the same or different service provider in order to allow the users of one service provider to communicate with the users of another service provider.

The TRAI Act, 1997 requires the regulator to ensure transparency while exercising its powers and discharging its functions. In accordance with this stipulation, TRAI has been following a process of consultation with the stakeholders. Earlier the decision making process was opaque and confined within the Government only. Nobody knew the basis of decision, and public

[a] Prior to NTP 99, one time license fee was being paid by the operators, which formed a high percentage of the total costs.

participation in the decision making process was not there. Now the regulator invites comments from various stakeholders after drafting the consultation paper on the subject. Subsequently, an open house meeting is scheduled for the representatives of various stakeholders to comment on the regulator's approach and findings, and raise issues of concern. The feedback from these meetings is now taken into account before regulator arrives at a judgement. TRAI has issued consultation papers on many key issues facing the sector. The issues that have been being tackled in these consultation papers are tariff, quality of service, licensing, competition, universal service obligations and interconnection.

TRAI has issued many regulations, the most important being the Tariff Order, 1999 (TTO,99). This was a landmark achievement as it aimed to rebalance the prevailing tariffs and bring them in line with the costs. As had been the case in most countries, tariffs on long distance calls cross-subsidized the local calls. This distortion is a hurdle in inducing full fledge competition into the sector. Tariff rebalancing was important to remove such distortion and create a conducive environment for competition. TRAI partially linked the tariffs with the costs in this order followed by an amendment that furthered the rebalancing of tariffs.

TRAI has submitted recommendations to the Government on growth of Internet, Internet telephony, Universal Service Obligation, opening of International Long Distance segment and introduction of WLL based limited mobility services (WLL-M). WLL service means connecting the subscriber through a wireless mechanism instead of through a copper wire, which is the traditional method of telephone connection. This wireless connectivity also enables the Operator to provide limited mobility services by doing suitable changes in its network. Besides, TRAI has provided its recommendations on license conditions and fee for certain service segments.

Section III: Competition in telecommunications

The fundamental objective of promoting competition is to benefit the consumer by lower prices & increased choice and to benefit the economy as a whole by the expansion of the networks through increased investments in the sector. Keeping in line with this fundamental objective, the ultimate aim of telecom reforms should be to induce competition in the sector so as to ensure the consumer services at competitive rates. The commonly perceived competition benefits to the user are:

- lower prices
- greater efficiency
- more innovation
- expanded supply
- better customer service

The users of telecommunication services have accrued partially, if not wholly, all the benefits listed above, especially in the case of cellular, long distance and internet services.

Tariffs, in all the three cases have gone down drastically. The cellular tariff have dropped from a high of Rs 600(rental) & Rs 6/minute (airtime) to Rs 200(rental) & Rs 2/minute (airtime) respectively within a very short period of time. Similarly, tariff of internet services too have gone down. The rates are one-fifth of those prevalent during monopoly over Internet access and this has happened within the span of two years only. The domestic long distance tariffs have been slashed by 62% a year ago. Tariff on international calls too has gone down by about 50%.

Increasing competition in the basic services segment is starting to have its effect on the pricing strategies of majors such as Bharat Sanchar Nigam Ltd (BSNL) and Mahanagar Telephone Nigam (MTNL). Both these players have revised the tariff rates downwards for distances from 50-200 kms so as to hold on to their revenues by way of increased volumes arising as a result of the increased traffic. According to the new tariff scheme, subscribers can make calls up to 200 km in the same manner as a local call. There is a reduction in rates by 1/8 and ½ of the usual rates for the 50 to 100 km and the 100 to 200 km slabs respectively. However, to compensate for the reduction in the call charges, the

monthly rental for rural and urban low user subscribers has been increased by as much as 40 per cent. This slashing of basic call rates in the 50 km-200 km range has thus made the rates on par with global levels. By way of these rate cuts, the telecom majors are likely to retain their subscribers and also give a fillip to their plans to enhance telecom traffic and subscriber volumes.

Intense competition in the cellular and the internet services industry has led to greater efficiency in the business processes. There is a downward pressure on the costs, which helps in bringing the prices down.

There are a range of value added services available. Product as well as process innovation is frequent in the industry. Innovative tariff packaging is pervasive enabling the user to choose an option according to his usage pattern. Cellular & internet services are almost commoditized. The consumer can buy the product from small kiosks and get connected instantly.

Deregulation has brought in more investments in the sector and the penetration is increasing. Telephone lines added to the basic services network over the last 5 years have been one and a half times that added over the preceding five decades. Cellular subscribers have increased manifold. In less than two years, the number of Internet users has increased 5 times. Customer retention, as a corporate strategy is leading to better customer services ultimately benefiting the users.

Current status of the telecom sector and key developments so far

The Indian Telecommunication network with 45 million telephone connections is the sixth largest in the world and the second largest among the emerging economies of Asia. The tele-density was 4.4 per hundred as on June' 2002, and the targets are to achieve 15 per hundred by 2010. Accordingly, India's Tenth Five Year plan, 2002-7 projects Rs 1,750 billion worth of investments in 50 million fixed lines, 30 million cellular lines and 20 million Internet connections.[a] The telecom market in India continues to grow at an annual rate of 23%.

Telephone network status as of June' 2002

Teledensity	4.4%

[a] http://www.tradepartners.gov.uk/text/telecom/india/profile/overview.shtml

Basic phone lines	39 million
Telephone exchanges &	32,509,
switching capacity	42.92 million
Cellular subscribers	6.7 million
Internet Subscribers & users	3.6 million,
	8.2 million
Paging subscribers	0.6 million

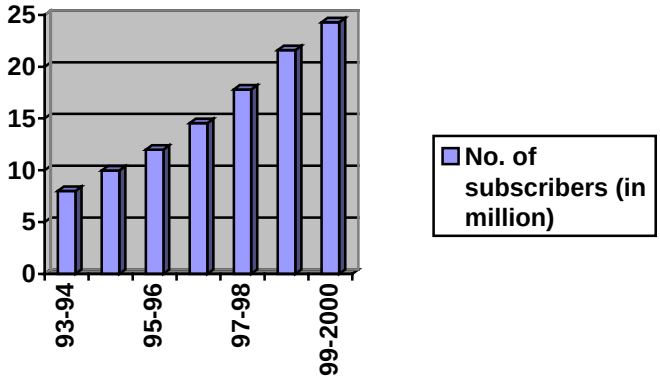
Source: http://www.tradepartners.gov.uk/text/telecom/india/profile/overview.shtml

The market structure and performance of various telecom services are outlined as below:

Basic Telephone service

The Government policy now allows unlimited competition in this sector. In addition to BSNL and MTNL, 31 more licenses have been issued till now for provision of Basic Telephone Service. However, state owned operators still dominate the whole market. In fact, their market share in this segment is over 90 per cent. Nevertheless, private operators are catching up and in few states they have created a significant impact. Among private operators, Tata Teleservices and Bharti Telecom have a conspicuous presence in their respective circles. Considering the inherent advantage of scale that the incumbent state operators have, the private networks are setting their networks very selectively and targeting corporate clients with value added services. The Government has also allowed the operators in this segment to provide limited mobility by using WLL technology. Reliance Telecom has forayed into WLL services and would provide the same in many circles. The leap forward will be when interconnection arrangements between various operators of the industry are in place. This would increase the level of competition and the market size too.

The following bar chart shows the growth of fixed service subscribers elaborating the effect of deregulation

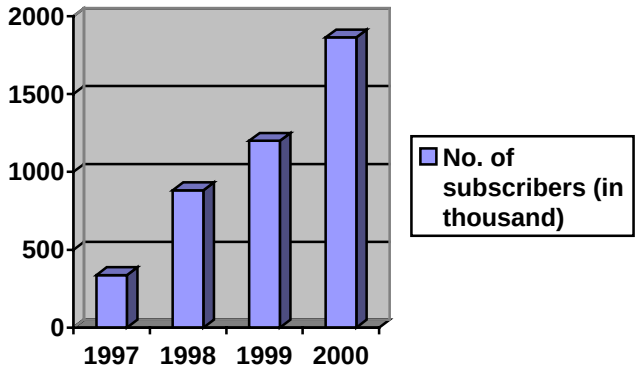


Source : www.investindiatelecom.com

Cellular Mobile Telephone Service

According to the policy framework, up to four cellular service providers can function in each of the 18 telecom circles and in 4 metro cities, representing a geographical coverage of 35% in the country. Presently there are two private service operators in each area and a third incumbent state operator. Licenses have been issued to private companies for the 4th operator in each region, which provides opportunity for cellular infrastructure network providers. The fourth cellular operator in different circles is rolling out its network and would become operational very soon. The cellular industry is projected to reach 100 million subscribers by 2010. The intensity of competition is very high, lowering the prices, and increasing the market size.

The following bar chart shows the growth of mobile subscribers:

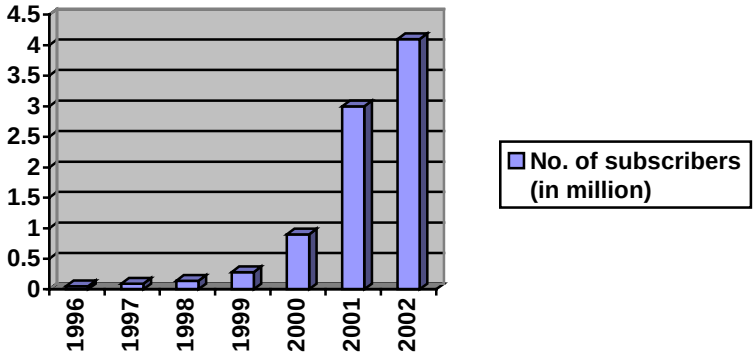


Source : www.investindiatelecom.com

Internet Service

The Internet policy, 1998 acted as a catalyst in catapulting the market structure of the industry from monopoly to competition. Allowing unlimited competition without any demand of license fee interested a large no. of private players to provide the service. There is no restriction on the number of Internet companies and over a hundred licensees are operational now. A conducive policy framework has enabled easy accessibility to the service with cyber cafes / kiosks increasing the density, not only in the metro towns but also in semi-urban towns. Free entry and 100% FDI in ISPs have kept Internet access prices low. The subscribers as well as the users have increased manifold since the deregulation of industry, which was solely dominated by VSNL. The industry would leapfrog as and when the PC prices become more affordable.

The following bar chart shows the growth of internet subscribers:



Source:www.ispai.com

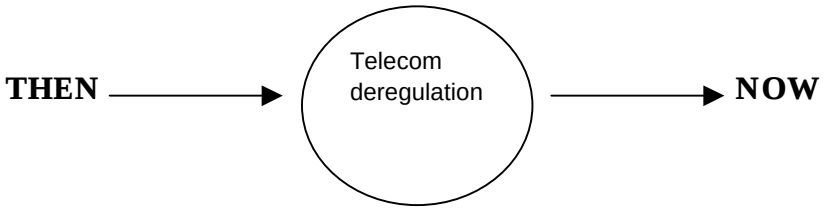
National Long Distance Service

In August 2000, the NLD service was finally opened to unrestricted competition. Due to the initial lack of clarity on critical issues like equal access, interconnectivity and last mile access, private sector participation was very low. With the opening up of the basic services and ILD, companies are now gearing up to provide integrated service. Two private operators namely Reliance Infocom and Bharti Televentures have already laid down the infrastructure for providing long distance services. The state owned operator, BSNL has reduced

the NLD prices by 62% in anticipation of losing the market to the private players. The NLD market is thus on the verge of seeing more competition, resulting in more choice and lower prices.

International Long Distance Service

The sector was opened to competition from April 2001, a year before the year 2002 as indicated by the telecom policy 1999. Five operators have procured licenses to provide the service. Bharti Televentures has already laid down the infrastructure. It has already entered into an interconnection agreement with BSNL. The ILD prices have fallen by about 50% and are expected to fall further by at least 40-60%. This reduction will be compensated by an increase in volume, driven by increasing globalisation, greater telephone penetration and rising number of Indians living and travelling abroad.



- Single service provider
- No competition
- High prices
- Absence of valued added services
- Poor customer service
- Rigid policy framework
- Absence of independence regulation
- Low teledensity

- Multiple service providers
- High competition
- Lower prices
- Range of value added services available
- Better customer service
- Conducive policy framework
- Presence of independent regulation
- Private sector involvement to increase teledensity

Universal Service Obligation

The tele-density, number of telephones per hundred people is 4.4 as on June' 2002. The rural tele-density is 1.2. 72% of the Indian population still resides in villages. The ratio of urban to rural tele-density is very high, about 7:1 in South Asia.[a] These figures underscore that a large area in the country where people don't have access to telecommunication services still remains uncovered. There are many reasons for such a state, the prime being higher costs of provision and low profitability in rural areas. The average cost of providing a telephone in low-density areas is higher than in high-density areas. Rural areas being less dense, the cost of telephone provision is very high. To add to it, the purchasing power of rural people being too low, the usage potential is very less. These factors primarily disable the operators from investing in rural areas. However, given the role of communications in overall development of the society, provision of telephone in rural areas is imperative. Therefore public policy promoting teledensity is warranted to attain the desired aim. Of late, the mechanism of Universal Service Obligation (USO) has evolved to bridge the

[a] Telecommunications Regulation Handbook, Edited by Hank Intven and McCarthy Tetrault

urban-rural divide. The objectives and considerations for such a framework are many, however, in essence the obligation aims to bridge the urban-rural divide and promote economic growth by providing access to all.

Universal service policies generally focus on promoting "universal" availability of connections by individual households to public telecommunications networks. The objective of connecting all, or most households to telecommunications facilities is referred to as "Universal Service Obligation".[a] However, the feasibility of providing every single household a telephone in a developing country like India is remote especially at the current level of tele-density. It is Universal Access that is more practical a policy objective. It essentially refers to a situation where every individual in a country has access to telephone. Public call offices are means to promote universal access, providing access to all on non-discriminative basis and at prescribed rates. Over 483,427 out of the 607,491 villages, i.e. 80% of the villages have public telephones.[b]

In the backdrop of low rural tele-density and the rising digital divide, a major policy thrust was given to USO in New Telecom Policy 1999 (NTP'99) by the Government of India. The NTP'99 envisaged provision of access to basic telecom services to all at affordable and reasonable prices. The resources for meeting the USO shall be generated through a Universal Service Levy (USL), at a prescribed percentage of the revenue earned by the operators holding different type of licenses. Further, NTP'99 envisaged implementation of USO for rural and remote areas through all Basic service providers who will be reimbursed from the funds collected by way of USL. Other service providers shall also be allowed to participate in USO provisioning subject to technical feasibility and shall be similarly reimbursed out of the funds of USL. It has been decided to extend support to the Universal Service from the Financial Year 2002-03. The following are broad guidelines for implementation of Universal Service Support Policy issued by the Department of Telecommunications (DoT) in March 2002:

[a] Telecommunications Regulation Handbook, Edited by Hank Intven and McCarthy Tetrault

[b] http://www.itu.int/ITU-D/treg/Events/Seminars/2002/china/pdf/26-doc6-2-verma.pdf

- Setting up Universal Service Fund (USF) with a percentage of Revenue contribution as Universal Service Levy by all telecom service providers except pure value added service providers.
- Date of implementation of USF support (1-4-2002)
- USF presently to be administered by Deptt. Of Telecom (DOT), Government of India
- USO subsidy would be granted through a bidding process
- USF support to public access telephones or community telephones and individual telephones in high cost rural / remote areas
- Replacement of old VPTs installed on Multi Access Radio Relay (MARR) technology
- Provision of additional rural community phone in villages exceeding population of 2000
- Upgradation of VPTs to Public Telecom and Info Centres (PTICs) within 5 kms of every village and at least in all villages with rural post offices to provide data transmission facilities by the year 2004;
- Installation of 5400 high speed PTICs for Tele-education and Tele-Medicine purpose by the year 2004

The so-called universal service levy is currently 5 per cent of the gross revenues of the telecom service providers. Annual contributions of about Rs 1,800 crore are expected on account of this levy. According to the DoT, the levy could be increased if required but the overall revenue -share limits (8-12 per cent) would not be disturbed to ensure that there is no additional burden on the service providers or the consumer.

For the additional villages identified in the 2001 census, the capital as well as the operating expenses will be reimbursed from the Fund. Support from the fund will, in addition, be available for rural community phones in villages where one VPT has already been installed. It would also be extended for installation of a second public phone to villages where population exceeds 2000. The Fund will also finance the capital expenses of replacing the VPTs, which are not working. The funds would also be reimbursed for upgrading VPTs to public telecom and info centres (PTICs).

The rural areas being economically unviable, have so far remained unconnected. The policy intervention by way of imposing such an obligation on the service

providers aims to expand the rural telephony. The guidelines being framed and announced, the rural tele-density is likely to pick up in near future.

Concluding remarks and issues related to independent regulation

Whereas policy formulation for private sector participation (PSP) in telecom sector comes under the purview of government, the role of independent regulator in ushering competition into the sector cannot be undermined. Introducing PSP in the sector is only a step forward towards competition. Given that the State owned enterprises are major players in the market, an independent regulatory body distanced from the ministry, is required to create a level playing field where the private operators as well as the State operators are treated at par. Numerous issues arise, especially when the industry is in transition, that is, moving from a state of monopoly to a state of competition. These issues, which are related to licensing, tariffs, interconnection, universal service obligations etc. will have to be sorted out by the Government and the regulator in larger public interest.

The priorities and interests of stakeholders are different and often in contrast with each other. To cite an illustration, the government would like to provide telephone at below cost tariff so as to connect the unconnected and increase the teledensity. But, an operator, especially a private operator would not be able to provide the service at a below cost tariff, for of course, it would hamper its profitability. The resolution of the apparent conflicts requires regulatory intervention.

For a competitive telecommunications market, rebalanced prices and an efficient interconnection regime are almost prerequisites. With regards to the former, tariff on long distance calls has been lowered. In fact, it has been lowered by the operators more than what has been mandated by the regulator. However, the tariff on basic telephone services is yet to be fully aligned with the costs. Interconnection is a major issue facing the telecom industry in India. A seamless routing of calls rests upon efficient interconnection between the networks. Moreover, a new operator would not be able to tap the market unless its network is interconnected with the networks of existing operators. The entry of a new operator, which would enhance competition, therefore rests on interconnection arrangements in the industry.

In the process of deregulation and otherwise too, the interaction between different economic agencies is indispensable. Numerous disputes arise which might slow down the pace of reforms. In telecom, many regulatory and policy decisions have been challenged by different stakeholders. Disputes between the regulator and the DoT are relatively common. The WLL-M dispute has occurred time and again. This dispute is summarised as below:

In view of the fact that WLL-M(limited mobility through Wireless in local loop) is cheaper, and would help increasing the tele-density, TRAI recommended to the Government its introduction by Basic Operators. The Government accepted TRAI's recommendations and allowed Basic Operators to provide WLL-M. The Cellular Operators opposed this decision. They said that it is a 'backdoor' entry to the mobile segment. They claimed that Basic Operators have not paid any license fee for providing WLL-M service, which would directly compete with cellular service, whereas they have paid huge license fee. Also, they pay a charge for accessing the Basic network but the Basic Operator doesn't pay any. Against this backdrop, they filed a petition in TDSAT, which was eventually dismissed. The Cellular Operators then went to the Supreme Court. The Supreme Court, in its judgement had asked the TDSAT to reconsider the issue. The matter is still under consideration of TDSAT.

The foregoing case underscores that a clear definition of TRAI's role is of paramount importance and the regulator has to be strengthened through legislative changes that imparts more autonomy and powers to the regulator. Whereas it is important to grant a sufficient level of autonomy to the regulator, the regulator should be accountable to the Government. Unless, institutional mechanisms are in place to ensure this, attaining a state of competition would not fructify.

Reforms in urban services

Introduction

Urban areas have been long known to be 'generators of economic momentum' and 'engines of growth'. These settlements enjoy economies of scale allowing them to access services at reasonable costs. Investments in these areas invariably yield higher returns than when invested in rural areas. Adequate infrastructure facilities provide the right platform for growth in various sectors of the economy. This growth results in a wider and stronger revenue base that allows governments more options for undertaking development activities, like improving the water supply and provision of better-equipped health and education facilities, which will, in turn, contribute to economic development.

Urban areas are favoured destinations for economic activities owing to the availability of higher quality infrastructure. The main infrastructure facilities related to urban areas include water supply and sewage disposal, solid waste management, urban roads, electricity, telecommunications, and various social infrastructure like health and education, civic amenities like milk booths, police stations, fire stations, etc. However, national performance in these sectors has not been good.

As per the Census of India 1991[a], approximately 20% of the urban households did not have access to safe drinking water. Only 23.35% had toilet facilities and 52% was left totally uncovered by sanitation. The state of organised sewerage systems was also not very good. In terms of city areas, only 35% of Class IV towns to 75% of Class I towns were provided this service. Solid waste management also showed a poor picture. The efficiency of solid waste collection in Class I cities was 82.8% and lower than 65% in other Classes of towns.[b] The level of service provided by urban roads also depicts congestion averaging 0.36 metres per capita in the Class I cities.[c] Poor performance of these sectors has raised questions about the mode of provision of these services.

Policy level initiatives

[a] India Infrastructure Report, 1996, Rakesh Mohan Committee Report, Ministry of Finance, Government of India, Thomson Press, pp. 1.
[b] India Infrastructure Report, 1996, op. cit., pp. 7.
[c] India Infrastructure Report, 1996, op. cit., pp. 11.

The Union Government has effected several policy-level interventions with the objective of improving the urban environment. These policies highlight the need to improve the delivery of these basic services, acknowledge the possibility and need of institutions to independently regulate these sectors and the importance of community participation. For instance, the National Water Policy of 2002 calls for a co-ordinated approach to water management, gives highest priority to adequate provision of drinking water, discusses environmental issues, and proposes participation by beneficiaries and private sector in water management.

Several other Union Government policy statements also have a bearing, although indirectly, on the water sector. The economic liberalisation policy of 1991 and subsequent policy statements on economic liberalisation have highlighted the need for adopting market-based approaches to economic management of infrastructure. They have discussed issues like privatisation of urban water, and decentralisation. The policy statement for reduction of pollution emphasises the need for prevention of pollution in place of conventional treatment of effluents. It also identifies the adoption of best available and practicable technologies as essential components for pollution prevention. Table 1 lists some of these policy-level initiatives.

Table 1 Policy /programme/legal reform highlights

Year	Policy/Act/Programme	Highlights
1974	Environmental Improvement of Urban Slums (EIUS) Scheme	▪ The scheme is applicable to notified slums in all urban areas ▪ Aims at provision of basic amenities like water supply and sanitation ▪ The EIUS scheme was made an integral part of the Minimum Needs Programme in 1974
1960s		▪ Ministry of Food and Agriculture – offered soft loans to urban local bodies for promoting composting of urban solid waste.
1969-74		▪ Fourth five-year plan provided block grants and loans to state governments for setting up MSW composting facilities.
1974		▪ GoI introduced a modified scheme to revive urban waste composting in cities with a population over 0.3 million.
1975		▪ GoI constituted the first high-powered committee for a holistic review of urban waste problems. This committee in its report covered eight areas

Year	Policy/Act/Programme	Highlights
		of waste management and made 76 recommendations.
1979	Integrated Development of Small and Medium Towns (IDSMT)	▪ The scheme was initiated with a view to augmenting civic services ▪ Strengthening municipalities through promotion of resource generating schemes ▪ Reducing migration from rural areas to larger cities by providing sufficient infrastructure facilities, including water supply.
1986	Centrally sponsored Rural Sanitation Programme (CRSP).	▪ Provide technical and financial assistance to states to implement rural sanitation programmes under the Minimum needs programme.
1986, 1990/91	Urban Basic Services Scheme (UBSS) (1986) / Urban Basic Services for the Poor Programme (UBSP) (1990/91)	▪ The primary objective was improving the standard of living of urban low-income households, particularly women and children through the provision of sanitation and social services in slum areas. ▪ In 1990/91, the scheme was integrated with the EIUS and came to be known as the Urban Basic Services for the Poor (UBSP) programme.
1990	National Waste Management Council (NWMC)	▪ One of the NWMC objectives was municipal solid waste management. The council is presently engaged in survey of 22 municipalities to estimate the quantity of recyclable waste and its fate during waste collection, transportation, and disposal.
1991	Rajiv Gandhi National Drinking Water Mission (RGNDWM)	▪ The Accelerated Rural Water Supply Programme (ARWSP) under the (RGNDWM) assists the States and Union Territories (UTs) to accelerate the pace of coverage of drinking water supply
1992	73rd and 74th Constitution (Amendment) Acts	▪ A three-tier system of local governance, through Panchayati Raj Institutions (PRIs) in rural areas and through Urban Local Bodies (ULBs) in urban areas was established ▪ State legislatures were empowered to entrust local bodies with necessary power and authority to enable them to function as institutions of

Year	Policy/Act/Programme	Highlights
		local self-government ▪ State Finance Commissions were to be set up to provide for sharing of revenues between State and local bodies ▪ The urban and rural local bodies are now responsible for Water supply and sanitation
1993/94	The Accelerated Urban Water Supply Programme (AUWSP)	▪ The Programme was initiated by the MoUDPA to provide safe and adequate water supply facilities to the entire population of the towns having population less than 20,000 as per 1991 Census. 50% of the finance for the urban water schemes is provided by the Union Government and the rest by the State Government.
1996	National Slum Development Programme (NSDP)	▪ Additional Central Assistance is being released to States/Union Territories for the development of urban slums ▪ Objectives of the programme include provision of adequate and satisfactory water supply, sanitation, shelter upgradation, garbage, and solid waste management in slums. ▪ Focus areas of the NSDP include development of community infrastructure, empowerment of urban poor women and involvement of NGOs and other private institutions in slum development.
1998	Aseem Burman Committee	▪ In January 1998, Aseem Burman Committee was formed under the Supreme Court of India to review the solid waste management conditions in class I cities in India. ▪ The key recommendation of this committee's report was to enable private sector participation in SWM
2000	The Municipal Wastes (Management and Handling) Rules	▪ The rules lay the procedure for waste collection, segregation, storage, transportation, processing, and disposal ▪ Municipalities will be required to submit annual reports regarding municipal waste management in their areas to the Central Pollution

Year	Policy/Act/Programme	Highlights
		Control Board ▪ Further these rules mandate that all cities set up suitable waste treatment and disposal facilities by December 31, 2001 or earlier
2000	The Accelerated Rural Water Supply Programme (ARWSP)	▪ To cover the residual Not Covered (NC), Partially Covered (PC) and quality affected rural habitations. ▪ Improve performance and cost effectiveness of ongoing programmes. ▪ Create awareness on the use of safe drinking water. ▪ Take conservation measures for sustained supply of drinking water. ▪ Have a need-based approach to achieve the objectives of coverage ▪ Decentralisation of powers to States for implementation of mission programmes. ▪ Enhance ceiling for Operation and Maintenance (OandM) from the present level of 10 percent to 15 percent of the annual plan allocation. ▪ Providing 100 percent funds for the nascent programmes such as Human Resource Development, Research and Development, Information Education and Communication and Management Information System. ▪ Institutionalising community based demand driven rural water supply programme with cost sharing instruments by communities, gradually replacing the current supply-driven, centrally maintained non-people participating rural water supply programme. ▪ Institutionalising water quality monitoring and surveillance systems.
2000	Manual on Solid Waste Management for Local Bodies	▪ In January 2000, the CPHEEO (Central Public Health Environmental Engineering Organisation) under Ministry of Urban Development brought out a manual on solid waste management to provide guidance to local bodies.

Year	Policy/Act/Programme	Highlights
2002	Urban Reform Incentive Fund	▪ Rs 500 crore to provide reform linked assistance to States on: ▪ Revision of municipal laws in line with model legislation ▪ Levy of realistic user charges and resource mobilization by urban local bodies. ▪ Initiation of public private partnership in the provision of civic services.
2002	City Challenge Fund	▪ Support to mega cities for transitional cost ▪ Partial cost of developing an economic reform programme and financially viable projects undertaken by the ULBs
2002	National Water Policy	▪ Drinking water should be priority in planning and operation of systems ▪ Maintenance of existing water resources schemes would be paid special attention under these institutional arrangements. ▪ Participatory approach should be adopted and water user associations and local bodies should be involved in operation, and maintenance to lead to eventual transfer of management to the local bodies/user groups ▪ Private Sector Participation should be encouraged in planning, development and management to introduce corporate management and improve service efficiency ▪ A standardised national information system with a network of data banks and data bases, integrating and strengthening the existing Central and State level agencies should be established ▪ Exploitation of ground water resources should be so regulated as not to exceed the recharging possibilities as also to ensure social equity.

Background

Availability of adequate infrastructure is critical for economic growth and development of the nation. These services, namely power, telecom,

roads, railways, water, etc., are critical inputs for various economic activities. Costs towards these services are usually borne by the consumer, namely industries – large, medium, and small-scale, commercial enterprises, and households. The input cost of these infrastructures reflects in the production cost of commodities. Consequently, similar commodities in terms of quality, but with different input costs, will have different sale prices. Evidently, the one with the lower price tag will have a competitive advantage in the market. This is even more important in the current liberalised economy.

Maintaining a lower cost for input infrastructure is one of the important factors for ensuring competitiveness of commodities in the market. It is one of the reasons that the provision of infrastructure services has long been within the purview of the public sector. Moreover, given the universal service obligation of the government towards providing these infrastructure services at an affordable cost to all sections of society including the poor, it is constrained to provide these services at the lowest cost possible. Also, the only way that they could control the tariffs of these services was by being a monopolistic provider of these services. In addition, the government has various revenue streams, and the scale of financial operations being very large, it is able to subsidise and cross-subsidise these infrastructure services for various activities.

Provision of these services at a high cost is, thus, not desirable for a developing economy like ours. Such a situation has been expected in the eventuality of allowing the private sector in the provision of these services. Then, the cost of these services will be available to the consumers at a higher price since it will also include the financial profit margin of the private sector. Thus, it is understandable if governments are reluctant to allow any form of private sector participation in the provision of these basic services. It would be worthwhile to have an understanding of institutions at different levels of government that are involved in the provision of environmental infrastructure, namely water supply and sanitation including solid waste management.

Institutional context

Water supply is a State subject as provided in the States List in the Constitution of India. The Union Government does not have jurisdictional authority over the subjects mentioned in the State List and can only formulate guidelines for policies and set standards. In addition,

the Centre also provides technical and financial assistance if it is so desired by the State. Solid waste management, on the other hand, is within the mandate of urban local bodies. The following two sections highlight the roles and responsibilities of the centre and state regarding the water sector.

Roles and responsibilities – centre

The role of the centre is generally limited to that of an advisor. Various ministries have been created with a view to co-ordinate the different aspects of this sector. These ministries have the advantage of a broader perspective that would aid in management of water at the national level.

Ministry of Urban Development and Poverty Alleviation (MoUDPA)

This is the nodal agency, at the national level, for urban water supply and sanitation. This ministry formulates the policy for the water supply and sanitation sector, provides financing for select urban development and poverty alleviation schemes, monitors the implementation of various programmes and promotes technical capacity building of various institutions. It has three main agencies under its administrative control, each assigned with a specific task, that play a vital role in supporting these infrastructure sectors.

a) The *Central Public Health Engineering and Environmental Organisation (CPHEEO)* is the technical wing of MoUDPA. It is responsible for national level planning and programming. It is also responsible for advising various centre and State Government level agencies and organisations on technical aspects, monitoring and evaluation of various plan programmes related to water supply and sewerage.

b) *Housing and Urban Development Corporation (HUDCO)*, on the other hand, is the finance wing of MoUDPA. This public sector unit provides finance to states for augmenting and improving urban infrastructure.

c) The *Town and Country Planning Organisation (TCPO)* has been assigned the role of being a technical arm to the ministry. It is directly concerned with matters relating to urban and regional planning and development. Its main functions include policy formulation and guidance at all levels, assistance to State Town Planning Departments, advising in formulation of

appropriate supportive legislative framework for infrastructure, and monitoring and evaluation of select projects, programmes, and schemes.

Ministry of Health and Family Welfare

This ministry is responsible for setting non-statutory guidelines for water quality. WHO specifications are adhered to in the formulation of these standards, in the absence of any statutory guidelines for this aspect.

Ministry of Environment and Forests (MoEF)

This ministry is responsible for controlling and preventing pollution of water from municipal sewerage effluents. It is responsible for enforcing the Water (Prevention and Control of Pollution) Act, 1974 (WPCPA) and Environment (Protection) Act, 1986 (EPA) through the state pollution control boards. It may be noted here that the Water Act was enacted by the Parliament after some state legislatures had consented to such legislation.

Ministry of Water Resources (MWR)

MWR provides the national perspective for water planning and co-ordination for management of water resources in the country. Though it is not directly related to urban water supply and sanitation, it is responsible for some rural water schemes and water management for both surface and ground water. The National Water Resources Council of the MWR is the apex policy-making body for water resources development in India.

In 1986, the Supreme Court directed the centre to create a Central Ground Water Board (CGWB) under EPA to regulate groundwater extraction. The jurisdiction of CGWB stretches over the entire country. MWR also prepared a model bill for enactment by all State Governments for regulation and control of development of groundwater. This bill describes the procedures for constitution of State Groundwater Authorities (SGWA).

Roles and responsibilities – state

There are no standard or uniform institutional arrangement that is followed at the state level for providing water and sanitation services. These institutional arrangements vary from state to state. However, there are some general arrangements that are being outlined here.

State government departments

The Department of Water Supply and Sanitation (DWSS) is usually the nodal state-level government department responsible for formulating various policies related to drinking water, preparing five-year plans and annual plans, allocating funds to the various implementing authorities like development authorities and urban local bodies, and guiding the overall sectoral development. In most states, there is a water supply and sewerage board that undertakes the execution of schemes related to this sector. These agencies are generally statutory by nature. The Urban Development Department has general regulatory overview of the urban local bodies. The Public Health Department lays down the general guidelines for water standards and hygiene.

Water supply and sanitation boards

These boards have different functions in different states. For example, in Karnataka this board is responsible for capital works namely creation of water treatment plants, pumping stations, intermediate storage tanks, transmission and distribution pipelines, and operations, and maintenance. In most other states the responsibility of this board is limited to capital works while the municipal bodies carry out operations and maintenance. There are, however, relatively few metropolitan agencies that deal only with water and sanitation services. Delhi, Bangalore, Chennai, and Hyderabad are some metropolitan areas that do have such dedicated agencies. In some instances, like Rajasthan and Himachal Pradesh, the Public Health and Engineering Department (PHED) of the state Urban Development Department handles the technical and planning end while the local government service provider manages the operations and maintenance.

Groundwater regulation

Separate agencies for regulating ground water extraction and quality exist in states that have enacted legislation regarding groundwater regulation. Maharashtra, being such a state, has created an agency, the Groundwater Survey and Development Agency (GSDA). This agency receives budgetary grants from the Water Supply and Sanitation Department. The main objectives of GSDA are to implement the Maharashtra Groundwater (Regulation for Drinking Water Purpose) Act, 1993, and forecast and monitor groundwater conditions in Maharashtra.

State pollution control boards

State Pollution Control Boards (SPCB) are responsible for the implementation of WPCPA and EPA. These boards set out standards for discharges from

municipal sewerage pipelines. However, these agencies can only air their observations and recommendations. They have no enforcement powers regarding implementation of their recommendations based on their monitoring and evaluation results.

Multiplicity of organisations is a major issue affecting efficient provision of this service. Due to lack of co-ordination between these agencies, responsibilities of various authorities in delivering a single service would conflict. For example, while management of water resources is the responsibility of the state water supply department and the irrigation department, the construction of capital works is the responsibility of another state level agency like water supply boards. Further, the operation and maintenance of these water works is the responsibility of urban local bodies. Moreover, given that different agencies are under the jurisdictional control of different ministries, one agency cannot enforce its observations on the other. They can merely be treated as observations. Thus, accountability for poor service provision may never be laid squarely on any one department or agency. Consequently, there is no incentive, or disincentive, within the agency for improvement of infrastructure.

Institutional context for urban areas

Prior to 1992, there were only **two tiers of government**: the **centre** and the **state** *(Refer Figure 1)*. The state is responsible for providing for services as listed under the State List and some of the listings under the Concurrent List. The centre, on the other hand, is responsible for providing services listed under the Central List and some within the Concurrent List.

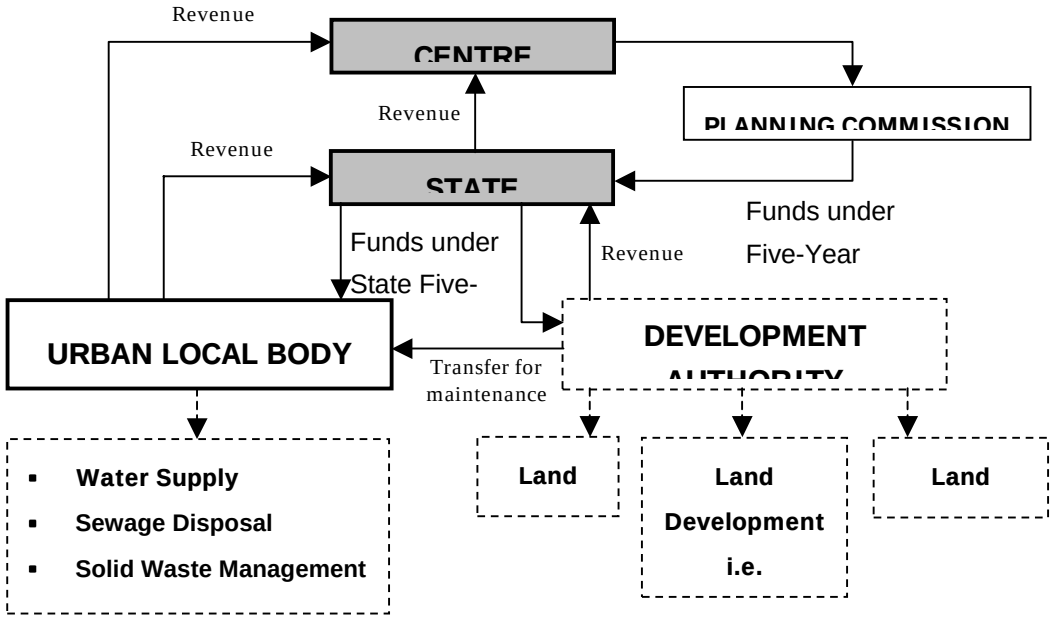
The *Planning Commission* is the nodal agency at the Union Government level that sets targets of national economic growth. It allocates budgetary outlays for various states along with grants and loans for various development activities. It is then left to the state governments to allocate its funds for various development activities depending on their priorities, as long as goals set out in the Five-Year Plans as stated by the Planning Commission are met.

To carry out development activities, state governments have created various *parastatal agencies*. These parastatal agencies, namely development authorities, water supply and sewerage boards, etc., are entrusted with the responsibility of implementing plans and projects as identified in the State Five-Year Plans and Annual Plans. These agencies provide the requisite technical assistance including planning, engineering, and execution of these projects. The state government

finances these projects. The role of these development agencies is limited to the initial provision and creation of infrastructure. On completion of these projects, the jurisdictional authority and control over these projects is transferred by the parastatal agencies to the *urban local bodies*, for operation and maintenance.

Specific to urban areas, infrastructure creation is done by development authorities. These development authorities acquire land for development activities, develop them by providing various economic, physical and social infrastructures, and then dispose of the land by selling it. Subsequent to this process, the developed and sold land is handed over to the municipalities for maintenance.

Figure 1: Institutional Arrangement



Consequently, while the chunk of the profit generated owing to large scale development and disposal of land goes to the parastatal agencies (the development authorities), the municipalities (urban local bodies) are left with relatively weak revenue streams within which to manage the maintenance and improvement of existing infrastructure. The role of the urban local bodies is then restricted to operations and maintenance of the urban areas.

The total revenues generated are turned over to the centre and state governments. The state, in addition, gives part of its revenues to the centre. The urban local bodies are thereby saddled with the responsibility of providing these services while being totally dependent on the governments for funds, loans, and grants. This mechanism has often led to certain areas and sectors

being favoured, owing to political interests, while development of other areas is neglected leading to imbalanced development.

Inducing uniform economic growth was one of the reasons why the centre enacted a landmark legislation empowering local governments to be responsible for their economic growth. This act, 74th Constitutional Amendment Act, 1992 (CAA74) envisaged the urban local bodies, usually the municipalities, municipal councils, and nagar panchayats, as a third tier of governance and accorded constitutional status to them. The implementation of this Act by the state government empowers the urban local bodies to generate their own resources while providing for these services. They are, then, removed from jurisdictional control of the state governments and no longer largely dependent on them for resources. Certain functions that were previously the responsibility of the state governments were removed from the State List (Seventh Schedule, Article 246, List – II) and included in Twelfth Schedule, Article 243W of the Constitution identifying the new powers, authorities and responsibilities of the municipalities.[a]

However, the Centre has no enforcing authority on the subject since the identified sectors come directly under the State List. State governments, however, were reluctant to implement this Act since it tended to remove the urban local bodies from the control of the state. They are also then deprived of a portion of the revenues from urban areas that would otherwise be used for upliftment of other areas in the state. Devolution of fiscal powers under this Act was, however, open to interpretation by the states and this was the excuse that states had used for not implementing this Act. The reason put forward was that urban local bodies lacked the expertise of managing the city. *"…parastatals exist because ULBs do not have adequate project implementation capacity."*[b]

This lack of enthusiasm is displayed by the fact that it has taken 10 years for various states (except Jammu and Kashmir, and Delhi, which have still not implemented this Act) to either enact new Municipal Laws or amend the existing laws to conform to this Act. However, minor aberrations still exist. The States of Jharkhand, Bihar, and Pondicherry have not conducted local elections while Arunachal Pradesh is yet to set up its State Finance Commission for working out devolution of fiscal resources to urban local bodies.[c]

Consequently, urban local bodies are now independently responsible for managing the urban areas. They are responsible for taking decisions for the

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[a] http://alfa.nic.in/const/schedule.html

[b] Nanavaty, Anish; "Implications of the 74th Amendment on the Water and Wastewater Sector"; India Infrastructure Report 2001, 3i Network, Oxford University Press, pp. 265.

[c] http://urbanindia.nic.in/mud-final-site/legislations/index.htm

betterment of urban areas – whether they are related to generating finances for infrastructure development and augmentation or for working out projects that are best suited for the improvement of existing conditions. With this responsibility is the increased accountability in the eventuality of failure or poor provision of service.

The main infrastructure sectors, among others, for which the urban local bodies are responsible, are water supply, sewage disposal, solid waste management, and local roads. The rest of this paper will focus on water supply and solid waste management sectors – existing status, various issues arising from the components of this sector, potential of private sector participation, role of the government, and potentially successful case studies for private sector participation in these sectors – The Tirupur Experience for water supply and Surat for solid waste management.

Water supply sector

The availability of the right quantum of water at the right place at the right time is critical for ensuring smooth functioning of day-to-day lives and economic growth. However, in most of our cities, water is generally not available in the right quantum. According to a survey conducted by National Institute of Public Finance and Policy (NIPFP) in 2000, approximately 78.3% of the municipalities, of the 249 urban centres in 1997-'98, reported piped water supply to be less than 100 litres per capita per day (lpcd)[a]. Moreover, an average of 214 lpcd is quoted for metro cities in 1997[b]. This average is also misleading since approximately 50% of these cities provide water at a level much lower than this average. The gravity of the situation is revealed when these figures are seen in comparison with Urban Development Plan Formulation and Implementation (UDPFI) Guidelines. This is the general model followed by most state governments towards determination of targets for various infrastructure sectors. UDPFI Guidelines state that water in urban areas should be supplied at an average of around 200 lpcd[c].

To improve the existing conditions of this sector, various policy level initiatives have been forthcoming from the centre, as has been indicated earlier. These policies have also identified possibilities and need for independent regulation of this sector and the importance of community

[a] Mathur, M.P., "Finances and Functioning of Urban Local Bodies: A Situation Report"; India Infrastructure Report 2001, 3i Network, Oxford University Press, pp. 248.

[b] Ibid.

[c] UDPFI: Urban Development Plan Formulation and Implementation Guidelines, Centre for Research, Documentation, and Training, Institute of Town Planners, India, Volume: 1, Appendix – B, pp. 144.

participation. The success of these policies, however, depends on how the relevant institutions implement them.

Water supply sector - components

The current approach for providing this service is a supply-oriented one. Development of water resources and construction of new infrastructure are priorities. This approach excludes the possibility of exploring alternatives for water resource regeneration. These alternatives could be generated once a detailed assessment of components of the water supply sector is done. Urban water supply has three broad components:

Bulk supply

Bulk supply through source includes treatment of water to be rendered fit for consumption and other purposes. The source of this bulk supply could be perennial or seasonal rivers, surface water contained in ponds, etc., and groundwater. The next step is the *treatment* of water that is done to make the raw water fit for domestic and non-domestic consumption.

Issues

One major issue that is related to this sector is the water loss incurred in transmission of raw water from the source to the treatment plant. Minimising these losses is a technical issue that needs to be resolved because this contributes to inadequacy of water supply from municipal pipelines.

Secondly, given the erratic supply from bulk sources and the constantly increasing demand for water owing to population growth, inadequacy of water for cities often leads to tapping of water from the groundwater table. Consistent drawout leads to a lowering of the groundwater table thereby increasing the concentration of total dissolved solids in the water. Moreover, given the poor sanitation conditions in the country, with over 65% of urban population not having access to sanitation facilities, bacteriological contamination of the ground water is a serious condition. All of these render the water unfit for consumption for both domestic and non-domestic purposes. Regulation of groundwater extraction is a major issue that needs to be addressed. Though policy level initiatives have been taken at the centre, most states do not have a legislative framework in place for addressing this issue. Tamil Nadu, Gujarat, and Maharashtra are the only exceptions in this regard.

This component requires a substantial financial investment for bringing water from the source to the treatment plant and, subsequently, construction and operationalisation of the treatment plant. The operation and maintenance

cost of this component is relatively low. The private sector may not be keen to participate in this component since it involves blocking a substantial amount of capital for a considerable period of time. There are difficulties in monitoring and preventing water losses incurred between the source and treatment, and multiplicity of agencies operating in the rural areas from whom various kinds of permits may be required. Another important factor in this regard is that the opportunity for maximising profits lies in the transmission and distribution component, which is the revenue-generating end of this sector.

Transmission and distribution

Source water, subsequent to treatment, is distributed through a transmission and distribution network system, consisting of pipe networks, underground and overhead water tanks, and pumping stations, ensuring maintenance of adequate pressure.

Issues

Transmission and distribution losses incurred in these networks is a major issue related to this component. As per the India Infrastructure Report 1996, these losses are as high as 30% to 50%.[a] These may be owing to a number of reasons. Leaking pipe networks is one of the most common reasons contributing to these losses. Illegal drawout of water from the water mains, application of additional withdrawing pressure on the water mains through booster pumps, and unmetered water drawout points are some of the other reasons resulting in these losses.

Revenue collection

The third component of this sector is the revenue collection mechanism. This involves billing, for water consumed, either through user charges or through property tax. Subsequent to billing is the collection mechanism.

Issues

Inefficient collection of revenue by the urban local bodies is a major issue related to this component. According to a study by HSMI in 1999, only about 40% to 45% of the total revenue is actually collected as compared to the total revenue demand. Moreover, user charges are highly subsidised. High administration costs (18% to 22% of the budgetary allocations) are another reason for poor fiscal health of these urban local bodies. This not only leads to higher dependency on state governments for additional funds, loans, and

[a] India Infrastructure Report, 1996, op. cit., pp. 28.

grants, it also causes a larger outflow of funds for clearing these debts. Thus, these agencies usually face a shortage of funds. It is an acknowledged fact that the main reason for low revenue collection efficiency is on account of poor existing capacities of urban local bodies.

This low revenue base of the urban local bodies also deprives them of the opportunities for improving their own human and skill resource base. According to a study by the All India Institute of Local Self-Government in 2000, there are approximately 0.72 million municipal employees in India and nearly 50% of them need training for managing urban services.

There are two main approaches for cost recovery adopted by urban local bodies all over the country. Water is charged either as a percentage of the property tax or through user charges. Collection of charges through property tax may result in higher revenues being generated since they are directly proportional to property values, as is the case of Ahmedabad. This also affords the opportunity to urban local bodies to provide these services to all sections of society at varying rates according to their economic status, as evident in their living conditions. However, as stated by the India Infrastructure Report 1996, owing to various stipulations under the Rent Control Act[a], the mechanism for determination of property values by the government invariably leads to property values that do not reflect the market values. This adversely affects the water revenue base. The biggest disadvantage of this approach is that it does not reflect the scarcity of this resource in any manner. Thus, lack of awareness regarding scarcity of this resource often leads to wastage of water. This loss of water also has impact at the level of bulk supply since this wasted water has previously been treated and the investment made for this treatment has no returns. Also, there is no sense of accountability in any agency regarding this water loss.

The second approach of levying user charges seeks to address the issue of scarcity of this resource. However, people in most parts of the country are not aware of the concept of "user pays". Wherever applicable, they are so low that they do not even lead to recovery of the operations and maintenance costs. Subsidies aggravate the problem of water wastage since they give the impression that water is a 'free commodity'. According to Indian Infrastructure in February 2002[b], the effective price charged for urban water is only about Rs. 2.00 to Rs. 8.00 per kilolitre compared to the average cost of supplying it, which is about Rs. 10.00 to Rs. 30.00 per kilolitre.

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[a] Ibid.

[b] "The Indian Water Sector: Problems and Solutions", Indian Infrastructure, February 2002, pp. 22.

One interesting technique for fare structuring is what is known as 'telescoping of user charges'. Under this mechanism, water consumption is billed under different 'user charge slabs', with the rate going higher as consumption increases. For the first 'slab', roughly equalling the average household monthly consumption, there is a nominal cost per kilolitre. For subsequent 'slabs' reflecting a more than normal consumption, the rate of water increases from the nominal rate. Thus, as consumption increases, the water bill increases manifold. This is directly aimed at controlling wastage that may form a significant portion of the total demand generated in urban areas. It may be noted here that implementation of this approach requires a sufficiently resource-strong urban local body and a complete information database of users. Given the poor capacities of urban local bodies, there is no comprehensive database of users or consumption. These initiatives, usually, do not find favour since they conflict with political interests.

Private sector is keen into entering these components of water supply sector since they are the revenue-generating ends of this sector. These components generally require lesser capital investments. The costs incurred are those of operations and maintenance. These components provide opportunities for maximisation of profit. However, it still remains to be seen whether they would be able to address all the issues affecting this sector.

Issues

In summary, the following are the issues plaguing the water supply sector:

1. *Environmental*

- Ground water depletion and contamination.

2. Technical

- Transmission losses prior to treatment.
- High transmission and distribution losses within urban areas.

3. Institutional

- Multiplicity of agencies in providing this single service.
- Delay in implementation of CAA74 by state governments.

- High degree of dependency of urban local bodies on state governments for resources.
- Weak capacities of urban local bodies for discharging their duties.
- Absence of regulation regarding groundwater extraction.

4. Financial

- Poor fiscal health of urban local bodies.
- Low level of revenue collection.
- Absence of user charges leading to non-addressal of issue regarding scarcity of water.
- Irrational tariff structure.

Potential of private sector participation

One of the major flaws in this sector is the supply-based approach of the government in the provision of this service. The inherent weakness of the urban local bodies and the governments' failing financial capacity in subsidising this service for the intended beneficiaries has resulted in deficiencies in both volume and quality of this service. Given the constraints, a demand-based approach may be a better option for the provision of this service. Private Sector Participation in this sector would lead to the entry of commercial market principles in the provision of this public service.

Private sector would be better equipped in terms of bringing in manpower and finances for provision of this service. Moreover, conservation of water would be a major concern. The concept of "more water – more sold – more profit" would result in the private sector minimising transmission and distribution losses since the water lost would have been purchased and would not be billed to any user. Also, user charges would come into play, probably with telescoping, leading to a rationalisation of the tariff structure with a true reflection of the water being consumed. Also to minimise competition in this sector, the private sector would require an assurance from the government or urban local body regarding regulation of groundwater extraction. Thus, the state governments may be forced into enacting and enforcing appropriate legislation in this regard.

There are instances of private sector participation in other infrastructure sectors in urban areas, although in varying degrees. For example, City & Industrial Development Corporation of Maharashtra Limited (CIDCO) was created in place of a development authority with the objective of overseeing the development of Navi Mumbai. CIDCO realising that all services would, in

time, be handed over to an appropriate local body, decided to minimise its own investments. Consequently, it involved small private operators in a big way in provision of almost all services. Private operators are engaged under contracts for the provision of shelter, water supply, sanitation, solid waste management, maintenance of railway stations, parks and gardens, street lighting, educational facilities, and other social services. Even computerised billing has been let out to a private contractor. Revenue collection, too, is being done by the private sector through the involvement of Senior Citizens' Club and Lions' Club, which are paid 1% commission of the total revenues collected by them. It has been estimated in a report by National Institute of Urban Affairs (NIUA) that CIDCO saves approximately Rs. 42.60 lakhs per annum (1991-92 prices)[a] by engaging private contractors as compared to the cost that it would have to bear if it were to provide these services.

An example of private sector participation in urban transport is the Delhi – Noida – Delhi Flyway. This project was initiated to improve travel conditions between Delhi and its satellite town Noida. The creation of this toll bridge was expected to improve the travel conditions that would ease population pressures on Delhi and provide an added incentive for migrants to settle in Noida. Consequently, a special purpose vehicle, the Noida Toll Bridge Corporation Limited was created that is currently managing this bridge. Toll is charged from users to recover the costs of this project. This project involved the creation of a special purpose vehicle to promote investor confidence in the viability of the project. This was also done in the case of the Tirupur Experience, which is India's first comprehensive water supply project involving private sector participation.

Tirupur[b]

Background

Situated 50 kilometres east of Coimbatore, Tirupur is a leading cotton knitwear centre accounting for over 75% of the country's knitwear exports. Currently, water is supplied to the city by the Tirupur municipality for a limited number of hours per day. The existing supply to the city is very low. It is inadequate to meet even the household demands let alone the service industry's demands. In this situation,

[a] "Privatisation of Land Development and Urban Services: A Case Study of CIDCO", National Institute of Urban Affairs, India Habitat Centre, Research Study Series, Number 57, February 1994.

[b] "Ambitious Initiative", Indian Infrastructure, February 2002, pp. 36 – 37.

water is sourced, by both households and industries, from ground water bored approximately 35 kilometres from the city. This water is brought to the city by tankers leading to a large amount of consumption of fuel. Thus, with a view to improving the water supply condition in Tirupur, the Tirupur Exporters' Association (TEA) made several representations to the state government even displaying a willingness to be a part of this initiative. In 1991, the Tamil Nadu government announced the launch of Tirupur Area Development Project (TADP) to address the infrastructural requirements of Tirupur. This project, when completed in 2008, would supply 185 million litres per day and service nearly 1,000 textile units and over 1.6 million residents in Tirupur and its surrounding areas.

The project was to be implemented by the Tirupur municipality with assistance from state government and financial institutions. However, the inadequacy of the Tirupur municipality in fulfilling this role was soon exposed. It was then decided to set up a special purpose vehicle (SPV) that would be adequately equipped in terms of resources in fulfilling the objective of improvement of infrastructure in Tirupur. The reason behind this was to create an agency that would be attractive for investors in terms of possessing capabilities required for the successful completion of this project. This vehicle, New Tirupur Area Development Corporation Limited (NTADCL) was created in 1994 following long-term aid commitment by USAID and the World Bank, and participation by the Tamil Nadu government, the union government, TEA, and Infrastructure Leasing and Finance Services (IL&FS).

Project profile

The project is being implemented on a Build-Own-Operate-Transfer (BOOT) basis for a 30-year concession period. At the end of this period, the project company will hand over all assets created to the government free of charge and legal complications whether it is regarding ownership of land or clearance of taxes, etc. During this project period, the project company will attempt to recover the total project cost along with reasonable returns. User charges are to be levied with the cross-subsidisation mechanism in-built into the tariff. Since 80% of the water is to be supplied to industries with the highest user charge, profit maximisation by the company may be achieved.

The issue of lack of finances was tackled through accessing capital markets. The financing partners of NTADCL went about systematically in dispelling fears that investors may have regarding the security of their investment and the returns that they will get from this investment. Independent studies on water availability, geo-technical and

environmental factors were commissioned by the project company. In addition, the Tamil Nadu government promised to provide 154 hectares of land to the project company to undertake real estate projects such as industrial parks, housing schemes, and townships. Though it took a long time, financial closure was achieved subsequent to mutual agreement regarding distribution of risk among the various partners in the project. This was also very tricky, as such a commercial project had never been done in India.

Thus, while gaps in institutional capacities were met by the creation of the SPV, finances were arranged for from the capital market. The greater social interests of the government were also preserved through the inclusion of cross-subsidisation mechanism in the tariff structure. The envisaged tariff structure would also address the 'realistic' concerns of the private sector.

The Tirupur Experiment, as it is so called, is the first public-private partnership to access commercial funds for the water sector in India. It is a benchmark for private initiatives in the sector. The success of this project would build a strong case for private financing of water projects in India.

Solid waste management sector

Management of solid waste has emerged today as a major environment issue in the country. With increasing urbanisation and changing lifestyles, the solid waste generated in Indian cities increased from 6 million tonnes in 1947 to 48 million tonnes in 1997. Efficiency of solid waste collection is quite low with approximately 82.8% of solid waste in Class–I cities being collected and less than 50% in Class IV cities. It has also been estimated that more than one–fourth of the municipal solid waste is not collected at all (Pachauri R K and Sridharan P V (eds). 1998).

The situation is aggravated by inadequate transportation and unscientific methods of disposal. Transportation of garbage is carried out using old outdated trucks, tippers, and refuse collectors. Inadequacy of transportation fleet and frequent breakdown of vehicles are the major hurdle in proper collection of garbage. Inefficient workshop facilities and poor vehicle fleet management and maintenance further serve to reduce the life of vehicles. In smaller cities, waste transportation modes include bullock carts, three wheelers, and tractor trucks. Moreover, it has also been observed that landfills, to dispose solid waste, are neither well equipped nor managed efficiently. CPCB (2000)

indicates that about 94 percent of cities resort to indiscriminate dumping of domestic, commercial, industrial and medical wastes in low–lying areas. All these problems combine to multiply the problems of solid waste management in India.

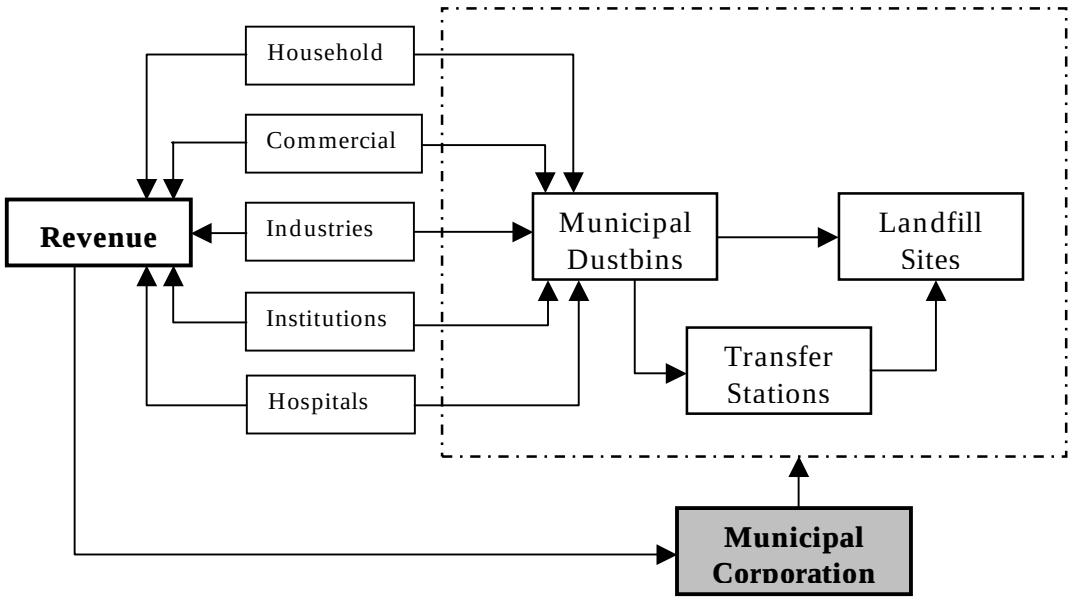
Urban local bodies are responsible for efficient service delivery in this sector. The most commonly stated drawback in efficient provision of this service is cited to be lack of funds with the urban local bodies. It has been observed that a large number of urban local bodies, despite spending 20 – 50 percent of their municipal services budget on SWM are unable to provide satisfactory and reliable services (NIUA 2000). It may also be noted here that, according to an estimate, urban local bodies spend anywhere between Rs 500 to Rs 1500 per ton of solid waste for collection, transportation, treatment, and disposal. About 60 to 70 percent of this amount is spent on collection, 20 to 30 percent on transportation and less than 5 percent on final waste disposal (Devi, K, and Satyanarayana, V. 2001).

Moreover, this sector, owing to inherent characteristics of the 'commodity', in this case garbage, requires a high level of manpower. Most local bodies, despite engaging about 30 to 50 percent of their total municipal staff in Solid Waste Management (SWM) seem to be always short of manpower. Given the growing population, and consequently, increasing solid waste generation, issues for efficient management of this sector will need to be addressed with caution given their direct impact on physical well-being of the citizens.

Solid waste management sector - components

Provision of this service is, by default, a natural monopoly of the urban local bodies. Market principles do not aid this sector owing to the lack of demand for such management. This is clearly visible in the uncollected solid waste in cities. Also, there is the common belief that garbage has no commercial value. The current approach for providing this service is, again, a supply-oriented one that is unable to match the need owing to population pressures. Since the urban local bodies provide this service with little pressure from the public, there are no incentives for exploring alternatives for solid waste management. An assessment of the components of solid waste management is, thus, critical. Urban solid waste management process, as shown in Figure 2, has five broad components:

Figure 2: Solid Waste Management Process



Collection

Collection of solid waste entails collection from the source points – households, commercial enterprises, institutions, industries, parks / playgrounds, open areas, etc. Urban local bodies carry out solid waste collection with support from the informal sector. Subsequently, this waste is transported to municipal dustbins where it is accumulated for further transportation.

Issues

One major issue that is related to this sector is the low level of collection as has already been pointed out earlier. The main reasons cited for this are inadequate manpower and the increasing pace of solid waste generation. Low level of collection efficiency leads to decomposition of waste thereby generating unhygienic conditions. This has adverse repercussions on the physical well being of citizens.

Inadequacy of manpower with urban local bodies to effect efficient collection leads to the informal sector providing this service. However, the segment of informal sector involved in this sector usually comprises mostly of women and children. Though this activity does provide them with additional means of livelihood to increase their meager incomes, it also leads to their exploitation.

There is a general lack of civic sense among citizens that is evident in the form of litter. This is aided by the absence of a stringent monitoring mechanism for identifying and penalizing polluters. This also leads to an

increase in the number of collection points with adverse effect on the general environment. The direct fallout of such a situation is reflected in the reduced collection efficiency since more time is then spent on collection and some areas are not cleared of the solid waste. Lack of a proper information management system further aggravates this problem. The probability of contamination of ground water owing to uncollected waste in this scenario is high since waste may naturally decompose and germs may be carried to the ground water table by rainwater.

This lack of civic sense is also reflected in the low level of community participation throughout the country. This is also aided by the fact that collection is done by urban local bodies at a macro-level subsequent to dividing cities into large zones. This eliminates possibilities of management of solid waste at a micro-level where there would be opportunities for community participation.

Segregation

Segregation of solid waste is a relatively new concept and is widely practised in developed countries. In this component, waste from different sources, namely hospitals, industries, commercial enterprises, and households is segregated at source and disposed off in ways that are appropriate to their characteristics. This also provides the opportunity for using solid waste as a resource.

Issues

In developing countries, owing to the absence of such practice, hospital waste, for example, is generally collected with domestic and other waste. This leads to a potentially hazardous situation that could put citizens at immense risk. This was witnessed in the case of the infamous plague in Surat in 1994.

Community participation initiatives in this component could improve the efficiency of solid waste management by reducing the time required for collection and segregation.

Transportation

Solid waste, accumulated at various municipal dustbins is transported by various modes to landfill sites. The modes for transportation are generally trucks, tippers, and refuse collectors.

Issues

The main issue related to this component is that of inadequacy of vehicles for transporting the solid waste. Moreover, urban local bodies are unable

to maintain these vehicles and replace them owing to lack of finances. Consequently, operating costs are higher causing either a further drain on resources by incurring expenditure on maintaining them or reducing disposal efficiency by shutting them. In addition, there are poor maintenance facilities for these fleets, thereby aggravating the inefficiency of this component. This component requires relatively higher order investments owing to the large costs involved in increasing vehicles and enabling proper maintenance facilities for these vehicles.

Disposal

Disposal of solid waste is generally done in landfill sites. These sites are generally located away from the city, but over time, owing to the growing spatial size of cities, these sites inevitably come within urban limits.

Issues

The most critical issue of this component is the improper design of these sites. Given the lack of finances with urban local bodies, proper soil treatment of these sites is never done and waste is indiscriminately dumped. These sites are generally located in low-lying areas where rainwater has a tendency to collect. Improper treatment of solid waste coupled with the eventuality of stagnant water is a potentially hazardous situation. This is further aggravated in the absence of segregation of solid waste that leads to decomposition and possible contamination of the ground water table. Moreover, in such adverse conditions, soil around these sites is leached rendering it sterile for most purposes.

Another aspect that must be looked into is that in the absence of segregation of solid waste at source, these sites become opportunities for livelihood for the urban poor. Given their strong need for ensuring proximity of workplace to residence, these landfill sites are generally surrounded by slums. This contributes to the unhealthy living conditions of such underprivileged sections of society.

Large-scale investments are required for creation and maintenance of these landfill sites owing to their sheer scale.

Revenue collection

The fifth component of this sector is the revenue collection mechanism. Revenue collection is effected through a conservancy tax that forms a part of the property tax.

Issues

Since solid waste management is one of the obligatory functions of the urban local bodies, issues related to revenue collection are more or less the same as mentioned earlier in the section on water supply. However, the major issue in this component that needs to be considered is that of the irrational tariff structure.

Revenue for providing this service is the conservancy tax that is a part of the property tax. Since in some cities, private operators are also engaged for the purpose of collection at source, citizens are required to pay twice for the same service. Moreover, owing to inadequate manpower there are certain areas in cities that are not covered under solid waste management. Conservancy tax, in these circumstances, is still collected while the urban local bodies have rendered no service.

In addition, since there is a low level of awareness among people regarding the tax structure, there is no demand for quality of service. In the absence of this demand, there is no pressure on urban local bodies to adequately and effectively provide this service.

Issues

Since solid waste management is within the mandate of urban local bodies, some of the issues are similar to the ones highlighted in the water supply sector. Following are the main issues plaguing the solid waste management sector:

1. *Environmental*

- Low level of civic sense and awareness of public health among citizens.
- Low level of community participation in urban solid waste management.
- Leaching of soil near collection points and landfill sites rendering it sterile for most purposes.
- Potential health hazards owing to unhygienic conditions created by unmanaged solid waste.
- Contamination of ground water.

2. Technical

- Inefficient solid waste collection aggravated by an increasing number of collection points.
- Absence of segregation of solid waste at all levels.

- Inadequate solid waste transportation fleet.
- Poor maintenance facilities for transportation fleet.
- Insufficient, ill-equipped, improperly designed and maintained landfill sites.
- Inadequate manpower for collection, transportation, and disposal purposes.

3. Institutional

- Exploitation of women and children from the underprivileged section of society.
- Absence of micro-level planning approach.
- Lack of information management system to consistently monitor quantum generation and efficiency of management.
- Absence of effective mechanism for stringent monitoring of polluters.
- High degree of dependency of urban local bodies on state governments for resources.
- Irrational tariff structure.

4. Financial

- Poor fiscal health of urban local bodies.
- Higher order of investments required for transportation and disposal.

Potential of private sector participation

The principles of engaging private sector participation in the provision of this service are the same as those mentioned in the water supply sector.

The biggest advantage that the private sector possesses in relevance to this sector is that of access to finances. This sector requires high investments with relatively lower scale of returns. Moreover, opportunities for income generation are limited to user charges and alternative methods for solid waste recycling. Technological advancements have permitted conversion of solid waste to various commodities like refuse derived fuels and soil enrichers. There are many opportunities here for the private sector to capture since there is a growing demand for such products.

This is most clearly expressed in the case of M/s. Excel Industries that is currently engaged as a private sector operator in solid waste management for many cities. It has developed a methodology whereby it

is able to convert organic waste into soil enrichers using a particular form of bacteria. In this context, given the inherent structure and nature of the sector, the private sector is most inclined to venture into a partnership in the components of transport and disposal.

This sector also provides the opportunity of inducing community participation given the close correlation between a clean environment and healthy living conditions. In the absence of responses from the private sector in participating in the provision of this service, urban local bodies have the alternative of engaging communities to participate in effective solid waste management.

Surat[a] – Like a Phoenix from its ashes

Background

Situated 260 kilometres north of Mumbai and 224 kilometres south of Ahmedabad, Surat is the second largest city in the state of Gujarat in terms of population. It achieved the status of Municipal Corporation way back in 1966. It was one of the 11 cities that were declared metropolitan areas in the 1991 Census of India. It was primarily a "manufacturing" town that has displayed a marked shift towards the service industry. The city has a lot of economic potential evident from the high growth rates of 85.35% in 1971-81, to 62.01% in 1981-91, climbing again to 62.29% in 1991-2001.

This phenomenal growth of the city also had its drawbacks. Surat Municipal Corporation (SMC) found it difficult to cope with the growing demands of infrastructure. The situation deteriorated very fast and the city came to be known as the 'City of Dirt'. However, the officials were not concerned and the situation was ignored.

In September 1994, the outbreak of plague in Surat city in Gujarat took the health officials in State and Central Government by surprise. The plague created widespread panic in the city and approximately 60% of Surat population fled from the city. It was a severe blow not only to Surat's economy, which suffered a loss of several millions of rupees every day but also loss of several million of rupees every day to Indian economy. A total of 146 presumptive (seropositive) cases and 54 deaths considered as due to plague occurred between 19 September and 22 October 1994 (WHO, 1995).

The Municipal Corporation undertook a massive cleaning operation in the wake of the plague outbreak. The central and state government

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[a] http://www.indiaurbaninfo.com/app/wsnsa.dll/niua/casesearch22.r?recno=4

departments, and doctors in public and private hospitals came to the rescue of the municipal government. The civic authorities launched a seven-point action plan for restoring normalcy at the earliest involving government, non-government, community organisations and the private sector. The big industrial groups in the city loaned their excavators and trucks to the SMC to clean the 4000 tonnes of garbage that had accumulated over the days. Private agencies were also hired to help in removing the garbage. The SMC gave utmost priority to cleaning dirt and debris, disposal of carcasses, pumping of stagnant water, spraying of DDT and anti-rodent operations, etc. Residents in different localities also came forward and burned the garbage, sprayed DDT on pools of stagnant water and cleaned their surroundings. However, all the above were short-term measures to bring the plague epidemic under control at the earliest. Municipal authorities failed to provide immediate solutions to persisting problems of infrastructure deficiency in the city. After the massive cleanliness operation, the city administration again returned to its earlier callous self and Surat gradually slipped back into the old days of garbage and filth.

Project profile

In May 1995, the Government of Gujarat launched a major programme to clean up Surat on a permanent basis. Objectives for improving the solid waste management system were formulated. The objectives, formulated for achieving an innovative and modern Solid Waste Management, are as follows:

- To devise a system of storage of waste and segregation of recyclable waste at source.
- To improve the system of primary collection of waste
- To devise a more efficient system of day to day cleaning
- To devise a system to eliminate practices of throwing garbage on the road causing nuisance and health threat
- To modernise the system of community waste storage and synchronize the system of primary collection as well as transportation of waste
- To eliminate manual handling of waste and open transportation vehicles.
- To improve the system of transportation of waste by ensuring "handling waste only once" by increasing number of transfer stations from 3 to 6.
- To promote derivation of organic manure from waste.
- To reduce quantity of waste going to landfill site.

- To develop landfill sites
- To derive income from the processing of waste and help agricultural production.
- To ensure safe disposal of waste including bio-medical wastes.
- To do institutional strengthening.
- To have public participation.
- To effect cost recovery.

The new and modern approach to the Solid Waste Management is as stated below:

- Integration of SWM with other activities viz. sewerage, water supply, health care, engineering departments, etc.
- Emphasis was laid on Complaint redressal system, Grievance redressal system, Litter prevention system, Slum Upgradation & Rehabilitation, Field work. Daily meetings were held in this regard.
- Financial commitment: Equipment, Vehicles, communication equipment.
- Involving citizens: Positive involvement, penalizing polluters, creating public awareness.

To achieve these objectives, the SMC adopted a strategy that included employing additional manpower and material; bringing about changes in administration and monitoring; and privatisation.

1 ***Additional manpower and material for SWM department -*** The total number of sweepers employed was increased; this was apart from employing daily wagers. The equipment in the health department was upgraded. Three new dumping sites were identified.

2 ***Administrative measures -*** The solid waste management was divided into 52 sanitary wards where micro-level planning was carried out. Accelerated campaign was undertaken to clean sewage lines and septic tanks. Street sweeping and garbage collection was closely and regularly supervised. It was mandatory to clean streets twice daily. Group 'Safai'(cleaning) was started. Till the end of 1995 all the senior officers and supervisory staff worked overtime to make the city clean. Strict action was taken against those who did not work. Strictness was also observed against sweet shops, hotels, restaurants, food joints, etc. who were throwing their waste on road. This campaign was also extended to the residential areas. The residents not only co-operated but also appreciated the efforts of SMC.

3 ***Monitoring -*** The Sanitary Inspectors would collect the previous day's information and report it to the Sanitary Officers at the zonal office through soft copy (floppy disk) which was collected at the main office. All the senior SMC officers including the Commissioner would be at the zonal office in the morning hours. This encouraged the lower cadre officers to work.

4 ***Privatisation -*** SMC deployed private contractors for solid waste collection and transportation. They undertook (a) garbage collection and its transportation to disposal sites; and (b) scrapping / cleaning of busy streets.

The innovative steps taken by SMC in solid waste management showed visible changes in the city. The level of solid waste collection increased from 30% in 1995 to 93% daily. 95% of streets are cleaned everyday. Market areas, major roads and litter prone spots are cleaned twice a day. Some of the essential features of solid waste management in Surat are:

- 98% of the total area covered
- 100% population covered
- 517 grams garbage generated per capita
- 491 grams garbage collected per capita
- 850 metric tonnes of garbage collected and disposed per day

There were certain lessons learnt from this exercise that may be of use to other urban local bodies all over the country.

1. Decentralisation of administration, adequate delegation of powers, micro level planning, motivation of staff and public participation can give exemplary results.
2. Enforcement is the key to success.
3. Efforts must be made to include people in implementing cleaning up programmes.
4. The effort of privatisation and contracting out of services would be sustainable only if contracts are given keeping in view the provisions of Contract Labour (Regulation and Abolition) Act 1970.
5. Public support comes when people see tangible results and benefit from such change.

Surat is now identified as one of the cleanest cities in the country. Firm determination and hard administrative measures have contributed to the success of the efforts of SMC.

Role of the government

The role of the government in the eventuality of private sector participation in this sector would tilt considerably towards that of a facilitator instead of being the service provider. In this scenario, the Sukhtankar Committee in 2001 and the World Bank in 1999 have shown that a strengthening of the regulatory agencies would be required. The evolving reform strategies would need to have regulatory instruments that would encourage self-regulation by the market and induce economic regulation in management of this sector. Though the encouragement of private sector in the provision of this service should be done at the initiative of the government, it is also the responsibility of the government to ensure that its social concerns regarding adequate access to all at an affordable cost are addressed.

Case for Deregulation

The entry of private sector in the provision of infrastructure brings in a stakeholder with the primary intent of making investments in development activities and generating a high degree of returns on these investments. Thus, maximisation of profit is a major concern with the private operator. During this course, the private sector would seek to provide these services at the highest price possible. The government, given its universal service obligations to ensure that the interests of the poorer section of society are also not overlooked, would want to keep the cost of provision of this service to a minimum. Moreover, the private sector provider would look to cut costs by compromising on quality, while the government has to ensure quality of service in order to minimise health-related risks owing to poor quality of service. In this scenario of conflicting interests, a regulatory body may be required that would work out a balance between the government and the private sector to ensure that interests of both parties are taken care of while ensuring sustainable development of the sector.

Such regulation, known as Independent Regulation, necessarily implies that the constituents of this office are in no way influenced or biased towards either the government or the private sector provider. The most basic requirement is that holders of such offices be technically sound and of sound integrity. While creation of such regulators necessarily encourages the private sector to participate, the integrity of such regulators is always in doubt. Moreover, the degree of independence enjoyed by these regulators is also a debatable point. This aspect is most clearly understood in the recent telecom war witnessed between the Telecom Regulatory Authority of India (TRAI) and the cellular phone service providers. While the government, from the universal service obligation standpoint, insisted on connectivity between the various cellular phone services and the local loop telecom network, availability of such connectivity was detrimental to the commercial interests of these cellular phone service providers. The stalemate was resolved over a period of time, but the crux of the matter is that it was resolved without resorting to a long drawn – out legal battle between the stakeholders. The creation of such bodies is the first step in enabling private sector participation in provision of infrastructure services.

In this approach, there is reduced scope for political interference and the private sector would welcome regulation by a body that would, expectedly, be impartial and would give due credit to interests of all stakeholders. However, the government would have its reservations regarding this alternative since it would lead to a reduction of its control on the projects.

Another option is the introduction of market competition principles in the provision of infrastructure. This is independent deregulation of the infrastructure sector whereby the entry of more than one private operator in the provision of these services would generate competition between the different service providers to provide better quality infrastructure at competitively lower costs. There is, however, a limit to the number of private sector providers that may be involved in the provision of these services. A large number of private operators working in a non-regulated environment may provide these services at a lower cost but the quality of these services may come down on account of cost reduction measures that will be taken by these operators. This aspect was successfully tackled in the case of Metro Manila, the National Capital Region of Philippines. Two private sector operators were engaged in the provision of water supply to the entire region. They were allocated different areas for operations. Consequently, while they were in competition for getting a better report card for provision of service in terms of tariff and quality, they were also not directly involved in competition in providing service to the same area. Thus, there were no incentives for cutting down costs by compromising on the quality of water that was supplied to the region.

In any case, private sector participation would require the creation of a regulatory body before any steps are taken to involve the private sector in the provision of infrastructure. Affording legal status to such a body would be a pre-condition to generate interest among the private sector to participate in the provision of infrastructure.

Endnote

Private sector participation in urban services is not a new phenomenon. Both developed and developing countries have experimented with this alternative for service provision. In most cases it has been found to be a viable one since it reduces the financial and institutional capacity burden on public sector agencies. Over the duration of this contract, the public sector makes minimal investments while it generates revenues. This time lag also gives the public sector the opportunity for generating its own resources and building its own capacities. Private sector participation, thus, may be looked forward to as an option in the efficient provision of this service.

Redefining the role of government in the context of independent regulation

Government's role prior to infrastructure reform

Background

It's indisputable that an effective Government is essential for the economic, social and sustainable development of a country. The moot point is formation of such a Government. How to define the role of Government that enhances its effectiveness? From principal investor and strict regulator to a facilitator, the role of Government has evolved over the last decade. Inadequate national resources and growing national challenges have paved the way for such an evolution.

It is widely acknowledged that one- approach-does-not-fit-all in the case of Government's role. The system of governance that works in one country might not work in the other. The challenges facing the Governments across the world are varied, both in number and in kind therefore a normative approach to define the Government's role might not prove to be effective. An approach that takes into account the political, social and economic realities of the country in defining the role of Government is more apt. However, a theme that possibly cuts across all approaches is the role of building institutions.

Institutions are rules, enforcement mechanisms, and organizations. Distinct from policies, which are the goals and desired outcomes, institutions are the rules, including behavioural norms, by which agents interact. They also include the organizations that implement rules and codes of conduct to achieve desired outcomes. Policies affect which institutions evolve – but institutions too affect which policies are adopted.

There are two types of institutions: formal and informal. Formal institutions include rules written into the law by government, rules codified and adopted by private institutions, and public and private organizations operating under public law. Informal institutions reflect unwritten codes of social conduct.[a] The

[a] World Development Report, 2002

laws and regulations, along with the informal rules of the society collectively form the institutional framework of a country.

A viable institutional framework is central to development. A study conducted by the World Bank confirms the relationship between institutions and development. The results suggest that development of institutions is important for the overall development. Institutions are central to the process of governance and the institutional frameworks in which various economic agencies operate determine the effectiveness of governance. In fact countries with ineffective governments must start with institutional arrangements that foster responsiveness, accountability and the rule of law to accelerate the process of development.

The Government has to build and sustain institutions that promote welfare. Attainment of such a state requires the Government to play the role of a facilitator and partner than of a sole market player. Markets are essential for economic growth and state institutions that facilitate competition are essential for markets' growth. Liberalization upholds the markets and the Government as complements where the latter through institutions, enables the former to achieve the desired economic and social outcomes. Market development without a functioning Government is not possible.

In physical infrastructure, private sector participation is supplementing Government's efforts and the Government is gradually reforming its role from an investor to a facilitator. The changing scenario requires the Government to invest in social infrastructure like health and education where externalities are positive and investment in such sectors is in broader national interest. Private entities providing these services in remote areas is at low ebb and until some policy is framed to induce the same, the Government ideally should divert its resources toward such investments. In a state of major economic and social challenges, the strategy of the Government ought to prioritize activities and focus on the fundamentals. Five fundamental tasks lie at the core of every Government's mission, without which sustainable, shared, poverty-reducing development is impossible:[a]

- Establishing a foundation of law
- Maintaining a non-distortionary policy environment, including macroeconomic stability
- Investing in basic social services and infrastructure
- Protecting the vulnerable
- Protecting the environment

The Government's role is not circumscribed to creating institutions that cater to the aforementioned tasks. The scope, design and role of these

[a] World Development Report, 1997

institutions have to be continuously amended to match the changing market dynamics. Institutional reforms that improve the capability of the Government form the core of Government's policy.

Institutional novelty: Independent regulation in infrastructure services

The Government in the pre-liberalization era was involved in many economic activities for both economic as well as non-economic rationales. It played the role of a policymaker, a regulator and a service provider. However, the decade long economic liberalization impelled many structural and institutional changes in the economy. With an increase in the scale and scope of economic activities, government finances have become too constrained to meet the economic and social challenges. One such challenge is to augment the state of infrastructure services. Few sectors have been privatized to supplement governmental efforts in this regard. Private sector participation has been accompanied with flow of foreign investments thereby integrating domestic economy with the global economy. However, privatization and globalization without proper checks and balances would not help the process at all. Regulatory reform is an important accompaniment to privatization else the process of privatization might only replace a public monopoly with a private monopoly. A regulatory body, which is independent of the government manoeuvre, is an enabling clause in promoting competition and helping privatization fructify. This consideration has lead to the setting up of such bodies in electricity, telecommunications and ports sector, which have been operational from the last five-six years. In fact, in the case of telecom sector, an appellate body has also been set up to scrutinize the challenged regulatory decisions and issue orders accordingly. The positioning of such independent agencies implies a paradigm shift of some functions of the Government to them.

Private provision of services that used to be monopolized by the Government, regulation by an independent agency, establishment of separate appellate bodies for hearings against regulatory decisions; all such changes have led to an institutional structure that warrants an examination of the Government's future role in the economy.

The first and the foremost task of the Government is to revise the existing set of legislations governing infrastructure services. Outdated laws have to be replaced with a legislative framework suitable to the changing economic and social environment. The main content of legal reform should include abolition of state monopoly and institution of a regulatory agency. The institution of regulatory agency should be effected in letter and spirit. The regulator should have a well-defined mandate to serve the interest of public. The regulatory rules and procedures are clearly specified so that the regulatory decisions can be

monitored and challenged if need be. The regulator should be sufficiently independent of but at the same time, accountable to the Government.

Once the institutions for inducing competition are in place, the Government should offload its equity in the Public Sector Enterprises. This equity can be sold to a strategic investor or to the public at large. The sale off is necessary, for the Government will always support its own enterprise through special privileges, which in turn would distort competition in the market. Another rationale for divestiture of Government's equity is to re-employ these resources into the social infrastructure that is marred with under-investment. However, if the State enterprises aren't sold off, the Government should ensure that they are treated at par with their private counterparts.

Having set the process of privatization and institution of independent regulation rolling, what should be the role of Government? Regulatory reforms do chalk out some functions and responsibilities of the independent regulator, however independent regulators do not create policy. That's the job of the Government. It is through policy changes amenable to the changing conditions that the Government exercises its role. For instance, reforms in power sector undeniably entail policy intervention. In the past, such policy interventions have created independent regulatory agencies in various states and created one at the Central level. Guidelines have been framed for the institution and functioning of these agencies. These agencies have primarily been active in the determination of tariff. However, there are many areas that warrant a broad policymaking by the Government. An indicative list of such areas would include tariff, captive power, subsidy, environmental impact, cross-sectoral linkages, restructuring and competition plan, capacity building of various stakeholders, governmental support to regulatory commissions, etc. Many states have taken initiative in this regard by defining the powers of the executive. For instance, the Andhra Pradesh Reform Act, 1998[a] outlines the powers of state government as follows:

(1) The state Government shall have the power to issue policy directions on matters concerning electricity in the state including the overall planning and co-ordination. All policy directions shall be issued by the state Government consistent with the objects sought to be achieved by this Act and accordingly shall not adversely affect or interfere with the functions and powers of the Commission including but not limited to the determination of the structure of tariffs for supply of electricity to various classes of consumers.

[a] SEB Reforms – A Handbook: Andhra Pradesh Act No. 30 of 1998

(2) The state Government shall be entitled to issue policy directions concerning the subsidies to be allowed for supply of electricity to any class or classes of persons or in respect of any area in addition to the subsidies permitted by the Commission while regulating and approving the tariff structure provided that the state Government shall contribute the amount to compensate such concerned body or unit affected by the grant of the subsidies by the state Government to the extent of the subsidies granted. The Commission shall determine the amounts and the terms and conditions and time frame on which such amounts are to be paid by the state government.

The Bangladesh Telecommunication Act, 2001[a] outlines the powers of the government while defining the functions and the powers of the regulatory commission. The Government may, under this Act-

(a) take all necessary actions in order to establish its rights and discharge its obligations under international laws and regulations or any international agreement relating to telecommunication;

(b) from time to time, refer to the Commission any matter relating to telecommunication for its consideration and recommendations thereon;

(c) consult the Commission on any matter that the Government considers proper;

(d) undertake research on telecommunication, radio communication and such technical matters of broadcasting as are related to the said communications, or may finance or otherwise assist those research activities;

(e) direct the Commission to represent Bangladesh in meetings of international and regional telecommunication organizations.

In essence, the aforementioned cases project the Government's role as to frame policy that facilitate development of the sector. The policy should innovate market-oriented solutions to achieve such development. The "command and control" approach of the Government's policy should shift towards a "market based" approach. The latter essentially calls for a policy framework that combined with state institutions monitors the market conduct in line with the overall welfare. The Government's direct intervention is warranted only when these institutions fail to achieve the policy objectives. In this context, the following scenario emerges:

Policy making & building / rebuilding institutions → Government

[a] Law on telecommunication in Bangladesh

Regulation ⟶ Independent agency

Service delivery ⟶ Private Co. / Public sector Co.

The Government is ideally a policy maker in the changing scenario. However, the execution of these policies is dependent upon reliable institutions. Policies by themselves attempt to attain desirable outcomes but the benefits are magnified where institutional capability is also high. The Government should not focus solely on improving policies; it must also strengthen the institutional environment those policies have to work within. To sum up, the policy objective has always been welfare and the government's role in framing such policies is undeniable. However, in the changing scenario, the Government has to place a conducive institutional structure, for good policies and strong institutions both are central to effective governance.