Chapter 6
Best Practices and Status of adoption in India

6.1 Introduction

The analyses in the past three chapters of this study has covered the industry and sectoral aggregates (in Chapter 3), followed by Structural issues (BOT structures) in Chapter 4), and finally the analyses of project level attributes (in Chapter 5). From these discussions it would be clear that the challenges of the infrastructure sector underscores that the structures evolved for each project are unique, which will call for tremendous depth of appraisal and risk evaluation competencies within the financing institution. Furthermore, it is derived that risk mitigation measures followed in normal corporate financing are not be easily adaptable to infrastructure project finance.

6.2 Status of Infrastructure sectors in India

6.2.1 Power

This part of the research study tries to identify practices that would lead to the benefits that private sector participation (PSP) could achieve for consumers of power and other infrastructure sectors in the context of the major research objectives of Risk Management stated at the outset. In light of the difficulties being experienced in a number of countries with their Independent Power Producer (IPP) contracts, due to the devaluation of their currencies, this work is quite timely, and several of these practices relate to ways in which to mitigate or avoid such situations in the future. Many India specific material apart from global literature have been scanned for this analysis. In addition to power generation, where there has been by far the most private sector investment and competition to date in developing countries, this report evaluates an area that is only minimally present in the developing countries, namely private sector investment in power transmission and distribution (T&D). This review also covers the important distinction in emerging competitive markets between distribution (what has come to be called 'the wires business') and retailing (marketing to customers).
T&D investments by the private sector, and the emergence of competition involving these segments have tremendous potential for increasing the efficiency of the power sector, creating a financially viable industry, and benefiting all consumers. Privatizations of T&D around the world are just beginning to grow. Analysis of data indicates the prices that have been paid over time, in constant dollars, for some distribution company investments in both developing and developed countries. Nearly 80 such transactions have been identified to date worldwide, including 56 in developing countries for which investors have paid a total of about US $26 billion. Clearly, much higher prices per customer have been paid in some countries (e.g., Argentina and Brazil) than in others (e.g., Hungary). However, private T&D investment hasn’t really picked up in Asia, a topic that is causing concern in India as well.

To identify the practices to stimulate investment and competition in T&D markets, the researcher drew upon extensive contacts and carried out research worldwide, and also tapped into the knowledge of professionals in the power sector and a good number of researchers in Latin America, California and Eastern Europe through Internet chats and tele-conferencing. At least fifteen experts who have first hand knowledge in the field have been spoken to for this research, and the practices have been drawn from a wide spectrum that can be characterized as government and legislative practices; regulatory practices; economic; labor; and financial practices; and practices relating to the privatization process and competition in general. Most of these are discussed extensively in this chapter.

Figure 6.1 demonstrates the different levels of progress in power sector restructuring in various countries, and provides an indication, though imprecise, of the country’s progress towards a competitive market. First, the vertical axis shows the present degree of private sector ownership allowed in the country. This is an indication of the government’s willingness to utilize private sector investment, even if full privatization has not yet been realized.

For example, the government in Argentina has made a policy decision to divest much of the generation, transmission and distribution (T&D) segments of the power sector, and has already sold much of it, so Argentina is placed high on the chart by this measure. Indonesia, which has to date allowed private sector participation (PSP) in the generation sector only, is ranked towards the lower end of the scale, and France, which is completely bundled, is at the bottom.
The horizontal axis reflects the present degree of vertical dis-integration or unbundling. As discussed elsewhere in this report, unbundling is one of the key practices or precursors leading to the potential for investment and competition in the power sector. Those countries in which the segments of generation, transmission, and distribution have been separated into different organizations are ranked higher on the scale than those that have not been unbundled. For example, Chile and the United Kingdom have completely separated the various industry segments; while in the People’s Republic of China (PRC), most of the provincial utilities are fully integrated, except for some national power plants, so PRC is further to the left on this scale. Similarly, in Pakistan, even though one of the two major state electrical companies is being sold to investors, most segments of the power industry have not yet been unbundled and so the power sector remains a largely vertically integrated one.
While the measurements along these axes are judgmental, it is in-general true that the farther a country is located towards the upper right hand corner of the chart, the more unbundled and potentially competitive is the country’s power market.

6.2.1.1 Process of Restructuring in the Power Sector

There is a raging debate in the domain of reform and restructuring as to the sequence adopted by many countries in following through the process of reforms and expert analysts are of the opinion that ‘jumping up sequences’ have many times played havoc with the results. In India also at the time the infrastructure sectors were opened up for private investment, governments did not recognize the need to establish an independent regulatory framework to facilitate the orderly entry of the private sector, and create a level playing field between the new entrants and the dominant incumbents. Regulatory reforms were thus not contemplated as part of the initial reform process. Other East Asian countries were no better. In India, infrastructure regulation was first established in the state of Orissa through the enactment of Orissa Electricity Regulatory Commission Act, 1996. The Telecom Regulatory Authority of India (TRAI) was set up only as recently as 1997 through the Telecom Regulatory Authority of India Act. The Central Electricity Regulatory Commission was established thereafter in 1998 through the Electricity Regulatory Commission Act 1998. Thus, in both the telecom and electricity sectors, the regulators came into being much after the sectors were opened up for private investment. It was only in the port sector that the Tariff Authority for Major Ports (TAMP) was established in 1997 just when the sector was opened up for private investment.

Clearly, the sequencing of reforms has not been correct in India. The consequence of opening up infrastructure sectors for private investment without an independent regulator in place to ensure the smooth entry of new players is a situation where the licensing conditions were onerous, the incumbent public enterprise was free to create hurdles for the new entrants and the Government had a vested interest in protecting the public enterprise. This has resulted in innumerable problems in inter-connectivity and revenue sharing, thus providing a rationale for the continuance of the regulator, though in a redefined role.

Though there are differences even among experts of the relevant sectors on the correct sequencing (steps to be proceeded in the order of precedence), many
workshops and discussions conducted by Financial Institutions, Government Departments/ Ministries and Multi-lateral Institutions like ADB and World Bank have tried to narrow this and establish a logically relevant and clear sequence to be adopted by functionaries. The ADB’s regional assistance team covering Asia had done one such workshop co-ordinated by their sectoral experts in 1998 and involving experienced senior government and private sector individuals together with restructuring consultants and the findings / final outputs of the study suggests a prioritization, involving five major steps in order of precedence. To some extent, these steps may proceed in parallel, but they are best to consider as sequential actions that will lead to the implementation of a competitive power market (see Figure 6.2).

These steps are:

1. Getting the investment framework right.
2. Deciding on the goals of restructuring and the ideal industry structure.
3. Preparing the players to participate in a competitive market.
4. Privatizing existing and new assets.
5. Ensuring that the competitive market is implemented properly.

First, a government should put in place a rational investment framework. This includes actions such as: (i) establishing a government commitment to a competitive power market; (ii) ensuring ministry and utility compliance with that commitment; (iii) passing a law for restructuring the power sector to be implemented over a fixed period of time; (iv) ensuring that the currency is convertible and foreign exchange is available; (v) strengthening local capital markets; and (vi) setting up a credible legal frame work.

Figure 6.2: The 5-Step Restructuring Process
Second, a country should determine how they want the power sector to be structured, both over the near term and long term, and why. To paraphrase Lewis Carroll in Alice in Wonderland: “it is much easier to get there if you know where you’re going.” For example, a developing country may decide that they will ultimately structure the power sector with:

- an independent regulator that oversees power T&D;
- a number of privately owned, competitive generating plants;
- a single regulated transmission system that includes private ownership;
- a number of power distribution companies with incentives for performance;
- Competition for retailing power to end-use customers.

If the country has committed to the above structure, they are in a much better position to take the steps necessary to achieve those ends, including interim steps as a transition to that final structure. Thailand, for example, is working on a privatization plan identifying the final structure of its power sector and the three transition steps required to achieve that structure. Also, if a country knows what benefits it expects from restructuring (e.g., lower losses in distribution, higher collections, greater plant reliability, lower prices, money for the treasury, and consistency in regulatory decisions) they will be able to design the restructuring process to maximize the likelihood of achieving these goals. In this context, it is critical that the country identify the structure they intend to adopt for both new and existing assets. Often, some of the greatest gains to customers will be realized from PSP in existing assets, though politically, these may be harder to sell.

Third, it is important to prepare the players to participate competitively. This includes such actions as: training the regulators so they can operate effectively; establishing clear regulatory rules; reducing or removing subsidies; enlisting public support for the restructuring process; re-organizing and preparing the state-owned utility for the new structure and incentives for performance that will emerge; developing draft tender documents and contracts; and defining a new role for the ministry.

Fourth, the developing country must carry out the restructuring or sale of assets. In Asia, most private sector investments in the power sector to date have been in new assets (e.g., to build a new power plant). As mentioned above, to achieve the most benefits of private sector investment and competition, the country involved must be
willing to sell the existing assets as well, especially in power distribution. The tendering process must be carried out in a transparent and open manner, and should be carried out in a short period of time.

Finally, it is critical that the developing countries implement all these changes effectively. It is not sufficient just to have a regulator in place, for example. In addition, that regulator must act according to the principles set out in the legislation that set it up (e.g., performance-based rate making) and this may mean not always going along with the state-owned utilities’ position. If there is legislation requiring that the utilities reduce their distribution losses according to certain deadlines (as in the Philippines), those requirements must be enforced. If an independent system operator (ISO) is responsible for transmission access and system reliability, then that organization must be properly staffed, funded and managed. Good intentions, and even good legislation, will not achieve the goals of competition in the power sector on their own — good follow-through is necessary as well.

6.2.1.2. Power Sector Reforms in India

India's power sector, which is dominated by public utilities, suffers from inadequate investment on the one hand and poor shape of Electricity Boards on the other all of which ultimately resulting in shortage of power supply. The power ministry has firmed up an action plan to double the electricity generation capacity in the country to over 2 lakh MW by the end of the Eleventh Five Year Plan (2008–12). Projects aggregating 1,07,000 MW generation capacity had been identified by the ministry for completion during the Tenth and the Eleventh Five Year Plans. While 43,000 MW additional power generation capacity has been planned for the Tenth Plan, 64,000 MW target has been fixed for the Eleventh Plan. The institutional and policy changes to realize even half of these are challenging. Many are doubtful, about the achievement of these targets, but need not presume failure that would be inevitable.

Under the action plan, the power ministry has envisaged large-sized thermal units such as 3 × 660 MW Sipat (NTPC) and 6 × 660 Hirma (IPP) to reap economies of scale. The Plan would target 35,000 MW additional generation capacity in the hydel sector as against the existing capacity of 25,000 MW. The likely problems in land acquisition and in management of environmental problems, and rehabilitation and resettlement, do not find adequate mention. Under the Tenth Five Year Plan, the Power Ministry hopes to operationalize the mega power policy with a set of fiscal and
other incentives (such as customs duty exemption and ten year tax holiday) extended to large-sized inter-state projects of over 1,000 MW for thermal, and 750 MW for hydro. The ministry hopes that these steps would ensure off-take of power from identified mega projects to beneficiary states and bulk consumers on the basis of long-term power purchase agreements. While the prospective entrants have been examining the feasibility of setting up new projects, the main concern has been the problems related to transmission and distribution (T&D). As the transmission and distribution network is owned by the SEBs the private generating companies building projects will be selling their power to them. In view of the poor financial performance of SEBs in the recent past in terms of irrational tariff, low plant load factor (PLF), high T&D losses and high level of receivables, prospective promoters have been insisting upon guarantees from the state governments and counter guarantees from the central government, Escrow cover for the settlement of their dues for sale of electricity to SEBs. Infact, the flaw in the policy with regard to electricity was the failure to recognize that the root of the problem lies in the financial unviability of the state electricity boards. This has made independent power projects (IPPs) look for temporary solutions such as escrow arrangements and central government guarantees which simply do not address the core problem. True reform is awaited in the power sector. The single buyer model of private generation of electricity could never have taken off with the SEBs in near bankrupt conditions. The process was started with the Deepak Parekh Committee Report which questioned the suitability of escrow account of SEB receivable and escrow capacity of KSEB (Karnataka State Electricity Board). The Committee also suggested that funding should be done on the strength and viability of the project itself. Important suggestions were made in the expert group reports (GOI, 2001a and 2001b), the energy review committee reports (GOM, 2001a and 2001b) popularly known as the Godbole Committee Report. The key process in reform seem to be Distribution reform in the power sector and unless otherwise we tackle it, involving the private sector in generation is going to be meaningless.

**Settlement of SEB Dues**

The chief ministers’ conference, held on 3 March 2001 under the chairmanship of the Prime Minister deliberated on the Power sector. They agreed to meet the challenge of restructuring head-on. The Union Minister of Power constituted an expert group under the chairmanship of Montek Singh Ahluwalia to recommend measures for onetime settlement of outstanding dues of SEBs to the central public sector.
undertaking (CPSUs) like the NTPC, Coal India, Railways, NHPC etc., and the dues from CPSUs to SEBs. The group was also entrusted to suggest a strategy for capital restructuring of SEBs to make them operationally viable. The expert group’s recommendation includes a package of incentives and disincentives linked to commercial discipline and initiation of a process of reforms. The group emphasized that the recommendations have to be accepted in toto. For the states participating in the scheme, the group recommended 50 percent waiver of the surcharge/interest on delayed payments. The rest of the dues, including the full principal payment amounting to Rs 33,600 crores was to be securitized through tax-free bonds bearing an interest rate of 8.5 per cent and issued by the respective state governments. The group recommended that if a state defaults in current payments for power/fuel, there should be a graded reduction in the supply of power from central power stations and coal supplies to the state. Further, SEBs should accept reform-based performance milestones such as setting up of SERCs (State Electricity Regulatory Commissions), metering of distribution feeders and improvement in revenue realization. Several states including MP, Orissa and West Bengal have objected to the severe penalties proposed by the panel against defaults. The government has accepted the first part of the report.

**SEB Restructuring**

In the second part of the report (GOI, 2001b), the group has proposed a comprehensive restructuring of the sector to make it viable. The causes of failures are in line with other reports. The committee has suggested that market borrowings and private investments should be tapped to finance expansion and modernization plans in the sector. It has also recommended waiver of loans provided by the states to the SEBs and central assistance for bridging the revenue gap, meeting the costs of the work force rationalization and adjustment costs for shifting to open access. The group has recommended that the adjustment costs of the transition would have to be funded out of the budgetary support. Further, it has recommended central assistance equal to 5 per cent of the total sale revenue of an SEB in 2000–1, subject to a ceiling of Rs 100 crore per year for allowing ‘open access’ of electricity. It has also suggested that the assistance should be provided to the SEB or its successor entities for a period of three years after ‘open access’ is guaranteed.
The group has recommended that during the first year of direct sale by any private generator to bulk consumers, the SEB or the transmission company should receive central assistance of 50 paise per unit of power wheeled, subject to a ceiling of Rs 250 crore. The panel has recommended that ‘this assistance should be reduced to 25 paise per unit during the second and third years, the ceiling remaining unchanged’. It has estimated that the central assistance on this count would not exceed Rs 10,000 crore during the Tenth Plan. The second part of the report has not yet been accepted by the government.

**The Electricity Bill 2001**

Undoubtedly, the precarious financial health of the state electricity boards (SEBs) can hardly be conducive for any investment. Promoters and investors have shied away from the sector. Policy risks continue to be high. The Electricity Bill drafted by the NCAER (National Council of Applied Economic Research) had gone through eight drafts before it was cleared by parliament and has come in place of the Indian Electricity Act 1910, the Electricity (Supply) Act 1948 and the Electricity Regulatory Commission Act 1998. The objective is to bring about comprehensive reforms in the power sector.

The salient features of the bill are:

- No techno-economic clearance for generating stations and no state licencing
- Non-discriminatory and open access to the transmission system
- Major role for the regulators, SERCs and CERC (Central Electricity Regulatory Commission) in licencing, tariff, grid rules, and access rules
- Provides for power trading, and the eventual creation of a spot market
- Graduated reduction of subsidies; and
- Mandate for the regulator to cover tariff in all segments.

### 6.2.1.3. POWER SECTOR REFORMS AND STATES

Reforms at the state level have been moving slowly. Administrative changes have not been easy to bring about. Table 6.1 succinctly captures the progress of reforms in various states.
Karnataka

The expansion of the generation capacity at the Raichur Thermal Power Station (RTPS, Unit 7) by the Karnataka Power Corporation Limited (KPCL) became the first project where financial closure is subject to reforms. The government of Karnataka, KPCL, Karnataka Power Transmission Corporation Limited (KPTCL) and IDFC signed a multipartite agreement which specifies milestones for reforms to be met by

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Table 6.1

Power Sector ‘Reforms’ : A ‘Score Card’ for States

* These constitute reforms in a formal sense. In content restructuring is not uniform across SEBs. Gujarat has trifurcated on paper, the GEB purely to meet certain targets set by the ADB (Asian Development Bank) while the sector continues as before. It is hoped that the Reform Law would make a difference.


the state government and KPTCL such as privatization of distribution within a specified period, commitment to financial discipline and creation of a dedicated power fund. Encouraged by this development, the Union Finance Minister has suggested a conditional lending programme for IPPs by financial institutions, in line with the multipartite agreement in Karnataka, as an alternative to escrow based lending.
**Orissa**

Power sector reforms initiated in Orissa six years ago have come to a halt. AES Corporation, the US power major has a 49 per cent stake in the Orissa Power Generation Company (OPGC) and a 51 per cent stake in Central Electricity Supply Company (CESCO), distribution company for central Orissa. The AES has initiated arbitration proceedings against GRIDCO for non-payment of dues and has threatened to pull out of CESCO if tariffs are not increased. CESCO is losing several crores every month in high costs and low tariffs. The power corporation is in red after six years of operation. The public, too, is not appreciative of slow and halting manner of the reforms process. From being a model in power sector reforms, Orissa’s experience is now a lesson on how not to go about privatizing the power sector.

**Andhra Pradesh**

Andhra Pradesh (AP) has provided major boost to the power sector reforms. The Rural Electrification Corporation (REC) has almost doubled the disbursement amount to the state to undertake rural electrification programmes last year. Under its lending programme for AP, the corporation has decided to disburse Rs 800 crore to the Transmission Corporation of Andhra Pradesh (APTransco) in 2001, which is substantially higher than Rs 420 crore during the previous year.

**Rajasthan**

The Rajasthan government has decided to spend Rs 2,000 crore on power sector reforms in the next two years in an attempt to make the energy sector self-reliant by 2005. Jhunjhunu, Jodhpur, Alwar and Jalore districts of the state have been identified under the Accelerated Power Development Project of the central government. Rajasthan, facing power shortage, has decided to work more on non-conventional resources like solar and wind energy. The first wind power project has been set up by an IPP in the border district of Jaisalmer. The state has already achieved a record by setting up 9,900 domestic light connections based on solar energy. According to the Renewable Energy Development Authority (REDA), three demonstration wind power stations are already functioning in Jaisalmer, Phalodi and Devgarh. All the three wind units have generated more than 7 million units of electricity so far.
**Jharkhand**

Recognizing the need to open up the power sector to private investment, Jharkhand has decided to privatize electricity supply in the state. Power supply as well as revenue collection will be first privatized in the state capital, Ranchi, on an experimental basis. If successful, it will be implemented in Jamshedpur, Bokaro, Dhanbad and other towns.

**Delhi**

The Delhi Vidyut Board (DVB) has invited financial bids for privatization of three distribution companies and Tata Power was shortlisted finally. The distribution privatisation of New Delhi is a courageous move and therein lies the ingredients for future initiatives. Under the scheme, the balance 49 per cent would be held by the government but the strategic partner would be given complete freedom in running the distribution companies.

**Tamil Nadu**

US based power major CMS Energy has threatened to pull out of the US $ 1.4 billion Ennore power project if the Union government does not agree to provide a counter guarantee on payments. The state government has strongly advised the Centre not to agree to a counter guarantee. The corporation has demanded that the government modify the payment security mechanisms for the Ennore project. CMS Energy holds 26 per cent of the equity in Dakshin Bharat Energy Consortium (DBEC), which is executing the 1,850 MW project. The central government is working to provide a type of counter guarantee under a new terminology called ‘termination guarantee’. Serious doubts are being raised as to whether the multi-million dollar integrated liquefied natural gas (LNG) import terminal-cum-power project proposed in Tamil Nadu will take off.

The DBEC was willing to sell the entire power generated from the Ennore project to the PTC. Tamil Nadu Electricity Board (TNEB), however, decided that it will buy only 750 MW of power on long-term basis. The MoU stipulates this and states that PTC will buy the power generated from Ennore as per the PPA terms agreed to between PTC and the developer, namely, DBEC and in consultation between TNEB and other
beneficiary states. The company has drawn the Prime Minister's attention to the signing of the Joint Development Agreement on 14 September 2000 in Washington, giving the Ennore project special status by both the American and Indian governments.

Alternative Sources

The government is targeting to generate 10 per cent of the power requirement from renewable energy sources and plans to set up additional generation capacity of 10,000 MW and a target for electrifying 18,000 remote unelectrified villages by 2012. Andhra Pradesh leads in power generation from bio-mass such as bagasse, rice husk and agricultural waste. Fifty plants of 6 MW range each had been sanctioned, of which five had been commissioned and 25 had been sanctioned loans. All the plants are expected to be fully operational in two years, accounting for a total of 300 MW of additional power. Private entrepreneurs now produce wind electricity in nine states. Together, they have a total installed capacity of over 1100 MW — Karnataka has 40 MW, Andhra Pradesh over 90 MW and Tamil Nadu over 800 MW. During the 2000-01 fiscal year, the 40 MW installed capacity in the state produced 71.1 MW electricity, 8 per cent of the 882.6 million units from renewable sources (solar, bi-product steam from sugar companies, biomass and small hydel).

Multi-lateral Institutions and other Financier's strategy in the power sector has been to leverage its assistance to support comprehensive reform of the institutional and regulatory frameworks at the state level, within an appropriate national power policy, by emphasizing restructuring and commercialization of the SEBs; rationalization of power tariffs; establishment of independent regulatory commissions; and improvement in demand management and efficiency, assistance for capacity building, focusing particularly on improving the capacity for undertaking power system, least cost development planning and tariff studies; improving the public-private sector interface, including preparation of power purchase agreements between state agencies and independent power producers; and the commercialization of distribution operations have also come to the top of the agenda. These reform efforts, particularly at the state level, is expected to assist in improving public resource management and lowering subsidies, thereby freeing resources for enhanced social sector allocation and poverty reduction. Recent experience has
shown that the process of reform and restructuring will take time and require support over a longer period. Hence, in addition to continued support for policy reforms, the projects are expected to support the upgrading and privatization of distribution including in rural areas, and, in the case of Madhya Pradesh, an extension of rural electrification. At the national level, support for power sector reforms is expected through loans from ADB etc., to the Power Finance Corporation. Given the ability of companies such as National Thermal Power Corporation to raise funds, and the significant potential interest of the private sector for investment in power generation, (more so on thermal power generation) it is expected that much of the activity will be through Private Sector window.

The Hydrocarbon Link

Much of the fortunes of India's Power Sector is tied to the performance of the Hydrocarbon sector. The hydrocarbon (oil and gas) sector is critical to India's economic growth as it meets direct energy needs, fuels power generation, and provides the raw material for downstream industries. India now depends on petroleum products and natural gas for over 50 percent of total final energy demand, compared with about 35 percent in the 1980s. The country is increasingly dependent on imported crude oil and petroleum products, accounting for 20-25 percent of total imports in the last few years. In keeping with the thrust of Government's overall deregulation and liberalization efforts, significant reforms were introduced in the hydrocarbon sector including deregulation of imports and marketing of certain petroleum products; greater marketing autonomy for gas distribution companies; private investment in development of oil and gas fields as well as in refining; development of a more transparent pricing structure for oil and gas producers; and creation of the Directorate General of Hydrocarbons (DGH), which has regulatory and supervisory responsibility over public and private sector exploration and production. Another significant development was the reform of the pricing of petroleum products and natural gas. In 1997, the Government decided to dismantle the administered price mechanism for petroleum products in a phased manner by FY2002. The Government also revised the gas pricing by linking the consumer price for natural gas to a percentage of the prevailing prices of a basket of fuel oils, and further review of the pricing formula will be undertaken to bring the price of gas on full parity with fuel oil. However, further structural reforms in the hydrocarbon sector, particularly within the natural gas sub-sector, are needed. These include the operationalization of the Gas Regulatory Authority; move to a market-based structure
for gas pricing; development of an adequate domestic gas infrastructure such as a natural gas grid and LNG facilities to ease transport and delivery bottlenecks; the opening of gas transmission to competition; and the adoption and enforcement of environmental regulations.

Multi-lateral Institutions like ADB have played a lead role in supporting policy and institutional reforms within the hydrocarbon sector, particularly through the Hydrocarbon Sector Program Loan, and in the institutional strengthening of the Directorate General of Hydrocarbons through technical assistance on Hydrocarbon Exploration and Production Database and Archive System. The program loan aimed at developing an efficient and competitive hydrocarbon sector in India through policy reforms and structural changes focusing on increased private sector participation; enhancement of the regulatory framework; removal of price distortions; and divestment of government equity in public sector enterprises. Most of the elements of the reform agenda were achieved, including the partial divestment of the Government's holding in the Oil and Natural Gas Corporation very recently. Given the progress in policy and regulatory reforms, the private sector is expected to increasingly take the lead role in meeting investment requirements in the hydrocarbon sector. To this end, investment through its private sector window, would focus on projects in the liquefied natural gas (LNG) sector within the gas sub-sector. Some public sector investment in selected areas may still be needed over the medium term in accordance with the ADB-funded National Gas Development Master Plan. Though analysis of many of these projects for the impact it has created is possible only in the long run, the importance of it and the recognition of the fact that the journey has only begun for the broader objective of Energy Sector Reform in India cannot be undermined.

6.2.1.4. Views of Committees / Reports

The Deepak Parekh Committee Report on Escrow Cover (Government of Karnataka, 2000) unequivocally raised the question of unsustainability of escrow accounts and brought out the importance of privatization of distribution in power sector. The Dabhol Power Company Report (DPC Report) that went into the failed Enron project by the Energy Review Committee headed by Madhav Godbole found a complete failure of governance of various governments at the state as well as the central government level in their dealings with DPC (GOM, 2001a). In the report (part I) the
committee found that the Enron power purchase agreement (PPA) had built in excessive payments to Enron from the Maharashtra State Electricity Board (MSEB) as a result of undue burden of the re-gasification facility, high recovery charges of shipping and harbour and O&M, and inflated claims of fuel consumption. Based on these findings the committee recommended a reduction in tariff.

The committee drew up a blueprint for restructuring the Maharashtra State Electricity Board (MSEB). The committee emphasized two elements essential to the success of the reforms: a reliable estimate of how much power is consumed by each user group; and an organizational structure, which devolves the responsibility to measure consumption and it has suggested trifurcation of the MSEB. There is to be a set of independent generation companies formed by clubbing the existing facilities into sets of six. Some are to be open to privatization, others not. Likewise, there will be a set of independent distribution companies which may be offered for private ownership. In keeping with the natural monopoly characteristics of this activity, the transmission company will continue to be under a single operator. The company will be kept under public ownership, with wheeling charges to be determined by the state's power regulator. Over time, it may be handed over to a private operator, but private ownership of the transmission company is not envisaged by the report.

The committee has rationalized that the overriding aim of power sector reforms is getting people to pay for the power they use at the rates which are set for that particular category. If the provision of power at below cost to specific categories of users, for example farmers, is deemed socially desirable, then it is incumbent on the government to reimburse the distribution company the difference between the price charged and the cost incurred. So far, this subsidization has been done by underwriting the losses of the SEBs, but under the reform blueprint, it now needs to be done by an overt transfer from the government to the private distributor who will then buy power at the regulated rate from the generators. For the system as a whole to be viable, the distributor needs to know precisely who is to be thus favoured and how much this group collectively consumes. Without an accurate estimate of consumption, rates cannot be set with any degree of precision. Distribution companies making plans based on erroneous estimates of paid-for consumption run grave risks of financial non-viability. Interestingly, the committee has recommended that the proceeds of privatization be deposited in the Power Sector Reform Fund, a state level fund. According to the report, ‘the essential feature of the model (defined as the Maharashtra model) is to avoid the problems of persisting with government
ownership, mixed zones, the single buyer approach and an annual regulatory process, while at the same time phasing in the transition to a full-fledged market system, as envisaged in the Electricity Bill, in an orderly manner'. (GOM 2001b, p. 88).

One could hardly disagree with the prognosis of Jack Welch that India cannot be a 'software superpower' if she does not produce enough power. 'Everyone thinks the internet shows up here, on the computer, and it doesn’t use power. It's a wonderful new industry. But the fact is every basis bit of information uses electronics. And if you don’t have power, nothing happen.’ (Singhal et al. 2000). The Enron saga came to full boil and has spurred many tumultuous changes in the sector which has to teach us how to shape up which will alone bear fruit in the years to come. Villages continue to suffer incessant power cuts. The failure of the northern grid which plunged a large part of northern India into darkness for a couple of days, brought home the importance of the transmission business.

6.2.2. Roads and Bridges

Indian road network is the second largest in the world. It spans 3.3 millions kms. Of this network only 45.7% of the roads are paved & only 20% are in good condition. This is in contrast to countries like U.S. U.K, Germany, Thailand, and Singapore who have more than 50% & close to 100% paved roads. Several Indian roads are characterized by congestion, poor maintenance, low safety, all of which result in slow traffic movement.

Road network in India:

Broadly the entire road network can be classified into three categories: national highways, state highways and other roads including district roads and rural roads. The 58,000 km national highway network comprises less than two percent of the total length of roads. Despite being the lifeline of the nation, as little as 5% of the national highways are four laned. It is only recently that some initiative has been taken in the form of Golden Quadrilateral. The Golden Quadrilateral project connecting the metropolitan cities, is making a steady progress. Approximately 3,218 km of the highway have already been four laned and 1,492 km are under implementation & is expected to be substantially completed by December 2004. Similarly on the North-
South and East – West corridors, 817 km length have already been 4-laned and 671 kms length is under implementation. At present, NHAI is operating 430 civil works related contracts for the Golden Quadrilateral and North – South & East – West Projects. Out of these 84 are with domestic contractors, 11 with foreign contractors and 35 with joint ventures between India and Foreign companies. The total value of these contracts is approximately Rs 25,000 crores. NHAI has grown dramatically from near zero expenditure in 1999 – 2000 to roughly Rs 10,000 crore per year today.

The Constraints:

- Despite being the lifeline of the nation, as little as 5% of the national highways are four laned.
- Government spending on the sector has been steadily decreasing from 6.9% of the total investment in the first five year plan to 3% in the eighth five-year plan.
- In contrast the vehicular traffic has witnessed a meteoric rise of 22 fold since 1995-96.
- Considering the international scenario the percentage of paved roads in the countries like Germany, Thailand, Singapore and Malaysia are higher than that of India.

Need for private sector participation:

The inadequacy of road network provides enormous opportunities for the private sector. Some 14,000 require four laning while 5,500 km widening from single lane to two lanes. Several new roads are required to be built. Since the early 1990’s government has tried attracting private investment in the road sector. The government has also taken the initiatives to expedite the Golden Quadrilateral project and in the process of more than a decade of experience of PPPs in the sector all stake holders have learnt their bit and that has augered well for the road sector development of the country.

Besides telecom, construction activity of arterial roads has been the most visible sign of the ‘new’ infrastructure. The road widening (four lane) projects on the Golden Quadrilateral are being expeditiously implemented by NHAI with funds being raised
from a variety of sources—budgetary resources, multilateral borrowings (World Bank/ADB), market borrowings by NHAI and private participation. In the logistics field little has been envisaged until the Prime Minister’s Task Force on Roads and Airports was constituted under Mr. N.K. Singh (then Secretary of the PMP) of which the IDFC was made the Secretariat. Tortuous debates on the single concession model was dragging for two years then. It was after the Task Force formation the going got the momentum and the Annuity Financing Concept for Roads (the first such concept applied to Roads anywhere) was implemented in eight roads projects in the Golden Quadrilateral project with great success.

The first major BOT project on national highways using the annuity approach, four laning of the Panagarh Palsit stretch on NH 2 received better response. Six other four laning projects have been offered to the private sector on the annuity format. Several applicants have qualified to bid for these projects. IDFC has involved in this initiative as an advisor to NHAI from the onset, defining the concept, finalization of the evaluation parameters for qualification and final selection, procuring documentation, managing the procurement process, finalizing the BOT concession structure and concession agreement, and negotiating with bidders.

The first major BOT project on National Highways using direct tolling approach—six laning of the Jaipur Kisangarh stretch on NH 8 received poor response with only one bid. Moradabad bypass, implemented by a wholly-owned subsidiary of NHAI, started functioning in 2001. The recently commissioned first phase of the Moradabad bypass has received enthusiastic response from users, with toll collections over Rs 1 lakh per day in less than a month since the road was opened to the public. A few more BOT projects which became operational were the Delhi-NOIDA toll bridge, Wainganga bridge project near Nagpur, and Baroda-Halol four laning project.

Several state governments, such as Maharashtra, Karnataka, Kerala and Punjab, are pursuing initiatives for road development, some of them through dedicated road development or infrastructure development corporations. Motorists will now have to pay for driving on newly-upgraded Indian highways. The government plans to toll the entire NHDP in perpetuity. This means that BOT roads are likely to be tolled even after the end of the concession period. The government has fixed a rate of 40 paise per kilometer for cars and an upper limit of Rs 1.40 for heavy vehicles. NHAI is to finalize the toll for different stretches, including bridges. It is estimated that NHAI will mop up annual revenues worth Rs 20 lakh per km through tolling of every completed
kilometre of highway along the Golden Quadrilateral linking the four metros of Delhi, Mumbai, Kolkata and Chennai. Taking into account a construction cost of Rs 4 crore per km, this works out to an average recovery of about 5 per cent of the total funds invested for developing the Golden Quadrilateral.

The SPV route appears to be the new buzzword fuelling India’s great highway dream. This new financing route is fast catching the fancy of the NHAI. The authority is considering the option of taking up projects through the SPV route on the Ahmedabad-Vadodara Expressway and plans to connect 12 ports including Kandla, Cochin, Paradip, Tuticorin, Haldia, JNPT, Vizag and Marmugao. In future SPV projects, NHAI proposes to invest 30 per cent of the equity of the project with the EPC contractor contributing a minor 5–10 per cent so that there is a sense of ownership towards the project. However, the success of the SPV route, would depend upon identification of commercially viable projects. NHAI hopes to take up projects worth Rs 2,500 crore via the SPV route.

6.2.2.1. The Central Road Fund

It is hoped that the Central Road Fund will ensure funds raised through the cess on petrol and diesel will be used for road development. The act, however, does not provide for complete ring fencing of the cess fund. Establishment of a road board to manage funds professionally is not mandatory in the act. The government has lost the opportunity to ensure that ‘users’ get the quality of roads they pay for. The Central Road Fund Act, 2000 gives statutory power to establish a Central Road Fund for development and maintenance of national highways and state roads, development of rural roads, construction of under- or over-head railway bridges, erection of safety works at unmanned rail-road crossings and other acts prescribed. The cess on petrol and high-speed diesel (HSD) at the rate of rupee one per litre to start with is being levied and collected. The proceeds of the cess shall first be credited to the Consolidated Fund of India; the central government may credit proceeds to the fund extend grants and loans. Any fund provided by the central government for the development and maintenance of state roads is also to be credited to the fund. The balance to the credit of the fund is not to lapse at the end of the financial year. The fund is to be administered by the central government and is to allocate and disburse money to concerned departments. Projects of state roads, approved by the central government using set criteria to be financed out of the share
for state roads shall be monitored by the central government. Fifty per cent of the cess on HSD is to be allocated for the development of rural roads and the balance as follows: 7.5 per cent shall go for the development and maintenance of national highways; 12.5 per cent for the construction of under- or over-head railway bridges; 27 per cent on development and maintenance of state roads; and 3 per cent on central government approved specific state road projects.

The salient features of the Act are:

- Cess collected from users shall be spent on development and maintenance of roads.
- All the central government funds earmarked for road sector shall be channelized through the fund. State road projects financed from the fund shall follow established criteria.
- Regulation and control of motor vehicles throughout the country come within the jurisdiction of the central government.
- There is no provision for a cess drawback for off-road usage of HSD which will keep the administration of the fund simple.
- Money from the fund cannot be allocated for the maintenance of an expressway.

CRITICAL ASSESSMENT OF THE ACT

- The administration of the fund remains with the central government and there is no statutory provision for an oversight board having user groups representation.
- The proceeds of the cess are not completely ring-fenced; the central government is required to credit the proceeds to the fund from time to time after deducting the expenses of collection.
- The fund has no budget constraint as the government may credit money by way of grants or loans. The government has powers to disburse funds to any prescribed project.
- The fund remains under political control except that proportion of money to be spent on development and maintenance of national highways is fixed.
- The act provides a weak legal basis to the fund but it will have published financial rules and regulations. The fund shall not be subject to independent, technical and financial audits.
6.2.2.2. **Annuity vs EPC**

In public-private partnership for infrastructure financing, received wisdom is that the contract should be such that risk ought to be borne by the party that is best able to mitigate it. Annuity is one such instrument. Soon after NHAI received the bid for the first annuity project, it received extremely sharp criticism from financial circles and analysts. Criticism of the popular press was based on prices quoted by the Gaumuda-WCT combine of Malaysia for Rs 69.8 crore (half yearly payments) for the Panagarh-Palsit pilot project. This was for a stretch of only 65 kms. They compared the annuity to the cost of four-laning a two lane highway at approximately Rs 4 crore per kilometer. However, one needs to consider the price to be paid for implementing a pilot project. It was expected that the prices would be lower once private entrepreneurs gain confidence in the concept. The annuity method is considered the most risk-free variant of BOT highway projects with private sector participation. However, analysts objected to annuity concept on the following grounds (Haldia, 2000):

- Annuity payments essentially entail budgetary funding on a deferred basis. Tight budget constraint, implies that only a fraction of the development programme can be sustained.
- Price at which a private company can raise funds from the market will be higher than that of the government.
- Dichotomy arises when user pays toll only on some roads. Political justification for a toll road at one place and annuity payment at another place will be difficult to sustain.
- To support annuity payments by the state government for state roads, it is not easy to impose another cess to support a state road fund.
- The developer demands a traffic guarantee or even a revenue guarantee which goes against the philosophy of private enterprise.
- The annuity programme is a logical way of getting better management control into the public sector. The government still manages virtually the entire road sector and has the option to collect toll on these roads.

Subsequent bids for annuity based projects have countered criticism from the popular press. The annuity prices quoted by the Hyderabad based G. Mallikarjun
Rao (GMR) group for three projects has suggested that this is a viable alternative. The GMR group has quoted Rs 29.48 crore for the Tuni-Ankapalle project, Rs 37.59 crore for the Dharwad-Belgaum project and Rs 41.85 crore for the Tindivanam-Tambaram project. The internal rate of return (IRR) works out at about seven per cent. In conclusion, whereas the BOT route tilts the burden of project risks and responsibilities towards the private developer, the annuity route provides for a more balanced approach to risk and responsibility allocation between the project participants. The government has been able to strike the right balance so far by adopting the annuity scheme on seven stretches totaling nearly 450 kms.

6.2.2.3. Toll Roads

The first BOT project (Rs 673 crore six lane highway project between Jaipur and Kishangarh on NH 8 in Rajasthan) under the direct tolling method was awarded to Larsen & Toubro and Joannou & Paraskevaides (Overseas) Ltd of Cyprus. The bare construction cost of the project is estimated at around Rs 493 crores. However, the total project cost is expected to rise to Rs 673 crore after factoring interest during construction (IDC). The successful bidder would develop the highway and recover costs by collecting tolls from the users directly during a concession period spanning 15 years. The agreement provides for a 100 per cent indexation to the wholesale price index (WPI) while revising the toll fees annually. Accordingly, increase in inflation will be passed on to the users fully at the time of annual revision in toll. Ever since that project many new toll roads have become a reality in the country and many new methods of tolling are being invented/implemented. A list of BOT projects in the India’s Road sector development has been included in the Appendix in the end.

6.2.2.4. Rural Roads

The Pradhanmantri Gram Sadak Yojna was launched in August 2000. The Prime Minister has reiterated the government’s commitment to this programme. The scheme, expected to connect 1.4 lakh habitations with the highway network, has a total outlay of Rs 58,200 crore over the seven year period. Approval from the Planning Commission has been waived for this scheme. The programme would be fully funded by the Centre on the basis of state government project reports. Under the programme, unconnected habitations in rural areas with a population of 1,000 or more is planned to be connected with all-weather roads in three years. In the second
stage all habitations with a population of over 500 persons are to be covered by the end of Tenth Plan. The third stage extends to northern-eastern states, Sikkim, Himachal Pradesh, Jammu and Kashmir, Uttaranchal and the desert areas. The objective is to connect habitations with a population of 250 persons and above.

The roads constructed under this programme would be maintained by panchayati raj institutions. The ministry of rural development will be the nodal implementation agency to raise additional financial resources from the World Bank and the Asian Development Bank to complete the programme by 2007. The ministry of rural development has been asked to set up a Rural Road Development Agency to provide advice on technical, quality control, and management aspects of the projects. The present source of funds comes from the 50 per cent share of cess on high-speed diesel totaling over Rs 17,500 crores during the seven-year period.

6.2.3. Water

The deliberations on National Water Policy and Report of the Sukthankar Committee were two important policy initiatives in the Water and Irrigation sector. Whereas the first raised the important issue of sharing of water resources—mainly surface water—among different states for different usage, the second one detailed the complexity of drinking water in urban and rural areas. The latter also highlighted complex institutional mechanisms required to make any success of the plans.

The National Water Resources Council did not accept the Draft National Water Policy in its meeting held in July 2000. The working group, set up to study the draft, consisted of water resources ministers from all states. It discussed the draft and guidelines for water allocation among states. The states were vertically divided with regard to River Basin Organizations (RBOs). The issues remained unresolved for the following reasons:

- Participants did not want RBOs with statutory powers as they did not find them in consonance with the constitutional provisions and the spirit of the federal structure.
- Some states felt that the priorities with regard to water allocation should be drinking water, irrigation, hydel power, aquaculture, agro-industries, non-agricultural industries and navigation and other uses. They felt that the
Inter-State Water Disputes Act 1956 could be suitably reviewed and amended to provide for conciliatory powers in Section 4 (1), timeframe for constitution of tribunal, completion and adjudication by the tribunal and for publication of award by the union government.

- A few states are of the opinion that the policy and guidelines appeared to have been drafted to accommodate the narrow interests of a few privileged states.
- Some states felt that the centre was trying to take control over the rivers and other water resources through this policy.

The working group eventually decided to constitute a core group of ministers under the chairmanship of the Union Minister of State for Water Resources to go into the details of water allocation and the setting up of an RBO. The final definition of provisions coined by the core group relating to water sharing is: “The water sharing /distribution amongst the states should be guided by a national perspective with due regard to water resources availability and needs within the river basin”. This statement is open to several interpretations. The group also decided not to empower the proposed RBOs with statutory powers.

**Water conservation, its importance and limitations:** One of the main proponent of water conservation, Rajendra Singh, who strongly believes in community rights of water, water harvesting and water conservation received the Magsaysay Award in 2001 for his work in Alwar, Rajathan. His work is a good example of integrated water system at village/ community level which is also an economically efficient solution for drinking water. It has proved that systematic development of village level watershed can change the economics of the village community. The strategy of water harvesting and surface water development was through a series of check weirs and earthen dams, soil conservation through series of gully plugs, afforestation and agro-forestry to meet the requirement of fodder, fuel and fruit as well as for soil conservation. There are many other successful examples of water harvesting in Madhya Pradesh, Andhra Pradesh and Maharashtra at village/community level.

A few state governments have extended the concept of water harvesting to a city level and have passed resolutions that all new dwellings should have water harvesting devices on their roof or on ground to collect rain water. These are simple
devices. The seasonal availability of water limits its use but this will help in recharging the groundwater table.

**Development at state level:** The chosen method adopted by states to build urban infrastructure is ‘partnership’ with the private sector. State governments short of funds have taken initiatives to establish infrastructure fund/project development companies in partnership with private sector financial institutions. The role of these institutions is to bridge the gap of risk perceived by a private promoter and the risk perceived by the present provider of the service. These are developments in the right direction. Not all the institutions are of the same genre, nor is it proposed that they have similar functions. Generally, these institutions are referred to as Infrastructure Initiative Funds (IIF). On the whole though some progress is there in the Irrigation front it is established that PSP initiatives in the water sector has been very luke warm.

6.2.4. Port

About 6,000 kilometers of Indian coastline is serviced by 153 ports (Table 6.2). Of these, 11 have special status as major ports under the central government’s purview. State governments oversee the remaining ports. The major ports are currently operated as Port Trusts, which exercise both statutroy and commercial functions, following what is commonly known as the service port concept. When the Major Port Trusts Act was enacted, six ports were named (Calcutta, Mumbai, Chennai, Cochin, Kandla and Vishakhapatnam). Since then, five ports have been added (Paradip, Tuticorin, New Managalore, Mormugao, and Jawaharlal Nehru). States administer their ports either through state maritime boards, as in Gujarat, Maharashtra, and Tamil Nadu, or through government departments. Maritime boards of trustees of a major ports.

The government has introduced legislation that will permit gradual corporatization of the major ports through an amendment to the Major Port Trusts Act. This amendment will allow the Port Trusts to invest in equity in companies established to provide operating services at the ports. A parliamentary committee is examining the legislation. The Ministry of Surface Transportation (MOST) has indicated that corporatization through this route could be considered for some of the newer ports, such as Jawaharlal Nehru and Haldia. Corporatization is less likely for older ports.
such as Mumbai, which are substantially overstaffed and have less favorable commercial prospects. The government also has approved schemes allowing joint ventures between Indian ports and private companies (both foreign and national) to improve productivity and efficiency at the ports.

The government also plans to establish the Ennore Port (which is under construction) along different lines from Port Trusts. The aim is to create a corporatized venture, with the government initially owning all the equity in the controlling company. A portion of this equity would be divested to strategic operators. However, the corporation would have both regulatory and operational roles. Under the landlord port scenario, the port authority only owns land and basic infrastructure, which is leased to operators who provide services.

There is concern at the national level that there has been a lack of coordination in developing new port facilities and perhaps a lack of strategic oversight in bringing the states and the central government together. A National Maritime Council was recently established to provide coordination among government bodies concerned with port development, particularly among state and central government agencies.

6.2.4.1. Current Operational Performance

India’s total port throughput was 287 million tons in 1997-98 (April 1- March 31); 251 million tons (88 percent) went through the 11 major ports. The Government estimates that the current capacity of the major ports is overstretched by 217 million tons, substantially below throughput levels. India’s ports have struggled to keep up with the increase in demand. Average ship turnaround time increased 1990 and 1996, reflecting a 30 percent increase in the number of vessels sailing from the major ports and only a 10 percent increase in capacity.

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<tr>
<th>Table 6.2 Productivity in Container Handling International Comparisons</th>
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</tr>
<tr>
<td>Chennai</td>
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<tr>
<td>JNPT</td>
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<tr>
<td>Bangkok/Laem Chabang</td>
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<td>Colombo</td>
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Source: Fairplay 1996a, 1996b
Significant productivity gains could be achieved at major Indian ports by moving close to average world standards on cargo-handling operation (table 6.2) The total costs of moving a container through a terminal are on an average 70-80 percent greater in India than in Japan and the United States, where labor costs are much higher. Low handling productivity rates mean that ships spend a long time at berth. The shipping Corporation of India reports that its ships spend 52 percent of their time in ports. Consequently, ship turn around time in Indian ports is commonly between five and six days, compared to one day or less in other ports in the region. Additionally, waiting times to get alongside the berth are considerable. Waiting time for a berth in Chennai in October 2000 was five or six days. As a result, regional feeder operator recently decided to impose a surcharge ($30 per laden container and $10 per empty container) on inbound and outbound containers between Chennai and Singapore. An acceptable standard is 2 to 4 days. Customs clearance can take up to five days in Indian Ports. The average is three or four.

6.2.4.2. Meeting the Growing Demand for Port Services

In 1997 total traffic was 251 million tons—an apparent use rate of 115 percent. However, this figure accounts for wide differences in traffic segments. For containers, current capacity is assessed at about 15 million tons, while total traffic in 1997 was more than 20 million tons, showing an apparent use rate of 133 percent.

<table>
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<tr>
<th>Table 6.3 Growth in Container Traffic (thousand of tons)</th>
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<tr>
<td>Port</td>
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</tr>
<tr>
<td>Calcutta</td>
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<td>Chennai</td>
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<td>Mumbai</td>
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<td>J NPT</td>
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<tr>
<td>Total</td>
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The government envisions demand growth for port services of around 200 million tons, with estimated throughput of around 415 million tons in 2001-2. It is therefore planning to add 122 million tons of port capacity over the Ninth Five-Year Plan period (Approximately 45 million tons, or around one-third of capacity is expected from the private sector, in addition to 31 million tons from captive schemes). The government also anticipates productivity increase around 11 million tons. In the longer term, minor ports are expected to play an increasingly important role in meeting India's transport needs. The planning Commission estimates total capacity of the major ports at about 550 million tons a year: by 2020 MOST projects that
demand is likely to be about 1,200 million tons, indicating the important role that
minor ports will play.

6.2.4.3. Private Provision to Date

The Major Ports Act of 1963 allows private provision of services at the major ports. The legislation already permits private sector intervention in port operation in the form of leasing of port assets, construction and operation of facilities, leasing of equipment for cargo handling, Pilotage, and captive facilities for port-based industries. The central government has adopted policy measures aimed at opening the port sector to private investors and operators. Based on the Major was strengthened at the federal level by the 1996 “Guideline on Privatization” which provides a more precise framework for private participation in the major in the major ports. At the state level maritime states have issued policy statements in the form of infrastructure policy or port policy papers. Gujarat was the first to publish a port policy statement in 1995. Private sector participation in development and operations of port infrastructure is the prominent feature in each document. The government of Andhra Pradesh had decided to privatize the operations and maintenance of three existing berths at Kakinada Port and is pursuing development of number of greenfield sites as well.

<table>
<thead>
<tr>
<th>Project</th>
<th>Nature</th>
<th>Status</th>
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<tbody>
<tr>
<td>Pipavav Port, Gujarat</td>
<td>State Port</td>
<td>First 400 meters berth ready</td>
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<tr>
<td></td>
<td>Multi-purpose facility</td>
<td>Another 325 meters under construction</td>
</tr>
<tr>
<td>Gujarat Chemical Port Terminal Ltd. Dahej, Gujarat</td>
<td>State Port</td>
<td>Under construction</td>
</tr>
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<td></td>
<td>Liquid Cargo</td>
<td></td>
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<tr>
<td>Essar Shipping limited Vadinar, Gujarat</td>
<td>State Port</td>
<td>Financing Completed</td>
</tr>
<tr>
<td></td>
<td>Liquid cargo, serving Essar Refinery</td>
<td></td>
</tr>
<tr>
<td>P&amp;O Australia Container Terminal, Nhava Sheva, Maharashtra</td>
<td>Major Port</td>
<td>Operationalised</td>
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<td></td>
<td>Container Terminal</td>
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</tr>
</tbody>
</table>
6.2.4.4. State Initiatives

Gujarat, Maharashtra, Andhra Pradesh, and Karnataka have introduced contracts that are more favorable to investors. The BOOT format adopted in Gujarat, for instance, includes full tariff flexibility in both level and currency. Gujarat's policy is clearly to attract investments in ports to foster regional economic development. In Karnataka private investment in infrastructure, including ports should "contribute to economic growth and public Welfare" with the objective of "rapid economic development of the State." Fiscal incentives to enhance the financial attractiveness of development projects. The main weakness of these contractual frameworks for developing new state ports may be the often limited physical connections between the project site and the main inland transport networks. Under the BOOT format being finalized in Gujarat, road and rail linkages for new port developments may be structured as separate BOT packages to be offered to the private sector. It is unclear whether a private port developer would commit investments in a port facility without assurance that mission or inadequate land connections would be built or upgraded in time. On the other hand, it is unclear whether the private sector will be willing to upgrade road facilities without substantial public support. It is the entire connectivity or logistics that has become important in port development.

6.2.4.5. Risk Allocation under the Concession Framework

Concessions awarded for projects at major ports follow the 1996 "Guidelines on Privatization" in establishing the allocation of risks between the private and public sectors and the incentives for efficiency provided under the contract. So far, concessions have been awarded as license agreements. Some key provisions of the concessions are as follows:

- Projects are currently defined under the build-operate-transfer (BOT) format, with asset ownership vested in the concessioning authority due to legal constraints linked to public domain legislation. Although a build-own-operate-transfer (BOOT) format would allow assets to be assigned to guarantee commercial debt, existing deals by-pass this difficulty and mortgaging rights were granted to investors (for example, at the Jawaharlal Nehru container terminal developed by P & O Australialia)
• Assets terminal under a BOT basis will revert free of cost to the Port Authority, a possible deterrent to continuous upgrading and modernizing of facilities and equipment throughout the lifetime of the concession.

• The lead partner in a consortium is required to keep its full shareholding in the port development company throughout the concession period and may not sell part of it.

• The fee structure includes an up-front fee, lease rent, and royalty per ton. The "Guidelines on Privatization" also add the concept of a free based on an annual minimum of guaranteed traffic.

• There is no compensation in case of failure by the concessioning authority to deliver agreed services. (Such as power).

• There is no provision for extending the duration of a concession to compensate for force majeure events.

• There are no provisions allowing an amicable settlement process before resorting to court action to settle contractual disputes.

Concessionaires must assume all labor liabilities attached to an existing facility. Significant overstaffing and low productivity will favor the creation of new facilities with little or no labor liability attached as with P&O Australia in Jawaharlal Nehru and Possibly the PSA Corporation in Tuticorin. The provision will create a bias toward investing in new facilities rather than expanding or improving operations at existing facilities.

6.2.4.6. Sector Regulation

The Tariff Authority for Major Ports (TAMP) was established in 1997 as a distinct body under the umbrella of MOST to regulate port tariffs independently from the Port Trusts. TAMP has responsibility for setting the tariffs of the major ports. It can also set tariffs for private licensees operating at a major port, where TAMP’s tariffs rulings will take precedence over charges outlined in a Contract between a Port Trust and a Private operator. TAMP was created in response to protests by private partners in the port system that they could not expect fair treatment on tariff matter from the Port
Trust, which is their commercial competitor. TAMP guidelines, adopted in Chennai in February 1998, state that “TAMP's overall objective shall be to move towards competitive pricing. TAMP is supposed to promote rationalization of the tariff system, applying uniform principles ports to develop a pricing methodology that will encourage improvements in operational efficiency and the introduction of innovative practices. TAMP is developing tariff formulations for the Port Trusts. It has already issued a ruling on tariffs to be charged by the Nhava Sheva International Container Terminal, which is being established by P & O Australia at JNPT. TAMP allowed the operator to have a tariff ceiling based on container handling charges currently levied at JNPT and the Cargo-related charges will be specified in rupees. In this ruling TAMP held that port operators should not be allowed to charge or calculate tariffs in foreign currency for cargo-handling services. It is established practice that only vessel-related charges can be based on foreign currency. However, the Mumbai Port Trust which already charges a tariff based on US dollars for container handling services. Most other port trusts would like to do the same. TAMP is considering reviewing the legal basis for the Mumbai Port Trust's tariff and also undertaking a broader review of the issue.

6.2.4.7. Modernizing the Ports Sector.

Although there has been progress in bringing the private sector into port development and operation, reforms are needed to provide greater commercial autonomy to all the port trusts, enhance competition among ports, and provide the institutional structure for a modern ports sector. In the long run, India will have to reply increasingly on throughput from minor ports. This fact increase the urgency of developing an overarching transport strategy. A three-tiered structure could separate policy, regulatory, and commercial roles and will help reduce conflicts of interest (such as uneven access to ship services managed by Port Trusts and berthing priorities) that the Port Trusts face. This raises the issue of the appropriate role for TAMP. If statutory authorities are created at each major port, these bodies could assume TAMP's regulatory functions. Reform is unlikely to be rapid, and TAMP will need to continue in its current role in the term. Because its authority extends to tariff setting, however, it may need enhanced authority to handle predatory behavior from port Trusts against private schemes. MOST and the Ministry of Railways have a shared interest in finding a common approach to creating inter-modal platforms that would reduce transport costs and increase trade competitiveness and establish much needed connectivity. Dry ports are mainly railway-based and developed under the
Ministry of Railways Umbrella. A common approach is required which is likely to enhance the impact of such developments and help integrate them into the inland transport network as a whole. At the port level, improved cooperation between actors such as Indian Railways, Container Corporation of India, and the Central Warehousing Corporation would improve the climate for investment in the Ports system. Currently in many cases, cargo transfer between Indian Railways and the local port results in inordinate delays. Improving the interface between railways and ports should be a priority, possibly using agreements such as the one at JNPT as a model.

6.2.4.8. Inland Waterways

India has 14,500 km of navigable waterways of which 5,700 km are navigable by mechanized vessels. There are three national waterways. These include Allahabad-Haldia, Dhubri-Sadiya over Brahmaputra and Kottanad-Kollam on the west coast canal. The cabinet has approved the Inland Waterways Authority of India (IWAI) Amendment Bill 2001 to enable it to constitute the IWAI. The policy package for the sector will allow the authority to form joint ventures with private sector companies. The new policy also allows equity participation for joint ventures up to 40 per cent for BOT projects and grants tax exemption as offered in the infrastructure sector. Major private and public sector companies, including Hindustan Lever Ltd, Indo Gulf Corporation, NTPC, Numaligarh Refineries and Concor, have evinced interest in developing inland water transport facilities in the country.

6.2.5. Telecommunications

The process of introducing the private sector into telecommunications service provision began in 1991 with the tendering of licenses to provide cellular services in the metropolitan areas of Delhi, Mumbai, Calcutta, and Chennai. India then needed to achieve a rapid expansion in the coverage, quality, and range of services available. The National Telecom Policy issued in May 1994, introduced the private provision of basic fixed telecommunications services and proposed private provision of cellular services in non-metropolitan areas. The more lucrative inter-state long-distance and international services remained in the public sector. The introduction of competition and the need for interconnection with the Department of Telecommunications (which was later corporatised and now called BSNL) and MTNL networks led to the formation of a regulatory authority and Telecom Regulatory
Authority of India (TRAI) was established in March 1997. The revenue sharing regime to replace the high license fee regime were instrumental in guiding the sector on a growth trajectory. For a number of years after the revenue sharing has come into being the telecom industry has witnessed rapid growth and investment with substantial equity investments from international players. Going forward, 'convergence' is going to be the norm and the telecom sector should be able to address this issue. That is the reason why even the derailed negotiations of the Cable operators under the 'Conditional Access System' (CAS) is being handled by TRAI. Many challenges are foreseen and when we look back the road we have travelled this far, not many can deny that it was worth the decision to have gone down that path.

The main responsibilities of TRAI are:

- Determining the need for and introducing new service providers.
- Recommending the conditions of licenses.
- Ensuring Compliance with license terms and conditions and recommending revocation of licences.
- Facilitating competition and efficiency in the sector.
- Protecting consumer interests.
- Ensuring technical compatibility and effective connection among service providers and regulating revenue-sharing arrangements.
- Announcing the prices at which telecommunications services can be provided within India.

6.2.5.1. Private Sector Participation

The government originally sought to establish a duopoly in basic and cellular telecommunications, with private service providers paying substantial license fees for the right to provide services. The policy commenced in December 1991 with the tendering of licenses to provide cellular services in the metropolitan areas. Eight cellular licenses- two in each Metro-were awarded in October 1994 for 10 years. The licenses could be extended for five years. Cellular licenses for the state circles, which broadly correspond to States, were awarded for the same term by competitive sealed bidding in December 1995. Private companies have been allowed to provide radio paging, voice- and e-mail services, and video text services since 1992.
A total of 39 cellular networks (covering both metropolitan and circle areas) have commenced operation. The number of cellular customers has increased since services began, with about 1.1 million customers by early 1999. However, the number of consumers in the metropolitan areas peaked in mid-1998, as figures revealed. The substantial reduction after 1998 may be partly related to the shedding of non-paying consumers. Although it has not yet reached the level of November 1997.

The number of subscribers is broadly in line with operator’s forecasts. However, revenues in the metropolitan areas are only around 60 percent or less of projections. The revenue shortfall is due to lower-than-expected phone use and lower airtime call charges than the maximum amounts allowed by licenses. Metropolitan operators also saw a decline in average revenue per subscriber as the customer base expanded. Metropolitan cellular licensers pay an annual fee per subscriber to the government. This fee, indexed to the ceiling unit call rate, has risen to 6.023 rupees (Rs) per subscriber in 1998. Around 50 percent of subscribers generated annual revenues below this fee in Mar 1998.

For the State circles, the later rollout makes it harder to access the situation. Indications are that consumer numbers are close to anticipated levels in the metropolitan areas, but use per consumer is also well below forecasts. Although use varies by State. Also, some licenses for the "B" circles, deemed to be less attractive at the time of auction, earn revenues per user similar to those of the "A" circles. Although there was considerable variation in the bids for each circle, most bids for basic and cellular circles have proven to be much higher than their markets can sustain. This overbidding was due partly to mis-estimation of market potential and, in some cases, to hope that the license terms could be renegotiated. Bharti Telenet became the first basic operator to start operations. The company first rolled out its network in Madhya Pradesh using bridge financing. Bharti Telenet has been joined by the basic services licenser in Maharashtra which is Hughes Tele.com.

Although the introduction of the private sector has meant some increase in service expansion, particularly through the availability of cellular telephones, paging, and Internet services, the roll-out of services has not begun as quickly as many hoped. This delay is largely due to the difficulties license holders have faced to date in achieving financial closure because of the high cost of license payments.
Licenses to provide basic services within state circles for 15 years (which could be extended by 10 years) were also awarded by competitive bidding. Bids were received for 13 circles. The license was awarded to the bidder who offered the highest net present value of license payments. Of the 13 licenses awarded, 6 basic operators have signed license agreement with the Department of Telecommunication and paid the first-years fees.

6.2.5.2. Interconnection Terms

Interconnection terms have been largely favorable to the Department of Telecommunications or the BSNL as it is called currently. Although access charges are in principle reciprocal for basic service operators, private operators are not allowed to carry calls outside their licensed circle. Consequently, inter-circle calls originating in the private network must be connected to the department; in these cases, callers pay an access charge to the department. The department is able to carry a call originating from any of its subscribers into the destination circle by connecting the call to the private operator within the local calling area of the subscriber and the department incurs no access charge. Arrangements for connecting cellular operators to the department's network have been colored by its treatment of cellular network as customer, rather than as "co-carriers." There are several other artificial restrictions on interconnection, including direct connection to VSNL. These restrictions initially meant that private operators are forced to use government-owned networks, rather than choose the most cost-effective solution for their consumers. Ever since TRAI's intervention in the matter much has been sorted out. Calling party pays concept has come in.

6.2.5.3. Moving to a Competitive Telecommunications Market

The New Telecom policy, 1999 was a clear step toward modernizing India's telecommunications. The government first publicly committed to separating the Department of Telecommunication's policy and operating functions and has announced a date for corporatizing the department's operations with new entry of private players and competition. This was subsequently acted upon and now DoT is corporatised and called BSNL. The VSNL - the International carrier has been privatized and Tatas hold the majority in the company. The policy also addresses some of the implications of convergence. The new Telecom Policy reaffirms the government's commitment to a "strong and independent regulator with
comprehensive powers and clear authority to effectively perform its function”. TRAI will be involved in key decisions about markets, license fees, and interconnections. The fact that, despite political controversy, TRAI's pricing order of March 1999 has held seem to have strengthened the regulatory regime. Though the public sector still dominates telecommunications service provision in India as the BSNL is the one that provides local fixed services throughout non-metropolitan India, the most visible PSP has happened in this sector and the commitment to reform has held ground in this sector.

6.2.6. Airports

The government has introduced an integrated civil aviation policy which incorporates guidelines on transport and tourism. It has been decided to club transport and tourism with aviation policy as good road and rail connectivity with airports would help both tourism and trade. The Centre is also considering the appointment of an independent economic regulator for airports to fix airport tariff and safeguard public interest. An autonomous statutory Airports Economic Regulatory Authority (AERA) has been proposed as a long-term measure for the limited economic regulation of airports in view of the inherent monopoly characteristics of airport services. The regulator will be delinked from government control.

The issue of setting up a regulatory authority has come in the wake of the government initiative of permitting complete foreign investment in airports. The government has approved the construction of new airports at Devenhally in Bangalore, Shamshabad in Hyderabad and Mopa in Goa, with majority private sector participation. The government decided to give major airports on long-term lease to private operators. There still needs to be the requisite amendment to the Airports Authority Act 1994. The aviation establishment has broadly come to an understanding that it would adopt a dual-component scheme of leasing. The first would be a one-time, fixed payment for the entire duration; and the second, a variable annual payment. It is estimated that the revenue from the leases of the four major airports would be sufficient to sustain the development and maintenance of the remaining 119 airports across the country. The Airport Authority of India (AAI) presently earns an annual revenue of approximately Rs 1,800 crore; of which nearly Rs 1,000 crore is generated by the airports at Delhi, Mumbai, Chennai and Kolkata.
The AAI has been privatizing other airport services as well. The operation, maintenance and management of the centre for perishable cargo for exports at the Indira Gandhi International Airport has been given to a private operator last year. Though many such PSP Options are possible it hasn't taken off in a huge way due to legal, regulatory and operational glitches.

6.2.7. Urban Infrastructure

Urban infrastructure is particularly neglected. The deteriorating infrastructure for drinking water compelled the Eleventh Finance Commission to sound a cautionary note on the inadequate maintenance of civic services and the need for rationalization in pricing of urban services. It has called for increase of tax revenue and user charges to cover operation and maintenance expenses. The commission also mentioned the need for speeding up devolution of funds and a concomitant transfer of staff from state governments to local bodies in line with the 74th Amendment. Progress along better quality private participation and investments has been slow due to inadequate revenue streams. However, a few states have been attempting innovative ways of construction and financing. The progress in municipal bond markets has been very little. The credibility of urban local bodies (ULBs) which had raised money earlier has come under cloud as ULBs lack financial management skills. Their accounting is not in line with generally accepted practices. For example, the Nashik Municipal Corporation failed to open an escrow account (a key bond issue condition) even two years after the bond issue, setting back the nascent market. The credibility of many such entities are in doldrums. The urban infrastructure seem to be the most un-happening infrastructure sectors in the country and proven reform successes are rare.

The above paragraphs have explained the status of various infrastructure sectors in India and the way they are placed in the overall reform agenda. With all the given constraints the challenge for governments is to encourage an appropriate form of private sector investment in infrastructure and for the lenders it is to ascertain the financeability. It is here that arriving at Best Practices from the experiences gained over the years by countries and institutions in the infrastructure sector makes sense. Benchmarking to best practices is a global norm today to enhance productivity, competitiveness and quality. It is understood that in Infrastructure sectors, which are so vital and is an underlying lynchpin for a vibrant economy, adopting best practices is indispensable. Best practices addresses many risk management issues as well.
Fortunately, multi-lateral lending institutions like the Asian Development Bank (ADB) and World Bank have by leveraging their past experiences, brought out Best Practices guidelines to be followed by governments and institutions. The ADB has in the year 2000, studied many of the vital infrastructure sectors like Power, Road, Water, Ports, Airports etc., and has identified significant differences among the infrastructure sectors concerning the appropriate balance between private and public participation in ownership of assets and provision of services. ADB found that only some of the sectors have well defined models for PSP\(^1\). Other best practices are still evolving and the menu will continue to develop as experience grows.

The many sectoral experts and review mission experts at ADB have identified the following as some of the core issues in arriving at Best practices for Private infrastructure investments: (i) size and complexity of the infrastructure sector; (ii) rate of growth in demand and the competitiveness of the market; (iii) options for unbundling by function or geography; (iv) legal regime regarding ownership of land and other critical assets; and (v) capacity for economic regulation. The established mechanisms, which range from management contracts to unregulated competition, are not new and have proven effective. The key is to have a vision of where the sector is going, and to carry through the reforms as quickly as possible so as not to allow the interim change to become the final state of affairs. The findings of the sectoral experts which have been taken in as the Best Practices for each sector by ADB are summarized below.

### 6.3 Best Practices - Power

In the electricity sector, IPPs provided a quick solution (in the Philippines, for example) by offering generation capacity needed for rapid economic growth. However, the costs were often high because the new capacity was not consistent with the least-cost expansion path and the private sector required high rates of return. However, these costs have been decreasing as the IPP market has matured. The focus on production rather than efficient distribution put the public sector in the position of retaining that activity in which it was least effective and restricting the private sector from performing the customer focused activities (distribution and supply) where it had real expertise. At the same time, it isolated the private sector

\(^1\) Private Sector Participation (PSP) is another generic term like Public Private Partnerships (PPP) in the infrastructure financing arena, to mean involvement of private sector. Both the terms - PPPs and PSPs are used synonymously in the public domain as also in this dissertation.
from the market through a combination of regulated pricing and guarantees against commercial risks.

The power sector experts advocate restructuring to achieve a competitive market model with wholesale and retail competition. Such reform will encourage sustainable PSP and maximize the benefits to consumers they say. The experts suggest five major steps in implementing this approach, and their order of precedence. To some extent, these steps may proceed in parallel, but they should be considered sequential actions that will lead to the implementation of a competitive power market:

1. Getting the investment framework right.
2. Deciding on the goals of restructuring and the ideal industry structure.
3. Preparing the players to participate in a competitive market.
4. Privatizing existing and new assets.
5. Ensuring that the competitive market is implemented properly.

Best practices for power sector restructuring would include the following:

- Create an enabling legal and regulatory environment to support competitive markets in electricity.

- Un-bundle the power sector into separate generation, transmission, distribution, and possibly retailing sectors to achieve the maximum benefits for customers.

- Privatization should include the sale of power distribution utilities as well as generation, and should include existing assets as well as new projects, using a transparent process.

- Open access to transmission and distribution wires, and the ability to trade power between buyers and sellers in an open market, are critical to achieve a competitive framework.

- Operate the generation and retailing markets competitively, with a large number of generators selling into a wholesale electricity market at prices which balance demand and supply throughout the day.

- Operate the transmission network as a concession on the basis of competitive bidding, or privatize it within a tight regulatory framework, controlling rates of return, prices or gross revenue.
• The independent regulator should mainly oversee prices and incentives for transmission and distribution operations.

• Restructuring should proceed at a pace consistent with the development of a competitive and unbundled system.

• Sequencing of the reforms (as referred above) to be very crucial in Power sector reforms/ interventions.

6.4 Best Practices - Water

The water sector has moved more slowly towards private sector investment, relative to electricity and telecommunications for example, not least because of the jurisdictional, environmental and sensitive social concerns about water supply, and its affordability. While major private sector involvement has now been achieved in distribution (Manila and Jakarta), the bulk of transactions were BOT models with take-or-pay clauses guaranteed by governments. Adding to these difficulties was the lack of knowledge about the location and condition of the (underground) networks and aquifers in many countries.

The volume on the water supply sector addresses the question of why, given the alternatives, the private sector should seek to invest in a sector with so many uncertainties, natural, governmental and financial. Water, unevenly supplied as rainfall, is often wrongly deemed a free public good, despite the costs of treatment and retail supply. Thus, there is often an ill-informed community constraint against private sector involvement in water supply, which in most countries has prevented arriving at the sorts of best practices.

The water experts make the point that when it comes to best practice in the case of water supply, most of the messages are for government — to install sound and independent regulatory regimes, catchment management policies and enforceable laws on tariff setting and collections. Once in place, best practices such as water supply concessions can be implemented. If not in place, then best feasible practice may simply relate to contracting out some services under government guarantee, or BOOT bulk supply to public sector water supply companies. It follows from this that since the particular features of the water supply situation and regulatory
and privatization policies differ greatly across countries, so, too, will the feasible best practice.

One misunderstanding regarding the scope for bringing commercial practices to water supply is the issue of affordability. The report notes that the poor often pay more for water than the cost from efficient commercial piped supplies. Experience has shown that low-income families will pay for quality water supply – and are not averse to PSP – if it delivers.

With the above referred perspective gained by ADB, they recommend the following to be the Best Practices that could be pursued:

- The benefits of PSP in the water sector must be explained to win public acceptance.

- The starting point in any reform process for water supply is to form a high-level reform unit to drive and manage the process. It would be responsible for coordinating and facilitating the entire reform and PSP process. The reform unit may be a cross-sectoral unit.

- While not essential to commence reform, the introduction of tradable water rights leads to efficient use of water, particularly when it is scarce and has alternative uses.

- The water sector should be unbundled to the extent possible. The private sector concession model is most likely to achieve the greatest benefits to the community and the economy as a whole. The government continues to own the network while the private operators lease the long-term right to use the assets and collect revenue from service delivery. The benefits accrue due to strong financial incentives to reduce water losses and expand service.

- If politically difficult, then the next best strategy is to use BOT, BOOT, and ROT (rehabilitate-operate-transfer) arrangements to bring expertise and finance to urgently required water supply projects. The bidding procedure should be carefully managed to ensure reasonable cost and the contractual arrangements should not constrain subsequent progression to more competitive models.
• Commercialization/ Corporatisation of water supply utilities together with tariff reform is advantageous as an interim step if the introduction of PSP is to be phased.

• Tariff reform to achieve full cost recovery is essential for PSP. Cross-subsidies for the poor can still be considered in a transparent manner.

• Critical to the success of PSP in the water supply sector is for the government to create sound and independent regulatory regimes, catchment management policies, and enforceable laws on tariff setting and collection.

• Risks are likely to vary between countries and even between different water utilities in a country. They should be managed by the party best able to minimize and manage each risk most effectively. Where no party has a clear comparative advantage to manage the risk, it should be shared.

6.5 Best Practices – Roads

ADB opines that in Asia’s roads sector, PSP has been equated with major BOT toll roads. These have been targeted where traffic is greatest – in and near the capital city and sometimes along major inter-city corridors. This private investment has produced some successes but also many failures. After more than a decade of concerted effort, implementation experience has not matched expectations. Indeed, surprisingly little has been implemented outside the People’s Republic of China (PRC).

The road sector experts at ADB have advanced three reasons for modest progress in roads. First, governments have not defined their policy, often leaving the private sector to identify projects. Secondly, almost everyone involved has expected such toll roads to be profitable without government support, but this has only rarely proved to be the case (outside the dense PRC market, which is deemed a ‘special case’). Thirdly, it has proved difficult to introduce promised tariffs and tariff increases in a
sector where roads have become to be regarded as free. The Table 6.5 below summarises some of the Key issues involved.

What is clear is that private construction and maintenance of public roads produced better results where there was adequate competition and effective methods for enforcing contracts. Efforts to substitute private sector management for public sector officials in the management of the public network are in their early stages, even in the developed economies, but the preliminary results are encouraging.

Worldwide experience identifies (as depicted in Figure 6.3) a broad range of PSP modalities, in which BOT is close to being the most difficult to implement. Other modalities include maintenance management contracts, turnkey, operate, and maintain or rehabilitate-operate-transfer concessions. Many of these modalities target improved maintenance, and rehabilitation of the network (rather than solely network capacity expansion). They have potentially much greater application than BOT projects.
<table>
<thead>
<tr>
<th>Issue</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Private sector's ability to identify and implement projects</td>
<td>Are they able to do this in the absence of strong government action?</td>
</tr>
<tr>
<td>2. Ability to introduce/increase tolls</td>
<td>Need for 'free' alternative? Location of tollgates critical? Can tolls always be introduced? Are promised toll increases delivered? Avoidance of 'leakage'</td>
</tr>
<tr>
<td>3. Macro-economic effects, crowding out other investment</td>
<td>Scale of private investment relative to size of domestic capital market.</td>
</tr>
<tr>
<td>Foreign exchange exposure</td>
<td>Percentage of off-shore financing, scale of recent devaluation, willingness of government to provide forex guarantees.</td>
</tr>
<tr>
<td>Misallocation of Resources</td>
<td>Economic returns on projects funded by the private sector?</td>
</tr>
<tr>
<td>4. Development of domestic capital markets</td>
<td>Do new financing instruments developed for infrastructure financing have spin-off benefits for the economy?</td>
</tr>
<tr>
<td>5. Road network development pace of network development?</td>
<td>Ability to learn from experience?</td>
</tr>
<tr>
<td>Does the private sector assist or constrain network development?</td>
<td>Extensions to existing projects? Private sector development of a network? Development of an integrated network?</td>
</tr>
<tr>
<td>6. Impact on development and transport strategy</td>
<td>What objective – benefits for through traffic or corridor/area development? May concessions form a 'straight-jacket' to public action?</td>
</tr>
<tr>
<td>Concessions may constrain and/or distort strategy, by concentration on the major corridors</td>
<td>Is there a concentration in capital cities? Potential for distorted transport development strategy? Resulting from the scale of public investment necessary to make private sector projects profitable Reinforcement of inefficient mega blocks, and concentration down existing corridors?</td>
</tr>
<tr>
<td>7. Social/Environmental issues concessions may affect the application of social and environmental policy</td>
<td>Are social equity and environmental concerns addressed? Impact on land acquisition and relocation. Are due processes circumvented? Visual impact, severance etc.</td>
</tr>
<tr>
<td>8. Development of road transport companies</td>
<td>Shortage of companies motivated to manage roads for the long term.</td>
</tr>
<tr>
<td>10. Implementation</td>
<td>Traffic disruption? Failed projects?</td>
</tr>
<tr>
<td>11. Political</td>
<td>Fear of foreign 're-colonisation', fear of loss of government jobs.</td>
</tr>
<tr>
<td>12. Role of international financial institutions</td>
<td>This is minimal – Why?</td>
</tr>
</tbody>
</table>
Table 6.6 details the characteristics of the PSP options available in the road sector.

### Table 6.6: Characteristics of the PSP Options

<table>
<thead>
<tr>
<th>Form of Contract</th>
<th>Maintenance Mgmt</th>
<th>Turnkey</th>
<th>Operate &amp; Maintain</th>
<th>Reliability-operate Transf. (BOT)</th>
<th>BOT</th>
<th>Corridor Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Definition</td>
<td>Maintain free from</td>
<td>Design &amp; build fixed fee from</td>
<td>Maintain and operate</td>
<td>Fin., rehabilitate, maintain and operate</td>
<td>Fin. design, construct main &amp; operate</td>
<td>Finance, design, construct, maintain &amp; operate</td>
</tr>
<tr>
<td>2. Examples - (in Countries)</td>
<td>New south wages US</td>
<td>US, Hong Kong, China</td>
<td>Argentina, Hong Kong, China</td>
<td>Argentina Colombia</td>
<td>Malaysia, Philippines, Thailand, Hong Kong, China, Argentina, US etc.</td>
<td>UK (DBFO) Colombia</td>
</tr>
<tr>
<td>3. Cost recovery</td>
<td>NO Income - fixed government payment</td>
<td>No income - fixed government payment</td>
<td>Typically government receives some toll revenue</td>
<td>Concessionaire may pay government or vice-versa</td>
<td>Government contributes existing roads, and other investment usually required</td>
<td></td>
</tr>
<tr>
<td>4. Scale of private investment</td>
<td>Very low</td>
<td>Considerable for very short term</td>
<td>Low</td>
<td>Medium</td>
<td>Large/very large</td>
<td>Medium/very large</td>
</tr>
<tr>
<td>5. Private sector risks</td>
<td>Maintenance</td>
<td>Design construction</td>
<td>Traffic &amp; revenue levels</td>
<td>Rehabilitation</td>
<td>Design construction</td>
<td>Design construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Revenue collection political financial maintenance</td>
<td>Traffic &amp; revenue collection political financial maintenance</td>
<td>Traffic &amp; revenue levels</td>
<td>Traffic &amp; revenue levels</td>
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<td></td>
<td></td>
<td></td>
<td>Revenue received social</td>
<td>force majeure social</td>
<td>revenue collection political financial maintenance</td>
<td>revenue collection political financial maintenance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Force majeure planning</td>
<td>Traffic levels maintenance</td>
<td>Planning force majeure</td>
<td>Planning force majeure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Revenue received social</td>
<td>Traffic levels maintenance</td>
<td>Macro social</td>
<td>Macro social</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Force majeure planning</td>
<td>Traffic levels maintenance</td>
<td>Environmental</td>
<td>Environmental</td>
</tr>
<tr>
<td>6. Public sector risks (land acquisition and relocation risks incl.)</td>
<td>Small</td>
<td>Medium/large $50-$500m</td>
<td>Small/medium</td>
<td>medium/large</td>
<td>Very large</td>
<td>Medium/very large</td>
</tr>
<tr>
<td>7. Typical contract size (US$ million)</td>
<td>Small</td>
<td>Medium/large construction firm</td>
<td>Construction firm with mgmt skills</td>
<td>Larger Constr. Firm with mgmt skills</td>
<td>Consortium including major construction firms</td>
<td>Consortium incl. a construction firm</td>
</tr>
<tr>
<td>8. Min. size of concessionaire required</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>9. Extent of government participation supervision required</td>
<td>2-10 years</td>
<td>Desired construction</td>
<td>2-10 years period only</td>
<td>10-20 years</td>
<td>25-30 years</td>
<td>25-30 years</td>
</tr>
</tbody>
</table>
The Best Practices that emerge are given as below by ADB:

- Governments must prepare the PSP environment. Institutions may need to be restructured with the objectives of controlling the PSP process in the public interest, and creating a regulatory body, separate from vested interests. A sound legal framework and a predictable regulatory regime are essential.

- Governments must identify priority PSP projects. This will almost always require an independent feasibility study, which focuses on traffic and tariff policy, project staging, network integration issues, risk allocation, finance and implementation issues. The Strategy objectives and the PSP options shall be considered in the lines depicted below:

<table>
<thead>
<tr>
<th>Strategy Objective</th>
<th>Maintainane</th>
<th>Turkey</th>
<th>Maintain &amp; Operate</th>
<th>BOT</th>
<th>Corridor Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Source of Funds</td>
<td></td>
<td>ø</td>
<td>ø</td>
<td>ø</td>
<td></td>
</tr>
<tr>
<td>Major capacity increase (New Road)</td>
<td></td>
<td>ø</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved Maintenance</td>
<td></td>
<td>ø</td>
<td>ø</td>
<td>ø</td>
<td></td>
</tr>
<tr>
<td>Rehabilitation of existing roads</td>
<td></td>
<td>ø</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- The best prospects for BOT projects are in middle-income countries (where the willingness-to-pay tolls exist) along existing congested corridors, or where there are missing links (e.g., estuarial/river crossings). A regulated income stream from a tolled public toll road is capable of securing project financing of an appropriate kind (i.e., suitable to pension funds and other long-term investor groups).

- Private sector modalities other than BOT exist, e.g., concessions (including Annuity models), and should be applied more widely, as they can address many of the sector problems, and in the process create a new high growth industry for transport management companies.

- Traffic risk is the major risk and may be shared. The core risk being taken by the private sector, with government taking a share of the upside benefit and providing a downside guarantee in the event of low traffic.

- Transparency and competition are essential in the procurement process.
- Government support should be defined upfront as a maximum so that the private sector can prepare realistic bids.

Roads/Expressways being one of the earliest to attract many multi-lateral development banks attention and intervention in the infrastructure spectrum Table 6.3 takes a look at the requirements sought by these lenders.

<table>
<thead>
<tr>
<th>Development Bank Requirement</th>
<th>ADB</th>
<th>IFC</th>
<th>EBRD</th>
<th>IADB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatible with country/ Sector Strategy</td>
<td>Must see that governments are committed &amp; have pol. will to fulfill cont. obligation</td>
<td>Requires government commitment.</td>
<td>Must have transition impacts &amp; fall within a coherent sustainable national transport policy.</td>
<td>Government must approve &amp; country regulatory system must not compromise project feasibility.</td>
</tr>
<tr>
<td>Technically Feasible</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes. New projects, expansion and rehabilitation all eligible. Refinancing asset transfer excluded.</td>
</tr>
<tr>
<td>Economically viable</td>
<td>Yes</td>
<td>Yes</td>
<td>Up-to-date, state-of-the-art traffic &amp; revenue study by independent international consultants &amp; suitable EIRR. Benefits to local &amp; international economy.</td>
<td>Not specifically.</td>
</tr>
<tr>
<td>Environmental impact Assessment</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes &amp; Public participation also required.</td>
<td>Yes</td>
</tr>
<tr>
<td>Institutionality &amp; Financially Sustainable</td>
<td>Investment in pvt. sector of a DMC. Majority of equity owned and oper. Controlled in pvt. sector.Doesn’t sup tariff protection</td>
<td>Must have good prospect of being financially viable.</td>
<td>Appropriate legal framework, state guar. mitigation measures in case of government actions materially &amp; adversely affecting the concessionaire &amp; insurance. Must demonstrate bankability on reasonable set of assumptions. 20% equity required.</td>
<td>Borrower must be established company within the law of the country in which investments is to be made. Majority of shares must be held by national of IADB member countries.</td>
</tr>
<tr>
<td>Limits on Bank Exposure</td>
<td>Not more than 25% of total cost or USD 50m whichever the lower.</td>
<td>Usually limited to 25% up to USD1m for small &amp; medium sized projects US$100,000 - US$1m &amp; from US$1 to US$100m for standard size projects.</td>
<td>Will normally limit exposure to 35% of total project cost</td>
<td>Share of the project not more than 25% of the total cost or US$75m</td>
</tr>
<tr>
<td>Competitor for the concession</td>
<td>Must improve the environment for private sector development. Must be awarded on competitive &amp; transparent basis</td>
<td>Not necessary</td>
<td>Beneficiary considered to operate in competitive environment if equity partner was selected in a transparent competitive tendering process</td>
<td>Not necessary</td>
</tr>
</tbody>
</table>


### 6.6 Best Practices - Ports

In the port sector, the transfer of cargo-handling activities to the private sector has been, in most cases, extremely successful in replacing inefficient government bureaucracy with commercially-oriented management. Improvements in productivity
and maintenance has increased the quality of service. However, where there was no competition, these arrangements were less likely to sustain these improvements. Private investment in port infrastructure has generally been limited to new and existing cargo terminals. Trans-shipment terminals were the most successful, since they were less dependent on local markets and land transport. Greenfield ports were slower to develop because they were farther from their markets and the logistics aspects of the multi-modal transport access was either missing or less developed. Basic infrastructure offered few opportunities for full cost recovery.

The ports sector experts have noted that the private sector has always been actively involved in port affairs. The land and water transport services that use the port are almost entirely private sector. Nearly all of the cargo shipped through ports is privately owned. The private sector provides an array of complementary trade facilitation and logistics services for this cargo. Within the confines of the public port, cargo owners, forwarders, and ship agents actively participate in decisions concerning the handling and storage of cargo. The public sector’s role is to own, develop, and manage basic port infrastructure and common-user facilities.

The process of port privatization has rarely involved pure privatization, since land and infrastructure are rarely sold. Instead, the process involves PSP in operations and investment in equipment and facilities. The process is not a monolithic effort because of the diversity and complexity of ports and the services they provide. It can be divided into three components: (i) institutional reform, (ii) divestiture of existing services and assets, and (iii) investment in new facilities and services. These can be implemented individually or in combination. For each port component, there are many possible public-private partnerships.

The main points for Best Practices were:

- The bidding process should encourage unbundling not only of the network but also for the services within the ports. Where ports are not financially viable, they should not be bundled with profitable ports, but treated as stand-alone facilities that are turned over to local government or put under management contract using a competitive tender.

- The landlord model is the best structure for promoting PSP because it accommodates different forms of public-private partnership while recognizing that the only fixed responsibility of the public port is the ownership of the site.
• The most effective and efficient procedure for promoting PSP in the port sector is to lease existing facilities with relatively short-term agreements that allow for reorganization and improvement in productivity. Subsequently, concession agreements can be used to encourage private investment in additional capacity. Where this capacity is required immediately, or labor problems make it difficult to lease out existing facilities, then concessions might precede lease agreements.

• Continued public investment will be required, as it is difficult to recover the costs for basic infrastructure in a time period reasonable to the private sector. Public investment may also be required to reduce the barriers to entry. This is important where a new entrant would otherwise have to make a large investment before competing with existing service providers.

• The best form of tariff regulation is market regulation; the second best is through the terms of the contract that identify the non-competitive services requiring regulation, state the maximum rates, the formulae for escalating these rates over time, and the arbitration procedures for discriminatory behavior in excess of that justified by commercial pricing. The third best is the establishment of a regulatory agency outside of the port which would apply a pricing formula related to cost recovery. All of these are preferable to a vague procedure for negotiating future changes in tariffs.

• The private sector should assume all commercial risks. Other risks should be negotiated, based on which party has the capability to mitigate the risk.

• The critical element in any effort to promote PSP is competition, or at least the potential for competition. This can be provided through direct competition between private sector service providers, between public and private service providers or between bidders in the case of an activity that does not allow competition.

6.7. Best Practices - Airports

For the airport sector, PSP in terminal operations produced significant improvements in financial performance and the quality of service. Private sector investments have increased substantially over the last five years. During the previous twenty years, there was little capital investment in airports, despite a five-fold increase in traffic. The airports coped with the higher levels of traffic through a combination of larger...
aircraft, better air traffic control, improved runway design, and the addition of second runways and additional terminal space. This period has now ended and most countries need to invest in new airports. These are proving to be costly, complex and often controversial investments.

The key policy questions concern how best to structure airports and groups of airports to obtain maximum customer benefits. The discussion on airports and air traffic controls indicates that there is little evidence of significant scale benefits flowing from multiple airport operation; equally, however, there is little evidence of significant scale diseconomies. The case for significantly reducing the concentration of airport ownership at privatization therefore depends on the trade-off between the up-front and visible costs of re-structuring, and the possibly less tangible benefits of increased competition resulting from break-up. The competition benefits in this industry are not clear-cut, primarily because major airports mainly serve distinct regional markets.

In the United Kingdom, the authorities took the view that any potential competition gains from breaking up the British Airport Authority prior to privatization would have been offset by restructuring costs. In Australia, in contrast, the Government has preferred to restructure and reduce industry concentration radically, emphasizing the public policy benefits of inter-airport competition for long haul international traffic. The benefits of fragmented ownership also include those that flow from yardstick competition, enabling regulatory agencies to assess individual operator performance more effectively; and from introducing a limited element of competition by emulation between operators. The airport sector experts are of the view that the benefits from the Australian model is greater. Key recommended **Best Practices** for the airport sub-sector are as follows:

- Airport privatization has to be encouraged by the existence of legislation in the form of a BOT law or similar, signaling the government’s recognition of the need for PSP in infrastructure provision. It is also important to ensure that the government is able to demonstrate that any projects offered to the private sector are economically viable.

- Regarding the optimum approach, full privatization based on asset transfer or acquisition through long-term leases is preferable to more restricted forms of PSP (but is also more demanding in terms of legal and regulatory frameworks).
• As to airport industry restructuring, there is no evidence of significant economies of scale in airport operation other than those associated with increased traffic density at a particular location. Hence, PSP can be based on individual airports (although facilities may need to be bundled to assist financing of major new developments or extensions to capacity).

• The existence of unprofitable airports does not justify the maintenance of a highly concentrated industry structure to facilitate cross-subsidies.

• Limited sharing of traffic and revenue risk (between the private sector partner and government) is justifiable in airport BOT or concession contracts.

• Denomination of some, or all, airport charges in US dollars is an effective way of hedging against currency risk and may significantly reduce the risk premium required by private investors;

• The benefits of PSP in airports are likely to be maximized by regulatory frameworks that incorporate good regulatory governance practice. The price-cap approach to constraining airport charges is likely to encourage better performance outcomes than one based on rate of return regulation.

• Competition for the market, whether through sale or leases, or BOT/concessioning, will be maximized by transparent bidding/sale processes.

From the above discussion it is clear that in almost all infrastructure sectors Best Practices have been arrived at by the largest development financial institution in Asia i.e., the Asian Development Bank. It is pointless to arrive at another set of Best Practices with reference to Asia or for that matter India as already Benchmarks are available. Further if we were to look at risk-wise benchmark practices (instead of Industry or sector-wide prescriptions), there again rating institutions like the Standard and Poor have done good contributions by developing this domain of knowledge by deriving scoring models\(^2\) for most kinds of risks. They have also been rating the infrastructure projects using these scoring models Thus, it would be meaningful to study and analyse as to what extent we have adopted these Best practices in our infrastructure sectors.

\(^2\) The scores prescribed by Standard and Poor for rating risks in infrastructure projects have been summarised at the end of this chapter as APPENDIX (Benchmarks).
6.8. Adoption of Best Practices in India

This Chapter tries to have a look as to what extent the Best practices have been adopted in the Indian Context. To this end a sample survey was conducted by including a significant portion of projects of all forms covering the entire spectrum of infrastructure sectors in India. It is a primary survey conducted with the help of a questionnaire and the respondents profile is summarized as shown in Table 6.8.

Table 6.8

Respondents for the Survey on Adoption of Best Practices in Private Infrastructure Financing Arrangements
(Number of Responses Grouped as per Transactional Type and Infrastructure Category)

<table>
<thead>
<tr>
<th>Service/Management</th>
<th>Roads/Bridges</th>
<th>Transport</th>
<th>Water and for Irrigation</th>
<th>Drainage, Sanitation</th>
<th>Port/ Shipping Facilities</th>
<th>Parks, Gardens, Open Spaces</th>
<th>Telecom / ISP Services</th>
<th>Electricity/Gas/Utilities</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lease</td>
<td>61</td>
<td>18</td>
<td>24</td>
<td>7</td>
<td>13</td>
<td>18</td>
<td>5</td>
<td>146</td>
<td></td>
</tr>
<tr>
<td>BOOT, BOO, BOT</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>0</td>
<td>2</td>
<td>25</td>
<td>12</td>
</tr>
<tr>
<td>Concession/ Franchise</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>13</td>
<td>2</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Full Privatisation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>10</td>
<td>0</td>
<td>16</td>
<td>146</td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
<td>22</td>
<td>27</td>
<td>15</td>
<td>31</td>
<td>42</td>
<td>9</td>
<td>229</td>
<td></td>
</tr>
</tbody>
</table>

This could easily be one of the big baseline surveys conducted covering a total of 229 infrastructure projects encompassing all the important infrastructure sectors of all forms/transaction type. The respondents views on the adoption of Best practices were extracted from a mix of either the companies who had actually handled the project or the lending institutions who had financial exposure in the project and hence had good knowledge about the project's intricacies.

6.8.1 Ranking Methodology

The Best practices of ADB (discussed at length above) were grouped into 10 Best practices in each of the seven identified infrastructure sectors mentioned below and
named as Infrastructure Risk Management in Power (IRM – Power), IRM – Roads/ Bridges and so on. Hence 70 variables have been analysed respondent-wise for their relative standing. As the idea was to know the level of adoption of Best practices parameters amongst the sampled entities, a ranking methodology is employed.

1. IRM – Power
2. IRM – Roads/ Bridges
3. IRM – Water
4. IRM – Ports
5. IRM – Telecom
6. IRM – Airports
7. IRM – Urban Infrastructure

These grouped Best practices are the parameters on which the surveyed samples are benchmarked. The ratings given by each of the respondents on their views of standing with respect to the Best practices were benchmarked against the ADB’s prescription which was given an index score of 100. The 10 Best practices measures/variables were captured for each of the project studied in the relevant infrastructure category. Each of the ratios arrived at was re-normalised by subtracting the mean and dividing by its standard deviation. We now have measures, where each had a mean of 0, standard deviation of 1, had no units, and could be combined without introducing any unit-related biases. An intermediate index was then derived, by giving equal weights to each of the measures of each of the 7 categories. This led to the creation of 10 intermediate indices. The final index was then created for each sector by taking the average of each of the 10 parametric indices. The 10 intermediate indices and the one overall index were then rescaled so that they had a minimum value of 0 and maximum of 100. A higher value indicates better performance in that category. An application software called ‘Rank Tool Box’ which allows for multi-criteria ranking was also used after the indices were grouped on the basis of set parameters.

Though the ADB has not come out with a specific Best Practices guidelines in sectors of Telecom and Urban Infrastructure, ADB’s many review mission reports and studies exists in these sectors as well and hence variables/parameters have been culled from such reports of ADB to constitute the Best Practices.
6.8.2. Analysis of Sectors

6.8.2.1. IRM - Power

Of the Nine Power/ Energy Utilities studied as part of this survey to know adoption of Best practices in Infrastructure Risk Management more than 90 % of the respondents (which included three SEBs) felt that sequencing of reform process which is a crucial best practice identified by ADB began at the wrong end in India. Though the Indian Power Sector could un-bundle its activities as generation, transmission, distribution and retailing the projects involving private participation soon found that the dues that they have to get from SEBs (which are mostly in the red) is not going to materialize soon. Even invoking guarantees were of no avail. This choked the entire unbundling exercise and except a few State-run SEBs all the rest started showing alarming overdues. Most of the respondents have opined that restructuring of SEBs should have preceded the unbundling process. Legal and Regulatory concerns have also been expressed by the respondents. However, two-thirds of the respondents feel that with the new Electricity Act, could make a difference to it and improve the scenario. But, as restructuring has not proceeded at a pace consistent with the development of a competitive unbundled system the best practices parameters on sequencing, open access, transparency, retailing have all been ranked low with respect to the benchmark scores of 100.

In India what we have had as of now is an unbundling coupled with private entry, but no competition really. Both the Enron and Cogentrix projects, for instance, are based on MOUs with a fixed rate of return on equity. There is now a move towards creating a more competitive structure-competitive bidding for projects with selection criterion based on quoted tariffs.

Thus what one can aim at, say in the power sector for instance, is a national grid where producers compete to sell to distributors directly on the grid based on spot/forward prices as in the case of the power sector post-1991 in Britain.
6.8.2.2. IRM - Water

The Water sector is generally considered to be slowest in moving towards a PPP structure. The survey here was conducted amongst projects in the Water as well as Irrigation sector. Of the 22 projects surveyed in the Water and Irrigation sector 14 projects were from Irrigation. While irrigation sector seem to have embraced the PPP and other innovative routes the unbundling of the water sector hasn’t been successful. In all the Best practices parameters like Awareness, having a regulatory regime (like a Central Authority) to manage the reform process, tradable water rights, adoption of concession system or other innovative BOT/BOOT structures, Commercialisation/ Corporatization etc., – the water sector has been ranked low, in many cases much lower than the median ranks. However, the Indian Irrigation sector has attempted to embrace many models of PPP structures and in States like Kerala, Punjab and Karnataka wherein people’s participation in development through strong panchayatiraj and co-operative initiatives exists, it has taken off. Atleast a good beginning has been made, and many such projects have managed to stay float albeit numerous local issues. In terms of adoption of best practices in these surveyed irrigation projects they have been ranked a good two to three notches above the way Water projects have been ranked, though in the overall ranks it doesn’t seem to have made much difference.

6.8.2.3. IRM – Roads/ Bridges

The story of adoption of Best Infrastructure Risk Management practices in the Indian Roads (which includes bridges as well) sector is on the threshold of becoming a success story if we were to turn the time-graph. It has happened through determined efforts of all stake-holders. The highest number - totaling 83 projects of all transactional forms have been surveyed for this study from this sector and this included some of the earliest projects of more than a decade back to some of the most recent ones. An in-depth analysis of the rankings clearly establishes that in the sphere of creating a PSP environment we have moved from early forms of maintenance contracts of roads to BOT/ROT and even advanced logistics concepts like Corridor. Many of the sampled have opined that though many legal and regulatory and operational constraints were there in the early days of PSP in the Road sector it has improved a lot.
6.8.2.4. IRM – Ports

The study entailed analyzing 15 projects in the Ports and shipping sector and many have ranked that historically the participation of Private sector in port handling has been there. It is just that lot more port services are being managed by Private entities now. On adoption of best practices though many legal, regulatory and logistics constraints are there in port sector development, a good beginning has been made which should sustain the sector in its path.

6.8.2.5. IRM – Telecom

Forty two projects of all forms including the Basic and cellular operators have been surveyed for this study and most of them have opined that though the sequencing of best practices adopted is much to be desired in the telecom arena, the determination to stay corrected at each stage seem to have propelled the sector to the right path. The trodden path has been tough and arduous and it has taught many learning and unlearning. Nevertheless, it has to be mentioned that the most visible outcomes of PSP has been in this sector and fruits of this is being enjoyed by the countrymen. Telecom is a competitive growth story in India.

6.8.2.6. IRM – Airports

Eight transportation projects involving Airports have been surveyed for the study and almost all have brought out that following Best practices has been a far cry in this sector. The adoption has been very slow and the parameters analysed clearly establishes that there hasn’t been any big involvement of PSP model in the sector. It has not really taken off.

6.8.2.7. IRM – Urban Infrastructure

More than 50 projects have been analysed ranging from parks and common facilities to Drainage and Sanitation. This included a few Municipal entities which have floated financial instruments like bonds for providing urban infrastructure. The analysed
parameters clearly establishes that the results have been pathetic and more often than not many projects are not even off the ground. Any practice, leave alone best practices seem to have been there in operationalising projects. It is unfortunate that such an important infrastructure sector seem to have been thoroughly neglected.

6.9 Ranking of Infrastructure Sectors in India

As a final step the survey used a proven multi-criteria ranking methodology (using the Rank Tool Box software) to rank the sectors in terms of the adoption of Best Practices and the scores have been detailed in Table 6.9. The sectors have been ranked using the chosen parameters in each sectors and are relative to the of Best practices of ADB which was given the Benchmark score of 100.

Table 6.9

<table>
<thead>
<tr>
<th>Rank</th>
<th>Sector</th>
<th>Index Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Telecommunications</td>
<td>70.68</td>
</tr>
<tr>
<td>2</td>
<td>Roads and Bridges</td>
<td>55.34</td>
</tr>
<tr>
<td>3</td>
<td>Power</td>
<td>38.21</td>
</tr>
<tr>
<td>4</td>
<td>Ports</td>
<td>34.10</td>
</tr>
<tr>
<td>5</td>
<td>Water and Irrigation</td>
<td>28.65</td>
</tr>
<tr>
<td>6</td>
<td>Airports</td>
<td>25.11</td>
</tr>
<tr>
<td>7</td>
<td>Urban Infrastructure</td>
<td>11.21</td>
</tr>
</tbody>
</table>

It can be seen from the above that the Telecom and the Road sectors has been ranked high with respect to the benchmark scores. It is because of their better indices values drawn from the variables studied.
6.10. **The Road Ahead**

The rankings have established where the preparedness of the sectors are in the Indian context. Broadly, it can be said that the focus has been on putting the macro PSP environment conducive for private sector participation and in that we have moved in the correct direction till now, albeit a bit wobbly at times. The coming years and the road ahead are going to be more challenging and it is going to be a long journey and a great learning experience for the stakeholders willing to go down the path. Figure 6.4 depicts a model as to where the Indian Infrastructure sectors are placed with respect to the Public-Private spectrum and it has been drawn from the data collected for this survey.

**Figure 6.4**

<table>
<thead>
<tr>
<th>An Evolving and Flexible Model for Infrastructure Service Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Sewerage/Sanitation</td>
</tr>
<tr>
<td>✓ Bulk water supply</td>
</tr>
<tr>
<td>✓ Rural electrification</td>
</tr>
<tr>
<td>✓ Rural water</td>
</tr>
<tr>
<td>✓ Rural roads</td>
</tr>
<tr>
<td>✓ Roads</td>
</tr>
<tr>
<td>✓ Power generation</td>
</tr>
<tr>
<td>Telecoms</td>
</tr>
</tbody>
</table>

**Engagement Anywhere Along the Spectrum**